Volume II

Independent Oversight Emergency Management Inspection of the

Nevada Test Site

September 21, 2004

Office of Independent Oversight and Performance Assurance
Office of the Secretary of Energy

INDEPENDENT OVERSIGHT
EMERGENCY MANAGEMENT INSPECTION
OF THE NEVADA TEST SITE

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Acronyms

BN	Bechtel Nevada
CEMP	Consolidated Emergency Management Plan
CIC	Communications Information Center
DAF	Device Assembly Facility
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
ERAP	Emergency Readiness Assurance Plan
ERG	2000 Emergency Response Guidebook
ERO	Emergency Response Organization
FY	Fiscal Year
HSC	Hazardous Material Spill Center
IC	Incident Commander
JIC	Joint Information Center
LANL	Los Alamos National Laboratory
LED	Local Emergency Director
LLNL	Lawrence Livermore National Laboratory
NA-43	NNSA Office of Emergency Management Implementation
NARAC	National Atmospheric Release Advisory Capability
NNSA	National Nuclear Security Administration
NSO	Nevada Site Office
NTS	Nevada Test Site
OA	Office of Independent Oversight and Performance Assurance
PEP	Performance Evaluation Plan
RWMC	Radioactive Waste Management Complex
TEEL	Temporary Emergency Exposure Level
TTPT	Tabletop Performance Test
WSI	Wackenhut Services, Inc.

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Volume II

1.0 Introduction

The Secretary of Energy's Office of Independent Oversight and Performance Assurance (OA), within the Office of Security and Safety Performance Assurance, conducted an inspection of safeguards and security and emergency management programs at the U.S. Department of Energy's (DOE) Nevada Test Site (NTS) in July and August 2004. The inspection was performed as a joint effort by the OA Office of Safeguards and Security Evaluations and Office of Emergency Management Oversight. This volume discusses the results of the review of the NTS emergency management program. The results of the review of the NTS safeguards and security program are discussed in Volume I of this report, and the combined results are discussed in a summary report.

Independent Oversight inspected safeguards and security and emergency management programs at the Nevada Site Office and the Nevada Test Site during July and August 2004.

The National Nuclear Security Administration (NNSA) Office of the Deputy Administrator for Defense Programs is the cognizant secretarial office for NTS. As such, it has overall Headquarters responsibility for programmatic direction and funding of most activities, as well as emergency management at the site. Line management responsibility for NTS operations and security falls under the Manager of the Nevada Site Office (NSO). NTS is managed and operated by Bechtel Nevada (BN), under contract to DOE. Wackenhut Services, Inc. (WSI) is the protective force contractor responsible for site physical security. NNSA national laboratories, including Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL), perform experiments at NTS and have responsibilities for operations of certain facilities used for nuclear stockpile stewardship support – the U1a facility, operated by LANL, and the Device Assembly Facility (DAF), operated by LLNL.

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. NTS also performs activities in the areas of 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.

The inspection examined the effectiveness of line management oversight and progress in addressing previously-identified weaknesses.

Throughout the evaluation of emergency management programs, OA reviews the role of DOE/NNSA organizations in providing direction to contractors and conducting line management oversight of contractor activities. OA is placing more emphasis on the effectiveness of DOE/NNSA line management oversight of emergency management programs. In reviewing NNSA line management oversight, OA focused on the effectiveness of NSO in managing the NTS contractor, including such management functions as setting expectations, providing implementation guidance, allocating resources, monitoring and assessing contractor performance, and monitoring/evaluating contractor self-assessments.

In addition to the OA review of NNSA's emergency management oversight and operational awareness activities, this inspection evaluated the site's progress in addressing weaknesses identified during the October 2002 OA inspection, particularly in the areas of hazards assessments and plans, processes, and procedures. The inspection team also conducted tabletop performance tests with a sample of the site's key decision-makers to evaluate their ability to employ available procedures, data sets, equipment, and skills when responding to postulated emergency conditions. Furthermore, as a part of OA's efforts to integrate security and emergency management performance testing, two combined safeguards/security and emergency management performance tests were conducted: a command post tabletop exercise that focused on how the NTS protective force and selected elements of the NTS emergency response organization respond to a simulated emergency event, and one force-on-force performance test that included emergency management objectives. The results of these performance tests are discussed in a separate report.

The inspection at NTS did not include a detailed evaluation of all required program elements delineated in DOE Order 151.1B, *Comprehensive Emergency Management System*, although the inspection results provide insights into the effectiveness of such key program elements as training and drills. Consequently, the conclusions drawn regarding the status of the program are necessarily based in large part on the effectiveness of the site's program improvement initiatives and the process by which these performance tests are planned, conducted, and evaluated. Further evaluation of the insights that are identified in this report may be helpful in developing root causes and corrective actions for the inspected areas, as warranted.

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 OA'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 review. Appendix A provides supplemental information, including team composition. Appendix B identifies the findings that require corrective action and follow-up. Appendices C through E detail the results of the reviews of individual emergency management program elements.

2.0 Results

2.1 Positive Program Attributes

NSO, BN, and the tenant national laboratory organizations have significantly improved the NTS emergency management program since the October 2002 OA inspection. Positive attributes of the NTS emergency management program are discussed below.

Improvements have been implemented in some emergency management program elements, and the Nevada Site Office is establishing incentives for further improvements in key areas.

BN and the national laboratory organizations have implemented improvements in all of the emergency management program elements that were evaluated during the October 2002 OA inspection. LLNL has completed surveys of all of their facilities at NTS and incorporated an increased spectrum of events into the DAF emergency planning hazards assessment (EPHA). The BN transportation EPHA addresses a comprehensive set of hazards and identifies an upgraded set of emergency planning zones. Most of the plan, process, and procedure weaknesses from the previous inspection have been effectively addressed. For example, the BN duty manager roles and responsibilities are well defined, and response actions are specified in a comprehensive set of response procedures and checklists. The categorization/classification and offsite notification processes have been streamlined to improve timeliness. Key emergency management documents, including implementing procedures and position checklists, are controlled to ensure that users have current revisions. Although no formal NTS-wide EPHA development guidance has been issued, NSO has indicated that issuance of such a document will occur by the end of the calendar year. Furthermore, efforts are under way to address the various plan/procedure inconsistencies and redundancies that were noted during this evaluation.

NSO is actively engaged in line management oversight of the NTS emergency management program and is well supported by the NNSA Office of Emergency Management Implementation (NA-43). NSO has established rigorous processes for conducting programmatic assessments, and in what OA considers to be a noteworthy practice, NSO is effectively using its objective-based performance evaluation plan to establish incentives for further improvements in key areas such as EPHAs. NSO is involved extensively in the closure process for completed corrective actions; closure actions are thorough and well documented, and in a number of instances, NSO has revised the actions. NA-43 and NSO communicate regularly on such topics as the emergency readiness assurance plan, and the NA-43 point of contact maintains cognizance of program status by reviewing exercise packages and evaluating emergency responder performance during annual site exercises. Additionally, to mitigate current NSO resource constraints, NA-43 has recently assisted NSO by coordinating support for an assessment of the NTS emergency public information function and participating in discussions regarding the level of support that NSO will require from the recently established NNSA service center. Finally, the training and qualification program for NSO emergency response personnel, who would oversee the site's response to an emergency event, remains well-structured, although the program does not require individuals to undergo formal verification of their readiness prior to being added to the duty rotation.

Key emergency response decision-makers at the facility level, security incident commanders, and consequence assessment personnel performed effectively during tabletop performance tests (TTPTs). For postulated events at the Radioactive Waste Management Complex, the local emergency directors (LEDs) demonstrated proficiency in classifying events, identifying protective actions for co-located workers, and working with the fire/rescue and protective force incident commanders (ICs) to orchestrate the response. The protective force ICs demonstrated a thorough understanding of emergency operations under unified command; established isolation zones that protected other responders and co-located workers for the postulated scenarios; and engaged the fire/rescue ICs in assessing the adequacy of security-initiated protective actions. Consequence assessment staff effectively performed initial and ongoing assessments of event consequences, confirmed the adequacy of initial protective-action decision-making and classification, and refined initial assessments based on accident-specific consequences.

2.2 Program Weaknesses and Items Requiring Attention

The OA inspection team observed significant weaknesses in the performance of the fire/rescue ICs during TTPTs. Also identified were concerns regarding the content and usability of some emergency action levels (EALs) and NSO's continued ability to maintain an appropriate degree of awareness of the NTS emergency management program. Specific weaknesses are discussed below.

Improvements are needed in some aspects of incident command and in emergency action level content.

Fire/rescue ICs did not consistently demonstrate the ability to accurately determine protective actions or classify emergency events in a timely manner, and NTS has not implemented a response process that supports continuous assessment of event consequences. During TTPTs involving facility-specific and transportation-related scenarios, fire/rescue ICs were not able to effectively use EALs and response procedures to classify events, verify the adequacy of isolation zones established by protective force ICs, and formulate the appropriate protective actions for co-located workers. In several instances, these individuals were not able to effectively interpret the information contained in the 2000 Emergency Response Guidebook to determine areas potentially impacted by postulated hazardous material releases. Although the actions of the protective force ICs usually compensated for the fire/rescue IC performance weaknesses, the observed performance is inconsistent with the NTS concept of emergency operations and the expectation that fire/rescue ICs will rapidly act to protect site personnel and the public. Finally, BN has not established the capability to use field monitoring data to correlate actual event consequences with the release estimates provided by consequence assessment personnel to refine the event assessment.

