Independent Oversight
Inspection of
Emergency Management
at the

Sandia National Laboratories

July 2006

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

OVERSIGHT

Table of Contents

Abbreviations Used in This Report

CAMP	Corrective Action Management Program
CAT	Consequence Assessment Team
CATS	Corrective Action Tracking System
DOE	U.S. Department of Energy
EAL	Emergency Action Level
ED	Emergency Director
EMIPP	Emergency Management Improvement Project Plan
EOC	Emergency Operations Center
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
EPIP	Emergency Preparedness Implementing Procedure
ERO	Emergency Response Organization
ES&H	Environment, Safety, and Health
FY	Fiscal Year
IC	Incident Commander
JIC	Joint Information Center
KAFB	Kirtland Air Force Base
LSPT	Limited Scope Performance Test
NA-43	NNSA Office of Emergency Management Implementation
NNSA	National Nuclear Security Administration
PAO	Public Affairs Officer
PAR	Protective Action Recommendation
PEP	Performance Evaluation Plan
SNL	Sandia National Laboratories
SOG	Standard Operating Guide
SSO	Sandia Site Office

1.0 Introduction

The U.S. Department of Energy (DOE) Office of Independent Oversight inspected the emergency management program at DOE Sandia National Laboratories (SNL) in May 2006. The inspection was performed by the Independent Oversight Office of Emergency Management Oversight. Independent Oversight reports to the Director of the Office of Security and Safety Performance Assurance, who reports directly to the Secretary of Energy.

Within DOE, the National Nuclear Security Administration (NNSA) has line management responsibility for SNL. NNSA provides programmatic direction and funding for most nuclear weapons stockpile management, research and development, facility infrastructure, and emergency management program implementation at SNL. At the site level, line management responsibility for SNL operations and emergency management falls under the Manager of the Sandia Site Office (SSO). Under contract to DOE, SNL is managed and operated by Lockheed Martin, which has operated SNL since 1993.[1]

The primary mission of SNL is research and development in support of national security and the NNSA stockpile stewardship program. SNL's mission areas include: nuclear weapons; nonproliferation and assessments; military technologies and applications; energy and infrastructure assurance; homeland security; and science, technology, and engineering. SNL has major facilities in Albuquerque, New Mexico, and Livermore, California. This Independent Oversight inspection focused exclusively on the SNL facilities in New Mexico, located on a portion of the 118-square-mile Kirtland Air Force Base (KAFB) military reservation. SNL and KAFB also share a 20,000-acre land withdrawal area that is used for remote testing activities.

SNL activities involve various hazards that need to be effectively controlled. These hazards include exposure to external radiation, radiological contamination, high explosives, beryllium, hazardous chemicals, and various physical hazards associated with facility operations (e.g., machine operations, high-voltage electrical equipment, pressurized systems, and noise). Significant quantities of radioactive materials and hazardous chemicals are present in various forms at SNL.

The purpose of this Independent Oversight inspection was to assess the effectiveness of corrective actions implemented by SNL, under the direction of SSO, to address emergency management programmatic weaknesses identified during the April 2005 Independent Oversight inspection. That inspection identified some improvement in SNL's program since the February 2003 Independent Oversight inspection, but also identified several areas where important programmatic weaknesses continued to hamper emergency response decision-making. Consequently, for this 2006 inspection, Independent Oversight focused primarily on follow-up inspection activities that evaluated progress against the objectives and actions specified in the corrective action plan developed in response to the April 2005 Independent Oversight inspection. It should be noted that SSO and SNL were instituting program changes during the inspection lead-in period as well as during the data collection period itself. Therefore, unless otherwise specified, this report identifies the status of the program at the beginning of the formal data collection period so as to provide a common comparison point among all of the program elements that were evaluated.

Independent Oversight used a selective sampling approach to assess a representative sample of facilities and emergency response organization (ERO) responders at SNL. Specifically, the sampling approach was used to evaluate:

[1] Consistent with common practice, the term "SNL" is used to refer to both the physical facility and the onsite contractor management. The term "Lockheed Martin" is used to refer to the Lockheed Martin management that provides corporate direction to the onsite SNL management team and that performs corporate line management and evaluation functions for Lockheed Martin activities at SNL.

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

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

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

Section 2 of this report provides an overall discussion of the results of the review of the SNL emergency management program elements that were evaluated. Section 3 provides Independent Oversight's conclusions regarding the overall effectiveness of SSO and SNL management of the emergency management program. Section 4 presents the ratings assigned as a result of this inspection. Appendix A provides supplemental information, including team composition. Appendix B identifies the findings that require corrective action and follow-up, as well as an overview status of the findings from the 2005 Independent Oversight inspection. Appendices C through F detail the results of the reviews of individual emergency management program elements.

2.0 Results

2.1 Positive Program Attributes

SSO and SNL have made significant strides in addressing the program deficiencies, many of them longstanding, that were evident during the 2005 Independent Oversight inspection. Positive attributes of the emergency management program are discussed below.

NNSA, SSO, and SNL senior managers have demonstrated a significant commitment to establishing an emergency management program that adequately protects site workers and the public and that meets DOE expectations. Shortly after the 2005 Independent Oversight inspection at SNL, the NNSA Administrator issued a memo directing SSO and SNL to immediately develop and implement a set of corrective actions that would result in a significant improvement in the emergency management program. Furthermore, he requested that Independent Oversight conduct a follow-up program inspection to verify the effectiveness of their combined actions. SSO established an emergency management Executive Steering Committee, which is chaired at the assistant manager level, to focus efforts and devote additional technical expertise to solving program implementation problems and managing changes to and closure of corrective actions. SNL reorganized the emergency management department and, shortly after the 2005 inspection, substantially increased the level of resources devoted to improving and operating the emergency management program. Additionally, SSO and SNL senior managers receive frequent briefings regarding the status of program improvement initiatives. SSO is also using performance incentives effectively to focus SNL management's attention on improving the site's emergency management program.

Nearly all of the emergency management program weaknesses identified during the 2005 Independent Oversight inspection have either been effectively addressed or will likely be satisfactorily completed as scheduled. Since the April 2005 Independent Oversight inspection, SSO and SNL have implemented improvements in all of the programmatic areas that were evaluated. In particular, significant weaknesses in response plans and procedures have been addressed effectively, and the training, drill, and exercise program has appropriately expanded beyond the local incident command group to include the emergency operations center (EOC) cadre. In large part, these improvements are the result of a disciplined implementation of the corrective action plan developed in response to the 2005 Independent Oversight inspection. SNL has also identified, through its corrective action verification process, additional actions that were required to meet the intent of the published corrective action plan, and SNL has appropriately completed these actions.

During performance tests, SSO and SNL emergency responders demonstrated improved ability to manage emergency events. Incident command and EOC teams effectively classified emergency events and issued timely notifications to offsite authorities, although (as discussed in the next section) incident commanders (ICs) and emergency directors (EDs) did not consistently identify appropriate protective actions. At the incident command team level, team members appropriately supported key decision-makers with timely recommendations. Similarly, from a response strategy perspective, EOC teams demonstrated an improved ability to actively support the IC and assume decision-making authority, when necessary, rather than always deferring to the IC's decision-making, thus reflecting an improved understanding of assigned emergency response roles and responsibilities. Furthermore, SSO emergency managers actively participated in the categorization, classification, and protective action decision-making processes. Finally, improvements were noted in the ability of consequence assessment team personnel to provide useable and timely information to ICs and EOC teams to aid in emergency response decision-making.

2.2 Program Weaknesses and Items Requiring Attention

Although much improved, the site's emergency management program is still maturing and additional work remains, particularly in the areas of emergency public information (EPI), ERO proficiency, and SSO and SNL feedback and improvement. Specific weaknesses are discussed below.

Efforts to resolve weaknesses in the EPI program, particularly regarding accessibility of the joint information center (JIC) during an emergency event and the lack of a public education program, have had limited effectiveness. Many of the previously identified weaknesses related to establishing clear processes for operating the JIC have been satisfactorily addressed; however, because additional work is required to resolve some JIC accessibility issues, the site's ability to effectively activate and operate the JIC during a significant emergency event is still uncertain. The current JIC facility, which is due for closure at the end of fiscal year 2006, and the alternate JIC locations are all located on KAFB and therefore suffer from the potential for being inaccessible following a significant site event and associated KAFB shutdown, particularly given the absence of a clear, formal agreement with KAFB regarding guaranteed emergency egress and ingress. Furthermore, while JIC access has been tested under simulated emergency conditions, most of the necessary actions by SSO and SNL response personnel have not been documented in response procedures. Additionally, although an offsite JIC is under discussion with local county officials, no interim agreements have been established. In the public education arena, the deadline of June 1, 2006, for developing samples of public education materials and coordinating and sharing outreach tools with the local emergency planning committee is unlikely to be met because agreement has not been reached among the responsible parties as to the specific nature of the public education approach or materials. Finally, in part because SSO has not identified a suitable backup for the individual qualified as the SSO public affairs officer (and has not established a contingency plan to fill this position), public affairs staff within the EOC team demonstrated inconsistent performance in decision-making regarding JIC activation and issuance of news releases.

Additional work is needed in several areas to fully address weaknesses identified during the 2005 Independent Oversight inspection that continue to hamper emergency response decision-making. In large part because some key SNL decision-makers on EOC teams, and to some extent the ICs, have not had sufficient practice with recently developed procedures, ICs and EDs did not effectively utilize SNL protective action plans and an associated sheltering/evacuation work aid to formulate protective actions. This resulted in some non-conservative or overly-conservative protective actions and protective action recommendations for site workers and the public, respectively. Contributing to the observed performance weaknesses were inconsistencies that had not been fully addressed in a few response procedures, most notably the emergency preparedness implementing procedure associated with protective action decision-making. Finally, although SNL has improved the EPHAs and EPHA-related tools and processes since the 2005 inspection, work remains to improve the usability of these tools and fully implement consequence assessment processes.

Some SSO and SNL readiness assurance components are not developed or implemented sufficiently to ensure that SSO can provide a consistently rigorous degree of line oversight of SNL programmatic and response elements and that SNL can self-identify and effectively address program weaknesses. Although corrective actions from the 2005 Independent Oversight inspection have received detailed SSO attention, corrective actions for findings and observations identified by SSO in programmatic assessments and exercises have not received a commensurate level of attention. Furthermore, the new SSO corrective action tracking system has achieved only limited implementation due to the difficulties experienced by SSO personnel in accessing the system. SSO's implementation of a training and qualification program for their ERO positions is also immature, as indicated by numerous weaknesses and inconsistencies in program definition, administration, and execution. SNL has also focused excessively on Independent Oversight findings, thus limiting their effectiveness in addressing other emergency management issues. As a result, several corrective actions developed in response to self-identified weaknesses are past due for implementation. SNL has demonstrated its ability

to conduct value-added assessments but has not yet implemented a formal program of self-assessments. Similarly, SNL has established or recently revised mechanisms for tracking issues and corrective actions at both the corporate level and within the environment, safety, and health (ES&H) and emergency management center, but these mechanisms are not fully developed or integrated. Finally, SNL has initiated an emergency management improvement project that has the potential to significantly improve the program, but sustained commitment and attention will be necessary throughout this estimated 18-month project to meet its goals.

3.0 Conclusions

This 2006 inspection was conducted at the request of the NNSA Administrator to follow up on the results of an Independent Oversight appraisal conducted at SNL in April 2005. That inspection was the fifth in a series of SNL appraisal activities, stretching back to 1998, that documented persistent weaknesses across the breadth of the site's emergency management program. The 2005 inspection found that SNL had completed or was in the process of implementing key improvements in the infrastructure of the emergency management program. In some cases, the progress was clearly evident; however, in many other cases the corrective actions were ineffective, or the improvement initiative had not progressed far enough to have a substantive positive impact. This 2006 inspection found that SSO's and SNL's efforts over the past year have been mostly effective in addressing longstanding weaknesses. However, a few actions were either ineffective or late, and other weaknesses are being corrected as part of longer-term improvement initiatives that will require sustained attention for their benefits to be realized.

The widespread program improvements observed during this inspection can be largely attributed to the significant degree of attention devoted by NNSA, SSO, and SNL managers in obtaining the necessary staff and resources and providing clear expectations for the expeditious development and implementation of an appropriate set of corrective actions. As a direct result, most weaknesses have been corrected and improvements were observed in all of the programmatic areas evaluated during this inspection. Of particular note were the improvements in the areas of plans and procedures and training, drills, and exercises. In addition, some improvements were observed in the response element. Incident command teams and EOC teams accurately classified events, issued timely offsite notifications, and demonstrated improved ability to work together to manage the postulated emergency events.

Of all the areas evaluated, the rate of progress in the EPI area has been the slowest. Although EPI-related roles, responsibilities, and operations are now mostly well-defined through the EPI plan and associated procedures, and JIC access has been tested under simulated emergency conditions, SSO and SNL have not yet formalized all of the mechanisms and controls necessary to ensure that the current JIC will be accessible by site personnel and the media following a significant event. Furthermore, because the actions necessary to establish a longer-term solution to the JIC accessibility issues need to be coordinated among disparate onsite and offsite organizational entities, the completion timeline is uncertain. Also, associated corrective actions involving the initial development of a public education program will be late.

