Independent Oversight Review of the Emergency Response Organization at the Los Alamos National Laboratory

April 2012

Office of Safety and Emergency Management Evaluations
Office of Enforcement and Oversight
Office of Health, Safety and Security
U.S. Department of Energy

Table of Contents

Acronyms

CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EMT	Emergency Management Team
EOC	Emergency Operations Center
EOD	Emergency Operations Division
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
EPIP	Emergency Plan Implementing Procedure
ERO	Emergency Response Organization
ETSC	Emergency Technical Support Center
F	Finding
FMT	Field Monitoring Team
HSS	Office of Health, Safety and Security
IC	Incident Commander
ICS	Incident Command Structure
JIC	Joint Information Center
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
NIMS	National Incident Management System
NNSA	National Nuclear Security Administration
NRP	National Response Plan
OFI	Opportunity for Improvement
SME	Subject Matter Expert
SOP	Standard Operating Procedure

Independent Oversight Review of the
Emergency Response Organization at the
Los Alamos National Laboratory

1.0 PURPOSE

The Office of Enforcement and Oversight (Independent Oversight) within the Office of Health, Safety and Security (HSS), conducted an independent review of the Los Alamos National Laboratory (LANL) emergency response organization (ERO) program. The purpose of the review was to evaluate the processes for establishing and maintaining an ERO that has overall responsibility for initial and ongoing emergency response and mitigation. The review scope was coordinated with the Los Alamos Site Office (LASO), and was conducted February 7-9, 2012.

2.0 SCOPE

The scope of this review included the plans, procedures, and processes used by LANL to establish and maintain an ERO consistent with the requirements of U.S. Department of Energy (DOE) Order 151.1C, *Comprehensive Emergency Management System.* Independent Oversight evaluated the site against these four objectives drawn from DOE O 151.1C:

1) LANL has established and maintained an ERO with overall responsibility for initial and ongoing emergency response and consequence mitigation and determination, for the site and required facilities.
2) The LANL ERO has effective control mechanisms at the scene of an event/incident and integrates ERO activities with those of local agencies and organizations that provide onsite response services.
3) LANL has an adequate number of experienced and trained personnel, including designated alternates, available on demand for timely and effective performance of ERO functions.
4) A readiness assurance program provides assurances that emergency plans, implementing procedures, and resources are adequate and sufficiently maintained, exercised, and evaluated, and that improvements are made in response to identified needs.

Independent Oversight used the criteria and lines of inquiry shown in Appendix C, Review Plan, to determine whether these objectives are being met. The lines of inquiry were developed using the requirements contained in DOE Order 151.1C and the associated DOE emergency management guides. Independent Oversight's review was accomplished by reviewing the documentation that establishes and governs the LANL emergency management program processes (e.g., emergency plans, procedures, checklists, and records), interviewing key personnel, and performing walkdowns of facilities and equipment.

3.0 BACKGROUND

DOE Order 151.1C requires that an ERO, a structured organization with overall responsibility for initial and ongoing emergency response and mitigation, be established for each facility/site. The ERO must establish effective control at the scene of an event/incident and integrate ERO activities with those of local agencies and organizations that provide onsite response services. An adequate number of experienced and trained personnel, including designated alternates, must be available on demand for timely and effective performance of ERO functions. The Order further states that control at the

event/incident scene must be consistent with the National Incident Management System's (NIMS) Incident Command System (ICS).

DOE Order 151.1C further requires that an emergency management readiness assurance program must be established for assuring that emergency plans, implementing procedures, and resources are adequate by ensuring that they are sufficiently maintained, exercised, and evaluated and that appropriate and timely improvements are made in response to needs identified through coordinated and comprehensive emergency planning, resource allocation, training and drills, exercises, and evaluations.

DOE Emergency Management Guide 151.1-4, *Response Elements,* describes approaches for achieving ERO requirements. The guidance addresses the ERO at the facility level, site level, and activity level. Importantly, the guidance clarifies that all personnel who may be needed to perform duties, beyond those specified by 29 Code of Federal Regulations (CFR) 1910.120 for the first responder awareness level, are to be members of the ERO. In addition to the emergency management team (EMT) in the site emergency operations center (EOC), these include personnel who perform emergency response functions, such as fire fighting, developing and distributing emergency public information (EPI), and performing consequence assessment in the EOC and the field. Further, each facility on a multi-facility site should have a facility-level ERO, as necessary, to interface with and join the site-level ERO in emergency events. Facility-level ERO members may have such responsibilities as implementing protective actions, securing ventilation systems or other systems, and interfacing with the incident commander (IC) and/or the EMT. Prescribed maintenance of the ERO consists of:

- Establishing a method, such as a duty-cycle or static roster, to ensure that qualified personnel are available on demand and properly assigned
- Ensuring that sufficient trained personnel for initial and ongoing response, including designated alternates, are candidates for call-up in each functional area ("three deep" is recommended for each ERO position)
- Periodically reviewing ERO rosters to verify individual qualifications for specified positions, current qualification dates, required numbers of primary and alternate personnel for all positions, correct work and home phone numbers, pager numbers, addresses, commute time from home to assigned response facility, and other contact information
- Periodically reviewing and updating ERO personnel qualifications
- Periodically testing the communication systems used to activate both on-shift and off-shift emergency response.

DOE Emergency Management Guide 151.1-3, *Programmatic Elements,* describes approaches for meeting ERO training and drill requirements and readiness assurance requirements. This guide suggests that the ERO training and drills program should:

- Establish initial training and annual refresher training based on the emergency plan and implementing procedures for the emergency management program.
- Develop and maintain a plan describing and documenting the training and drills program.
- Establish a comprehensive and coordinated program of training and drills for the identified ERO, both primary and alternate members.
- Establish training requirements for each position in the facility/site- or activity-specific ERO.
- Address each response element of the facility/site or activity emergency management program in the training program.
- Provide for demonstrations of proficiency after training for ERO positions.