As a result of errors in technical content, formatting inconsistencies, and wording ambiguities, EALs do not always ensure accurate event classification or protective action formulation. In most cases, EALs for BN, LLNL, and LANL facilities at NTS adequately support the process for classifying emergencies and formulating protective actions for co-located workers and the public. However, some DAF-analyzed events, such as a plutonium fire/explosion, are not included in the EAL set, and some DAF, Hazardous Material Spill Center, and transportation EALs incorporate entry thresholds that are not readily observable by the decision-maker. The BN transportation EALs incorrectly use the terms "Unidentified hazardous materials" and "Unknown" to apply to known materials not otherwise listed in the transportation EAL set. Finally, the EALs for the U1a facility and DAF for use by the respective LEDs are different in format, numbering, and, in some cases, content than the EALs that are intended to be used by the ICs and other response personnel. These differences may confuse responders attempting to verify the accuracy of initial decision-making and develop timely and accurate notification messages. In part, EAL weaknesses can be attributed to the continued absence of a formal, sitewide procedure that conveys the standards and requirements for developing EPHA documents.

NSO has not developed a strategy for ensuring that the NNSA responsibilities for line management oversight of the NTS emergency management program can be appropriately fulfilled. In part due to the transfer of NSO emergency management staff to the newly-created NNSA service center, assessment activities over the past year have been less extensive than in the past, and they have concentrated on reviews of documents generated by the program upgrade efforts. Furthermore, NSO has not ensured that the tenant national laboratory organizations have consistently conducted the required annual assessments of their emergency management programs. The NSO fiscal year (FY) 2004 validation/assessment plan appropriately implements a three-year assessment cycle starting in FY 2005 that meets the line management oversight requirements of DOE Order 151.1B, but resources for this plan have

not been identified. Uncertainty in the level of support that will be provided by the NNSA service center, combined with weaknesses in the contractor self-assessment processes, may limit NSO's ability to implement its FY 2004 emergency management assessment plan and, more broadly, maintain the appropriate degree of program awareness.

3.0 Conclusions

The October 2002 OA inspection of the NTS emergency management program found that the program was generally well defined and that most emergency responders were well trained and capable of handling potential emergency events. Furthermore, due in large part to the active involvement of the NSO Manager and the Emergency Management Operations Team Leader, feedback and improvement programs were effective in self-identifying and correcting program and performance weaknesses. However, hazards surveys and EPHAs, which establish the technical basis for all other emergency management program elements, were identified as having significant weaknesses, and the effectiveness of program implementation at the facility level was not consistent between or within the contractor and the tenant national laboratory organizations. This 2004 inspection found that appropriate programmatic improvements have been implemented in nearly every area previously evaluated, and NSO and BN are acting to correct known weaknesses. However, the OA team noted significant weaknesses in one area of emergency response during TTPTs and concerns in several other programmatic areas.

The most noteworthy improvements have appropriately been in the area of hazards survey and EPHA documents. BN has upgraded the EPHAs for the Hazardous Material Spill Center and transportation, and LLNL has developed hazards surveys for its facilities and has upgraded the DAF EPHA. BN has also effectively addressed most plan and procedure weaknesses noted during the previous inspection, including implementing an effective document control procedure for key documents used by the emergency response organization. Previously-identified weaknesses in the key emergency management processes for categorizing/classifying events and notifying offsite authorities have also been corrected. As demonstrated during TTPTs, consequence assessment personnel are able to utilize the available tools effectively to complete timely initial and ongoing assessments of event consequences.

Other notable positive attributes include the rigor of NNSA line management oversight and the results of the TTPTs for most of the emergency response decision-makers who were evaluated. NSO continues to be actively engaged in maintaining a high degree of operational awareness of the status of the program, and NA-43 is involved as well, both through exercise evaluations and, more recently, assisting in obtaining resources to identify and address continuing weaknesses in the emergency public information program. NSO is using a rigorous process for closing previously-identified areas of weakness, and as a noteworthy practice, is effectively using its performance evaluation plan to drive program improvements. Most BN TTPT participants demonstrated effective performance in TTPTs in the key areas of event classification; event notifications; and most importantly, identification and implementation of protective actions for site workers and protective action recommendations for the public.

Although improvements have been made in many emergency management program elements, some remaining weaknesses limit the effectiveness of program implementation.

Notwithstanding the wide range of improvements, some work remains to make the NTS emergency management fully mature. Although fire/rescue ICs were able to work effectively within a unified incident command system, they experienced significant difficulty in using EALs, response procedures, and the 2000

Emergency Response Guidebook to rapidly classify events and formulate appropriate protective actions for co-located workers and the public. Fire/rescue ICs placed undue reliance on supporting response personnel to achieve critical emergency management objectives, and consequently, their performance does not provide a sufficient level of confidence that effective emergency management decisions will be made under all conditions.

The OA team also identified several programmatic concerns, including weaknesses in the technical content and usability of EALs and in EPHA consistency. Some facility-specific emergency scenarios have not been incorporated into the associated set of EALs; the EALs are not worded to ensure consistently accurate and timely implementation; and the DAF and U1a LEDs work from a set of EALs that are inconsistent with those used by the remainder of the NTS ERO. Several weaknesses were also noted in the NTS EPHAs, principally the DAF EPHA, that reflect inconsistent hazards survey and EPHA development processes among BN and the national laboratory organizations. In addition, NSO's plan for scheduling and conducting emergency management assessments in future years to maintain awareness of the status of the NTS program is not supported by a systematic analysis of the assessment schedule or a clearly defined set of available resources. Because there is some uncertainty regarding the resources that the NNSA service center will be able to provide, it is unclear how NSO will be able to provide the appropriate degree of line management oversight for an emergency management program as large and complex as that existing at NTS. NSO and BN were already aware of most other items requiring attention, including weaknesses in the emergency public information area, most of which remain from 2002; the absence of mechanisms for effectively obtaining and using field monitoring data to refine event assessment estimates; and the need to remove remaining redundancies and inconsistencies from various emergency response plans and procedures. Finally, NSO does not require response personnel assigned to the emergency operations center to demonstrate proficiency through an evaluated drill or exercise prior to their assignment to the active emergency response organization.

Overall, the Nevada Site Office emergency management program is fundamentally sound and continues to improve, but line management attention is warranted to ensure that ongoing corrective actions are effective in addressing program weaknesses.

Overall, the NSO emergency management program continues to improve, and the concept of emergency operations remains fundamentally sound. BN has implemented compensatory measures that should address the observed performance weaknesses until longer term corrective actions can be completed. However, NNSA line management attention is warranted to ensure that collectively, the corrective actions are effective in ensuring that site workers can be adequately protected following events where the fire/rescue ICs are the initial decision-makers, and therefore would be relied upon to identify necessary protective actions. Furthermore, NNSA line management needs to address resource issues that could challenge NSO's ability to maintain the appropriate degree of line management oversight of the NTS emergency management program.

4.0 Ratings

This inspection focused on a detailed assessment of three key emergency management programmatic elements, as well as the performance of selected emergency response decision-makers. No overall program rating has been assigned. The individual element ratings reflect the status of each NTS emergency management program element at the time of the inspection. The rating assigned below to the readiness assurance category is 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 Survey and Hazards Assessments ..... NEEDS IMPROVEMENT
Program Plans and Procedures ..... EFFECTIVE PERFORMANCE

Emergency Response

BN Radioactive Waste Management Complex LEDs ..... EFFECTIVE PERFORMANCE
BN Fire/Rescue ICs ..... SIGNIFICANT WEAKNESS
BN Consequence Assessment Team ..... EFFECTIVE PERFORMANCE
WSI Protective Force ICs ..... EFFECTIVE PERFORMANCE

Readiness Assurance

NNSA Line Program Management ..... EFFECTIVE PERFORMANCE

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APPENDIX A

Supplemental Information

A.1 Dates of Review

Scoping Visit	June 14 - 16, 2004
Onsite Inspection Visit	July 12 - 20, 2004
Report Validation and Closeout	August 16 - 19, 2004

A.2 Review Team Composition

A.2.1 Management

Glenn S. Podonsky, Director, Office of Security and Safety Performance Assurance
Michael A. Kilpatrick, Director, Office of Independent Oversight and Performance Assurance
Charles B. Lewis, Director, Office of Emergency Management Oversight

A.2.2 Quality Review Board

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

A.2.3 Review Team

Bradley Peterson, Director, Office of Cyber Security and Special Reviews (Team Leader)

Steven Simonson (Topic Lead)
Jeffrey Robertson
Tom Rogers
David Odland
Jesus SanAgustin
David Schultz
Douglas Trout

A.2.4 Administrative Support

Leisa Weidner

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APPENDIX B

Site-Specific Findings

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

FINDING STATEMENTS	REFER TO PAGES:
1. BN, LANL, and LLNL have not established EALs that support consistent and timely emergency event classification, as required by DOE Order 151.1B, *Comprehensive Emergency Management System*.	16
2. During tabletop performance tests, BN fire/rescue incident commanders did not always accurately classify events or determine protective actions in a timely manner, as required by DOE Order 151.1B.	26
3. BN has not established the mechanisms necessary to integrate field monitoring activities with ongoing consequence assessment activities, as required by DOE Order 151.1B.	27

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APPENDIX C

Emergency Planning

C.1 INTRODUCTION

Emergency planning consists of identifying hazards, threats, and hazard mitigation mechanisms; developing and preparing emergency plans and procedures; and identifying personnel and resources needed to ensure an effective emergency response. Key elements of emergency planning include developing a hazards survey and emergency planning hazards assessment (EPHA) to identify and assess the impact of site- and facility-specific hazards and threats, and establishing an emergency planning zone. Based upon the results of these assessments, U.S. Department of Energy (DOE) and National Nuclear Security Administration (NNSA) sites and facilities must establish an emergency management program that is commensurate with the identified hazards. The 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, regardless of its magnitude.