Other weaknesses were noted as well, principally the fact that incomplete or ineffective corrective actions in a few areas continue to negatively impact the performance of ERO decision-makers. For example, the structure of the protective action implementing procedure does not adequately support the protective action formulation process. Furthermore, because of recent procedure changes, some ERO members have had insufficient practice to be proficient in formulating the required protective actions. Additionally, some tools for enhanced initial assessment of the consequences of a release of radiological mixture have not yet been provided to the consequence assessment team, and based on demonstrated performance during the initial set of LSPTs, training to address this tool limitation has not been completely effective. Finally, some SSO and SNL readiness assurance processes intended to ensure that SSO can provide the appropriate degree of programmatic and emergency response line oversight and that SNL can self-identify and correct weaknesses will require additional time to mature and demonstrate their long-term effectiveness.

Overall, the efforts over the past year on the part of SSO and SNL managers and staff have been successful in addressing most of the key program weaknesses and facilitating an increased level of preparedness to respond appropriately to a significant site event involving the release of hazardous material. However, SSO and SNL line management attention is necessary to ensure that ongoing, nearer-term initiatives in the EPI and ERO proficiency areas are completed. SSO and SNL line management attention is also needed to sustain efforts over the long term to complete and implement the readiness assurance activities that will promote continued program improvement.

4.0 Ratings

This inspection focused on a detailed assessment of six key emergency management programmatic elements, as well as the performance of key emergency response decision-makers and support functions during LSPTs. No overall program rating has been assigned. The individual element ratings reflect the status of each SNL emergency management program element as described in the associated report section. The ratings assigned below to the readiness assurance category are specific to those assessment, corrective action, and performance monitoring mechanisms applicable to the emergency management area.

To provide perspective on program changes since April 2005, the information below illustrates the element ratings from the 2005 Independent Oversight emergency management inspection report, an arrow indicating trend, and the ratings for the individual program elements evaluated during this inspection.

Element	2005 Rating	Trend	2006 Rating
Emergency Planning			
Hazards Surveys and EPHAs	NEEDS IMPROVEMENT	↗	EFFECTIVE PERFORMANCE
Program Plans and Procedures	SIGNIFICANT WEAKNESS	↗	EFFECTIVE PERFORMANCE
Emergency Preparedness			
Training, Drill, & Exercise Program	NEEDS IMPROVEMENT	↗	EFFECTIVE PERFORMANCE
Emergency Public Information	NEEDS IMPROVEMENT	↗	NEEDS IMPROVEMENT
Emergency Response			
SSO and SNL Emergency Response Decision-Making	NEEDS IMPROVEMENT	↗	NEEDS IMPROVEMENT
Readiness Assurance			
NNSA/SSO Feedback & Improvement	NEEDS IMPROVEMENT	↗	NEEDS IMPROVEMENT
SNL Feedback & Improvement	[Not Evaluated]	[None]	NEEDS IMPROVEMENT

APPENDIX A
SUPPLEMENTAL INFORMATION

A.1 Dates of Review

Scoping/Planning Visit	April 18 – 19, 2006
Onsite Inspection Visit	May 8 – 17, 2006
Report Validation and Closeout	May 31 – June 1, 2006

A.2 Review Team Composition

A.2.1 Management

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

A.2.2 Quality Review Board

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

A.2.3 Review Team

Steven Simonson (Team Leader)

JR Dillenback
Deborah Johnson
Teri Lachman
John Nichols
David Odland
Jeff Robertson
Brian Robinson

A.2.4 Administrative Support

Anna Lucero

APPENDIX B
SITE-SPECIFIC FINDINGS

Table B-1. 2006 Site-Specific Findings Requiring Corrective Action Plans

FINDING STATEMENTS	REFER TO PAGES:
1. The SNL consequence assessment processes and tools do not ensure timely assessments of the consequences of a hazardous material release during an emergency event, as required by DOE Order 151.1B, *Comprehensive Emergency Management System*.	14
2. SSO and SNL have not ensured that, following a significant site event, they can activate a JIC that is accessible to the media and public officials for the purpose of coordinating and informing the public about emergency response activities, as required by the SSO/SNL EPI plan and by DOE Order 151.1B.	22
3. SSO and SNL have not implemented an integrated public information/education program that ensures that information will be disseminated to the public concerning emergency conditions, area hazards, and protective actions, as required by the SSO/SNL EPI plan and DOE Order 151.1B.	22
4. During LSPTs, the SNL incident command and EOC teams did not implement protective action plans, as specified by EPIP-600, "Protective Action and Consequence Assessment," and DOE Order 151.1B.	28
5. During LSPTs, the EPI cadre did not consistently provide accurate and timely information to site workers, the news media, and the public, as required by the SNL/SSO EPI plan and DOE Order 151.1B.	29
6. SSO has not ensured that a sufficient number of trained emergency response personnel are available for the SSO PAO EOC position, as required by DOE Order 151.1B.	33
7. The implementation of the SSO corrective action management process does not ensure that weaknesses and exercise findings identified by SSO are resolved in a timely manner by SNL, as required by DOE Order 151.1B.	34
8. SNL has not implemented sitewide, integrated self-assessment and issues management processes for emergency management that identify and correct program weaknesses, as required by DOE Order 151.1B.	37

Table B-2. 2005 Site-Specific Findings Status

2005 FINDING SUMMARY	STATUS[2] Milestones Closed/Total	DUE DATE
1. EPHAs do not provide the technical basis for protective actions and PARs.	7/11	12/16/2006
2. The process for developing, approving, and maintaining the EPHA does not establish a clear, documented understanding of the hazardous material inventory limits.	2/5	09/30/2006
3. EPIPs do not provide the specific instructions necessary to ensure that the desired actions are effectively accomplished.	4/5	02/15/2006
4. The emergency plan, EPIPs, and position-specific checklists do not consistently define and implement the roles and responsibilities of the IC and ED regarding protective actions and PARs.	5/5	02/15/2006[3]
5. Predetermined protective actions or PARs have not been developed for nearly all of the high-consequence accident scenarios.	5/5	02/15/2006[3]
6. A process to ensure that only qualified individuals are placed on the ERO watch bill has not been implemented.	9/9	02/28/2006[3]
7. The exercise program is not effective in identifying and correcting programmatic weaknesses.	11/11	02/28/2006[3]
8. JIC processes have not been developed nor implemented that can produce and disseminate coordinated, effective, accurate, and timely public information.	4/9	12/01/2006
9. The EOC teams did not ensure that critical decisions were made and implemented to facilitate an effective emergency response.	9/9	02/28/2006[3]
10. The consequence assessment team did not provide event assessments that were useful in decision-making.	7/7	12/16/2006[3]
11. SSO has made limited progress in establishing an effective issues tracking system, and has not conducted adequate reviews of contractor corrective actions.	3/4	04/15/2006

[2] Milestone status as of May 17, 2006 (i.e., completion of inspection data collection)

[3] Milestones complete and accepted by SSO; awaiting SSO verification of effectiveness

APPENDIX C
EMERGENCY PLANNING

C.1 Introduction

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

This evaluation included a review of the Sandia National Laboratories (SNL) hazards survey and EPHAs and their treatment of hazards associated with several SNL facilities and transportation activities. 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 in April 2005.

C.2 Status and Results

C.2.1 Hazards Survey and Emergency Planning Hazards Assessments

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

The April 2005 inspection determined that SNL had improved the content and rigor of their hazards survey and EPHAs since the 2003 inspection, had implemented technically accurate emergency action levels (EALs) for classification and protective action decision-making purposes, and had implemented a more rigorous screening process for hazardous chemicals. The primary concerns were related to SNL's ability to ensure the technical usefulness, completeness, and consistency of the EPHAs and maintain the validity of EPHA assumptions regarding the quantities of hazardous materials available for release. This 2006 inspection found that SNL has effectively addressed most of the weaknesses identified in this area in 2005.

Responding to recommendations from the 2005 inspection, SNL has taken steps to assure that EPHAs are complete and consistent. For example, SNL:

- Revised the EPHAs to include the distances to critical receptors of interest, such as nearby facilities, Kirtland Air Force Base housing, and public facilities
- Revised the EPHA for the Sandia Pulsed Reactor facility to ensure the use of appropriate release fractions for catastrophic event scenarios pertaining to the reactor core
- Developed a radiological transportation EPHA for inter- and intra-site moves of radiological materials
- Verified the validity of the current SNL emergency planning zone based on the consequence assessment results in the Sandia Pulsed Reactor facility and radiological transportation EPHAs

- Revised the protective action plans to include the technical bases for protective actions and protective action recommendations (PARs).

With regard to material-at-risk assumptions, SNL has documented its use of the Los Alamos National Laboratory chemical screening thresholds for the hazards survey. In order to ensure the validity of the EPHA assumptions regarding material-at-risk quantities analyzed in the consequence assessment, SNL has executed a compliance agreement with facility owners and users to document understandings regarding the relationship of facility inventory limits and planning quantities of hazardous materials, and SNL has conducted training sessions on actions to be taken if those limits might be exceeded.

Some EPHA corrective actions have not been completed, but SNL is making appropriate progress to meet the associated milestones. For example, SNL has not completed an EPHA for transporting multiple containers of hazardous chemicals (September 30, 2006, completion date), but SNL has analyzed the maximum quantities of chemicals transported on the site. Similarly, SNL has not yet developed EPHAs for all of the facilities that may have hazardous materials in sufficient quantities to pose a serious threat to workers, the public, or the environment. A hazards survey completed early in 2005 identified eight additional SNL facilities that might have required an EPHA, but SNL questioned the survey's validity because of concerns regarding the accuracy of the chemical information system. Subsequently, SNL devised a plan and schedule to complete a revised hazards survey using the screening criteria from DOE Order 151.1C, in conjunction with the Los Alamos National Laboratory chemical screening thresholds, to ensure the accuracy of the survey; SNL also identified milestones and resources for performing further analyses to determine whether EPHAs will be required. In the interim, SNL has developed discretionary EALs to ensure the safety of the workers and public if an unanalyzed hazardous material is released.

SNL has also improved its EPHA-related maintenance processes by revising the methodology documents used for preparing the EPHAs, protective actions, and EALs. For the most part, these documents appropriately address the weaknesses identified during the 2005 Independent Oversight inspection, although their usability could still be improved. The EPHA methodology document has been revised to ensure consistent content and arrangement, and SNL has developed a triennial EPHA update schedule. SNL has also developed an EAL/Protective Action methodology document that provides the technical basis for the protective action plans, but three of the four attached instructional appendices are not described in the body of the text. Similarly, SNL has developed a new radiological EPHA methodology document and two supporting informational appendices, as well as three informational appendices concerning hazardous chemicals to support the EPHA methodology overview document. However, these appendices are not referenced or described within the body of the text.

Overall, the relatively large number of methodology documents and associated appendices results in a complex process for initially producing EPHAs and then maintaining them to reflect changes in hazardous material types and quantities. For example, to develop an EPHA and the corresponding EALs and protective actions, the developer has to refer to four methodology documents. In addition, for each analyzed facility, the EPHA and related output information are organized into four volumes (the report, source terms and event consequences, EALs, and protective action plans). The complexity of the EPHA-related maintenance process limits the internal and external auditability of the EPHAs. Furthermore, SNL has not developed a formalized process for reviewing EPHAs that ensures that changes affecting one volume are consistently incorporated in all four volumes.

Although significant effort has been expended to ensure that the EPHAs form an appropriate foundation for the SNL emergency management program, work remains to ensure that the EPHAs and consequence assessment processes and tools adequately support timely and ongoing consequence assessment. For example, in some of the weekly performance drills used to train consequence assessment team (CAT) personnel, analysis results sometimes differ from those indicated in the EPHAs. However, because the EPHA documents (or corresponding methodology documents) lack such technical information as the type of terrain that is modeled, CAT personnel cannot immediately reconcile these differences. In addition, consequence assessment analyses of radiological mixtures contained in the EPHAs use an isotopic mixture compiled from the fraction of each of the isotopes. However, the associated tables of the isotopic mixtures are only available in the EPHA for one radiological facility, which was not the facility included in the initial limited-scope performance test (LSPT), and CAT personnel have not been trained to use this mixture methodology. Similarly, consequence assessment analyses of chemical mixtures contained

in applicable EPHAs were performed using the spreadsheet developed by the DOE Subcommittee on Consequence Assessment and Protective Actions, but, again, CAT personnel have not been trained to use this methodology.

Currently, CAT personnel are expected to perform timely initial assessments by first concurring with the event classification decision and then referring to supplemental EAL tables of protective action distances applicable to a single, more realistic set of meteorological conditions (i.e., D stability, 3 meters/second wind velocity). CAT personnel are also expected to perform continuous ongoing consequence assessments by choosing the chemical or isotope that presents the greatest hazard and performing the analyses as a single material release. However, as discussed in more detail in Section E.2.2, CAT personnel had difficulty in developing a timely initial assessment of a release involving a radiological mixture during one of the LSPTs conducted as part of this inspection. In part, this can be attributed to the absence of any procedures or other guidance documents that delineate these expectations and the lack of an easy-to-use, readily available computational tool that handles chemical and radiological mixtures (to replicate EPHA results). To address these issues, SNL is implementing an upgrade (currently undergoing acceptance testing) of the timely-initial-assessment tool being used by CAT personnel. The tool has an automated capability for assessing the consequences of a release of chemical and radiological mixtures for worst-case and typical weather conditions during emergency events. However, this upgrade does not allow CAT personnel to input real-time meteorological information. Adding this capability would make the timely-initial-assessment tool usable for continuous, ongoing consequence assessments during an emergency event.