- Include practical, hands-on training and use of realistic situations and scenarios for drills and ensure that they are coordinated with site groups, such as health physicists, industrial hygienists, medical, public affairs, and security.
- Provide refresher training that includes details of program changes and lessons learned from actual events, exercises, DOE and industry operating experience, and program evaluations.

A 2007 Independent Oversight inspection of the LANL emergency management program did not perform an ERO program review, but identified related weaknesses in the ERO training and drill program and the EPI program. Independent Oversight performed a follow-up of corrective actions for these 2007 weaknesses in 2010 and confirmed that progress was being made to strengthen these areas, but they remained incomplete. Furthermore, the 2010 review provided additional recommendations to ensure that the designated ERO membership was complete. Specifically, Independent Oversight identified LASO, security, initial consequence assessment, field monitoring, emergency public information, and facility-level responders' positions as not designated as ERO members or were not on the ERO duty roster.

4.0 RESULTS

Objective 1: LANL has established and maintained an ERO with overall responsibility for initial and ongoing emergency response and consequence mitigation and determination, for the site and required facilities.

Independent Oversight reviewed LANL's processes for establishing and maintaining an ERO using comprehensive and integrated plans and procedures. The review focused on whether the ERO structure and functions to be implemented by facilities and the site ensure that LANL is fully capable of responding to the spectrum of potential emergencies affecting the site, including appropriate definition of roles, responsibilities, authorities, and duties of individuals assigned to the ERO.

LANL operates under the policies, procedures, and instructions outlined in its Institutional Requirements Center. These include PD1200, *Emergency Management Program Description*, which is derived from the Laboratory Governing Policies in the section on Management Systems and institutes the emergency management framework found in EO-DO-PLAN-100, *Los Alamos National Laboratory and Los Alamos Site Office Hazardous Material Program Emergency Plan*, often referred to as the emergency plan. Furthermore, PD1200 establishes the overarching requirements for development and maintenance of the emergency management program. The overall concept specifies a single ERO for the entire site and individual facility EROs for nuclear facilities. The sitewide ERO comprises positions that are required during an emergency, and the ERO positions at the EOC are specifically designated in the emergency plan implementing procedures (EPIPs). Other key response elements of the ERO, such as fire fighting, hazardous materials (HAZMAT) response, radiation protection, industrial hygiene, EPI, and protective force, rely on their own standard operating procedures (SOPs).

LANL has established a site ERO but has not included all of the disciplines needed for the initial and ongoing response to an emergency. The emergency plan defines the LANL ERO as the EMT, the emergency technical support center (ETSC) staff, the EOC staff, the IC and principal members of the field response staff, and other positions described in EPIPs. LANL is also adding the joint information center (JIC) and field monitoring team (FMT) functions to the ERO definition. However, not all needed positions are clearly designated as emergency personnel so they can make a quick and effective transition from a normal operational organization to an ERO. Several important positions that are necessary to accomplish site-level ERO functions, such as facility operations, radiation protection, industrial hygiene, fire fighting, security, protective force, and operations representatives are not included as members of the ERO. Furthermore, these ERO functions are not discussed in the Institutional Requirements Center in PD1200 or P313, *Roles, Responsibilities, Authorities, and Accountability*. Appropriately, the Institutional Requirements Center defines the LANL ERO functions performed by Emergency Operations Division (EOD) personnel. However, because there is no operating structure for the matrix organization approach used to staff other essential ERO functions, the responsibility and accountability for staffing and maintaining ERO assignments with personnel who must be provided from outside the EOD remain unclear. (See Opportunities for Improvement, **OFI-1**.) In addition, some critical EOC positions (e.g., dispersion modeling staff, FMT coordination, power and utilities, security, public affairs, and environment, safety and health) are performed by subject matter experts (SMEs) who are not considered to be part of the ERO and thus do not have to meet the associated staffing, training, and drill participation requirements. A one-to-one correspondence between ERO positions and emergency response functions is not always necessary, but once the emergency response functional areas are clearly established and the individual tasks within the areas are identified, the personnel assigned to carry out those tasks should be identified as ERO members. The current approach to ERO membership contradicts requirements found in DOE Order 151.1C and further guidance in DOE Guide 151.1-1. Consequently, an adequate number

of experienced and trained personnel outside of the EOD, including designated alternates, may not be available on demand for timely and effective performance of all ERO functions. (See Findings, **F-1**, and Opportunities for Improvement, **OFI-2**.)

Overall, LANL has established and maintained an ERO that consists of the IC and principal members of the field response staff and many of the designated EOC positions; the JIC and FMT positions will also be included. Through the LANL emergency plan, EPIPs, and emergency responder SOPs, LANL has established an integrated emergency response for events and emergencies. However, several SMEs routinely participate in emergency management activities and perform ERO functions but are not considered to be members of the ERO. This reliance on non-ERO SMEs is not consistent with DOE Order 151.1C and DOE Emergency Management Guide 151.1-4. Further, such personnel, who may be needed to perform emergency duties beyond those specified by 29 CFR 1910.120 for the first responder awareness level, have not been subject to the applicable staffing, training, and drill participation requirements.

Objective 2: The LANL ERO has effective control mechanisms at the scene of an event/incident and integrates ERO activities with those of local agencies and organizations that provide onsite response services.

Instead of observing performance demonstrations, Independent Oversight evaluated this Objective by reviewing planning and preparedness documents and examining the documented ERO response to the recent Las Conchas wildfire.

The LANL ERO has planned and prepared for the use of the NIMS approach to event scene command and control. The *LANL and LASO Hazardous Materials Program Emergency Plan* and ERO-EPIP-100, *LANL Incident Commander,* describe the use of a NIMS ICS at the event scene. As part of the IC qualification program, ICs are required to complete the NIMS training courses provided by the Federal Emergency Management Agency to prepare them to implement NIMS. LANL ICs also practice the implementation of NIMS concepts during required periodic drills, as well as exercises and operational events.