This evaluation included a review of the hazards survey and EPHA documents associated with the U1a facility (managed by Los Alamos National Laboratory – LANL); the Device Assembly Facility – DAF (managed by Lawrence Livermore National Laboratory – LLNL); and the Hazardous Material Spill Center (HSC) and transportation activities (both managed by Bechtel Nevada – BN). Also reviewed were sitewide and facility-specific emergency plans and associated implementing procedures. These reviews focused on improvements made in response to weaknesses identified during the inspection conducted by the Office of Independent Oversight and Performance Assurance (OA) in October 2002.

C.2 STATUS AND RESULTS

C.2.1 Hazards Survey and Hazards Assessment

The October 2002 inspection identified significant weaknesses in the Nevada Test Site (NTS) hazards surveys, EPHAs, and emergency action levels (EALs). These weaknesses included incomplete hazards surveys for LLNL facilities, a transportation EPHA that was in draft form, and the use of non-conservative or incomplete assumptions and methodologies in the HSC EPHA. Additionally, the DAF EPHA had not been revised in four years and did not analyze a spectrum of events using bounding values for source terms or diverse event initiators. Collectively, the rigor and content of the NTS hazards surveys and EPHAs varied significantly among the facilities and did not contain a level of detail sufficient to determine how hazards were screened or evaluated. Contributing to these weaknesses was the absence of a hazards survey and an EPHA development and maintenance procedure that defined a common format, established acceptable methodologies, and conveyed documentation expectations, all intended to enable users to easily and readily extract pertinent information when needed. Finally, the EALs were not maintained as controlled documents and contained content and format inconsistencies. This 2004 inspection found that substantial improvements have been made to the hazards survey and EPHA documents for the NTS facilities operated by BN and LLNL, and that the LANL EPHA for U1a, which was previously determined to be technically adequate, is being appropriately maintained. However, some work remains, particularly in the area of EAL content and usability.

Since the 2002 inspection, BN has issued hazards survey, EPHA, and EAL development procedures for use at BN facilities, and the BN EPHAs for transportation and HSC have been appropriately revised to correct the specific weaknesses identified by OA in October 2002. The transportation EPHA now provides a comprehensive analysis of the many hazardous materials known to or expected to traverse NTS through conservative analyses using widely-accepted computer dispersion modeling programs, such as the Emergency Prediction Information Code or Hotspot. Each hazardous material is evaluated using both average and severe weather conditions for events initiated by impact, fire, and explosion, with the consequences determined at appropriate receptor distances. In addition, the EPHA correlates material-at-risk (i.e., source term) quantities that could cause classifiable emergencies (if accidentally released) with the calculated distances from the release points where protective actions would be necessary. This information is contained in user-friendly tables that facilitate rapid event classification and selection of the appropriate predetermined protective actions. The results are also depicted graphically on an NTS map so that the impacts of postulated releases on facilities along the transport routes are readily available.

The BN EPHA for HSC now includes a comprehensive table of analyzed events that links event classifications with predetermined protective actions. BN has increased the analyzed spectrum of events; now evaluates three different source term quantities in terms of maximum historical (100 percent, 50 percent, and 10 percent); and determines consequences at an expanded list of receptors of interest. The Nellis Test and Training Range property that borders NTS is now appropriately considered a separate jurisdiction and receptor of interest. The collective result is the identification of a larger set of potential classifiable emergencies, including new events at the General Emergency level, and a larger HSC emergency planning zone, which should be reflected in the next revision to the site's Consolidated Emergency Management Plan (CEMP).

LLNL hazards survey and EPHA documents are similarly improved. LLNL has completed hazards surveys for all LLNL facilities, and the DAF EPHA is now being updated and approved annually. DAF chemical hazards were appropriately screened from a quantitative assessment, and material-at-risk quantities analyzed in the EPHA are consistent with the limits contained in the DAF technical safety requirements. The DAF EPHA analyzes a wider spectrum of emergency events, including those initiated by fire, natural phenomena, malevolent acts, and aircraft crashes; considers average and severe weather conditions; and for buildings with high efficiency particulate air filtration, includes postulated consequences for filtered and unfiltered releases. Most of the analyses are technically sound; however, as a result of computational errors, the consequences of tritium releases have been overstated by several orders of magnitude. The LANL EPHA for U1a has been appropriately reviewed and revised as part of the annual maintenance process. LANL concluded that no new hazards were identified that required a quantitative assessment, a conclusion that is consistent with a review of the U1a list of hazardous substances.

Although the EPHAs were generally much improved, several weaknesses were noted in the NTS EPHAs, principally the DAF EPHA, that are reflective of inconsistent hazards survey and EPHA development processes among BN and the national laboratory organizations. For example:

- The hazards screening methodology that LLNL uses for DAF is similar to that used by BN but different from the process that LLNL uses at the Big Explosive Experimental Facility. Consequently, LLNL screened from further consideration at the Big Explosive Experimental Facility a quantity of hazardous material approximately four times the amount of that determined by BN (in the transportation EPHA) to be capable of producing a classifiable emergency.

- The process used to screen hazardous chemicals from further consideration in the DAF EPHA is not documented. Although the process that is used appropriately calculates a screening threshold that is based on the distance to the point where protective action criteria would be exceeded, the DAF

hazards survey states that threshold planning quantities published in the Code of Federal Regulations are used as screening thresholds.

- LLNL uses values for airborne release fractions in the DAF EPHA that differ from those used in BN EPHA documents, but the justification for the differences is not documented. If a release event at DAF requires consequence projections by a consequence assessment team, the differing release fractions may be a source of confusion for BN consequence assessment staff who are familiar with BN EPHA methodologies.

- The hazards survey for HSC inappropriately includes information on event classification developed in the EPHA, but because the hazards survey is not updated as often as the EPHA, the hazards survey information could be misused. For example, a release of chlorobenzene is listed as a Site Area Emergency in the hazards survey, but the EAL contained in the EPHA indicates that for the same quantity released, an Alert is the most severe event classification possible.

The DAF EPHA provides a generally sound and in-depth set of analyses; however, the hazards survey and EPHA development processes used by the national laboratory organizations at the NTS facilities continue to be expert-based because they have not developed formal guidance on generating hazards survey and EPHA documents and are not using the equivalent guidance that BN developed for its facilities at NTS. Although the BN process is formalized, the applicable procedure is written in general terms and lacks the specificity to ensure a uniform approach to analysis and documentation. Consequently, inconsistencies in the methodologies used to screen hazardous materials and develop EPHAs exist among DAF, other LLNL facilities at NTS, and other non-LLNL facilities at NTS. Adopting a common approach to developing hazards survey and EPHA documents and a common format for documenting analytical results would facilitate more effective use of these documents by decision-makers and consequence assessment personnel during an emergency event. Furthermore, institutionalizing the process would make the rigor and utility of the analyses much less dependent on the experience and background of individual EPHA authors. In recognition of the importance of institutionalizing the hazards survey and EPHA development process, NSO identified corrective actions intended to address Finding #1 from the October 2002 OA inspection report that included developing and issuing a sitewide EPHA development manual. Completion of this action, originally scheduled for March 2003, is now expected by the end of calendar year 2004.

EALs have improved since the October 2002 OA inspection. They are well organized in tables that include associated predetermined protective actions and protective action recommendations, as appropriate. However, some EALs do not include indications or appropriate language to provide observable, unambiguous, and objective criteria, or do not reflect the scenarios or analyses contained in the EPHAs. For example:

- Although analyzed DAF EPHA scenarios include plutonium and plutonium oxide fires that result in classifications at the General Emergency level and a plutonium metal spill that results in a classification at the Site Area Emergency Level, associated EALs are absent from the DAF EAL set.

- Because of a delay in revising the DAF initial response procedure, the DAF EALs to be used by the local emergency director (LED) for initial emergency decision-making did not reflect various changes to classification thresholds that were identified in the April 2004 revision to the DAF EPHA.

- The HSC EPHA identifies the release of acetonitrile as an Alert, whereas this event is identified as a Site Area Emergency in the applicable EAL.

- Some DAF EALs do not facilitate ready identification of the correct classification and protective action because of unclear or incomplete phraseology or inconsistencies within the EAL set. For example, one EAL entry statement states that a plutonium oxide spill in any location will not result in a classified emergency as long as the ventilation system is operating. However, subsequent EALs state that, depending on the quantity spilled and spill location, a plutonium oxide spill is a classified emergency, without indicating the required ventilation status.

- EALs for DAF, HSC, and transportation activities include classification thresholds not easily determined. For example, the transportation EALs include a tritium release threshold of "greater than 3.41E+6 curies but less than 7.41E+6 curies," and DAF EALs do not include a spill quantity for americium or curium spill scenarios. Additionally, the DAF EAL for a criticality event relies on an alarm from a criticality alarm system that is not installed.

