

Lawrence Livermore National Laboratory

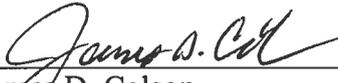
**EMERGENCY PLAN**

(Rev. 17)

**January 2012**

LLNL-AR-524491

Approved

  
James D. Colson  
Emergency Management Program Administrator

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Date

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## **Auspices Statement**

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## EXECUTIVE SUMMARY

The Lawrence Livermore National Laboratory (LLNL) Emergency Plan (EPlan) documents the concepts for preparedness and response to Operational Emergencies (OEs) or any unplanned, significant events, or abnormal conditions that require time-urgent response. The LLNL Emergency Plan provides an overview of the roles, responsibilities, and lines of authority for the Emergency Response Organization (ERO). The Emergency Response Organization maintains the capability to respond to and mitigate the effects of hazards associated with emergencies; to direct protective actions (PAs) for site personnel; to notify offsite agencies and provide protective action recommendations (PARs) for the public; to recover from an OE, minimizing impact to onsite operations and security; and to limit adverse impacts to the environment.

This latest issuance of the Emergency Plan incorporates mostly minor changes and editorial corrections as well as concepts of the newly developed LLNL Emergency Communications Plan.

The LLNL EPlan and associated Emergency Plan Implementing Procedures (EPIPs) identified in Attachment B, *Index of Emergency Response Documents*, address the requirements of Department of Energy (DOE) Order 151.1C, *Comprehensive Emergency Management System*.

A summary of the contents of each section in the Emergency Plan follows:

- Section 1** Provides an introduction to the Emergency Plan by stating the mission of LLNL, followed by the purpose, scope, and concept of operations. Site and facilities descriptions and a summary of the hazards survey/hazards assessment process for LLNL are included.
- Section 2** Describes the Operational Emergency Base Program. Each DOE facility/site is required to establish an Operational Emergency Base Program that provides the framework for response to serious events or conditions that involve the health and safety of workers, the public, the environment, and safeguards and security.
- Section 3** Describes the overall organizational structure of the site and the Emergency Response Organization, which emphasizes responsibilities, lines of authority, and command and control of preparedness and response elements.
- Section 4** Describes the interface with those Federal, State, and local agencies that may be involved in a response to an Operational Emergency. Includes information on formally-documented agreements with offsite agencies.
- Section 5** Defines Operational Emergencies and provides an overview of the process used for categorization and classification of Operational Emergencies at the Laboratory. Discusses the emergency action levels used to declare an Operational Emergency.

- Section 6** Describes the notification process for onsite and offsite notifications. Also describes communications to onsite personnel and offsite agencies.
- Section 7** Describes the process for performing an initial consequence assessment to support the impact of a release of radioactive or other hazardous materials. Describes the continuous process of refining those initial assessments as more information and resources become available.
- Section 8** Outlines protective actions based on protective action criteria. Defines the Laboratory emergency planning zones, and provides information on personnel accountability, emergency evacuation, communications, and termination of protective actions. Provides general guidelines for reentry during an Operational Emergency.
- Section 9** Describes onsite medical facilities and capabilities, staff, and equipment. Describes mutual aid agreements for offsite medical assistance.
- Section 10** Establishes criteria for termination of an Operational Emergency and the transition to the recovery phase.
- Section 11** Describes the emergency public information program and organization that provides information about the emergency to news media and the public. Includes a discussion of the Joint Information Center.
- Section 12** Describes emergency response facilities and equipment that might be used during an emergency or recovery.
- Section 13** Describes emergency preparedness training and drills for elements of the Emergency Response Organization and describes training structure.
- Section 14** Outlines the process for scheduling, coordinating, conducting, and evaluating emergency preparedness exercises.
- Section 15** Describes emergency preparedness program administration, document control, and self-assessment.

## 1 INTRODUCTION

### 1.1 Purpose

The Lawrence Livermore National Laboratory uses an integrated emergency management system to ensure effective response to OEs.