LANL has planned and prepared for the integration of offsite response assets as part of the ERO structure. The *LANL and LASO Hazardous Materials Program Emergency Plan* describes and identifies the mechanisms for integrating local agencies and other external organizations. These include policy letters and agreements and memoranda of understanding between DOE and external agencies. Local agencies entering into agreements include area hospitals, Los Alamos County fire services, Los Alamos County Police, and nearby county Sheriff Departments. State agencies operating under agreements include the New Mexico State Police, the State Office of Emergency Management, the State Fire Marshall, and the State Highway and Transportation Department. LANL also has agreements with Federal agencies outside of DOE that are within or near the LANL emergency planning zone, such as the U. S. Forest Service, the Bureau of Land Management, and the National Parks Service.

The effectiveness of the LANL ICS and its ability to integrate with external response resources were tested during the Las Conchas wildfire event in the summer of 2011. Overall, the Las Conchas after action report concluded that the response was effective in recalling the ERO, declaring an operational emergency, integrating with offsite authorities, operating in a unified command structure, notifying employees and authorities, and implementing protective actions. The event significantly tested the LANL ERO's depth and its interfaces with multiple organizations from Los Alamos County, the state of New Mexico, and Federal agencies for more than a week. During this period, the EOC was initially activated for a non-emergency significant event when the fire threatened the site; the event was later categorized as an operational emergency not requiring further classification when the fire entered LANL property, and

this categorization continued through event termination and recovery. At the onset of the event, LANL was in normal weekend operation with only limited personnel on site. Non-essential personnel were evacuated, and important LANL facilities were re-entered to place those facilities in safe and secure configurations. The decision to close the site to the general workforce on Monday (and subsequent days) eliminated the need for a general evacuation of the LANL workforce. The Los Alamos County authorities issued separate evacuation guidance for the town site, with voluntary evacuation on Sunday and mandatory evacuation on Monday.

After the Las Conchas wildfire and associated recovery operations, LANL evaluated its response to identify the strengths and weaknesses of the response and promote program improvements. The LANL EOD conducted a "hot wash" review of the sitewide response and prepared an after-action report, which concluded that the response was generally effective and identified many noteworthy practices. However, the LANL EOD review also noted that the ERO's effectiveness was somewhat diminished because untrained/unqualified senior managers entered the EOC and diluted the NIMS ICS standard for unified command by separately tasking resources to provide data outside of the ICS structure. Further self-identified ERO related opportunities for improvement include:

- Interface points between EOC personnel and the continuity emergency response group should be established to minimize distractions.
- All EOC staffing should be on the same shift cycle to promote consistency in shift changes and turnover briefings.
- The EOC executive management team should execute the NIMS formalism for incident management.

Overall, LANL has adequately prepared the ERO to control the event scene and integrate offsite resources using the NIMS through its system of plans, procedures, training, drills, exercises, and written agreements. LANL successfully demonstrated NIMS concepts during the recent Las Conchas wildfire event. LANL continues to identify areas for improvement as part of the program maturation process.

Objective 3: LANL has an adequate number of experienced and trained personnel, including designated alternates, available on demand for timely and effective performance of ERO functions.

Independent Oversight reviewed the ERO training and drill plans, training and drill status reports, the ERO duty roster, and ERO recall mechanisms; interviewed key personnel; and reviewed LANL's after-action report for the Las Conchas wildfire event to determine whether the ERO is sufficiently staffed with trained personnel that are available on demand to respond to an operational emergency.

LANL maintains a duty roster of primary and alternate personnel for a core group of ERO responders; however, as previously mentioned, the full LANL ERO consists of additional positions and personnel who are not identified on the ERO duty roster. EOD manages the duty roster to ensure that trained and qualified primary and backup personnel are available for recall during assigned weeks. LANL expects ERO members to be available to respond in a timely manner and to be fit for duty during their assigned duty week, or to ensure that their duty is transferred to an appropriate alternate member. The ERO response to the Las Conchas wildfire demonstrated that ERO staffing was adequate if 12-hour shifts were used; however, LANL self-identified that it is desirable to have additional depth to allow 8-hour shifts, as described by the DOE Emergency Management Guide. Independent Oversight also noted that there is no duty roster for some ERO members, such as most of the positions on the consequence assessment team and personnel performing the EPI function. (See Opportunities for Improvement, **OFI-3**.)

LANL has the capability to recall ERO personnel in a timely manner and has recently implemented a mass notification system that enables rapid recall for ERO members, as well as mass employee

notifications for protective actions or general event information. This system is capable of making text and verbal notifications by cell phone, pager, office phone, and e-mail. Currently the mass notification system is being populated with contact information for ERO members as they are assigned to the duty roster. For ERO members whose information is not yet in the mass notification system, LANL relies on a network of preexisting ERO activation mechanisms, consisting of the LANL management pager system, the EOC public address system, phone trees, and duty pagers. These notification capabilities were used effectively during the Las Conchas wildfire event, including the FMT's duty pager system. As noted in LANL's Las Conchas after-action report, the recall of too many people, some without initial ERO assignments or position training, actually diminished the effectiveness of the ERO. To further promote a timely ERO response, LANL identifies ERO members by putting a red stripe on their site access badges so that security personnel can recognize them as emergency response officials and not delay their response.

Overall, LANL has identified, staffed, and trained a minimum number of ERO members to fill key positions. This key set of members are current in their training requirements, are provided training in their response tasks, are identified on emergency response duty rosters, and are provided equipment to enable their recall in case of an operational emergency. Nevertheless, to ensure adequate ERO maintenance, the ERO membership must be broadened to include additional positions. Further, to enable long-term operations using 8-hour shifts, each ERO position will need at least one additional person to serve as a backup.