- Transportation EALs for "unknown hazardous materials" are listed in two separate sections of the table (i.e., Section 4: Unknown Hazardous Materials and Section 5: Discretionary/General) but differ in appearance and content. Additionally, the EALs for "unknown hazardous materials" are actually intended to apply to identified materials that are not otherwise listed or assessed in the transportation and HSC EALs. This led to confusion and improper classification during a tabletop performance test.

Furthermore, for U1a, EALs in the possession of the LED do not always contain the same information or formatting as those in the possession of the incident commanders and other emergency response organization personnel. Consequently, for an event at U1a, BN and NSO decision-makers may not be able to readily confirm initial classification and protective action decisions made by the cognizant LED. This weakness is described in more detail in the following section.

Finding #1: BN, LANL, and LLNL have not established EALs that support consistent and timely emergency event classification, as required by DOE Order 151.1B, *Comprehensive Emergency Management System*.

To summarize, BN and the national laboratory organizations have significantly improved the quality and rigor of the hazards survey and EPHA documents that were reviewed during the October 2002 OA inspection. These program foundation documents are, with few exceptions, technically adequate. However, BN, LLNL, and LANL have not developed and implemented formal guidance that ensures that the hazards surveys and EPHAs (and associated EALs) have the appropriate and consistent degree of rigor and documentation across the site. Consequently, the hazardous material screening processes are not adequately described, and the hazards surveys are not always consistent with the associated EPHAs. Furthermore, because EPHA methodologies are inconsistent and, in one case, the response procedure containing EALs was not promptly updated, EPHA analyses have not been completely and accurately carried forward into EALs. Many EALs do not contain entry statements with observable or readily measurable indicators, or do not sufficiently distinguish among similar events to ensure consistently accurate event classifications. Consequently, initial emergency response decision-makers and consequence assessment personnel may find these response tools unnecessarily difficult to use.

C.2.2 Program Plans and Procedures

During the October 2002 inspection, the OA team found that NSO had established the appropriate programmatic emergency management requirements supported by a comprehensive set of procedures and response tools. However, many response plans and procedures contained inconsistencies, and the emergency classification and notification processes did not ensure that these response activities could be

performed without unnecessary delays. In this inspection, the team found that corrective actions were effective in streamlining the classification and notification processes and that plans and procedures were generally improved. Particular improvement was noted in the comprehensive BN duty manager procedures and checklists and in the emergency operations center (EOC) checklists and response tools. However, various redundancies and inconsistencies still exist among the large number of plans and procedures for which NSO, BN, and the national laboratory organizations are responsible.

The NSO CEMP establishes requirements for the management of operational emergencies that could occur at facilities located on the NTS and outlying sites under the cognizance of NSO. The CEMP is supported by a hierarchy of NSO, contractor, and national laboratory plans and procedures. NSO implementing procedures, which are used by the EOC cadre, provide a clear chain of command, and position-specific roles and responsibilities are clear and concise. Most notable is the NSO EOC staffing procedure that contains position-specific checklists. These comprehensive checklists are well organized and formatted in a way that make them user friendly in a high stress situation. The February 2003 revision to the CEMP corrected the few deficiencies noted during the October 2002 OA inspection, including making the notification requirements in the CEMP consistent with DOE Order 151.1B requirements and establishing a formal document control process.

As a part of corrective actions to address identified weaknesses, the site has implemented improvements in three key emergency management processes. The first of these is that the notification processes has been simplified to avoid unnecessary delays. The BN duty manager completes the notification form after receiving information from the incident commander or LED. It is then faxed and emailed to the EOC watch officer. If the EOC is not activated, the EOC watch officer has the authority to transmit the notification; if the EOC is activated, the watch officer prints the form for review and approval. This is a substantive improvement over the previous process, which required transcription of the notification information using two different forms. The only remaining weakness noted is that the electronic version of the notification form differs slightly from the controlled copy that is included in the notification procedure. The copy in the procedure contains an instruction to address questions regarding the notification to the public affairs officer and provides a telephone number. However, the public affairs officer reports to the EOC in an emergency and would not be available at the number provided in the procedure. The electronic version of the form does not contain this statement.

The categorization/classification process has also been streamlined by deleting the requirement that the emergency manager or deputy emergency manager must make categorization and classification determinations when the EOC is activated. The new NSO emergency response procedures appropriately place this responsibility with the LED, incident commander, or crisis manager (as appropriate, given the event location). By designating the role of the emergency manager and deputy emergency manager as one of reviewing the categorization and classification decisions for accuracy, the time required to initially categorize or classify an emergency is reduced by eliminating the need for EOC concurrence.

The third specific area of improvement is implementation by NSO and BN of an effective document control procedure for key documents used by the emergency response organization. The formal document control process includes the NSO emergency management plan and implementing procedures, EALs, job aids, and checklists. A comprehensive tracking system is used for distributing, indicating revision status, issuing controlled or information copies, and ensuring timely updates. However, as mentioned in the previous section, some EALs used by LEDs at the U1a facility (LANL) differ from those used by the incident commander and other emergency response decision-makers in the emergency management center and EOC. At U1a, EALs are extracted from the EPHAs, reformatted, renumbered, and enhanced with the addition of discretionary EALs, and then incorporated into an initial response implementing procedure. However, the incident commander and other decision-makers are provided with a controlled copy of the EALs extracted directly from the EPHAs. Differences between the EALs

appearing in the EPHAs and those in use at U1a can impair timely verification of initial response decision-making and notifications, particularly during rapidly moving events.

More broadly, BN has effectively addressed most plan and procedure weaknesses identified during the October 2002 OA inspection. The BN duty manager roles and responsibilities are well defined by comprehensive procedures and checklists, and the duty manager interviewed during this inspection was knowledgeable of those procedures and how they were to be implemented. The consequence assessment team coordination issue, stemming from the practice of using two independent teams, was appropriately resolved, and the performance of the consequence assessment function has significantly improved, as observed during tabletop performance tests conducted as part of this inspection. Additionally, use of the GeoNotify system – a computerized worker notification system – is now fully addressed in procedures, and facility and transportation EALs are consolidated in a single binder for use by the incident commander and emergency response personnel located in the emergency management center and the EOC. The emergency plans and implementing procedures for which the national laboratory organizations are responsible have also been improved and, with few exceptions, are consistent with the overall concepts of emergency management at NTS.

Although NSO, BN, and the national laboratory organizations have implemented many improvements in plans and procedures, there are inconsistencies among these documents. Because the CEMP and procedure revisions are not made effective concurrently, NSO procedure revisions issued within the last few months are not entirely consistent with the CEMP issued in February 2003. Inconsistencies also exist between BN plans and procedures, most notably in the notification and categorization/classification processes. Some inconsistencies were also identified within the LANL emergency plan and higher-level plans, but these are mostly administrative in nature and will not affect emergency response. These inconsistencies primarily result from the large number of NTS plans and procedures and the redundancies between these documents. Nonetheless, there is a common understanding among emergency response personnel regarding how the processes are to be implemented, and the primary response procedures and checklists are current. Consequently, except for weaknesses in EAL content and usability, the various plan and procedure inconsistencies do not materially affect the NTS emergency response processes.

To address this issue, NSO is revising the CEMP to remove some of the detail that is more suited to procedures and thereby minimize the need to revise multiple documents to address simple process changes. BN is in the process of implementing a long-term improvement plan aimed at eliminating redundancies in procedures, streamlining the procedures and checklists, making facility response procedures more user friendly, and providing templates for improved content and consistency of facility procedures. Because these efforts are in the early stages, they could not be evaluated, but the consolidation plans described (when fully implemented) would significantly improve the clarity and usability of BN procedures.

To summarize, the NTS emergency management program is defined and implemented using a comprehensive hierarchy of NSO, contractor, and national laboratory organization plans and procedures. The NSO, BN, and facility-level corrective actions have, with few exceptions, resulted in significant enhancements of response plans, processes, and procedures. The notification and categorization/classification processes have been streamlined to minimize delays. BN has implemented effective procedures and checklists to define the duties and responsibilities of the BN duty manager. The consequence assessment team coordination issue stemming from the use of two independent teams has been adequately resolved. Additionally, key emergency management documents are now formally controlled to ensure that users have current revisions. However, as was the case during the October 2002 inspection, there are many inconsistencies between response plans and procedures; in large part, these inconsistencies are to be expected given the extent of the recent program improvements. In addition, because the implementing procedures and response checklists, which are used to train emergency

responders, are generally more current than the higher-level emergency plans, the inconsistencies are not expected to adversely affect emergency response activities.

C.3 CONCLUSIONS

BN and LLNL have strengthened the technical foundation of the NTS emergency management program by implementing significant improvements in their respective hazards surveys and EPHA documents. However, the EALs, which implement the results of the EPHAs, do not consistently reflect the EPHA conclusions and contain weaknesses that affect their usability, particularly in a high-stress environment. To a large degree, the relatively few observed EPHA weaknesses and the EAL weaknesses reflect the absence of sitewide standards and guidance for developing hazards surveys, EPHAs, and EALs. Such standards and guidance are an important element in promoting sound and consistent analysis methodologies and facilitating timely use of EPHA information by decision-makers and consequence assessment personnel. NSO, BN, and the national laboratories have implemented significant improvements as well in response plans, processes, and procedures, thereby effectively addressing the previously identified weaknesses. Although many inconsistencies among response plans and procedures remain, the inconsistencies are not expected to impact emergency response activities, and NSO and BN are working to correct and simplify the procedures by which the NTS emergency management program is implemented.