This EPlan establishes planning and preparedness, conceptual response to and recovery from OEs, and emergency preparedness program administration. The emergency management system is intended to:

- Protect onsite and offsite personnel who could be impacted by an OE originating at LLNL
- Protect the environment
- Protect national assets

This EPlan describes the ERO and provides for the implementation of response, communication, mitigation (e.g., protective actions), and recovery actions through the EPIPs. The EPlan also describes the interfaces and coordination with offsite agencies that provide community awareness and protection through notifications, protective action recommendations, and mutual aid.

LLNL uses the California Standardized Emergency Management System (SEMS) to manage response to emergencies. SEMS was established in 1992 in the California Code of Regulations, Title 19, Division 2. The use of SEMS standardizes throughout the State the response to emergencies involving multiple jurisdictions or multiple agencies. SEMS is intended to be flexible and adaptable to the needs of all emergency responders in the State.

SEMS incorporates the use of the National Incident Management System (NIMS), the Incident Command System (ICS), Multi-Agency Coordination System (MACS), the California Master Mutual Aid Agreement, existing mutual aid systems, and Operational Area Concept.

DOE Order 151.1C, *Comprehensive Emergency Management System*, states that the established Emergency Response Organization at each DOE/National Nuclear Security Administration (NNSA) site has the overall responsibility for the initial and ongoing response to and mitigation of an emergency. Control at the event/incident scene must be consistent with the National Incident Management System's Incident Command System.

This EPlan implements the emergency planning requirements of DOE Order 151.1C, Contractor Requirements Document (CRD), et seq., and complies with NIMS/SEMS requirements.

Nothing in this plan shall be considered to limit the use of good judgment and common sense in matters not foreseen or covered.

### **1.1.1 Update of the Emergency Plan and Emergency Plan Implementing Procedures**

The EPlan and EPIPs are reviewed annually and revised as needed. A major revision requires formal approval and involves a substantive change, such as work scope, performance responsibilities, work processes that mitigate hazards, and requirement changes. Minor revisions in EPIPs, such as adding, changing, or deleting the use of specific forms, can be completed via the Temporary Change Notice (TCN) process. EPIP-141, *Emergency Programs Administration*, contains more information on the revision process.

Updates to the EPlan are reviewed by:

- Environmental Functional Area Manager
- Worker Safety & Health Functional Area Manager
- Radiation Protection Functional Area Manager
- Health Services Department Head
- Environment, Safety, and Health Director
- Maintenance & Utility Services Department Head
- Facilities & Infrastructure Associate Director
- Nuclear Operations Associate Director
- Operations and Business Principal Associate Director
- Security Organization Director
- Public Affairs Office Director
- Laboratory Counsel
- Emergency Programs Manager

The review and signature of the Emergency Management Department Head represents formal LLNL approval.

### **1.1.2 Distribution of Copies**

Controlled copies of the EPlan are stored in the Emergency Programs Organization (EPO) files and are provided to the Emergency Operations Center (EOC), the National Nuclear Security Administration/Livermore Site Office (NNSA/LSO), and others as per established distribution lists. Uncontrolled copies of the EPlan are maintained on the Emergency Programs Organization Emergency Preparedness & Planning website, distributed within LLNL, Lawrence Livermore National Security, LLC Parent Oversight Office, and are offered to appropriate offsite agencies.

## 1.2 Scope

This EPlan addresses and applies a description of emergency preparedness and response to OEs as defined in the Contractor Requirements Document of DOE Order 151.1C. The EPlan applies to the Livermore site (Site 200), Site 300, and LLNL facilities contained therein; additionally, it applies to the employees, visitors, and contractors performing work onsite for the Laboratory. This EPlan is not intended for use in the management of and recovery from accidents, incidents or events outside the scope of OEs. Those events are covered in other LLNL policies and procedures found in the LLNL *Environment, Safety, and Health (ES&H) Manual*. This plan does not cover LLNL operations or facilities at the Nevada Test Site.