Objective 4: A readiness assurance program provides assurances that emergency plans, implementing procedures, and resources are adequate and sufficiently maintained, exercised, and evaluated, and that improvements are made in response to identified needs.

Independent Oversight reviewed the status of corrective action plans and examples of completed products that address weaknesses in the ERO program identified by Independent Oversight and LANL self-assessment activities to determine whether improvements are made in response to identified needs. For the ERO, this principally affected the ERO training program, EPI plans and checklists, the ERO recall mechanisms, and establishment of FMTs.

LANL continues to improve the effectiveness of its ERO response by addressing weaknesses identified through self-assessments, external assessments, exercises, and operational emergencies. Training and drills are key components to prepare ERO responders for their emergency response tasks, and this area was identified as a weakness during the 2007 Independent Oversight Inspection. A recent significant contribution to LANL's ERO response effectiveness is the establishment of an ERO training program that now includes qualification standards, a training implementation plan, and workshops and skills testing for key ERO positions. The LANL EOD has a training corrective action plan, managed through the LANL issues tracking system, to implement training program improvements. Similarly, LANL public affairs personnel are managing and developing a training and qualification program for their ERO members who function in the EOC, the media center, and the JIC.

With the exception of the public information training, the initial ERO training program plans are now in place for the ERO positions currently defined by LANL for EOC positions and the IC position. The training plans serve as the core curriculum for ERO qualification to train personnel to perform their emergency response tasks. An annual drill participation requirement is also included in the training plan for ERO proficiency maintenance. Training plans for facility-level ERO members are under development for the Facility Operations Division. Although the training curriculum is generally designed to prepare ERO members for their ERO tasks, Independent Oversight noted that an individual can meet the annual drill participation requirement by executing response tasks during drills and exercises or by serving as a controller or evaluator during a drill or exercise; neither of the latter demonstrates the individual's

performance in the ERO position. LANL is temporarily allowing this practice while phasing in the new drill requirements in order to maintain sufficient depth on the ERO duty roster. LANL will discontinue this temporary practice after all ERO members have had opportunities to demonstrate proficiency through a drill, an exercise, or an operational emergency. The content of annual refresher training also remains an open item in the corrective action plan, due for completion on October 31, 2012. Additionally, LANL is addressing a longstanding weakness in the EPI training program by completing sufficiently detailed public information plans and checklists to serve as the basis for EPI position training, but EPI training program development remains a work in progress.

Further recent improvements include the aforementioned mass notification system and the recent establishment of FMTs to perform onsite surveys for characterizing hazardous material releases. The FMTs were deployed for the first time during the Las Conchas wildfire event to validate that no radioactive material was involved in the fire.

Overall, ERO program improvements are being made using readiness assurance program processes. Significant recent improvements include the development of ERO training requirements for many ERO positions and sufficiently-detailed EPI plans and checklists. LANL continues to implement corrective action plans to establish training programs for all ERO positions, training materials for EPI personnel, a fully compliant drill program, and annual refresher training courseware. Finally, an onsite FMT capability has been recently implemented in response to previously identified deficiencies.

5.0 CONCLUSIONS

LANL has established an ERO, as defined in LANL planning and preparedness documents, through plans, procedures, staffing, and training and is equipped to respond to an operational emergency in a timely manner and has used its readiness assurance process to further improve its capability and level of preparedness. LANL defines the ERO to consist of IC and EOC positions staffed by the LASO and LANL personnel. Personnel assigned to these positions have completed initial training requirements, are subject to drills and exercises, and are included on the duty roster. The duty roster assignments are adequate for long term operations using 12 hour shifts.   The training and drill program used to prepare personnel for these positions focuses on assigned response tasks as executed under the NIMS. LANL's ability to implement an effective emergency response that integrates offsite personnel using NIMS concepts was recently demonstrated during the Las Conchas wildfire event. The ERO training plans, as well as the capability to perform onsite field monitoring are notable improvements since the last Independent Oversight review. Additionally, LANL EPI positions have been identified and sufficiently detailed checklists have been developed to guide the performance of EPI tasks and to serve as the basis of EPI training.   Nevertheless, LANL's definition of ERO membership does not include all positions required to execute all required emergency response functions. The omission of important personnel from the ERO could hinder a timely and effective response by excluding responders from required training, drills, and exercises or by not being accessible or available in case of an emergency. Furthermore, the ERO maintenance program, encompassing drills and annual refresher training, remains a work in progress under the readiness assurance corrective action program.

6.0 FINDINGS

DOE Order 227.1, *Independent Oversight Program,* states that timely and appropriate action to address the findings and other deficiencies identified in HSS Independent Oversight appraisal reports must be taken and corrective action plans must be developed and implemented for Independent Oversight appraisal findings. Cognizant DOE managers must use site- and program-specific issues management

processes and systems developed in accordance with DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*, dated April 25, 2011, to manage these corrective action plans and track them to completion.

F-1: LANL has not fully established a site-level ERO that ensures adequate ERO membership and an organizational structure that includes all positions and functions needed for emergency response, as required by DOE Order 151.1C.

7.0 OPPORTUNITIES FOR IMPROVEMENT

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

OFI-1: To ensure adequate ERO membership and organizational structure of positions and functions associated with ERO members, consider the following:

- Establish the Laboratory's governing policy on ERO membership and staffing in the Institutional Requirements Center to identify all personnel needed to perform duties, beyond those specified by 29 CFR 1910.120 for the first responder awareness level, during a response to the range of emergencies defined in the hazards surveys or EPHAs. Refer to the DOE Order 151.1C "frequently asked question" regarding ERO membership dated October 1, 2007.
- Expand the description of the ERO and organizational structure in the *Emergency Management Program Description*, based on the results of LANL hazards surveys and EPHAs, to address the relationships between the site and facility response capabilities and the relationships between the onsite and offsite emergency response organizations.
- Ensure that the *Roles, Responsibilities, Authorities, and Accountability* document appropriately reflects that the LANL ERO is a composite force in which both line and staff organizations are fully integrated to provide ERO personnel to fill those requisite skills and disciplines for mitigation of emergency events with the overlay of command and control to see an event to a successful conclusion.
- Revise the *Los Alamos National Laboratory and Los Alamos Site Office Hazardous Material Program Emergency Plan,* applicable EPIPs, and other key response element SOPs to reflect the revised identification of ERO membership.