Finding #1: The SNL consequence assessment processes and tools do not ensure timely assessments of the consequences of a hazardous material release during an emergency event, as required by DOE Order 151.1B, *Comprehensive Emergency Management System*.

Finally, SNL is instituting a quality assurance program to verify the analyses in the EPHAs. However, due to the complexity of the analyses (e.g., type of modeling, chemical and isotopic mixtures, terrain), SNL cannot institute such a quality assurance program until they receive and understand all the technical data used in the modeling so that the analyses can be reproduced. For example, according to the EPHA methodology overview document, the EPHA developer (an external contractor) has modeled 44 meteorological scenarios, representing different combinations of meteorological conditions, event heat generation, and stack height for use in the consequence assessment analyses. SNL has not received the databases for these scenarios.

To summarize, SNL has revised or prepared EPHAs with improved technical content, included the appropriate technical bases in the protective action plans, verified the accuracy of the emergency planning zone, and established a formal mechanism to control and limit the quantities of hazardous material in facilities. As a result, most of the weaknesses identified during the last inspection have been effectively addressed, and the EPHAs provide an adequate foundation for the SNL emergency management program, which is their primary function. However, the complexity of the EPHA methodology documents, EPHAs, and related output documents, combined with the absence of a formalized SNL process for reviewing EPHA changes, increases the possibility for errors in EPHA maintenance. Further, the lack of such necessary technical information as the consequence assessment databases makes it more difficult for SNL to implement appropriate quality assurance processes for the analyses. Finally, although CAT personnel demonstrated the ability during most of the LSPTs to provide useful consequence assessments using the material posing the greatest hazard, CAT personnel do not yet have the tools they need to ensure that the assessments are timely and can be easily refined to reflect actual conditions.

C.2.2 Program Plans and Procedures

During the April 2005 inspection, the Independent Oversight team found that SNL had implemented corrective actions since the prior Independent Oversight inspection that had improved the procedures, processes, and tools for initial emergency response decision-making and onsite protective action implementation. However, notification form and procedure weaknesses, incomplete protective action plans, and minimal levels of associated training precluded assurance that responders in the emergency operations center (EOC) could adequately protect site workers and the public following significant events. Furthermore, these weaknesses were the dominant contributor to the significant performance weaknesses observed during LSPTs in 2005. Additionally, many of these

weaknesses were previously identified during the 2001 and 2003 Independent Oversight assessments, but corrective actions were not consistently effective. This 2006 inspection found that SNL has made numerous improvements in emergency management program plans, procedures, work aids, and notification processes and forms to ensure that critical, time-urgent tasks for determining and communicating protective actions and PARs are completed in a timely manner following a significant event.

With few exceptions, the SNL emergency plan and procedures establish an appropriate response framework and implementing mechanisms, respectively, for an effective emergency management program. The SNL emergency plan contains the appropriate emergency planning elements, has undergone a recent comprehensive revision that adequately captures the various process improvements, and with few exceptions, clarifies emergency response roles and responsibilities. The SNL emergency preparedness implementing procedures (EPIPs) have also been improved in terms of content and usability by emergency responders. In particular, SNL has corrected the process and procedural inadequacies that caused most offsite notifications to be either late or inaccurate during the LSPTs conducted as part of the 2005 Independent Oversight inspection. Other substantive improvements completed as part of the SNL corrective action plan include the following:

- The remainder of the protective action plans, including those applicable to the most significant events that would affect both onsite and offsite personnel, have been developed.

- All of the protective action plans have been revised to include such additional tools for the incident commander (IC) and emergency director (ED) as receptors of interest (sequenced in order of distance) and information regarding remote operation of building ventilation systems to assist in shelter-in-place decisions.

- A well-designed work aid has been developed to assist the IC and ED in determining protective action strategies. This work aid provides specific recommendations regarding shelter-in-place and/or evacuation based on such factors as length of release and the ability to shut down building ventilation.

- EAL structural and usability weaknesses, particularly those for the Sandia Pulsed Reactor, have been addressed effectively.

- SNL has developed and implemented a standard operating guide for developing, revising, and controlling emergency management response documents to ensure that responders have access to current procedures.

The SNL response plans and procedures continue to improve and evolve, as indicated by the large percentage of documents reviewed by Independent Oversight that had been revised in the 60-day period before the inspection. The rapid rate of program change is considered to be a significant contributing factor to the observed weaknesses, inconsistencies, or ambiguities, all of varying significance, in some response plans, procedures, checklists, and other response documents. For example:

- The EPIP governing protective actions is written in an informational style, rather than in the structured, step-by-step style used in other response EPIPs. The informational style of presentation makes it difficult to ensure that critical steps required for effective emergency response can be performed in a high-stress, time-urgent environment.

- The standard operating guide for suspicious items defines a "potential" threat to exist if "an explosive is found, indicated, or suspected," whereas the EPIP governing event categorization and classification requires that three conditions must be met in order for a threat to be classified as "credible"; neither procedure differentiates between "potential" and "credible." This inconsistency caused a delay in classifying the event during one of the incident command team LSPTs.

- SNL has not developed guidance addressing expectations for procedure use. Lack of this guidance likely contributed to some performance inconsistencies during the LSPTs, particularly in developing protective action plans. (Refer to Appendix E, "Emergency Response," for additional information.)

- The EPIP governing protective actions contains several confusing statements and internal inconsistencies regarding IC and ED responsibilities within the "Incident Command Area," which is defined as that area for which the IC has consequence-based decision-making authority. For example, the EPIP contains statements that conflict on whether the Incident Command Area always includes the onsite protective action areas outside the isolation zone. Additionally, the EPIP indicates that the Incident Command Area could extend beyond the SNL site boundary; this statement conflicts operationally with others within the EPIP that generally assign PAR determination to the ED after EOC activation.

None of these inconsistencies in content or style was, by itself, a significant contributor to the performance inconsistencies observed during the LSPTs conducted as part of this inspection. Instead, the results of the LSPTs, discussed further in Appendix E, indicate that the amount of practice in using newly-revised response tools was the dominant factor in whether the teams being evaluated attained their performance test objectives.

To summarize, SNL has implemented significant improvements in its emergency management program plans and response procedures since the 2005 Independent Oversight inspection. SNL has effectively addressed each of the elements that led to the rating of Significant Weakness in this area in 2005, including the two most critical: completion of the protective action plans and correction of the offsite notification process. SNL has made numerous other clarifications as well to address various procedure and EAL weaknesses and inconsistencies. Written guidance on creating, maintaining, and revising procedural documents has been significantly improved, but the procedure development process is not sufficiently rigorous to ensure consistency among EPIPs, response checklists, and other procedural guidance documents. Although these procedure inconsistencies are important and warrant attention, the current set of SNL plans and response procedures provides an adequate basis for responding to potential emergencies at SNL, and the weaknesses do not materially detract from the effectiveness of this program element.

C.3 Conclusions

Since the 2005 Independent Oversight inspection, SNL has implemented corrective actions that have led to notable improvements in emergency planning and that contributed to the improved performance during LSPTs. Upgrades in the technical content of the EPHAs, which provide the foundation for the entire emergency management program, and in the plans and response procedures support timely, effective emergency response. As a result of the upgrades, most of the weaknesses observed in the previous inspection have been satisfactorily addressed, though some remain. Although the EPHAs adequately execute their primary function of establishing the basis for the site's emergency management program, the complexity of the EPHA documentation causes difficulties in their validation and use. Furthermore, at the time of the inspection, CAT personnel had not been provided with all of the tools required to ensure that initial release assessments during an emergency are timely and can be easily refined to reflect actual conditions. Also, emergency response implementing procedures, checklists, and guidance documents exhibit a number of inconsistencies that require resolution through a rigorous development, revision, and validation process. While consequence assessment procedures, assessment tools for dealing with releases of hazardous materials, and procedural inconsistencies are important and warrant attention, the current set of consequence assessment tools and emergency response procedures provides an adequate basis for responding to potential emergencies at SNL.

C.4 Ratings

A rating of EFFECTIVE PERFORMANCE is assigned to the area of hazards surveys and EPHAs.

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

C.5 Opportunities for Improvement

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are offered to the site to be reviewed and evaluated by the responsible line

management and accepted, rejected, or modified as appropriate, in accordance with site-specific emergency management program objectives and priorities.

Sandia National Laboratories

- Enhance the usefulness of the EPHA-related processes by simplifying the methodology documents. Specific actions to consider include:
  - Develop one EPHA methodology document and ensure that all appendices are described in the body of the text.
  - Revise the EPHA development procedure to provide guidance on the steps necessary to maintain EPHA documents, including applying screening criteria, verifying and applying modeling assumptions, and maintaining consistency in consequence analysis tables.
- Consider establishing clear requirements for technical reviews and approvals of the hazards survey and EPHAs to ensure that facility managers, facility representatives, and the appropriate technical disciplines, such as safety and security analysis experts, support the review.
- Enhance the EPHAs to ensure that CAT personnel can adequately and effectively use them as emergency response tools during all emergency events. Specific actions to consider include:
  - Revise the consequence assessment analyses to include all dispersion modeling parameters incorporated (e.g., type of model, deposition velocity, terrain).
  - Include an example of the chemical or radiological mixture methodology in the appropriate EPHA and an explanation of how the resultant source term is used in the dispersion models.
- Consider ensuring that all required emergency response personnel (e.g., EDs, ICs, CAT personnel) review the EPHAs and have a general understanding of the information they provide.
- Consider the following to improve the consistency of emergency management plans, procedures, and checklists.
  - Ensure that document revisions are reviewed to identify corresponding changes required in other plans, procedures, and checklists.
  - When a change affects more than one document, issue revisions concurrently to prevent conflicting information and requirements.
  - Ensure that self-assessments of plans and procedures specifically evaluate the hierarchy of emergency management documents for consistency.
- Consider reviewing and revising the following plans and checklists to ensure that ED roles and responsibilities are clearly delineated.
  - Include ED responsibilities and procedural duties related to categorizing and classifying events in EPIP 300, "Categorization/ Classification of Operational Emergencies."
  - In the ED checklist, refer to the IC turnover process.
  - Indicate in the ED checklist those items that must be performed by the ED if not performed by the IC.
- Consider revising EPIP-600, "Protective Action and Consequence Assessment" to adopt a step-by-step procedure format that provides detailed guidance to ICs and EDs on how to complete the protective action plan form.
- Consider reviewing guidance contained in EPIP-300, "Categorization/Classification of Operational Emergencies," against guidance contained in SOG-2104, "Suspicious Package," to clearly indicate what the requirements are for determining when a "suspicious package" becomes a "credible" device.
- Consider establishing written expectations for uses of such high-impact procedures and checklists as the protective action plans.

APPENDIX D
EMERGENCY PREPAREDNESS

D.1 Introduction

A coordinated program of training, drills, and exercises is necessary to ensure that emergency response personnel and organizations can effectively respond to emergencies impacting a specific facility or the site as a whole. This response includes the ability to make time-urgent decisions and take action to minimize the consequences of the emergency and to protect the health and safety of responders, workers, and the public. To be effective improvement tools, exercises should be used to validate all elements of an emergency management program over a multi-year period using realistic, simulated emergency events and conditions, and to provide emergency response organization (ERO) members an opportunity to practice their skills. An effective emergency public information (EPI) program provides the public, media, and U.S. Department of Energy (DOE) employees with accurate and timely information during an emergency event. In part, effectiveness is based on having in place a long-term, documented program to educate the public and the media about actions that may be required during an emergency response.

The Office of Independent Oversight team evaluated the training, drill, and exercise program used to support the ERO at the institutional and facility levels. As part of the programmatic review of the training, drill, and exercise elements, the Independent Oversight team evaluated the plans and procedures that support these elements and reviewed training and proficiency records for key site emergency responders. Drill and exercise reports were also reviewed for indications that they are being used effectively to enhance responder proficiency and evaluate the level of the site's response preparedness. The team also evaluated EPI plans and applicable processes for an emergency at Sandia National Laboratories (SNL).

D.2 Status and Results

D.2.1 Training, Drill, and Exercise Program

The April 2005 Independent Oversight inspection determined that SNL had implemented many improvements in the training, drill, and exercise programs since the previous Independent Oversight inspection, including developing a comprehensive training plan, implementing an effective training program for field responders, and strengthening the process for planning the annual exercise so that the ERO is appropriately challenged. However, the entire training program envisioned in the training plan was not yet fully implemented, which hampered the effectiveness of training and drills, and the drill and exercise program was not being used effectively to identify and correct emergency management program weaknesses or to provide the ERO with the necessary proficiency in their assigned positions. This 2006 inspection found that the previously identified weaknesses have been effectively addressed and, consequently, the training, drill, and exercise programs at SNL are comprehensive and coordinated.