C.4 RATING

A rating of NEEDS IMPROVEMENT is assigned to the area of hazards survey and hazards assessments.

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

C.5 OPPORTUNITIES FOR IMPROVEMENT

This OA inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible NNSA and contractor line management and prioritized and modified as appropriate, in accordance with site-specific programmatic emergency management objectives.

Nevada Site Office

- Continue to enhance the usability and effectiveness of the site's EPHAs. Specific actions to consider include:
  - Complete the existing corrective action to establish a site-wide standard for EPHA development, content, and format.
  - Ensure that site contractors and tenant laboratory organizations implement the site wide EPHA standard.
- Expedite the revision of the CEMP. Specific actions to consider include:
  - Update the site's emergency planning zone to reflect the new facility-specific emergency planning zones from the recently-revised EPHAs.
  - Eliminate conflicts with updated implementing procedures.

- Determine whether the public affairs officer is the desired point of contact to address questions related to offsite notifications, and ensure that forms and procedures are updated to reflect this determination. Specific actions to consider include:

  - Confirm that a knowledgeable person will be available to answer the phone at the number listed on the notification form for the public affairs officer, or consider making the EOC watch officer the initial point of contact.

  - Ensure that the electronic notification form is revised to be consistent with the form contained in the notification and reporting procedure.

- Ensure that the incident commanders, crisis manager, and emergency manager have the same set of EALs as the LED. Specific actions to consider include:

  - Determine which facilities reformat or otherwise change the EALs for incorporation into an implementing procedure.

  - Include these EALs in the controlled distribution process to ensure that they are placed in the EAL binders.

Bechtel Nevada

- Revise the BN EPHA development procedure to reflect the practices performed in the BN development process and remove instructions that permit deviations from the process. Specific actions to consider include:

  – Remove the screening discussions that refer to the use of thresholds published in the Code of Federal Regulations and National Fire Protection Association ratings and add a description of the method, using evaluations based on exceeding protective action criteria, that was implemented in the latest EPHA updates.

  – Provide instructions to obtain Temporary Emergency Exposure Levels (TEELs) from the Internet website for the Subcommittee on Consequence Assessment and Protective Actions to ensure that current TEELs are used in both screening and consequence assessment activities.

  – Change the instructions from using alternate guidelines to requesting that a TEEL be established by the Subcommittee for Consequence Assessment and Protective Actions in the event that one has not been established.

  – Identify the individuals responsible for developing, reviewing, and approving hazards survey and EPHA documents.

  – Add a description of the methodology used to determine airborne release fractions based on the chemical's vapor pressure.

  – Add the Emergency Prediction Information Code to the list of recognized dispersion models.

  – Ensure that consistency in scope and results is maintained between fixed facility EPHAs and the BN site transportation EPHA by including a crosswalk check in the development and revision processes.

Lawrence Livermore National Laboratory

- Develop and issue procedures and templates to guide the development of hazards surveys, EPHAs, and EALs. Maximize the degree of consistency with BN and other NTS organizations in the screening and analysis methodologies, informational content, and format to optimize their usefulness during a response. Include requirements that ensure that EALs are promptly revised to reflect changes identified by EPHA revisions.

- Enhance the usefulness of EPHAs for decision-makers and consequence assessment teams by minimizing incorporation by reference, particularly to classified documents. Specific actions to consider include:

  – Provide the assumptions, methodologies, and analysis data contained in referenced documents in the EPHAs sufficient to enable a consequence assessment team to understand how consequence assessment conclusions were derived.

  – Use unclassified bounding or surrogate data in the EPHA when classified information is used in documents referenced by the EPHA.

Bechtel Nevada and Lawrence Livermore National Laboratory

- Revise the EAL tables to eliminate difficulties in their use. Specific areas to consider include:

  – Use observable conditions in the EAL statement. In cases where mathematical calculations and observable conditions are not perfectly aligned, bound the mathematical results with the observable conditions and describe the relationship in the EPHA.

  – Ensure that all analyzed events are included in the EAL set and that all event designators are correctly cited in the EAL statements.

  – Ensure that consistency of event classification is maintained between the EPHA and the EAL statements for the analyzed events.

- Strengthen the processes that support development of the hazards survey and hazards assessment. Specific actions to consider include:

  – Ensure multi-disciplinary membership on the hazards survey/hazards assessment development team, and facility manager approval of and involvement in the document development process.

  – Include references to hazardous material database inventories in the hazards survey.

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APPENDIX D

Emergency Response

D.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 of three sets of tabletop performance tests conducted by the Office of Independent Oversight and Performance Assurance (OA). The first set of performance tests involved two emergency response decision-making teams at the Area 5 Radioactive Waste Management Complex (RWMC), each consisting of a local emergency director (LED), fire and protective force incident commanders (ICs), and selected support staff. The second performance test involved the Bechtel Nevada (BN) consequence assessment team, which is activated following the declaration of a classified emergency and responds to the site emergency management center (EMC) or emergency operations center (EOC), depending on the time of day. The third set of performance tests involved two decision-making teams of fire/rescue and security officers responding as ICs to events involving site transportation activities.

Collectively, four operational emergency scenarios were presented to the participants: 1) a facility handling event that produces a release of radioactive material and injured personnel; 2) a malevolent act with a potential bomb explosion and release of radioactive material; 3) a two-vehicle accident involving injuries and the release of a hazardous chemical; and 4) a two-vehicle accident involving a specialized site vehicle carrying a nuclear experiment and a hazardous chemical release. The consequence assessment team was presented with the facility radiological release and transportation chemical release scenarios that did not involve security issues. The scenarios, which were developed by OA in conjunction with BN and Wackenhut Services Inc. (WSI) Trusted Agents, were presented to the participants by several Trusted Agents to ensure scenario validity and delivery of accurate event cues. The Trusted Agents also played the roles of several functions not staffed, such as fire and security dispatchers.

D.2 STATUS AND RESULTS

In the event of an emergency, the facility LED, if available, provides initial direction and control of the BN emergency response organization (ERO); the BN fire/rescue and protective force senior officers provide this function for site events or for facility events when the LED is not available. The fire/rescue and protective force officers, who become the IC during an emergency, are supported by personnel in the communications information center (CIC), central alarm station, and BN duty manager's office, all of which are staffed 24 hours per day. Depending on the event location, either the LED or the fire/rescue IC perform initial emergency protective action and classification decision-making. They also initiate notifications through the BN duty manager until relieved by the BN crisis manager as part of the site emergency management center activation process. ICs from the fire/rescue and protective force organizations join the LED at the affected facility and, depending on the type of emergency, relieve the LED of overall command and control functions and lead the on-scene response. The IC directs the

tactical response, while the LED retains facility operational control through unified incident command. For such site events as transportation accidents, the cognizant IC directs the tactical response and the fire/rescue IC performs initial protective action decision-making, classifies the event, and initiates notifications.

The October 2002 OA inspection determined that BN LEDs at the Hazardous Materials Spill Center effectively responded, with minor exceptions, to the postulated emergency conditions. Fire/rescue ICs were similarly proficient, with only minor concerns identified in handling radiation control measures and transferring command and control. In contrast, the consequence assessment teams did not demonstrate the ability to provide accurate event consequences in a timely manner. This inspection determined that BN LEDs continue to be proficient in their response roles, whereas fire/rescue ICs experienced significant difficulty in utilizing initial decision-making procedures and response tools. The performance of the consequence assessment function was a notable positive and included the ability to confirm the adequacy of initial decision-making and predict the areas of consequence. However, due to process weaknesses, the consequence assessment team was not able to confirm their predictions of event consequences using field monitoring data. WSI protective force ICs, who were not previously evaluated by OA, performed their roles effectively.

D.2.1 BN RWMC LEDs

The RWMC LEDs, who lead the facility response teams, clearly understand their roles as the initial decision-makers, and they effectively used their response tools to protect personnel, classify events, and make notifications. When joined by fire/rescue and security ICs, the LEDs quickly established an effective unified command system through which the response duties were appropriately divided among the ICs. After relief of incident command, the LEDs managed facility personnel and provided status information to the ICs.

Upon receiving indications of the facility emergency, the LEDs immediately assessed the significance of the event and notified other facility personnel to implement the necessary protective actions. Using a 911 call, the LEDs promptly summoned outside assistance, including activating the site EMC to obtain strategic support. The deputy to the LED effectively supported the team response by performing such duties as sounding alarms and accounting for personnel. After implementing the necessary protective actions at the scene and other affected locations and calling for additional resources, the LEDs and their deputies directed their attention to emergency classification and notification. Using information contained in the applicable emergency action levels (EALs), the LEDs confirmed the adequacy of protective actions. Both LEDs accurately and quickly classified the emergency. Shortly thereafter, the LEDs initiated communications with the BN duty manager to ensure the availability of information necessary to initiate notifications to offsite jurisdictions. Upon arrival of the fire/rescue and security ICs, the LEDs conducted a comprehensive event status briefing to prepare for transferring command and control within a unified incident command structure. The LEDs ensured that plant personnel accompanied and assisted rescue personnel in removing injured personnel to minimize radiological hazard issues.