OFI-2: Consider revising the Institutional Requirements Center information on ERO administration to specifically improve the listing of responsibilities of the EOD, organizational managers, and ERO members:

- Institutionalize the procedure for organizational managers to identify those personnel in their organizations who have experience in the assigned functional areas to staff ERO positions.
- Assign personnel to only one critical staffing position.
- When determining ERO assignments, give special consideration to single parents and/or personnel with small children whose spouses work off-hour shifts.
- Select ERO personnel who reside within the designated response radius of the Laboratory for activation purposes.
- Identify a replacement before an incumbent ERO member's departure and ensure that the new member meets all requirements for appointment, when possible.

OFI-3: To ensure the availability of all ERO personnel and the timeliness of a response, consider establishing a duty roster that includes all ERO positions, identifies primary and backup personnel, and includes contact information.

8.0 ITEMS FOR FOLLOW-UP

Independent Oversight identified the following items for follow-up. These are items that LANL was aware of before this review began. They are being addressed in existing corrective action plans or represent a temporary condition while LANL strives to meet performance goals:

- Corrective actions to address interface points between EOC personnel and the continuity emergency response group to minimize distractions
- Corrective actions to place all EOC staffing on the same shift cycle for consistency in shift changes and turnover briefings
- Corrective actions to strengthen the EOC executive management team's implementation of NIMS concepts
- Populating the mass notification system with ERO member contact information
- Corrective actions to address the exclusion of unnecessary personnel from the EOC
- Completing facility-level ERO member training programs
- Completing the EPI training program
- Implementing ERO annual refresher training
- Discontinuing the practice of allowing participation as an exercise controller/evaluator to satisfy drill participation requirements.

Appendix A

Supplemental Information

Dates of Review

Onsite Data Collection: February 7-9, 2012

Office of Health, Safety and Security Management

Glenn S. Podonsky, Chief Health, Safety and Security Officer
William A. Eckroade, Principal Deputy Chief for Mission Support Operations
John S. Boulden III, Director, Office of Enforcement and Oversight
Thomas R. Staker, Deputy Director for Oversight
William E. Miller, Deputy Director, Office of Safety and Emergency Management Evaluations

Quality Review Board

William Eckroade
John Boulden
Thomas Staker
Michael Kilpatrick
Bill Miller
Robert Nelson
George Armstrong

Independent Oversight Site Lead for LANL

Robert G. Freeman

Independent Oversight Reviewers

John Bolling
Tom Rogers

Appendix B

Documents Reviewed and Interviews

Documents Reviewed

- DOE Guide 151.1-4, Response Elements, 7/11/07
- DOE Order 151.1C, Comprehensive Emergency Management System, 11/2/05
- EM-AAR-165, June 27, 2011 Fire on Los Alamos National Laboratory Property Resulting from the Las Conchas Wildfire, Rev 0, 9/11
- EM-FORM-038, Emergency Director's Checklist, Rev. 0, 12/8/08
- EM-FORM-039, Secondary Facilitator Checklist, Rev. 0, 3/11/09
- EM–FORM-059, Primary Facilitator Checklist, Rev. 0
- EM-FORM-060, ETSC Coordinator Checklist, Rev. 0.1, 1/20/10
- EM-FORM-061, ETSC Staff Checklist, Rev. 0.1, 1/20/10
- EM-FORM-063, Radio Room Coordinator Checklist, Rev. 0.1, 9/4/09
- EM-FORM-073, Logistics Section Chief Checklist, Rev. 0, 8/26/09
- EM-FORM-065, Operations Section Chief Checklist, Rev. 0.1, 8/24/09
- EOC-FORM-025, Planning Section Chief Checklist, Rev. 1, 1/9/12
- EO-DO-PLAN-100, The Los Alamos National Laboratory and Los Alamos Site Office Hazardous Materials Program Emergency Plan, Rev. 2, 10/31/11
- EO-SA-09-019, March 2009 Emergency Response Organization Program Assessment 2nd Quarter FY09, Rev. 0, 3/31/09
- EO-SA-09-022, Emergency Operations Division Program Review Gap Analysis for DOE Order 151.1C, 4/27/09
- EO-SA-10-036, September 2010 Emergency Response Organization Program Assessment 4th Quarter FY10, Rev. 0, 9/30/10
- EO-SA-11-054, August 2011 Emergency Response Organization Program Assessment 4th Quarter FY11, Rev. 0, 9/1/11
- ER-610-010, Deploying the Los Alamos Field Monitoring Team during an Emergency Event, Rev. 0, 5/31/11
- ERO Duty Roster, 2/7/12
- ERO Training plans
- ERO-EPIP-100, LANL Incident Commander, Rev. 1, 3/31/11
- ERO-EPIP-105, Emergency Director, Rev. 2.1, 3/31/11
- ERO-EPIP-110, Primary Facilitator, Rev. 0.2, 3/31/11
- ERO-EPIP-115, Secondary Facilitator, Rev. 0.4, 12/21/11
- ERO-EPIP-120, ETSC Coordinator, Rev. 0.3, 3/28/11
- ERO-EPIP-125, ETSC Staff, Rev. 0.3, 3/28/11
- ERO-EPIP-130, Planning Section Chief, Rev. 1, 9/21/11
- ERO-EPIP-135, EOC Operations Section Chief, Rev. 0.4, 12/21/11
- ERO-EPIP-140, Logistics Section Chief, Rev. 0.3, 1/9/12
- ERO-EPIP-145, Administration/Finance Section, Rev. 0.1, 2/14/11
- ERO-EPIP-150, Radio Room Coordinator, Rev. 1, 12/21/11
- ERO-EPIP-155, Radio Console Operator, Rev. 0.4, 12/21/11
- ERO-EPIP-160, Notifier Levels I, II, III, Rev. 3.2, 11/28/11
- ERO-EPIP-205, Emergency Operations Center Operations, Rev. 1.1, 11/23/10
- ERO-FORM-141, Administration/Finance Checklist, Rev. 0