Training

Since the April 2005 inspection, SNL has made significant improvements in the emergency management training program. The emergency management training plan provides the framework for a strong ERO training program; the supporting training materials now provide a much more comprehensive training program for emergency operations center (EOC) team members. The program requirements are generally well documented in the emergency management training plan, and those requirements are now implemented for all SNL ERO members. The training plan addresses initial and refresher training for SNL ERO members, and core training requirements are identified that establish minimum requirements for qualifying an individual to serve in an ERO position. After initial qualification, additional training is required to be completed within one year for full certification.

The training program, which is based on an analysis of ERO functions, is extensive and includes a good mix of classroom training, practical exercises, self-study, on-the-job training, written exams, and training drills. The program also includes qualifications for instructors and drill/exercise evaluators and controllers. Although not clearly defined by the training plan, ERO members participate in a drill prior to initial qualification.

Annual refresher training for SNL ERO positions and additional proficiency training for selected positions are identified in the plan and have been implemented. National Incident Management System training requirements have also been incorporated.

SNL has also implemented an effective system for tracking ERO training and drill/exercise participation to ensure that ERO members have received the required training and practice before serving in an ERO position. SNL ERO members who have not satisfied their training requirements are removed from the call-out list, and in accordance with the training plan, a 90-day warning letter is issued to notify an ERO member that their qualification status will lapse if training is not completed. If training is not completed within the 90 days, a letter is issued to inform the individual that they are no longer an active ERO member, and the mechanism for keeping the call-out list current with ERO member qualification status has recently been strengthened.

Overall, the training program is comprehensive; however, as demonstrated during the limited-scope performance tests (LSPTs), ERO members were not adequately prepared to perform some assigned responsibilities in accordance with newly-revised processes. Training and practical exercises are provided annually to the ERO cadre in the areas of event categorization and classification, use of emergency action levels (EALs), and protective action determination. An additional six hours of classroom training was provided in April and May 2006 on recent upgrades to the EALs and protective action plans. In this case, procedure changes were implemented, training was conducted, and a series of training drills was scheduled and initiated to permit ERO members to develop proficiency in using the revised EALs and protective action plans. However, at the time of this inspection, only one EOC team had been given an opportunity to participate in such a drill. One of the EOC teams evaluated during the LSPT had not completed the proficiency activity and thus was unable to demonstrate effective use of the newly-revised protective action determination process. Similarly, an emergency preparedness hazards assessment was revised to include isotopic mixtures without first training the consequence assessment personnel to develop hazardous material dispersion plots for a source term consisting of multiple radiological isotopes. These weaknesses are discussed further in Appendices C and E of this report.

Drills and Exercises

Since the April 2005 inspection, SNL has made significant improvements in the drill and exercise program. Generic language has been removed from the revised SNL Drill/Exercise Guide, and the document now adequately defines the SNL-specific roles, responsibilities, and program requirements. This document corrects the previously-identified weakness and addresses the associated opportunities for improvement noted in the 2005 inspection report.

A minimum of eight hours of drill/exercise/actual event participation is required annually by the training plan. The SNL drill program is active and well documented, and it is being used to promote improvements in performance and procedures. Drills are scaled to the objectives and range from small tabletop exercises to large evaluated drills. Drills are conducted for training, to verify performance effectiveness, and to improve proficiency in targeted functions. Large-scale drills include play by numerous response organizations, including field teams, incident command personnel, the EOC team, the corporate hazardous materials team, the Kirtland Air Force Base (KAFB) Fire Department, and the consequence assessment team. Three evaluated drills conducted in 2006 were found to have used challenging scenarios, and responder performance and the conduct of the drill were evaluated in a meaningful way. Weaknesses and observations were identified and entered in a corrective action tracking system.

The exercise program involves many onsite and offsite responders, provides challenging scenarios that test emergency management program elements, and generally produces high-quality reports that identify program strengths and weaknesses. Clear and measurable objectives and criteria are established, and strengths and weaknesses are correlated to objectives. Additionally, qualification standards have been implemented for controllers and evaluators. Exercise reports are developed consistent with the DOE guideline. The after-action report for the 2005 annual exercise represents a significant improvement from previous years: results were presented clearly and concisely, the executive summary identified the overall rating and summarized performance by functional elements, strengths and weaknesses were identified by objective, and the criteria for meeting objectives were clearly identified. However, one instance was noted where a criterion was not met but no improvement

items were identified. Additionally, the executive summary presented the results in a more positive way than was warranted by the details of the report, and only the more significant improvement items were entered in a corrective action tracking system. However, since this exercise was conducted in October 2005, the drill and exercise guide has been revised and now requires corrective action tracking for all improvement items. Also, the three most recent evaluated drills demonstrate a trend toward more critical evaluations and better documentation of performance.

SNL recently issued a six-year drill and exercise plan intended to provide a planning method for ensuring that all program elements are validated by drills or exercise over a five-year period. The plan is in matrix form, and it identifies response functions and organizations, types of drills/exercises, and facilities by hazard type (e.g., chemical, radiological, explosive). Although the logic of the plan is sound, the list of facilities is not complete when compared to the list of emergency planning hazards assessments. At the time of this inspection, the recently issued six-year plan had not yet been used to develop a drill and exercise schedule/plan. An annual drill and exercise schedule and a five-year spreadsheet are in use that together include information on the planned and completed activities at facilities having an emergency planning hazards assessment, type of hazard or response, and the major program elements of the sitewide emergency management program to be evaluated.

To summarize the training, drill, and exercise area, SNL has implemented a program whose elements are comprehensive and coordinated. The emergency management training plan, which is supported by detailed lesson plans, establishes the framework for a strong ERO training program. Training requirements for each SNL ERO position have been implemented to establish initial qualifications and to maintain proficiency through annual refresher training, drills, and exercises. Training requirements, as well as participation in drills and exercises, are effectively tracked, and individuals who have not satisfied the qualification requirements are removed from the call-out list. Previously-identified weaknesses in the SNL drill and exercise guide have been effectively addressed, and improvements were noted in the quality of drill and exercise reports, evaluation of performance, and identification of improvement items. Additionally, the active program of drills and exercises is being used to promote improvements in performance and procedures. Finally, comprehensive classroom training has been provided to all ERO members on recent upgrades to EALs and protective action plans, and ERO members have been scheduled for training drills to develop proficiency in using these procedures. However, not all ERO members have completed the proficiency development activity they need to be fully trained on the significant process changes associated with the formulation of protective actions, and the LSPTs demonstrated that those EOC team members who had not yet attended the practice drills were not able to use the response procedures effectively to formulate protective actions. Although the completion of proficiency training for ERO members warrants attention, SNL emergency management staff are aware of the importance of completing this ongoing activity. Program weaknesses in the training, drill, and exercise area have been fundamentally corrected, and additional time is needed to allow the benefits of the improved program to translate into consistently effective ERO performance.

D.2.2 Emergency Public Information

The April 2005 inspection determined that the Sandia Site Office (SSO) and SNL had developed a well-conceived, integrated, and mostly comprehensive EPI plan. However, the absence of a proven operational concept for the joint information center (JIC) with the necessary supporting planning elements and procedures remained an important weakness from the 2003 Independent Oversight inspection. Consequently, in 2005 there was reduced assurance that SSO and SNL would be able to provide the public and the media with accurate and timely information following a significant site event. This 2006 inspection found that SNL has made significant improvements in the tools, mechanisms, and training for the EPI cadre. However, some previously identified issues associated with the JIC location remain unresolved, and little progress has been made in developing a public education program.

The Independent Oversight inspection team observed several noteworthy improvements in the integrated SSO-SNL EPI program. The newly-approved, integrated EPI plan, together with the amplifying SSO-issued directives, incorporate the appropriate DOE requirements and guidance, such as issuance of an initial news release within one hour of the beginning of an emergency event. With few exceptions, the EPI plan, associated directives, and supporting procedures and checklists document the processes necessary to provide site workers, the news media, and the public with accurate, candid, and timely

information and to ensure the timely correction of misinformation and rumors in news releases and news conferences. The EPI plan now also delineates the roles and responsibilities for the JIC cadre, and SNL has developed comprehensive supporting procedures and checklists that clearly detail the appropriate response actions and associated criteria to activate and operate the JIC.

As with some other areas evaluated during this inspection where the pace of recent plan and procedure changes has been rapid, the inspection team identified several areas where the EPI plan (and accompanying directives), procedures, and checklists contained inconsistencies or were unclear. For example:

- One section of the EPI procedure requires JIC activation at a General Emergency declaration; however, the checklist for the SSO public affairs officer, contained in the EPI plan, does not identify any JIC activation parameters.

- The SNL emergency plan requires that a JIC be established when an event reaches "an appropriate level" and does not provide further direction.

- The concept of operations section of the EPI plan states that an operational JIC would be required for any General Emergency, whereas section 6 of the plan does not specifically mention the term General Emergency.

Additionally, the EPI plan and supporting procedures and checklists lack important detail in some areas. Provisions for a staffing plan identifying personnel for around-the-clock coverage of the JIC have not been formalized and referenced within the response procedures, and although the EPI plan provides preliminary guidance regarding how the media relations center staff will efficiently transition to the JIC, the procedures lack a deployment plan directing which positions will deploy during this transition. Other weaknesses include the lack of an approval process for subsequent news releases and employee messages; the unrealistic nature of the specified ten-minute goal for issuing employee messages (as demonstrated during LSPTs); and the content of recently-issued SSO directives that accompany the EPI plan, which clarify two key aspects of EPI response but have not yet been incorporated into the EPI plan or the supporting procedures and checklists.

Some EPI corrective actions have not been completed, and although limited progress has been made, the remaining corrective action milestones may not be completed as scheduled. The slower than expected pace results largely from the shared nature of EPI responsibilities between SSO and SNL and weaknesses in coordinating the initiatives between and among various organizational entities to address EPI program weaknesses. Consequently, the corrective action milestones related to the 2005 Independent Oversight finding regarding the operational concept of the JIC (and implementation of a public education program – discussed below) have not been adequately addressed. One impact is that SSO and SNL have not yet established a suitable offsite JIC location or all of the necessary emergency access and egress processes to ensure that the current JIC is accessible by the media and offsite officials irrespective of the nature of an emergency event. In the case of JIC access, the location of the JIC remains problematic. As in 2005, the Energy Training Complex is the primary JIC, and because it is located on KAFB property, there is a significant risk that the JIC would be inaccessible by media and local, state, and tribal organizations following a significant site event that initiates a KAFB shutdown. The principal reason for this risk is that efforts to date have been unsuccessful in securing a clear, documented guarantee of emergency ingress and egress access from senior KAFB officials. Furthermore, while the ability to access the JIC under simulated emergency conditions has been tested, most of the steps that SSO and SNL response personnel would need to follow in order to access the JIC have not been documented in response procedures or checklists. Closure of the Energy Training Complex at the end of fiscal year (FY) 2006 complicates this issue further because SSO and SNL have not established a mechanism to ensure the facility's availability for use as the primary JIC until the closure date. SSO and SNL have identified a potential offsite JIC location outside the SNL emergency planning zone and are currently in discussions with the City of Albuquerque and Bernalillo County regarding its use as an integrated JIC for both SNL and the surrounding metropolitan area. SNL and SSO have also begun to negotiate an interim agreement in an attempt to use an existing City facility as a JIC until a new facility is available, which is not expected until FY 2008; this interim agreement is expected to be finalized by the end of calendar year 2006. However, in the interim, the three alternate JIC locations that have been established by SSO and SNL are all on KAFB property and present the same accessibility concerns as the primary JIC.

Finding #2: SSO and SNL have not ensured that, following a significant site event, they can activate a JIC that is accessible to the media and public officials for the purpose of coordinating and informing the public about emergency response activities, as required by the SSO/SNL EPI plan and by DOE Order 151.1B.

Although this is not a repeat finding from the 2005 Independent Oversight inspection, the uncertain nature of JIC accessibility during a significant event is a common element in Finding #8 from that report. In particular, while the JIC operational process weaknesses have been addressed, concerns regarding the JIC location have not been completely addressed.

In the public education area, the EPI plan appropriately states that an integrated public education program will be jointly designed and implemented to ensure that information is disseminated annually to the public concerning area hazards, emergency points of contact, protective actions, emergency response activities, and processes for public notification should an emergency occur. The plan assigns the SNL Public Relations and Communications and SSO Public Affairs organizations with responsibility for implementing this program. During this inspection, there were indications that this issue is beginning to be addressed, and there has been some recent progress in developing the deliverables required by the corrective action plan. However, despite a completion milestone of June 1, 2006, efforts to date have not included work on a process for implementing the program, which is required by the EPI plan, and there has been no integration or finalization of ideas or deliverables between the responsible parties.

Finding #3: SSO and SNL have not implemented an integrated public information/education program that ensures that information will be disseminated to the public concerning emergency conditions, area hazards, and protective actions, as required by the SSO/SNL EPI plan and DOE Order 151.1B.