The OA team identified several response weaknesses. For example, upon arrival of the fire/rescue IC at the building that housed the LEDs' incident command post, one LED directed the IC to remain outside because shelter-in-place was in effect for the building. The building's location was well outside the projected footprint of the hazardous material release, but since radiological surveys had not been completed inside or outside, the LED kept the IC outside the building. This action also inhibited effective unified incident command due to the communication limitations imposed by using a radio instead of face-to-face dialogue. Directing the IC to don protective clothing and enter the building would have controlled potential contamination and minimized any potential uptake, while facilitating communication. In

addition, although LEDs effectively used their EAL tables to determine protective actions and classify the event, both LEDs utilized informal, self-prepared overall response checklists because they considered the applicable RWMC emergency response procedure to be too cumbersome to effectively direct their response actions. Although use of the checklist did not result in any inappropriate actions, the use of uncontrolled and unapproved emergency response tools does create the potential for incomplete response actions, inconsistent responses, and improperly prioritized actions. Finally, although hazardous material operations at RWMC are ongoing as much as 20 hours per day, a qualified LED equipped with the appropriate response procedures is not always available to assist the 24/7 fire/rescue IC with timely, facility-specific, emergency management decision-making. For an RWMC event that occurs when an LED is not onsite, the LED can provide some emergency response information from memory via telephone, but because the LEDs are not required to always have access to facility EALs and response procedures, timely identification of the appropriate event classification and protective actions cannot be assured.

To summarize, the Area 5 RWMC LEDs demonstrated good knowledge of their roles and responsibilities, performed effective command and control, and implemented prompt and effective actions that protected facility responders, co-located workers, and the public. LEDs quickly notified other organizations and obtained support from other response units in a timely manner. Categorization and classification decisions were accurate and timely; LEDs proactively provided the BN duty manager with the information necessary to rapidly notify offsite jurisdictions; and LEDs established unified incident command generally without difficulty. Several response weaknesses were identified; however, these weaknesses did not materially detract from the overall positive performance of the LEDs.

D.2.2 BN Fire/Rescue ICs

Fire/rescue ICs, who are the senior emergency response officers available at the Nevada Test Site at any time, clearly understand their roles as the initial decision-makers for events away from facilities or for events at facilities that do not have an LED. They established a unified command with LEDs and security ICs, and they were effective in mitigating facility events by completing the response actions that were initiated by the LEDs. When responsible as the lead IC for emergency management decision making, their response actions, when combined with the actions of other responders, generally protected the responders and co-located workers. However, fire/rescue ICs did not always correctly utilize their decision making tools to ensure that impacted workers and the public would be protected under all emergency event circumstances.

Fire/rescue ICs promptly established incident command; determined suitable incident command post and staging area locations; and obtained such additional support as deploying the mobile command vehicle, placing flight-for-life resources on standby, and activating the site EMC commensurate with the emergency severity. ICs have the capability of using the CIC and the central alarm station to link radio communications among units of the unified incident command system through electronic “patches.” Command vehicles are equipped with all necessary decision-making tools, such as emergency preparedness hazards assessments, maps, and the 2000 Emergency Response Guidebook to support emergency response. The recent assignment of a “chief’s aide,” who accompanies the IC, is a positive initiative that is intended to allow the IC to perform critical tasks while traveling to the event scene. After arrival at the scene, the chief’s aide also assists in determining event categorization and classification and protective actions. Also available to support the IC are two shift fire captains, who are qualified as ICs and can act as the IC until relieved by a more senior IC.

Despite the support received by the chief’s aide, the fire/rescue ICs did not always accurately determine protective actions or classify emergency events in a timely manner. Neither IC confirmed in a timely manner the adequacy of the initial isolation zone that was established by the protective force IC in

response to the postulated bomb at RWMC without significant prompting by the chief's aide and LED. After one IC was convinced of the applicable EAL by other responders, he ordered an evacuation of Mercury, which is located approximately 20 miles upwind, instead of sheltering to a distance of 1.4 miles, as specified by the applicable EAL, and his direction to initiate protective actions for much closer facilities was excessively delayed. After he was convinced of the applicable EAL, the second IC initiated no protective actions. When he reported the EAL number to the CIC, he incorrectly stated that other ERO members had implemented required actions. Although both ICs ultimately determined the correct severity of the security event with prompting from assistants, neither IC correctly interpreted the EAL table for the material-at-risk to determine the emergency classification.

Similar to the weaknesses noted in their response to the RWMC events, the ICs did not accurately determine protective actions and classifications for the postulated transportation events. The same IC who inappropriately ordered Mercury evacuated for an RWMC event did not determine the correct protective action distance from either the EAL tables or the 2000 ERG for a collision involving a chemical spill. He relied on roadblocks established by WSI patrol officers to protect the scene without confirming the distance as adequate, and then ordered CIC to shelter all non-essential personnel in place without defining the affected area. The second team of two fire captains, both qualified as ICs, similarly did not determine the correct protective action distance for the same event and relied on WSI roadblocks without confirming the distance as adequate. Both teams accurately classified the chemical spill event, but one IC improperly classified a security event involving a chemical release as an operational emergency. He did not further classify the event because he could not use the applicable procedure to correlate the distances at which protective action criteria were exceeded with event classification criteria. Finally, in response to follow-up questions posed to two IC teams regarding the content of the 2000 ERG, both teams required significant prompting to apply the 2000 ERG large/small spill criteria, quickly determine protective actions, determine areas of consequence, or determine the applicability of existing meteorological conditions to the "day/night" distances listed in the ERG tables.

Finding #2: During tabletop performance tests, BN fire/rescue incident commanders did not always accurately classify events or determine protective actions in a timely manner, as required by DOE Order 151.1B.

It should be noted that shortly after the conduct of the tabletop performance tests, BN proactively implemented a command proficiency improvement initiative. The initiative included already-completed performance improvement actions for all currently assigned captains and assistant chiefs in the areas of event scene size-up; utilization of the chief's aide and decision making tools such as the 2000 ERG; and timely protective action and categorization/classification decision making. Furthermore, the improvement initiative included a multi-step process of additional performance-based testing for all command officers and the acceleration of an ongoing effort to enhance the qualification process for new fire/rescue officers.

To summarize, fire/rescue ICs have been provided with tools that, if properly employed, can mitigate the consequences of site events. These ICs generally demonstrated effective performance in establishing and utilizing elements of unified incident command. However, they did not effectively use procedures and tools to ensure that protective action and event classification decisions were accurate and timely. Instead, the fire/rescue ICs relied excessively on input and interpretations from other responders to influence their decision-making. The performance weaknesses noted above did not directly impact the health and safety of the responders, co-located workers, or the public during the particular scenarios that comprised the performance test. However, the observed performance of the fire/rescue ICs does not provide adequate assurance that under other event circumstances and with different supporting response personnel, the fire/rescue ICs would be able to perform the critical role of appropriately protecting site workers and the public from hazardous material releases. The site believes that corrective actions implemented shortly

after the results of the tabletop performance tests became available will adequately address performance weaknesses until longer term corrective actions can be completed.

D.2.3 BN Consequence Assessment Team

When activated, the consequence assessment team reports to the onsite EMC (during normal working hours) or the EOC (during backshifts) to minimize the transit time of team members. All appropriate consequence assessment tools are duplicated in each facility, including access to current protective action criteria. Multiple mechanisms exist to transmit assessment results from the EMC to the EOC during normal work hours. The consequence assessment team supervisor normally participates in briefings of the EOC emergency manager by the EMC crisis manager to ensure clear understanding of the assessment results. Although the Nevada Site Office Consolidated Emergency Management Plan identifies the primary dispersion model as National Atmospheric Release Advisory Capability (NARAC), it is relatively slow compared to other models. Thus, the consequence assessment team appropriately employs other models initially to quickly confirm the adequacy of initial decision-making with actual source term and meteorological data. This is followed immediately by the actions necessary to generate a NARAC dispersion plot. Another benefit of using models other than NARAC is that they generally provide more conservative assessment results and are more consistent with initial decision-making because the emergency planning hazards assessments, which are the basis for the EALs, are performed with models other than NARAC.

After being presented with the initial event conditions, the consequence assessment team immediately implemented their procedure to determine an accurate and timely initial assessment of the impact of radiological and chemical releases using the applicable facility and transportation emergency planning hazards assessment. The team promptly acquired actual meteorological conditions and confirmed that the meteorological tower nearest to the event scene was operating satisfactorily. Concurrently, the team independently confirmed initial protective action and classification decisions made by the LED or IC, including reference to the 2000 ERG. These activities were accurately completed within minutes. Upon completion of this assessment phase, the consequence assessment team supervisor briefed the EMC crisis manager and initiated dispersion modeling. The consequence assessment team then initiated ongoing assessment activities for the radiological and chemical releases using standard dispersion models for more immediate results and NARAC for more accurate results, and they transmitted the results to the EOC in multiple formats to enhance readability and utility. Upon obtaining the model outputs, the team reviewed the assessment results to confirm the adequacy of protective actions that had been implemented and the accuracy of the emergency event classification.

The Consolidated Emergency Management Plan requires that field monitoring data be incorporated into dispersion models to refine the modeling results so that the computed predictions will more accurately reflect actual field deposition and airborne dispersion. However, BN has not developed the processes and supporting procedures required to accurately conduct field sampling and integrate the information with the modeling process. As a result, the consequence assessment team was not able to demonstrate this final phase of consequence assessment. The Nevada Site Office previously identified this weakness, and the staff is developing a fee-based performance incentive for fiscal year (FY) 2005 to address the deficiency.