- Fiscal Year 2008 Los Alamos Site Office Evaluation of the Los Alamos National Emergency Management Full Scale Exercise "Chile Chile Bang Bang", Rev. 0, 9/15/08
- Fiscal Year 2009 Fourth Quarter Los Alamos Site Office Assessment of the Los Alamos National Emergency Management Program Emergency Response Organization, Rev. 0, 9/22/09
- FROG-260, Incident Commander Field Response Operating Guidelines, Rev. 1.3, 2/23/11
- P313, Roles, Responsibilities, Authorities, and Accountability, Rev. 5, 11/30/11
- PD1200, Emergency Management Program Description, Rev. 2, 11/22/11
- Training Corrective Action Plan, EOD-ICAM-002, R0.7

Interviews

- LANL Emergency Operations Division Leader
- LANL Emergency Operations Division, Emergency Management Group Leader
- LANL Emergency Operations Division, Emergency Manager Duty Officer
- LANL Emergency Operations Division, Emergency Planning and Preparedness Group Leader
- LANL Emergency Operations Division, Emergency Response Group Leader
- LANL Emergency Operations Division, Training and Self-Assessments Group Leader
- LANL Field Monitoring Team Coordinator
- LANL Public Affairs Officer
- LASO Emergency Management Program Manager
- LASO Public Affairs Officer

Appendix C

Review Plan
Los Alamos National Laboratory Emergency Response Organization Program Review

SCOPE

The scope of this review includes an evaluation of the plans, procedures, and processes used by the Los Alamos National Laboratory (LANL) to establish and maintain their emergency response organization (ERO). This includes emergency plan implementing procedures, response checklists, agreements with the Los Alamos Fire Department, and training and drills associated with the LANL ERO, as defined by the Los Alamos Site Office (LASO) and the LANL emergency plans. Additionally, follow-up reviews of corrective actions for previous weaknesses of the ERO program that were identified by Independent Oversight, LASO, and LANL will be included. The Office of Enforcement and Oversight (Independent Oversight), within the Office of Health, Safety and Security (HSS), will perform this review in accordance with DOE Order 226.1B, *Implementation of DOE Oversight Policy*, using criteria derived from the functional requirements of DOE Order 151.1C, *Comprehensive Emergency Management System*. The Office of Safety and Emergency Management Evaluations will use the criteria and lines of inquiry contained herein to determine whether the objectives are met. The lines of inquiry were developed using the requirements contained in DOE Order 151.1C and the associated DOE emergency management guides.

OBJECTIVE

The lead site contractor has established and maintained an ERO for each facility/site.

CRITERIA

1. An ERO, a structured organization with overall responsibility for initial and ongoing emergency response and mitigation, must be established and maintained for each facility/site.

2. The ERO must establish effective control at the event scene and be consistent with the National Incident Management System's Incident Command System, which integrates local agencies and organizations that provide onsite response services.

3. An adequate number of experienced and trained personnel, including designated alternates, must be available on demand for timely and effective performance of ERO functions.

4. A readiness assurance program provides assurances that emergency plans, implementing procedures, and resources are adequate and sufficiently maintained, exercised, and evaluated and that improvements are made in response to identified needs.

REFERENCES

• DOE Order 151.1C, *Comprehensive Emergency Management System*

• DOE Guide 151.1-3, Emergency Management Guide, *Programmatic Elements*

- DOE Guide 151.1-4, Emergency Management Guide, *Response Elements*

- 29 CFR 1910, *Occupational Safety and Health Standards*

APPROACH

Document Reviews:

1. Review the LANL emergency plans to determine the ERO concepts of operation and the positions that comprise the ERO.

2. Review LANL emergency plan implementing procedures to verify that the ERO concepts described in the emergency plans are promulgated through procedures and to determine ERO roles and responsibilities.

3. Review ERO implementing checklists to ensure that ERO actions are consistent with tasks assigned within the emergency plan implementing procedures.

4. Review training and drill programs to ensure that the ERO training curriculum contains the appropriate content, is well defined, includes hands-on training sessions, provides periodic training on significant changes to plans/procedures and lessons learned, and provides a mechanism to maintain ERO member proficiency.

5. Review ERO training status reports to assess the readiness of ERO members based on completion of training requirements and participation in drills, exercises, or actual events.

6. Review the ERO duty roster to ensure that adequate depth is provided by trained personnel.

7. Review reports of drills, exercises, and actual events to determine performance attributes and ERO effectiveness, to the extent possible.

8. Review the progress of implementing corrective actions and the means of verifying their effectiveness for previously identified ERO program weaknesses identified by Independent Oversight, LASO, exercise evaluators, critiques of actual events, and LANL self-assessment personnel over the past three years.