Finally, in the area of training for EPI personnel, the inspection team noted that SNL incorporated some of the EPI cadre into the ERO training program and developed three training modules based on the new EPI plan and procedures. These courses have thorough lesson plans and are included in the SNL emergency management training matrix and database; proficiency requirements are included as well. Furthermore, in March of this year, the JIC cadre conducted several practice activities and incorporated lessons learned into the EPI procedures and checklists, and the 2006 annual exercise is expected to evaluate the full range of EPI processes, including JIC operations. However, as a result of inappropriate direction from SNL EPI staff, the emergency management training database indicates that the only EPI position requiring training is that of the emergency public information officer, which is a title not defined or used in the EPI plan or checklists. Therefore, other than the emergency public information officer, there are no formalized training requirements for any of the EPI positions that are identified in the EPI plan. Interviews and informal documentation indicate that 21 of 24 individuals may have received position-specific training from the SNL Public Relations and Communications Center regarding roles for media relations center and JIC personnel. SNL has not, however, maintained the EPI-related training records and therefore cannot ensure that individuals assigned to fulfill EPI cadre roles are qualified. EPI training weaknesses likely contributed to EPI performance weaknesses in the timing and content of news releases and JIC activation that were observed during LSPTs conducted as part of this inspection, as detailed in Appendix E. SSO public affairs training and qualifications are discussed in Appendix F.

To summarize, SSO and SNL have implemented several improvements in the EPI area, including a well-conceived, integrated, and mostly comprehensive EPI plan and an upgraded framework for training and qualifying SNL EPI staff. However, as a result of lapses in the coordination of shared EPI responsibilities between SSO and SNL, two important weaknesses identified during the April 2005 inspection remain unresolved: uncertain accessibility to a JIC that is located on KAFB property and the absence of a public education program. Consequently, there continues to be reduced assurance that SSO and SNL will be able to provide the public and the media with accurate, timely, and understandable information during a significant event. Additionally, there are inconsistencies among the EPI planning and response documents and the SNL emergency plan regarding activation of the JIC and the approval process for news releases.

D.3 Conclusions

SNL has made significant improvements in the training, drill, and exercise program since the 2005 inspection, and SSO and SNL have improved the framework and operational concepts needed to support

an effective EPI program. The SNL emergency management training plan, which establishes a comprehensive program for ERO personnel, has been implemented effectively through a combination of classroom training, practical exercises, and training drills. Qualification status is effectively managed and reflected in the ERO call-out system, and an extensive schedule of evaluated drills and exercises has contributed to improved procedures and performance, although performance inconsistencies during LSPTs indicate that additional time will be necessary to see the benefits of ongoing proficiency initiatives, particularly in using recently-revised protection action plans and processes. With a few exceptions, the SSO and SNL EPI program is well supported by the recently approved EPI plan and supporting procedures, and SNL has implemented a training and qualification process for the EPI cadre. However, corrective actions to improve the EPI function have not yet fully addressed all the underlying issues; consequently, two important issues remain from the 2005 Independent Oversight inspection. The first is the potential lack of access of the public and media to either the JIC or any of the alternate JICs, all of which are located within the secure areas of KAFB. The second involves the need to implement a public education program. These two weaknesses could significantly impact the site's ability to communicate timely information and understandable protective actions to the public in an emergency.

D.4 Ratings

A rating of EFFECTIVE PERFORMANCE is assigned to the area of training, drills, and exercises.

A rating of NEEDS IMPROVEMENT is assigned to the area of EPI.

D.5 Opportunities for Improvement

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

Sandia Site Office and Sandia National Laboratories

- Consider the following updates and improvements to the EPI plan, procedures, and checklists.
  - Incorporate the graduated activation of the EPI program that was identified in the 2005 plan.
  - Include the new roles and responsibilities defined by the recently issued SSO directives, including SSO approval requirements for the employee message, initial news release, and subsequent news releases.
  - Consider using a pre-approved initial news release to rapidly disseminate initial information during normal working hours and for an off-hours incident.
  - Revise the EPI plan and SNL emergency plan to ensure that all requirements and references to JIC activation are consistent.
  - Develop and add a round-the-clock staffing plan for JIC roles, and establish which media relations center roles will be deployed to the JIC upon activation.
  - Establish criteria enabling the media monitors and telephone inquiry teams to distinguish between an isolated case of misunderstanding and a rumor.
- Continue the dialogue with the City of Albuquerque and secure an adequate location, such as the Metro JIC, for use as the Sandia JIC. Consider the following:
  - Establish an understanding with KAFB regarding use of the Energy Training Complex between now and the Energy Training Complex closure date.
  - Establish and document actual and/or potential use of the Fire Training Academy as a JIC location as soon as possible.
  - Determine with the City and document the use of the Academy for JIC activation during facility renovations.

- Update appropriate memoranda of understanding regarding the JIC.

- Strengthen the EPI training program by developing and implementing position/task training specific to the media relations center and the JIC. Consider the following recommendations in EPI training program development:

  - Incorporate all training for the media relations center and JIC into the SNL emergency management training program.

  - Identify the role of the emergency public information officer and either change the title in the training program or incorporate that role into the plan and procedures.

  - Develop lesson plans with learning objectives and associated training materials consistent with the SNL emergency management training plan requirements.

- Improve public awareness of SNL emergency management concepts and practices by establishing a public education program as documented in the EPI plan. Consider the following:

  - Coordinate the design and implementation process between SNL and SSO.

  - Establish realistic milestone due dates for implementing this program.

Sandia National Laboratories

- Consider the following enhancements to training, drill, and exercise plans to more clearly define requirements and expectations:

  - Revise the emergency management training plan to formalize the practice of requiring ERO members to participate in a drill or exercise as an initial qualification requirement. Ensure that individuals who are qualifying for more than one ERO position have the opportunity to drill in each position.

  - Ensure that the six-year drill and exercise plan includes all facilities requiring an emergency preparedness hazards assessment. Complete the drill and exercise planning process to ensure that all program elements are validated over a five-year period.

- Consider additional drills to improve the proficiency of all applicable ERO members in applying protective action plans.

  - Ensure that drills test the emergency directors' ability to complete protective action plans in addition to verifying the adequacy of plans developed by the incident commander.

  - Conduct drills with the incident commanders designed to improve their proficiency in making determinations on the most appropriate protective action – shelter in place or evacuation.

  - Emphasize the use of emergency plan implementing procedures for protective action and consequence assessment in training drills.

- Ensure that consequence assessment team training and drills include methods for developing dispersion models when the source term consists of multiple radiological isotopes. Include the process used to determine the most significant isotope (for use in performing the ongoing assessment).

- Review the 2005 annual exercise report and ensure that corrective actions are adequately identified and addressed or tracked for unmet objectives.

APPENDIX E
EMERGENCY RESPONSE

E.1 Introduction

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

Most of the information provided in this section is based on observations from two sets of emergency management limited-scope performance tests (LSPTs) conducted by the Office of Independent Oversight. The first set of performance tests involved two Sandia National Laboratories (SNL) incident command decision-making teams, each consisting of the operations incident commander (IC), the deputy incident commander, a safety officer, an incident safety officer, a senior shift security officer, an operations chief, and selected support staff, including a communications coordinator located in the emergency operations center (EOC). The second set of performance tests involved two EOC teams, each consisting of an SNL emergency director (ED), an SNL admin-finance chief, Sandia Site Office (SSO) emergency manager, SSO duty officer, and selected EOC support staff, including public information personnel. In addition, the first EOC team involved the active participation of the consequence assessment team (CAT); their output was provided to the second EOC team through controller injects.

Two operational emergency scenarios were developed for the LSPTs: a facility security event involving the potential catastrophic release of hazardous chemicals, and a facility operational event that results in release of a hazardous radiological material. The LSPT scenarios, which were developed by Independent Oversight in conjunction with SNL trusted agents, were presented to the participants by the SNL trusted agents to ensure scenario validity and delivery of accurate event cues. The trusted agents also played the roles of several positions that were not otherwise staffed, such as the rescue-reconnaissance teams during both the incident command and EOC team LSPTs.

E.2 Status and Results

In an emergency, the SNL IC provides initial direction and control of the SNL emergency response. Depending upon the nature and severity of the event, the IC is supported at the event scene by a number of organizations, including the Kirtland Air Force Base (KAFB) Fire Department, SNL security, and the SNL rescue-reconnaissance team. The IC is responsible for command and control of the event scene and for making key decisions regarding the safety of emergency responders, event classification, protective actions for site workers, and protective action recommendations (PARs) for offsite populations before the EOC is activated. After the EOC is activated, the ED assumes responsibility for overall response. Key ED responsibilities are to verify categorization, classification, and protective actions made by the IC; perform event classification and PARs if the IC is unavailable; and review and approve offsite notifications. CAT members in the EOC support both the IC on scene and the EOC by identifying areas that could be affected by the hazardous material release.

During the April 2005 Independent Oversight inspection, incident command teams, EOC teams, and CAT personnel performed many initial response actions effectively and demonstrated improved overall response capability since the 2003 inspection. However, weaknesses in training, procedures, and processes hampered emergency responders' ability to consistently and accurately classify events, apply protective actions for site workers, make timely and accurate notifications, and develop useful assessments of event consequences. This 2006 inspection found that revisions to procedures and processes have improved the ability of the incident command and EOC teams to complete time-critical notifications. Additionally, improvements in the CAT and in emergency public information have resulted in improved performance of the emergency responders. However, because not all ERO members have attended drills intended to develop proficiency in applying newly-revised SNL processes and procedures, and because there are some

inconsistencies in procedure application, inconsistent ERO performance was observed.

E.2.1 Incident Command Teams

SNL has taken effective corrective actions to rectify procedure and process weaknesses that previously impaired the ability of communication coordinators to make timely and accurate notifications to offsite agencies, site workers, and evacuation teams. During the LSPTs, ICs effectively communicated categorization, classification, and protective action information to the communication coordinators, resulting in timely notifications. When communicating categorization/classification and protective action information, the ICs and communication coordinators utilized repeat-backs to ensure accuracy. Program changes have been mostly effective in addressing weaknesses in ICs' understanding of the application of protective actions for site workers within the designated hot zones and protective action zones, resulting in improved responder performance. In most cases, ICs demonstrated correct application of improved protective action plans and guides.

SNL ICs consistently demonstrated the ability to establish a well-organized command post. After arriving at the scene, responders donned position-identifying vests, were briefed by the IC, and established a responder accountability system. The safety officer, incident safety officer, and operations chiefs utilized position-specific checklists to execute their responsibilities in a timely manner. The IC support team provided timely, accurate recommendations on response activities, such as requesting the support of KAFB resources and relocation of the command post based on a possible wind shift associated with the time of day. Furthermore, SNL improved the response vehicles over the past year by installing a roll-out workstation to provide workspace for the IC, operations chief, and safety officer.

The primary area of performance weakness noted during the LSPTs was in the formulation of protective actions. Neither incident command team completed the protective action plans in the manner specified by emergency preparedness implementing procedure (EPIP)-600, "Protective Action and Consequence Assessment," and the SNL Emergency Action Level (EAL) and Protective Action Plan Methodology document. These documents specify that the protective action plan be completed as part of the protective action decision-making process; however, in all cases the protective action plan was not filled out. Additionally, the ICs did not directly reference the sheltering and evacuation work aid when developing protective actions, resulting in some non-conservative protective actions and PARs. Examples of shortfalls in procedure implementation include:

- One IC selected shelter-in-place as the protective action and PAR for a suspicious package that was not yet identified as a credible threat, whereas the sheltering and evacuation work aid indicated that if a release is anticipated but is not imminent, facilities within the isolation zone should be evacuated. In addition, after the device was considered credible and PARs were implemented, both ICs selected shelter-in-place as the PAR for a related isolation zone that exceeded the site boundary, even though the PAR for the affected offsite zones should have been evacuation.

- During response to a suspicious package, the IC teams responded inconsistently due to conflicting guidance between standard operating guide (SOG)-2104, "Suspicious Package," and the event-classification EPIP. One IC demonstrated conservative decision-making by declaring a General Emergency after he determined that the item presented a credible threat. The second IC did not classify the event until the device exploded, delaying the issuance of PARs to offsite authorities.

- In response to a fire alarm at a reactor facility, one IC selected a downwind location for a command post. When additional information became available during transit to the selected location that identified the manual fire alarm actuation as a response to a dropped fuel cask containing an irradiated fuel element, the IC did not re-evaluate the location of the command post. In accordance with the SOG for a hazardous material incident, the IC should identify a responder staging area that is close enough to the incident scene to observe but located in the cold zone, upwind from the scene.

- During the initial response to a dropped fuel cask at a reactor facility that resulted in an evacuation of the facility, neither IC categorized the event as an operational emergency in accordance with the categorization and classification EPIP.

Because the incident command team and EOC team performances shared some common weaknesses,

these incident command team performance weaknesses are included in Finding #4, which is discussed in the following section.

A final potential program weakness identified during the incident command LSPTs is that the IC's use of the CAT to assist in making initial protective actions decisions is not an institutionalized process. The CAT supervisor maintains an office in the EOC and carries a laptop that includes timely initial assessment software, thus allowing response from off site. During the LSPTs, the ICs delayed decision-making while attempting to contact the CAT supervisor for plume data using actual meteorological conditions. Although this practice did not significantly delay the evaluation of the protective actions, the ICs indicated that they would adjust their protective actions based on feedback from the CAT member. The process of using a CAT member's timely initial assessment to revise the protective action plan specified by the EAL is not described in the SNL emergency plan or supporting response procedures. In addition, there are no controls on this practice that determine when the IC can use the CAT information to reduce the protective action zone, how long the IC should delay making a categorization/classification/protective action determination when the CAT member is not immediately available, or what distance requirements or other constraints must be followed by a CAT member who is on call. This lack of controls could reduce the overall appropriateness and effectiveness of the initial protective actions and PARs.