Finding #3: BN has not established the mechanisms necessary to integrate field monitoring activities with ongoing consequence assessment activities, as required by DOE Order 151.1B.

To summarize, BN has established effective consequence assessment mechanisms to adequately predict the areas of health impacts to co-located workers and the public in event of an emergency. The

consequence assessment team demonstrated the appropriate utilization of the available tools in completing a timely initial assessment, and they effectively manipulated the dispersion models to generate timely ongoing assessments of event consequences. However, BN has not developed mechanisms to refine release predictions based on the collecting field monitoring data and communicate the results to consequence assessment staff.

D.2.4 WSI Protective Force ICs

Protective force senior officers, qualified as ICs, demonstrated an understanding of their roles and responsibilities both as the lead IC within the unified incident command system implemented for all security events on the NTS, and in their supporting role for facility and site events without security implications. WSI ICs effectively implemented the provisions of their general orders and accompanying checklist during postulated responses to security events and provided anticipatory support to events led by the facility LED or fire/rescue IC.

Protective force ICs, on-duty at all hours, effectively responded to and managed facility and transportation events under their cognizance and supported the facility LED or fire/rescue IC for non-security events. For each of the security events, the IC promptly established isolation zones and areas of containment that protected other responders and co-located workers for the postulated scenarios. For example, based on their concern for the potential release of hazardous material from RWMC and as a good choice for staging other responders, both security ICs set isolation zones well beyond the required standoff distances for a bomb of unknown size. Protective force ICs promptly employed subject matter experts such as the LED to determine the impact of the postulated security event (bomb) and engaged the fire/rescue IC in assessing the adequacy of security-initiated protective actions. When greater distances than those initially established were required for safe isolation, the protective force IC immediately relocated the incident command post. At least one protective force IC participating in the performance test completed extensive hazardous materials training and effectively used the 2000 ERG to determine conservative stand-off distances.

To summarize, the WSI protective force ICs demonstrated appropriate knowledge of their response roles and the principles of effective command and control, and they implemented prompt and effective actions that protected patrol officers and other responders, co-located workers, and the public. Protective force ICs quickly notified other organizations; obtained support from other response units in a timely manner; and established effective unified incident command structures that mitigated the consequences of the events presented.

D.3 CONCLUSIONS

All members of the unified incident command system, including the RWMC LED, fire/rescue ICs, and protective force ICs, demonstrated appropriate knowledge of their roles and responsibilities during emergency response. They established an effective command and control system through team response that generally mitigated the consequences of the postulated events during tabletop performance tests. The RWMC LEDs and protective force ICs were proficient in performing all of their assigned responsibilities. Consequence assessment personnel demonstrated their ability to confirmed the adequacy of initial decision-making and quickly developed estimates of expected event consequences, although processes have not been developed to facilitate confirmation of event estimates using field monitoring data. Fire/rescue ICs were unable to demonstrate their ability to adequately protect workers and the public and accurately classify emergency events using response procedures and references without undue reliance on supporting responders. Although the impact of this significant weakness on the public is mitigated to some extent by the remote nature of the site and the compensatory measures that were implemented immediately following completion of the tabletop performance tests, line management attention is

warranted to ensure that longer term corrective actions are effective in providing an adequate level of protection for site workers following significant site events.

D.4 RATING

A rating of EFFECTIVE PERFORMANCE is assigned to the area of BN RWMC LED emergency response decision-making.

A rating of SIGNIFICANT WEAKNESS is assigned to the area of BN fire/rescue IC emergency response decision-making.

A rating of EFFECTIVE PERFORMANCE is assigned to the area of consequence assessment.

A rating of EFFECTIVE PERFORMANCE is assigned to the area of WSI security IC emergency response decision-making.

D.5 OPPORTUNITIES FOR IMPROVEMENT

This OA inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible NNSA and contractor line management and prioritized and modified as appropriate, in accordance with site-specific programmatic emergency management objectives.

Bechtel Nevada

- Improve the ability of emergency managers to respond to emergencies under all circumstances. Specific actions to consider include:
  - Provide LEDs with a checklist that focuses on the critical response activities and references appropriate procedures for further details.
  - Provide guidance and training to decision makers regarding the actions necessary to shelter persons that may have been contaminated prior to seeking shelter.
  - Assign an on-call RWMC facility duty officer and equip the duty officer with the appropriate documentation and tools to provide subject matter expertise on event classification and protective action decision-making to site decision-makers at any time of the day or night.
- Improve the ability of on-scene fire and rescue decision makers to effectively utilize emergency classification guidance and enhance their ability to implement timely protective actions. Specific actions to consider include:
  - Train decision-makers to complete emergency management decision-making en route to the scene, if sufficient information is available.
  - Assign the BN duty manager the role and responsibility of determining event classification and protective actions (away from the scene) until relieved by the BN crisis manager or EOC emergency manager, and conduct scenario-based training to ensure understanding.

- Improve the effectiveness of training fire/rescue personnel on utilizing and implementing the 2000 ERG. Incorporate evaluated tabletop performance tests into the recurring training program to provide practice opportunities and to identify areas where training has not been effective.

Wackenhut Services Inc.

- Consider improving the ability of WSI central alarm station dispatchers to provide immediate information to officers in the field who are responding to events involving the potential release of hazardous materials by providing training on the use of the information contained in the 2000 ERG, including protective action guidance.

APPENDIX E

Readiness Assurance

E.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), Bechtel Nevada (BN), and other site tenants and contractors will facilitate an effective response to an emergency at the Nevada Test Site (NTS). 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, implementing self assessment programs, and ensuring timely corrective actions are taken for identified weaknesses. NNSA field elements also have direct responsibility for performing some emergency response activities, including oversight of the site's emergency response and activities related to the release of emergency public information to site workers and the public.

As a follow up to the October 2002 inspection conducted by the Office of Independent Oversight and Performance Assurance (OA), this inspection examined the processes by which NSO provides guidance and direction to and maintains operational awareness of the NTS emergency management program. The inspection included a review of NSO emergency management program assessment processes; selected aspects of the NSO training and qualification program for emergency response organization (ERO) staff; the status of actions taken to address findings identified in the previous OA inspection; and the emergency public information plan and procedures for responding to an emergency at the site.

E.2 STATUS AND RESULTS

E.2.1 NNSA Line Program Management

The October 2002 OA inspection found that NSO had established a structured assessment program to evaluate the NTS emergency management program against U. S. Department of Energy (DOE) requirements and had applied significant resources toward improving the NTS emergency management program. The report further noted that the efforts had proven effective in driving the actions necessary to establish and maintain contractor and tenant emergency management capabilities. In addition, NSO had developed a comprehensive emergency public information (EPI) program that was implemented through an integrated set of implementing procedures, although some weaknesses were identified in position-specific training and the plan and procedures that supported the program. This 2004 OA inspection found that NSO continues to employ a comprehensive set of procedures and processes for conducting oversight activities and is actively engaged in maintaining program awareness. However, some weaknesses in the overall NSO assessment program were identified, and some weaknesses in EPI-related procedures and position-specific training continue to exist.

The NNSA Office of Emergency Management Implementation, NA-43, represents the program office for emergency management program implementation at the NNSA sites. NA-43 and NSO have established an effective working relationship in support of oversight at NTS. Office personnel conduct regular communications on a variety of topics, including the Emergency Readiness Assurance Plan (ERAP), site exercise packages, and emergency planning hazard assessments. NSO has published a manual that

governs the preparation, approval, and submittal of the NTS ERAP, which provides a basis for communicating the program status and plans to DOE line management. The NA-43 point of contact also maintains cognizance of program status by participating regularly in site exercises as an exercise evaluator. Additionally, NA-43 has recently assisted NSO by coordinating support for an assessment of the EPI function at the site and participating in the discussions regarding the level of support that needs to be provided to the site by the recently established NNSA service center.

As was observed during the October 2002 inspection, NSO has implemented a noteworthy process to effectively implement the Performance Evaluation Plan (PEP) and promote improvements in the site contractor's emergency management program. NSO management has allocated sufficient incentive fees to the emergency management program to ensure that the success of the program initiatives is important to BN management. The emergency management team utilizes the performance objectives to support its strategic objectives for the site contractor, such as the improvements to hazard surveys and assessments. A structured process, guided by procedure, is used to develop performance objectives and deliverables. The PEP process includes negotiation of an agreed upon set of performance objectives with measurable results and defined milestones. Progress towards the performance objectives is monitored regularly and discussed at monthly meetings. Finally, NSO evaluates BN performance in accordance with the agreed-upon incentives and awards or withholds fee based on the objective evaluation of performance. NSO has emphasized the importance of the program by withholding fee when BN performance did not meet the performance objectives. This noteworthy practice is described in more detail in the text box below.

NSO has established rigorous programmatic and procedural processes for conducting program self-assessments, as well as conducting assessments of the overall NTS emergency management program. An NSO order assigns to the emergency management team the responsibility to ensure that contractor self-assessments are performed in accordance with DOE Order 151.1B. The Consolidated Emergency Management Plan requires that site contractors and NSO conduct self-assessments to document readiness assurance. The oversight management system manual establishes the processes NSO uses to perform management self-assessment activities and assessments of the contractor programs. The ERAP contains a summary schedule of the assessments that are planned for a given fiscal year, and this schedule is supported by the emergency management functional area validation/assessment plan, which contains a detailed schedule of the planned assessment activities. In addition to the schedule, the validation/ assessment plan includes established criteria related to the order requirements for all emergency management elements except emergency medical and emergency public information.