Interviews:

As appropriate, interview:

1. LASO and LANL managers responsible for the LANL emergency management program

2. LANL Emergency Operations Department Personnel

3. ERO members

4. Los Alamos Fire Department personnel

<u>Lines of Inquiry:</u>

- Has the site/facility established and maintained an ERO, a structured organization with overall responsibility for initial and ongoing emergency response and mitigation, for each facility/site?
- Does the ERO establish effective control at the scene of an event/incident and integrate ERO activities with those of local agencies and organizations that provide onsite response services?
- Are an adequate number of experienced and trained personnel, including designated alternates, available on demand for timely and effective performance of ERO functions?
- Is the organizational configuration of the ERO based on actual or potential emergency conditions?
- Does the management structure of the response facility provide for collecting and disseminating accurate data, setting priorities, assigning work to functional groups, and keeping key emergency response staff abreast of emergency response status?
- Is ERO activation based on actual or potential emergency conditions?
- Does the site/facility ensure that personnel availability on demand, ERO functions, and the ongoing, standby staffing of ERO emergency facility positions and response teams are effectively accomplished:
  - Using a technique, such as a duty-cycle or static roster, to ensure that qualified personnel are available on demand and properly assigned?
  - Ensuring that sufficient trained personnel for initial and ongoing response, including designated alternates, are candidates for call-up in each functional area?
  - Periodically reviewing ERO rosters for accuracy?
  - Periodically reviewing and updating ERO personnel qualifications?
- Are the communication systems that are used to activate both on-shift and off-shift emergency response personnel periodically tested to ensure their adequacy and reliability?
- Are initial response functions performed by on-shift operations staff?
- Is the ERO functionally staffed and activated in a timely manner? Are key emergency response facilities operational within an hour after declaration of an operational emergency?
- Is staffing of ERO positions following declaration of an operational emergency orderly, controlled, and verifiable?
  - Do personnel gain access to response stations without impediment?
  - Are non-ERO personnel excluded from emergency response work areas?
- Are individuals in key response positions readily identifiable by other ERO staff?
- Are procedures and/or checklists describing the major activation and initial response activities of the ERO members used?
- Are all personnel who are needed to perform duties, beyond those specified by 29 CFR 1910.120 for the first responder awareness level during a response to any of a broad range of emergencies defined in the hazards survey or EPHA, considered to be members of the ERO?
- Are fully trained personnel assigned to facility- and site-level ERO positions to ensure adequate staffing for emergency response?
- Do all personnel assigned to facility- and site-level ERO positions demonstrate their proficiency in assigned positions through periodic participation in an exercise, an evaluated drill, or an actual response? Do all primary and alternate personnel accomplish this participation on a rotating basis?
- Are an adequate number of experienced and trained personnel for initial and ongoing response, including designated alternates, available on demand for timely and effective performance of ERO functions?
- Is the order of succession of management personnel responsible for managing the emergency in the absence of the primary designated emergency director clearly designated/implemented?
- Are extended operations anticipated and planned for?

- Is an individual who is trained to recognize, categorize, and classify events and to conduct appropriate notifications available 24 hours a day, 7 days a week? Is this individual's authority unambiguous and clearly communicated throughout the ERO?
- Is an emergency director or equivalently titled individual in charge of the overall response, with authority to use necessary resources to mitigate the emergency?
- Does the emergency director have authority and responsibility to perform required functions, including initial activation of onsite response assets, notification of offsite authorities, and requests for offsite assistance, in accordance with the National Response Plan (NRP) and the National Incident Management System (NIMS)?
- Is the division of authority and responsibility between the incident commander and emergency director positions clearly established and maintained?
- Is control of operations, monitoring, and repair teams clearly vested in a single ERO position or clearly defined between multiple ERO positions?
- Does the emergency director adequately and effectively perform assigned functions, utilizing sufficient and practical knowledge of the affected facility and its operations, the emergency response team and its mission, and available tools and resources necessary to affect appropriate response and mitigate the emergency?
- Is the transfer of a command and control function to another emergency facility, within an emergency facility, or to a command external to the ERO or Incident Command System (ICS) completed in an orderly and formal manner, and are all appropriate ERO personnel informed of the transfer?
- Does the fully staffed ERO establish effective internal and external interfaces with other agencies and organizations? External interfaces may include local, state, tribal, and Federal agencies, as well as non-governmental groups, such as concerned citizens and the media.
- Is an individual in the ERO assigned liaison responsibilities for coordinating with offsite agencies to ensure that effective communications are initiated and maintained during an emergency?
- Do members of the ERO:
  - Perform roles, functions, and interfaces and in their use of emergency equipment, facilities, and resources in a timely, effective, and efficient manner?
  - Clearly acknowledge and understand authorities and responsibilities?
  - Identify and access available response resources and, as appropriate, take account of resource limitations and specific capabilities?
- Do the responsible ERO operations and technical support staffs determine and implement a reasonable, well-planned course of action within their sphere of responsibility, based on current knowledge of the situation?
- Are taskings clearly made to emergency response staff, and are actions followed through to completion, when priority actions are identified?
- Do specialty groups supporting the response staff provide timely information to the decision-making process?
- Is adequate data obtained and analyzed to support operations staff in assessing and mitigating emergency events?
- Is information accurately and efficiently transmitted in an orderly and documented manner throughout the chain of command and between/within emergency facilities?
- Is the use of acronyms, code words, conventions, and technical terminology addressed to preclude misunderstandings related to response and associated data?
- Are periodic briefings provided on status of the emergency and current significant response priorities and activities?
- Are communications maintained with, and is information provided regularly to, the DOE Headquarters emergency management team?
- Does ERO management effectively coordinate state and DOE site requests for use of DOE/NNSA assets?