To summarize, during LSPTs, ICs demonstrated improved response since the 2005 Independent Oversight inspection. ICs effectively communicated categorization, classification, and protective action information to the communication coordinators, resulting in timely notifications. ICs consistently demonstrated the ability to establish a well organized command post. SNL has also improved the vehicle equipment to provide workspace for key incident command post personnel. However, weaknesses in implementing SNL protective action plans and using the sheltering and evacuation work aid resulted in some non-conservative protective actions and PARs.

E.2.2 EOC Teams

Corrective actions taken to ensure the adequacy of decisions made by the ED regarding event categorization/classification, protective actions, and notifications were mostly effective in improving the response of the EOC team. The EDs were aware of and executed their responsibilities regarding categorization, classification, protective actions, and PARs during periods when the IC was not available or requested assistance. In addition, SNL improved response procedures and checklists to better define EOC team roles and responsibilities, resulting in improved command and control by the EDs.

SSO emergency managers actively participated in the categorization, classification, and protective action decision-making processes and provided valuable technical advice to the ED during the event. During one LSPT, the SSO emergency manager was instrumental in the ED's decision to make the proper classification determination regarding a credible explosive device. In all cases, the SSO emergency manager provided technical and emergency-management-related feedback to the ED that assisted in the categorization, classification, and protective action decision-making process.

Some weaknesses remain in the EOC team's ability to ensure the adequacy of event categorization and protective actions. Although protective action plans have been substantially improved and guidance on what actions should be taken within the isolation zone and protective action zone has been developed, implementation of these guidance documents did not result in consistent, conservative EOC decisions during the LSPTs. Similar to the performance of the ICs, neither EOC team implemented the protective action plans in the manner specified by EPIP-600 and the EAL and Protective Action Plan Methodology document. Additionally, neither EOC team directly referenced the sheltering and evacuation work aid when developing protective actions, resulting in some non-conservative protective actions and PARs. Additionally, the SNL EDs demonstrated inconsistent command and control. Examples of performance shortfalls include:

- During a simulated fuel damage event at a reactor facility, the ED, SSO emergency manager, and admin-finance chief appropriately agreed that the proper classification and protective action distance were a General Emergency and 16,300 feet, respectively. The notification was erroneously completed by the admin-finance chief using a protective action distance of 10,000 feet, and the ED signed the offsite notification form without verifying the accuracy of the offsite notification, resulting in a non-conservative PAR.

- One ED implemented overly-conservative protective actions and PARs while responding

to a suspicious package and selected evacuation for all personnel within a 15,000-foot protective action zone, which included five Albuquerque fire zones, when only 5,270 feet (the isolation zone) was required by the sheltering and evacuation work aid.

- One ED did not take action to select protective actions, thereby requiring the EOC communication coordinators and the EOC coordinator to develop the PARs. Additionally, this ED never approved the transmission of any of the notification forms by signature or formal verbal approval during either of the LSPT scenarios; the communication coordinators transmitted the form assuming that a verbal approval had been issued.

- During the initial response to a dropped fuel cask at a reactor facility that resulted in evacuation of the facility, neither ED verified that the IC should have categorized the event as an operational emergency.

- One ED selected shelter-in-place as the protective action and PAR for a suspicious package that had not yet been identified as a credible threat, whereas the sheltering and evacuation work aid indicated that if release is anticipated but is not imminent, facilities within the isolation zone should be evacuated.

The weaknesses in utilizing SNL protective action plans and the sheltering and evacuation work aid can be largely attributed to the fact that they had been recently revised. Classroom training for the protective action plan revisions was completed in early May 2006, and only one of the evaluated EOC team leaders had completed any drills or exercises associated with these changes. The pace and effects of training in the new processes are discussed in more detail in Appendix D.

Finding #4: During LSPTs, the SNL incident command and EOC teams did not implement protective action plans, as specified by EPIP-600, "Protective Action and Consequence Assessment," and DOE Order 151.1B.

Overall, the CAT demonstrated improved ability to provide useable data to the ED during the LSPTs. In one of the LSPTs that involved a potential chemical release, the CAT provided a complete timely initial assessment that included a suggested revision to the protective action plan and an EAL recommendation. This timely initial assessment corrected an error made in the EOC regarding classification and the protective action zone. However, during another scenario, CAT personnel had difficulty in analyzing the consequences of a radiological release. At the termination point, which was well beyond the point at which the ED had classified the event, determined protective actions, and approved the issuance of offsite notifications, CAT personnel had not yet developed a timely initial assessment of the selected protective action plan based on more realistic meteorological data. Therefore, consequence assessment was not timely for this scenario and was not appropriately integrated with the event classification and protective action process. The Independent Oversight team performed additional subsequent performance testing using similar types of events and objectives to determine the basis for the CAT personnel's performance inconsistencies. During these tests, CAT personnel were able to develop complete timely initial assessments for both radiological and chemical source terms. The Independent Oversight team concluded that inconsistencies in the results of the various CAT performance tests resulted primarily from the fact that CAT personnel had not been given all the tools, procedures, and associated training necessary for handling a radiological release that consists of an isotopic mixture. The timely-initial-assessment tool for radiological events has not yet been implemented, and the supporting procedures and training for how to assess a mixed-isotope radiological release are expert-based. In addition, there is currently no checklist or procedure that addresses the method for locating source term information and determining the isotope that presents the greatest hazard. The absence of guidance and weaknesses in consequence assessment tools resulted in delays in developing the timely initial assessment during one performance test; this is discussed in more detail in Section C.2.1 of this report and reflected in Finding #1.

During the LSPTs, the emergency public information (EPI) cadre demonstrated their proficiency in performing many important public information functions. The EPI cadre kept the SSO emergency manager, ED, SSO emergency response duty officer, and DOE Headquarters apprised of media interest and concerns, followed their procedures, and recognized the urgency of releasing accurate and timely information to the public and employees. However, inconsistent performance was observed regarding the actual release time and content of news releases, as well as the

decision to activate the joint information center (JIC). Additionally, the initial employee messages were mostly accurate but were not released in accordance with the ten-minute goal of the SNL EPI plan. Examples of EPI-related performance weaknesses include:

- In two of the LSPTs, the initial news release failed to meet the one-hour time requirement, and one of the two was inaccurate.

- In one instance, the initial news release was late due to a "hold" placed on the draft by the ED; in the second instance, the EPI cadre held the release pending additional emergency details. The latter news release also contained inappropriate information regarding SNL-transmitted PARs; however, the ED indicated that he would not have approved the news release for transmission.

- The SSO public affairs officer (PAO) activated the JIC immediately upon classification of a General Emergency in two of the LSPTs but did not activate the JIC when required during the other two LSPTs. During one scenario, the SSO PAO did not think it appropriate to activate the JIC at the declaration of a General Emergency, as required by the EPI plan. During the next scenario, the same SSO PAO appropriately sent EPI personnel off base to the JIC to deal with media before a potential base lockdown but did not recommend activation of the JIC to the ED.

- During all LSPTs, SNL's goal of informing employees within ten minutes was missed, in most cases by a substantial margin. All of the messages contained the appropriate emergency information; however, one message did not detail the evacuation areas for employees.

Finding #5: During LSPTs, the EPI cadre did not consistently provide accurate and timely information to site workers, the news media, and the public, as required by the SNL/SSO EPI plan and DOE Order 151.1B.

Appendices D and F provide additional information on PAO qualification issues.

To summarize, during LSPTs, EDs were aware of and executed their responsibilities regarding classification, protective actions, and PARs during periods when the IC requested assistance or was not available. SSO emergency managers actively participated in the categorization, classification, and protective action decision-making processes and provided valuable technical advice to the ED during the event. Additionally, the CAT provided a complete timely initial assessment and EAL recommendation for one event that resulted in correcting an error made in the EOC regarding classification and the protective action zone for a potential chemical release. Furthermore, the EPI cadre effectively performed many of its important response functions in keeping EOC decision-makers apprised of media interest and concerns and was aware of the need for issuing accurate and timely news releases. However, weaknesses in the EOC teams' implementation of SNL protective action plans and the sheltering and evacuation work aid resulted in some non-conservative protective actions and PARs. Inconsistencies were observed in EPI staff performance regarding the release time and content of news releases and JIC activation decisions. Finally, the LSPTs indicated that the current method for performing timely initial assessments of radiological mixtures did not consistently produce timely information for the ED's use in decision-making. There is currently no checklist or procedure that addresses the method for locating source term information and determining the isotope within the mixture that presents the greatest hazard; the lack of this guidance resulted in delays in developing the timely initial assessment during one performance test.

E.3 Conclusions

During LSPTs, ICs and EDs demonstrated improved response when compared to performance during the 2005 inspection. ICs and EDs effectively executed their responsibilities for determining classification, protective actions, and PARs. Improvements in timely decision-making by the ICs and EDs and upgrades in EOC communications center staffing, procedures, and processes led in turn to an increase in the timeliness and accuracy of onsite and offsite notifications. EOC staff also demonstrated an improved ability to support the EDs, and the SSO emergency managers actively participated in the decision-making processes and provided valuable technical advice to the ED. During one event, the CAT effectively supported the EDs by providing an initial assessment and EAL recommendation for one event that resulted in correcting an error made in the EOC regarding classification and the protective action zone for a potential chemical

release. However, weaknesses in the implementation of the protective action plans and the sheltering and evacuation work aid resulted in designation of some non-conservative protective actions and PARs by the ICs and EDs. Finally, the LSPTs indicated that current consequence assessment tools, procedures, and training for radiological mixtures do not provide the technical information needed to consistently perform timely initial consequence assessments.

E.4 Rating

A rating of NEEDS IMPROVEMENT is assigned to the area of SSO and SNL emergency response decision-making.

E.5 Opportunities for Improvement

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

- Consider revising the IC checklist to include guidance in agreement with SOG-2102, "Hazardous Materials Incident," on selection of an initial staging/command post area for all events, including fire.

- If the IC is expected to utilize consequence assessment information for initial decision-making, consider developing specific procedural guidance for the CAT member who is on call to perform timely initial assessments for the IC to include:

  – Requirement to maintain fitness for duty during the on-call assignment

  – Allowable response time (e.g., how soon the on-call member must respond) so that on-call members can ensure that they are near a telephone and have the duty laptop available

  – What type of validation of the timely initial assessment the IC must perform before using the data to reduce the isolation zone and protective action zone

  – How long the IC can delay categorization, classification, and issuance of protective actions while waiting for the on-duty CAT member to respond.

- Consider developing a requirement that EOC personnel validate the protective action plan form against the notification form before the ED signs the notification form. Currently, this verification is performed only by the IC, using repeat-back communications.

- Enhance the consequence assessment output products. Specific actions to consider include:

  – Preload site-specific source term data into the dispersion model programs to enable a timely initial assessment that uses current weather conditions while obtaining other event-specific data to support source term refinement.

  – Evaluate consequence assessment tools and ensure that CAT personnel have all required consequence assessment tools needed to conduct continuous, ongoing consequence assessments during an emergency event.

  – Revise CAT procedures to ensure the use of field measurements instead of computer modeling outputs when recommending reduction of protective action distances.

  – Perform drills with the CAT and the field monitoring team to ensure integration of activities (e.g., using modeling output data to determine where field monitoring team should be deployed, back-calculating the source term using field monitoring results).

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

APPENDIX F
READINESS ASSURANCE

F.1 Introduction

Emergency management program administration includes elements of readiness assurance as well as performance of some planning and response functions. Readiness assurance activities are intended to ensure that the emergency management program plans, procedures, and resources of the Sandia Site Office (SSO) and Sandia National Laboratories (SNL) will facilitate an effective response to an emergency at the site. Readiness assurance activities include implementation of a coordinated schedule of program evaluations, appraisals, and assessments. Key elements of the readiness assurance program include the active involvement of National Nuclear Security Administration (NNSA) line organizations in monitoring program effectiveness, implementing self-assessment programs, and ensuring that timely corrective actions are taken to address 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 April 2005 inspection conducted by the Office of Independent Oversight, this inspection examined the processes by which SSO provides guidance and direction to and maintains operational awareness of the SNL emergency management program. The inspection included a review of SSO emergency management program assessment processes and selected aspects of the SSO training and qualification program for emergency response organization (ERO) staff. Additionally, the inspection included reviews of the SNL emergency management self-assessment and issues management processes and the status of actions taken to address findings identified in the previous Independent Oversight inspection.

F.2 Status and Results

F.2.1 NNSA/SSO Feedback and Improvement

The April 2005 inspection determined that SSO had added an experienced emergency management program manager and had implemented a comprehensive emergency plan and associated procedures that addressed oversight of the SNL emergency management program and SSO response to site emergency events. SSO was maintaining effective oversight and awareness of the SNL emergency management program, and SSO had assessed program performance through review of the SNL self-assessment and corrective action processes and performance of its own formal assessments. SSO was also tracking and verifying the status of corrective actions resulting from the 2003 Independent Oversight inspection. However, the inspection team identified several areas in which SSO had either incorrectly concurred on corrective action closeout by SNL or had inappropriately prioritized corrective action efforts. This 2006 inspection found that while the SSO ERO training and qualification program and corrective action management process require additional effort to ensure effective implementation in accordance with SSO requirements, SSO has continued to improve its ability to provide line management oversight and direction to the SNL emergency management program.