While the NSO procedural processes for conducting self-assessments and assessing the contractor emergency management programs are well structured, some weaknesses in program implementation were observed. For example, NSO has not conducted a recent self-assessment of their overall emergency management program. Additionally, annual self-assessments by the tenant national laboratory organizations have not always been conducted, and in some cases the results of completed self-assessments have not been provided to NSO to facilitate their oversight of the program. Furthermore, there are concerns associated with the impact of staffing reassignments on NSO's ability to continue to perform its line management oversight function. During fiscal year (FY) 2003, emergency management staff members conducted a significant number of assessments, primarily document reviews, to support the large effort to update emergency management hazards surveys, emergency planning hazards assessments, and procedures. The current fiscal year schedule shows a reduced level of activity partially due to the completion of a large number of documents during the previous fiscal year and partially to the decrease in emergency management staff within NSO. Neither schedule supported the evaluation of each functional area over a three-year period, as required by DOE Order 151.1B. The recently approved validation/assessment plan introduces an assessment schedule starting in FY 2005 with a three-year cycle to begin to address assessment of each of the site contractor and tenant programs. However, lapses in the performance of BN and national laboratory self-assessments, the reduction in available NSO

NOTEWORTHY PRACTICE

Implementation of the Performance Evaluation Plan (PEP) has led to successes in improving the NTS emergency management program.

NSO effectively implements the PEP to promote improvements in the NTS emergency management program. NSO management has appropriately tied an incentive fee to the PEP by developing strategic objectives having specific performance objectives and deliverables; allocating sufficient incentive fee to provide the contractor with motivation to meet the performance objectives; and then granting or withholding fee based on meeting those objectives. Using the PEP process, NSO has been able to target and improve specific emergency management functions such as consequence assessment and hazard surveys and assessments. NSO is currently using the PEP process to improve field monitoring capability and performance.

The PEP process allows the NSO emergency management team to develop strategic objectives for the site contractor that target specific weaknesses in the emergency management program as opposed to making general statements for established requirements. Then, specific performance objectives with deliverables and defined milestones are developed to fulfill the strategic objectives. These performance objectives are negotiated with and agreed to by the site contractor. Incentive fees are tied directly to the performance objectives. Progress towards the performance objectives is monitored regularly by the NSO emergency management operations team leader and discussed at monthly meetings. Finally, NSO evaluates contractor performance using the agreed-upon incentives and awards or withholds fee based on the objective evaluation of performance. NSO has withheld fee when contractor performance did not meet the performance objectives, thereby emphasizing the importance of the PEP and driving specific improvements.

Noteworthy Practice: NSO implements a notable process through the PEP to identify strategic emergency management objectives, translate these strategic objectives into measurable performance objectives, monitor contractor accomplishments, and award or withhold incentive fee based on performance.

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staff, and uncertainty in levels of available support from the NNSA service center will challenge NSO's ability to support the published assessment schedule.

Once an issue is identified during an internal or external assessment, the NSO process for tracking and closure of the issue is supported by comprehensive procedural guidance and an effective computer database for tracking open issues and actions. Assessments are documented through entry of issues into the system via an issue detail report, which provides such data as a detailed description of the problem, issue priority, responsible person, and root cause code. Action items related to the issue are tracked through the action detail report, which provides details of the action to be taken, results of the action, and closeout verification actions. Reviews of the action items related to the October 2002 OA inspection indicate that most of the action items have been completed and are either closed or awaiting closure verification. NSO has been actively involved in the closure process and in a number of instances has intervened to clarify, expand, or enhance the responses. One important open item, covering five open

actions, is the preparation and issuance of a manual to govern site-wide the processes for developing emergency planning hazards surveys and assessments.

The NSO training and qualification program for ERO personnel continues to be generally well-structured, and the details of the program are contained in the ERO staffing procedure. The program requirements for each Emergency Operations Center (EOC) position include an evaluation of the background and experience of the assigned personnel, as well as training, briefings, reading, and continuing education. In addition, a training matrix identifies the training that must be completed prior to interim or full position qualification. Interim qualification is granted to personnel after completion of a subset of the training requirements with the proviso that the remaining qualifications be completed within the next twelve months. A weakness in this approach is that ERO personnel are not required to demonstrate proficiency prior to being placed in the EOC duty rotation.

Finally, the OA inspection team reviewed selected aspects of the NSO EPI program, including improvements made since the October 2002 inspection. Operation of the Joint Information Center (JIC) is appropriately governed by procedures and desk instructions, and the EOC staffing procedure now establishes the roles and responsibilities of the EOC public affairs officer and contains a detailed checklist to guide the required actions. Additionally, the EPI implementing procedure, approved in November 2002, establishes the roles, responsibilities, requirements, and processes for emergency public information during an emergency. The EPI procedure governs the roles and responsibilities of members of the JIC and establishes goals for a timely initial news release and initial news conference, a classification review of news releases, and the coordination of releases with the HQ Public Affairs Office.

Several weaknesses were noted in portions of the EPI program. For example, the EPI procedure does not reflect the organizational changes that have occurred during the past two years, including the loss of public affairs organization staff. Further, the desk instructions do not reflect the current organization, have no revision or approval dates, and may duplicate the list of responsibilities and the checklists in the EPI procedure. Some weaknesses identified during the October 2002 OA inspection regarding the NSO training program for JIC staff have not yet been addressed. While the EPI procedure includes a table with the EPI training requirements, training for JIC personnel lacks formality and is not well documented. Currently, BN is developing training modules for use in training the JIC cadre; the modules are due to be completed by September. In addition, an assist team, arranged through cooperation with NA-43, has been enlisted to evaluate EPI procedures and training and to help NSO establish an overall improvement plan.

E.3 CONCLUSIONS

NSO has clearly defined the roles, responsibilities, and authorities required to perform their emergency response functions and to conduct line management oversight of the NTS emergency management program. The NSO emergency management team leader has established a solid working relationship with NA-43 to help foster program improvements. Line management oversight activities are governed by a comprehensive set of processes, including those for conducting assessments and managing issues. NSO personnel are actively engaged in providing direction to and maintaining awareness of the BN and national laboratory organization implementation of the NTS emergency management program through an active assessment program, noteworthy use of the PEP, and interactions with the site emergency management organizations. NSO emergency management staff are also involved in the corrective action process to ensure that issues are identified and that corrective actions are tracked, documented, and properly closed. Weaknesses in the NSO self-assessment and assessment programs and uncertainty in the resources available to support the operational awareness activities may challenge the longer-term ability of NSO emergency management staff to provide adequate, ongoing line management oversight of the NTS emergency management program. Furthermore, weaknesses in the process for qualifying NSO emergency responders and in the processes for and training of emergency public information personnel

should be addressed in a timely manner to ensure that NSO can fulfill its responsibilities for overseeing the response to an emergency and for meeting public information expectations and commitments. Currently, these collective weaknesses do not materially detract from NSO's performance of its line management oversight functions in the emergency management area.

E.4 RATING

A rating of EFFECTIVE PERFORMANCE is assigned to the area of NNSA Line Program Management.

E.5 OPPORTUNITIES FOR IMPROVEMENT

This OA inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible NNSA and contractor line management and prioritized and modified as appropriate, in accordance with site-specific programmatic emergency management objectives.

Nevada Site Office

- Improve the implementation of the self-assessment program.
  - Schedule and conduct annual self-assessments that include all functional areas of the NSO emergency management program.
  - Ensure that site contractors and tenants perform the required annual program self-assessments and provide the results to NSO.
  - Encourage the use of performance-based assessments.
  - Factor the self-assessments into the emergency readiness assurance plan and the overall site assessment schedule.
- Develop a detailed, resource-loaded assessment plan for completing the required program assessments over the three-year cycle. Consider incorporating the following:
  - Identify assessments needed to address each of the emergency management program functional areas at each of the sites/facilities over the three-year cycle.
  - Integrate self-assessments with internal and external assessments and evaluated exercises.
  - Balance the assessments of documents with assessments of field implementation of the documents.
  - Identify the resources needed to complete the assessment plan. For activities that require outside expertise, identify how that expertise will be obtained.
  - Include the updated assessment plan in the ERAP.

- Consider strengthening the process for qualifying NSO emergency responders by including an element that facilitates the demonstration of proficiency prior to being considered "qualified" to ensure effective response by any responder assigned to the duty roster.

- Continue the recent effort to redesign the EPI organization, plans, and procedures. Specific actions that should be considered include:

  - Review and update the organization of the EPI function and the JIC to reflect recent changes in staffing.

  - Revise the current EPI program procedure to reflect the new organization and work flow.

  - Where possible, consolidate the existing desk instructions into the revised procedure and checklists, or incorporate the desk instructions into new, approved, and controlled procedures.

- Complete the development of the training program for EPI staff. Consider incorporating the following:

  - Address position-specific functions within the EOC and JIC.

  - Base the lesson plans on approved, final procedures, and work processes.

  - Track the training and qualification status of EPI staff using the EOC training database.