- Is an individual assigned liaison responsibilities with personnel representing DOE/NNSA assets involved in response to coordinate logistics, ensure that effective communications are initiated and maintained, and ensure that data is exchanged using consistent units of measure?
- Are ERO personnel provided with adequate briefings on safety, operations, communications, and hazards before being deployed?
- Is a Safety Officer designated and provided authority and responsibilities in accordance with 29 CFR 1910.120 (q)?
- Are ERO teams debriefed upon return from assigned missions, and are their accomplishments, failures, exposures, and status information recorded and made available to other teams and emergency facilities?
- Does the responsible individual properly authorize emergency response personnel to receive exposures in excess of site administrative limits or other Federal criteria for carrying out lifesaving or other emergency activities, when required?
- Do teams implement survey and sampling procedures in a timely manner:
  o Are field teams provided with adequate monitoring equipment and personal protective equipment to accomplish field monitoring and plume tracking within and beyond the emergency planning zone?
  o Do teams correctly use protective equipment?
- Is the required equipment adequate, accessible, functional, and calibrated?
- Do teams make effective use of maps or general arrangement drawings showing pre-determined and potential monitoring points?
- Are teams briefed on facility and meteorological conditions and exposure control procedures before deployment and when changes occur?
- Do teams maintain effective communications to transmit accurate and timely readings and results to their team coordinator?
- Are field teams well-directed and effectively controlled by emergency response management who:
  o Provide directions to survey specific areas?
  o Provide directions to minimize hazardous material exposure by exiting high airborne and whole body dose areas or high concentration areas, when not actively engaged in sample and survey activities?
  o Set exposure limits for survey and tracking teams, and solicit and record survey results?
- Do teams utilize proper survey equipment and log results accurately?
- Do teams collect samples, bag and mark them, and log results accurately and efficiently?
- Are samples received, properly packaged, and labeled with identifying information, such as sample time and date, sample location, volumetric data, sample media, and sample or survey collection person's name?
- Are analysis procedures and equipment used to support processing of samples received, either by properly analyzing the samples in the field or transporting them to a laboratory?
- Are analysis results promptly and accurately communicated to other emergency response organizations?
- Are security procedures for protective forces carrying out responsibilities during response to operational emergencies implemented promptly, safely, efficiently, and effectively?
- Is an ICS implemented for security emergencies in accordance with NIMS/ICS requirements?
- Is the response of protective force personnel and equipment characterized by effective command and control?
- Is access and egress control quickly and properly maintained for the site/facility, impacted areas, and emergency response facilities?
- Do security practices facilitate timely movement and access of site/facility operating and response personnel (including offsite personnel) to required areas during emergency situations?

- Under emergency conditions, are material accountability and protection for special nuclear material and other critical DOE assets handled in a timely and effective manner?
- Is a common protocol used for local law enforcement backup of the onsite security force (e.g., use of deadly force, weapons employment, tactics, code words, radio frequencies)?
- Does a mutual understanding of authorities and responsibilities, response plans, utilization of command and control facilities, and terminology enable site security to effectively coordinate and correlate response activities with other components of the ERO?
- Are fire/rescue personnel and equipment assembled and deployed to the scene of the emergency in a safe and timely manner?
- Do fire/rescue personnel take necessary precautions for contamination, exposure, heat, and personal safety?
- Are search and rescue operations carried out in an efficient manner, coordinating their efforts with medical, industrial hygiene, and health physics personnel?
- Are injured personnel properly extricated, immobilized, and moved during search and rescue operations?
- When responding on site, are both onsite and offsite fire personnel outfitted with the appropriate specialized equipment and supplies specific to the onsite hazards?
- Are facility and field repair and maintenance activities carried out in a timely and efficient manner?
- Are proper tools available for repair and maintenance activities, and is the procurement of replacement parts expedited?
- Are emergency work order procedures used, and is emergency tagging implemented?
- Do repair and maintenance activities include personal protection and monitoring as well as coordination with support groups, such as health physics and industrial hygiene personnel?
- Is an incident commander in charge at the event scene?
  - Are control and coordination at the event/incident scene consistent with the NRP and the NIMS/ICS, which integrates local agencies and organizations that provide onsite response services?
  - Is the ICS identified in the emergency plan and memoranda of understanding/agreement with local response organizations?
- Is the ICS organized in the five major functional areas of NIMS (Command, Operations, Planning, Logistics, and Finances and Administration)?
- Is the incident assessed, and are priorities established with life saving, safety, and incident stabilization receiving top priority?
- Are incident command strategic goals and tactical objectives clear, and is a flexible action plan implemented?
- Does the incident command evolve from providing oral direction to the development of a written Incident Action Plan (IAP)?
- Does the incident command staff continually assess the situation, develop a mitigation strategy, and request additional assets as needed?
- Does incident command coordinate internal and external response assets in an effective manner?
- Is an ICS command post strategically located in a safe area where command control may take place safely and effectively?
- Is command post and staging area habitability periodically assessed and moved as necessary for safety purposes?
- Do incident command staffs ensure that response personnel take necessary precautions for personal safety and contamination control as follows?
  - Does the incident command staff establish a staging area where arriving asset personnel are briefed, communications are checked, special equipment is issued, and assets are deployed upon request?

- o Are asset personnel being released debriefed, accounted for, surveyed for contamination (both personnel and equipment), and decontaminated as necessary, and is issued equipment returned?
- Are the responsibilities of incident command carried out in accordance with 29 CFR 1910.120(q093)?
- Do evaluated findings from program and exercise evaluations include corresponding corrective action plans?
- Are corrective actions completed as soon as possible, and are corrective actions that address revision of procedures or training of personnel completed before the next annual self-assessment of the program or exercise?
- Does completion of corrective actions include a verification and validation process, independent of those who performed the corrective action, that verifies that the corrective action has been put in place and validates that the corrective action has been effective in resolving the original finding?
- Is closure of findings from program and exercise evaluations by organizations external to the facility validated by the evaluating organization?
- Do improvement programs prepare corrective action plans and establish and maintain a tracking system to monitor and verify correction of findings from all program and exercise evaluations and from actual responses?
- Does the improvement program include a system for incorporating and tracking lessons learned from training, drills, actual responses, and a sitewide lessons-learned program?
- Does an established improvement program ensure that relevant lessons learned (i.e. DOE complex-wide and from non-DOE sources) are received at the facility, reviewed for applicability, and incorporated in the emergency management program as appropriate?