With few exceptions, SSO has an emergency plan and associated procedures in place that adequately govern the roles, responsibilities, and processes for oversight and implementation of the emergency management program at SNL. SSO recently updated their emergency plan to reflect changes resulting from Department of Energy (DOE) Order 151.1C; this is well in advance of the November 2006 deadline. SSO has also implemented a procedure to facilitate the formal review and approval of SNL emergency management documents, and the procedure was used to

approve two emergency planning hazards assessments. SSO emergency management program assessment activities are governed by procedures that establish clear requirements for formally documenting oversight and self-assessment activities, tracking assessment results, and closing findings. SSO has also modified the SNL contract to include DOE Orders 151.1C and 226.1; SSO is on an aggressive path to implement DOE Order 226.1 and has drafted a risk-based oversight procedure with plans to finalize the procedure and begin implementation by the required September deadline.

Weaknesses were noted in some of the documents. For example, the emergency plan notes that no SSO personnel are designated to fill the roles of the on-scene coordinator or the senior Federal official, even though an emergency that would fall within the scope of the National Contingency Plan or National Response Plan is possible. Numerous inconsistencies exist among the SSO emergency response procedure and the associated response checklists. For example, the responsibilities section of the procedure states that ensuring the accuracy of the event categorization and classification is a responsibility of the SSO emergency manager; however, this responsibility does not appear in the procedure section for the SSO emergency manager or in the SSO emergency manager checklist. Further, the procedure section states that a second SSO emergency response duty officer can be called in to assist if necessary, but this task is not included in the SSO emergency response duty officer checklist. Additionally, the procedure lacks any provisions for carrying out emergency public information responsibilities if the lone SSO public affairs officer (PAO) is not available.

SSO is actively engaged in line oversight of the SNL emergency management program, and SSO receives considerable support from the NNSA Office of Emergency Management Implementation (NA-43). SSO senior management demonstrated their commitment to resolving emergency management issues by establishing a working group of SSO subject matter experts and an executive steering committee of SSO senior managers to assist the SSO emergency management program manager in closing the findings from the previous Independent Oversight inspection and improving the overall emergency management program. The SSO emergency management program manager continues to follow the status and performance of the SNL emergency management program through frequent communications and interactions with the responsible SNL manager, including bi-weekly meetings, review of significant emergency management program documents, programmatic assessments, and frequent observation of SNL drills and exercises. NA-43 maintains awareness of the status of the SNL program and is actively involved in supporting the SSO emergency management program manager by participating in frequent discussions, providing assistance with assessments, supplying subcontractor support to SSO, and evaluating annual exercises.

SSO is also using a revised SNL performance evaluation plan (PEP) effectively to focus SNL management attention on improving the emergency management program. The SNL PEP encompasses four separate performance criteria: performance objectives with a fixed fee, performance incentives with an award fee, an award term that provides for a one-year contract extension for an overall rating of "Outstanding," and award term incentives. SSO denied SNL the award term portion of their performance criteria in fiscal year (FY) 2005 due in part to SNL not meeting SSO's expectations for the emergency management program. SSO also added an emergency management performance incentive to the SNL PEP for FY 2006 with specific performance targets and due dates focusing on completing the FY 2006 elements of the SNL emergency management project and staffing plans, meeting the Independent Oversight corrective action plan milestones, and training three new emergency directors. SSO senior management frequently interacts with SNL management regarding the status of the SNL emergency management program and provides formal feedback to SNL on a quarterly basis indicating areas of concern about the performance to date. For example, SSO's FY 2006 first quarter input to SNL reflected that the first performance target for emergency management was not completed on schedule, the deliverable provided by SNL was incomplete, and timely completion of the other four performance targets was in jeopardy.

Weaknesses were noted in the timeliness of assessments and transmittal of results. The SSO emergency management program manager is completing programmatic assessments of SNL on a yearly basis; however, five program elements remain to be assessed in FY 2006 in order to meet the three-year assessment cycle requirement. An assessment to address these five elements has not been scheduled, and SSO has asked NA-43 for assistance in determining how to request an exemption from the assessment cycle requirement. SSO and NA-43 personnel participated in the evaluation of the 2005 SNL annual exercise conducted in October 2005; however, the SSO report

detailing concerns identified by SSO and NA-43 regarding this exercise was not provided to SNL until after this inspection began.

SSO has instituted a training and qualification program for their ERO positions that includes tracking completed qualification requirements and a proficiency requirement to complete a drill before serving on the ERO. However, the implementation of the program is still immature, and numerous weaknesses were noted. Although the qualification cards specify requirements for formal training, self-study, practical factors, and annual refresher training, documentation is extremely limited in describing how the ERO training and qualification program is administered or the relationship between the qualification standards and the qualification cards. SSO also developed a training course that addresses specific SSO ERO oversight and performance roles; however, the training course is not consistent with the duties outlined in the SSO emergency response procedure and emergency plan. For example, according to the course materials, approving offsite notification forms is a duty for the emergency manager, but this duty is not addressed in either the SSO emergency response procedure or emergency plan. In addition, the emergency manager approval authorities listed in the training course differ from the list in the emergency plan.

Furthermore, there is only one PAO in the SSO ERO training and qualification program. In one of the two sets of emergency operations center (EOC) limited-scope performance tests (LSPTs) conducted as part of this inspection, SSO relied on an NNSA Service Center PAO who is not part of the SSO ERO and has not completed the SSO training and qualification requirements. This assignment is in conflict with the SSO emergency plan, which requires SSO personnel to complete the SSO ERO qualification requirements prior to serving on the SSO ERO. In addition, although the SSO emergency plan states that the NNSA Service Center can provide PAOs as additional staffing for a joint information center, the plan does not state that NNSA Service Center personnel can serve in the EOC in lieu of the SSO PAO. No one from the NNSA Service Center is on the SSO ERO roster or has completed the SSO ERO qualification requirements for the PAO position in the EOC. Despite the weaknesses in the documentation and implementation of the SSO ERO training and qualification program, the emergency managers and emergency response duty officers demonstrated knowledge of their roles and responsibilities during the LSPTs. However, the NNSA Service Center PAO did not follow established SSO procedures and policies during the LSPTs, as noted in Appendices D and E. This can be at least partly attributed to this individual not being "qualified" in the position according to SSO standards.

Finding #6: SSO has not ensured that a sufficient number of trained emergency response personnel are available for the SSO PAO EOC position, as required by DOE Order 151.1B.

While corrective actions from the previous Independent Oversight inspection have received detailed attention as discussed previously, corrective actions for findings and observations regarding the SNL program identified in assessments and exercises by SSO have not received a commensurate level of attention. SSO actively tracks all corrective actions from the previous Independent Oversight inspection and verifies the completion of the actions. SSO has modified the verification process to include the use of subject matter experts to verify the adequacy of SNL corrective actions in the verification reviews, and verification files are available for each of the completed actions. SSO has also instituted a validation step to ensure the effectiveness of corrective actions after all actions that are associated with a specific finding are closed. Additionally, SSO conducted a self-assessment in August 2005 and is tracking the completion of the corrective actions in the SSO corrective action tracking system. However, SSO has not consistently tracked the completion of corrective actions in response to SSO assessments of the SNL emergency management program. For example, SSO is not tracking the FY 2005 SNL assessment in either of the SSO corrective action tracking systems, although the SSO procedure for conducting environment, safety, and health (ES&H) assessments (in place at the time of the 2005 SSO assessment) and its successor procedure for managing SSO issues require that all findings resulting from SSO assessments of SNL be tracked to closure. While the two FY 2004 assessments of SNL are in one of the SSO corrective action tracking systems, SSO has not followed up on the SNL corrective actions that range from seven months to nearly two years overdue. In addition, SSO does not track the development or completion of corrective actions to address unmet objectives from the SNL annual emergency management exercises. As a result, some important weaknesses identified by SSO are not being addressed, integrated into the overall corrective action process, and corrected in a timely manner.

Finding #7: The implementation of the SSO corrective action management process does not ensure that weaknesses and exercise findings identified by SSO are resolved in a timely manner by SNL, as required by DOE Order 151.1B.

To summarize, SSO has refined their emergency plan and associated procedures, including updating the emergency plan to incorporate DOE Order 151.1C and pursuing an aggressive path to implement DOE Order 226.1. SSO also demonstrates a strong management commitment to resolving emergency management issues, and SSO has implemented changes in the SNL PEP that are focusing the attention of SNL managers on improving the SNL emergency management program. In addition, SSO has instituted a training and qualification program for their ERO positions. However, several weaknesses were noted in the SSO emergency management program. The SSO emergency response procedure contains numerous inconsistencies and does not indicate how emergency public information responsibilities are to be performed if an SSO PAO is not available. While the SSO emergency management program manager has been completing programmatic assessments, it is uncertain whether the five program elements that remain to be assessed will be completed in FY 2006. In addition, the SSO evaluation of the 2005 SNL annual exercise, which noted concerns regarding SNL's performance, was not provided to SNL until almost seven months after the exercise was conducted. Further, implementation of the training and qualification program for the ERO members is still immature, and SSO did not have a sufficient number of trained and qualified PAO personnel to participate in the LSPTs, resulting in inconsistent performance at the PAO position. Finally, because corrective actions for findings and observations identified in programmatic assessments and exercises have received inconsistent attention, SNL has not corrected some weaknesses in a timely manner. Overall, SSO has made substantial improvements; however, newly-improved and implemented processes will need time to mature to enable SSO to demonstrate effective performance across its emergency management line oversight function.

F.2.2 SNL Feedback and Improvement

The SNL feedback and improvement area was not evaluated during the April 2005 Independent Oversight inspection. An Independent Oversight evaluation of the SNL assessment and issues management area conducted in 2003 determined that SNL was in the process of establishing a more structured approach to performing emergency management self-assessments; however, SNL lacked an issues management system to capture, track, and ensure closure of all emergency management issues, regardless of source. This shortcoming had contributed to the persistence of several longstanding weaknesses in emergency management, in part because emergency management program interests and concerns cut across functional areas and organizations. This 2006 Independent Oversight inspection found that SNL conducted an insightful analysis of the emergency management program following the 2005 inspection and has improved their ability to track issues and implement corrective actions to make program improvements, particularly for internal departmental issues. Nevertheless, SNL has not fully implemented self-assessment or issues management programs and supporting systems to address sitewide, cross-cutting issues affecting emergency management.

Following last year's Independent Oversight inspection, SNL conducted a detailed internal review of the emergency management program, focusing not only on corrective actions from the inspection but also on achieving long-term improvements in the program. The review was based on information from past internal and external assessments, and evaluation of each of the program functional areas using internal knowledge and judgment of program status. Corrective actions and improvement plans were then subjected to internal management and external peer review. The immediate result of the effort was reflected in the corrective action plan for the inspection, and early action by SNL management to reorganize the emergency management department and increase emergency management staffing and budget. Subsequently, SNL initiated efforts to address the corrective actions developed in response to the inspection and to improve the overall emergency management program (with a goal of achieving full compliance with program requirements by the end of FY 2007).

Broad actions to improve the overall emergency management program are included in the emergency management improvement project plan (EMIPP), which was initially developed and issued in November 2005. The purpose of the plan is to capture actions that are outside the corrective action plan for the Independent Oversight inspection (e.g., implementation of the newest version of DOE Order 151.1). The initial draft of the plan describes the analysis that forms the basis for the project, delineates the program's

goals, and establishes an extensive (initial) task list of improvements. A project manager and scheduler are on site and are developing a revised plan and scheduling tools to support project implementation beginning in June. SNL intends to add tasks to the plan as the program is further refined and additional items are identified. For example, SNL has conducted an evaluation of the emergency management program using the National Incident Management capability assessment support tool and included tasks resulting from this assessment in the revised plan. Completion of the improvement plan has been identified as a corporate issue and has received a high level of management attention and support to date. In addition, SSO has included the EMIPP in the site's performance evaluation plan. Sustained commitment and attention will be needed over the estimated 18-month project in order to meet its goals.

SNL is effectively implementing the corrective action plan for the findings identified during the 2005 Independent Oversight inspection, has established a rigorous verification process, and is making progress in improving the program, although some areas of weakness in corrective action implementation were noted during this inspection. Corrective actions have been closely followed and have received significant management attention, including regular briefings of responsible senior managers. As discussed above, decisions to increase staffing and funding were made expeditiously and contributed to the ability to implement corrective actions in a timely manner. Many of the corrective actions have been completed as scheduled and internally verified. Corrective action completion is verified using a rigorous, procedure-driven process that has been effective in improving the quality of the corrective actions. In a number of instances, the verification process has identified the need for additional actions, which have been subsequently completed and re-verified. Following completion of the corrective actions, SNL has continued to monitor performance and make additional changes to further improve the program, by such means as follow-up from evaluated drills. Nonetheless, some corrective actions will likely miss their completion milestones or have not been fully effective in addressing the underlying issue. For example, emergency public information corrective actions dealing with public education and establishment of an offsite joint information center are behind schedule, and during LSPTs, weaknesses were observed in utilizing plans and procedures to implement protective action plans.

An important aspect of readiness assurance is a program of self-assessments. Although high-level requirements for a self-assessment program have been established, SNL has not defined a complete, sitewide program governing emergency management assessments. Sitewide expectations for self-assessments are established in an SNL corporate process requirement document. This document, which was issued in April 2005, establishes a requirement to conduct self-assessments, and includes guidance on the type of self-assessments to be performed, areas to be assessed, and steps to plan and conduct assessments. In addition, the ES&H manual establishes a site requirement for line self-assessments of ES&H and provides further details on the implementation of those assessments. Within the ES&H and emergency management center, a framework for implementation of a formal self-assessment program has been established through an administrative operating procedure; and further, the emergency management department has supplemented this procedure with a recently developed standard operating guide that provides direction for the planning and conduct of management assessments. However, the overall framework for self-assessments of emergency management is not complete. The ES&H manual section on self-assessments, which is currently under revision to address an Independent Oversight ES&H finding, does not specifically address emergency management; and as a result, there is no clear direction for line and functional managers concerning an integrated, sitewide approach to the self-assessment of the emergency management program.

While SNL has established a framework for implementation of the self-assessment program within the emergency management department, SNL has not implemented a program for conducting those self-assessments. As noted above, an extensive review of the emergency management program was conducted following the 2005 Independent Oversight inspection. In addition, external assessments of emergency public information and consequence assessment were performed during this fiscal year to support implementation of the corrective actions from that inspection, and the emergency management department has scheduled a number of management assessments for the remainder of this fiscal year. The SNL emergency plan indicates that an annual self-assessment of the emergency management program is conducted, and the annual self-assessment has been included in the schedule in the emergency readiness assurance plans. However, SNL has not implemented a formal self-assessment program that establishes a

schedule of integrated line and emergency management functional self-assessments and a mix of formal and less formal assessments.

After an assessment or inspection identifies issues and corrective actions, SNL has several procedures, processes, and database tools to support and manage the corrective action process. However, some of the processes and tools, particularly at the institutional level, are immature and not fully integrated across the site. Institutional requirements for identifying issues and managing corrective actions are contained in the corporate requirements document for corrective action processes. The corporate requirements document describes a complete corrective action process that includes, for example, requirements for documentation, causal analysis, and verification and validation of closure. It also indicates that this process is optional for deficiencies that can be addressed by the local organization and do not result in systemic corporate deficiencies, and it references several other areas with special corrective action processes that must be followed. These special corrective action processes were given until the end of June 2006 to meet the "baseline requirements" specified in the corporate requirements document. During this inspection, some potential implementation weaknesses that may hamper timely implementation of the new process were noted. For example, differences between the corporate requirements document and the current ES&H corrective action procedure (regarding the findings that must be entered into the corporate system) require resolution before the process can be fully implemented. Similarly, differences between the emergency management department's corrective action process for self-assessments and the corporate processes must be resolved for these processes to be fully integrated. These procedures are discussed further below.

The corrective action management program (CAMP), which is the corporate process for resolving ES&H findings, is described in the ES&H manual. This program is run by the ES&H and emergency management center and is currently used to manage issues and corrective actions related to emergency management findings. CAMP is supported by the ES&H and emergency management center corrective action tracking system (CATS), which provides a database of findings and corrective actions and is used to produce the reports necessary to effectively manage the corrective actions. The findings and corrective actions in this database will be transferred to the SNL CATS as part of the implementation of the corporate corrective action process. However, although the corrective actions for the 2005 Independent Oversight inspection were used to test the newly-developed SNL CATS database, the database reporting function in this system does not yet support all needed management functions, such as development of management reports and corrective action status reports. As a result, the ES&H and emergency management center has found it necessary to continue to track the corrective actions in the center's own corrective action database.

The CAMP procedure indicates that corrective actions related to ES&H and emergency management self-assessments are to be managed in accordance with the ES&H and emergency management center's self-assessment procedure, which addresses the development of corrective action plans for findings identified during self-assessments. However, several weaknesses in integration with the new corporate-level processes were noted. For example, the self-assessment procedure does not address screening of the findings to determine whether or not any of the higher-level processes, such as corporate issues management, should apply, nor does it contain an explicit requirement for verifying corrective actions related to findings. Further, the procedure also assigns responsibility for development and follow-up of corrective action plans to the self-assessment lead subject matter expert rather than to the responsible manager.

As discussed above, SNL has effectively managed most of the actions identified in the 2005 Independent Oversight inspection. In addition, management and disposition of issues identified within the emergency management department are supported by a newly developed standard operating guide that describes the process used to identify, record, and track emergency management findings and associated corrective actions. The guide addresses findings identified during evaluated emergency preparedness drills and exercises, internal audits, self-assessments, and external inspections and assessments. The process is supported by the recently implemented CATS. Review of a number of issues identified during corrective action verification activities, evaluated drills, and follow-up from an actual emergency event indicates that although the process and database are relatively new, they have been effectively implemented to track and close identified issues. However, the standard operating guide does not include steps to determine whether or not the corporate issues management process should apply, and the guide does not screen issues consistent with the corporate requirements document. Further, findings related to internal SNL and SSO assessments

have not been addressed in a timely manner. For example, 14 of 24 corrective actions unrelated to the Independent Oversight inspection are being tracked as open and late.

SNL has begun implementing DOE Order 226.1, *Implementation of DOE Oversight Policy*, which was added to the SNL contract in March 2006, and has started to identify the corporate process requirements that comprise a comprehensive assurance system. In a letter to the SSO contracting officer, SNL indicated that implementation of the self-assessment process and the tools related to ES&H and emergency management were tied to the schedule outlined in the corrective action plan for the 2005 Independent Oversight inspection (with the majority of actions to conclude in June 2006). The letter does not address some other areas of the contractor assurance system, such as lessons learned and performance measures. And, as noted above, the corporate self-assessment process is currently being revised, and the self-assessment and corrective action processes in the emergency management department need to be reconciled with the new corporate-level processes. Further, SNL CATS requires some software modifications in order to effectively support management of the process. Finally, the SNL letter does not address the actions necessary to implement the assurance program in the line and functional organizations or to conduct activities to verify implementation. Without a comprehensive schedule and additional actions to roll out the applicable corporate requirements documents, it is unlikely that SNL will effectively implement the order by September 2006.

Finding #8: SNL has not implemented sitewide, integrated self-assessment and issues management processes for emergency management that identify and correct program weaknesses, as required by DOE Order 151.1B.

To summarize, following the 2005 Independent Oversight inspection, SNL took timely steps to assess the overall performance of the emergency management program, and prepared both a corrective action plan and a long-term improvement plan. The emergency management department also developed and executed a detailed, critical process to verify completion of the corrective actions, and has continued to use feedback and improvement activities, particularly from the drill program, to identify and implement further improvements. With some exceptions, SNL has effectively implemented the corrective actions on schedule. Additionally, the emergency management department developed a management assessment procedure and the ES&H and emergency management center implemented an effective process and supporting software for managing issues and associated corrective actions within the emergency management department. However, SNL requirements and supporting processes for a sitewide, integrated program of self-assessments are not fully implemented, and the emergency management department has not conducted formal, documented self-assessments. Finally, while SNL has taken steps to develop and implement integrated issues management processes, the process requirements and procedures are not fully integrated or implemented across the site.

F.3 Conclusions

Following last year's Independent Oversight inspection, SNL (with appropriate direction and oversight from SSO) implemented a detailed plan to address the resulting corrective actions. Both SSO and SNL senior managers have been engaged in overseeing implementation of the corrective actions and, in addition, have initiated the emergency management improvement project to continue to improve the overall performance of the site's emergency management program. The process of verification and validation of corrective action closure has been improved through increased oversight activities by SSO, supported by NNSA, and implementation of a critical verification process by SNL. With the exception of corrective actions related to emergency public information and implementation of the process for formulating protective action plans, the overall process has resulted in effective implementation of corrective actions. SSO has implemented the readiness assurance program through such activities as programmatic assessments, evaluation of annual exercises, and self-assessment of the SSO emergency management program. SNL conducted a thorough evaluation of the emergency management program in developing the 2005 corrective action plan and improvement project and has begun to utilize the drill and exercise programs to foster program improvements. SNL has nearly completed development and implementation of a sitewide corrective action tracking system, which would provide support for both SSO and SNL in tracking high-level issues. Also, SNL has implemented an effective issues management and tracking system for those issues that can be addressed within the emergency management department.

Nevertheless, a number of weaknesses diminish the effectiveness of the site's readiness assurance program. Some SSO programmatic assessments may not be completed during this fiscal year, and SSO's training and qualification program for the ERO members needs to mature in order to ensure that a sufficient number of trained, qualified personnel are available to support and oversee emergency response. SNL has not developed and implemented a sitewide, integrated self-assessment program. Additionally, the holdup in providing the NNSA and SSO evaluation of the 2005 annual exercise, coupled with weaknesses in the internal SNL evaluation of the exercise, resulted in considerable delay in addressing the identified issues. Furthermore, SSO and SNL have been less effective in tracking and correcting findings that are identified by processes other than the Independent Oversight inspection, such as programmatic assessments and exercises. Both SSO and SNL need to address the remaining readiness assurance program weaknesses and inconsistencies and permit newly-revised or implemented processes to mature so that SSO and SNL can demonstrate effectively their ability to self-identify and correct issues and promote continuous program improvement.

F.4 Ratings

A rating of NEEDS IMPROVEMENT is assigned to the area of NNSA/SSO feedback and improvement.

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

F.5 Opportunities for Improvement

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

Sandia Site Office

- Consider expanding the scope of the procedure for reviewing and approving SNL emergency management documents to include the emergency readiness assurance plan.
- Continue to enhance the ability of SSO ERO members to perform their roles during an emergency event. Specific actions to consider include:
  - Add a description of the processes used to administer the ERO training and qualification program, including the relationship between the qualification standards and qualification cards.
  - Expand the qualification status database to include refresher training and all ERO positions.
  - Revise the emergency plan, emergency response procedure, and SSO ERO training course to ensure consistency between the ERO position titles, responsibilities, duties, checklists, and the training materials.
  - Add a description to the emergency response procedure of how emergency public information responsibilities are to be performed in the EOC in the absence of a PAO.
  - Designate SSO personnel to fill the roles of the on-scene coordinator and the senior Federal official in case of an emergency that falls within the scope of the National Contingency Plan or National Response Plan.
- Enhance the effectiveness of SSO oversight processes in achieving improvements in the emergency management program. Consider taking the following actions:
  - Develop a detailed, resource-loaded assessment plan for completing the required program assessments over the three-year cycle.
  - Integrate the SSO evaluation of SNL exercises into the SNL after-action reports to promote more timely development and implementation of corrective actions.
  - Clarify the conditions for determining which findings are tracked to closure by SSO and the specific roles and responsibilities of the multiple change control boards and various Assistant Managers.

– Resolve the differences between the SSO corrective action management procedure and the SSO procedure for implementing CATS to promote a consistent corrective action process.

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- Consider the following actions to improve the effectiveness of the self-assessment program.

  – Develop an emergency management self-assessment plan and annual schedule that includes each of the applicable emergency management program functional areas, ensuring that the following are integrated and taken credit for as appropriate:

    - Areas that are tested significantly in the evaluated drill and exercise program
    - Line organization (facility-level) self-assessments
    - Emergency management assessments of line organization programs
    - Functional area self-assessments related to the emergency management program, such as emergency public information and medical
    - Internal and external audits.

  – Include a mix of formal, semi-formal, management, and independent assessments (with scope and depth tailored to strategic improvement plans) in the self-assessment program and schedule.

- Consider developing procedures and processes that specify the expectations for the conduct of the assessments.

  – Use a set of approved standards and criteria (graded to the scope and formality of the assessment).

  – Develop formal assessment plans and semi-formal checklists.

  – Emphasize the use of performance-based assessments whenever possible.

  – Separate the assessment and issues management/corrective action processes and procedures to address potential inconsistencies.

- Improve corrective action processes through consideration of the following actions.

  – Re-evaluate corporate issues management processes and requirements (for example, determining when to perform root cause analysis or when to require verification and/or validation of corrective actions and assigning the corrective action owner and responsible manager) to ensure that the processes are vertically and horizontally integrated at the laboratory.

  – Establish screening processes at appropriate levels within the laboratory to identify issues whose:

    - Program impact is low and/or corrective actions are within the Department's capabilities and thus should be addressed within the emergency management department, or
    - Program impact is moderate and/or corrective actions require support and action from the ES&H and emergency management center, and thus should be addressed within the ES&H and emergency management center, or
    - Program impact is high and/or corrective actions require sitewide (or cross-cutting) support and/or action from other divisions, centers, or departments, and thus should be addressed at the site level.

  – Reconcile the center and department issues management and corrective action processes with the division and corporate processes so that issues are assigned to the proper issues management and corrective action system and appropriately addressed.

  – Establish and implement databases and supporting software (at each appropriate level) to support effective management and reporting of issues and their associated corrective actions.

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