## 1.3 Concept of Operations

When an Operational Emergency occurs, the EPlan, through the EPIPs, is invoked for response to the emergency. Routinely designated LLNL emergency responders, such as fire, ES&H Teams, Hazardous Material (HazMat), medical/emergency medical services, and Security Organization/law enforcement, provide on-scene response. The Incident Commander (IC) directs on-scene emergency response.

The Emergency Management Duty Officer (EMDO), from the Laboratory's Emergency Management Department (EMD), is onsite or on-call at all times, and is responsible for categorizing Operational Emergencies (OEs) and further classifying OEs as Alerts, Site Area Emergencies, or General Emergencies, if required. The EMDO is also responsible for making initial required DOE and offsite agency notifications within fifteen (15) minutes of the declaration of an Alert, Site Area Emergency, or General Emergency, and within thirty (30) minutes of the declaration of an Operational Emergency Not Requiring Further Classification. In addition, the EMDO is responsible for activating the Emergency Operations Center. Activation level may be determined in consultation with the Laboratory Emergency Duty Officer (LEDO). The LEDO, who is onsite or on-call at all times, represents the Laboratory Director

Support to the EOC is provided by Department Operations Centers (DOCs – including Security Organization's Tactical Operations Center [TOC]). The LEDO/Emergency Director (ED) may activate DOCs supporting Environmental; Worker Safety & Health and Radiation Protection; Health Services; Facilities & Infrastructure (F&I); Public Affairs Office (PAO); Security Organization; and Site 300. The DOCs have internal plans and procedures for their specific emergency management support functions.

The Laboratory Director and/or designated executive staff gather to monitor the progress of the emergency and provide business continuity at the Executive Business Coordination Center (EBCC). A LEDO, if available, is assigned to the EBCC by the ED to serve as liaison with the EOC.

The EPO maintains classified and unclassified video-teleconferencing communications capability. NNSA's Emergency Communications Network/Video-Teleconferencing (ECN/VTC) equipment is located in the support area of the LLNL EOC.

### **1.3.1 The LLNL Integrated Emergency Management System**

The LLNL integrated emergency management system considers and incorporates responses to a broad spectrum of hazards and possible consequences in its planning. The extent of emergency planning and preparedness for a particular LLNL building or facility corresponds to the type and amount of hazards and the potential effects on workers, the public, the environment and/or national security. LLNL also incorporates lessons learned from simulated and actual emergency situations that have occurred at this site, other DOE sites, or similar hazardous material facilities.

The on-scene response and emergency management support described above comprise a portion of the overall integrated emergency management system at LLNL. The system is based on the LLNL commitment to Integrated Safety Management (ISM).

Integrated Safety Management, as described in the LLNL Program Description Document: Integrated Safety Management System and implemented as described in LLNL's *ES&H Manual*, Volume I, Part 2, Document 2.1, "General LLNL Worker ES&H Responsibilities," is the first and primary level of defense against undesired and unexpected events. The Alameda County Fire Department (Fire Department), ES&H Teams, Facilities Management, Health Services Department, and the Security Organization provide the second level, dealing with incidents that are mitigated and resolved primarily using onsite assets. If an incident should escalate beyond the capabilities of onsite assets, appropriate notification ensures that mutual aid can be invoked at the third level of defense through existing local, State, and Federal agreements.

This graded response is based on Integrated Safety Management, the *ES&H Manual*, and the LLNL EPlan. Internal and external reviewers routinely assess these defining documents against current standards. The emergency preparedness process is reviewed through self-assessment, LLNL assurance programs, annual exercises/drills, NNSA/LSO oversight, and NNSA/DOE Headquarters (HQ) review.

The integrated emergency management system at LLNL also supports local area emergency response and mutual aid. This integrated system provides successful working relations, local awareness of LLNL as a community partner, implementation of the California Standardized Emergency Management System, and validation of LLNL's integrated response capability.

### **1.3.2 Declaration of an Operational Emergency**

An Operational Emergency may not require further classification, or it may be classified as an Alert, Site Area Emergency, or General Emergency by the Emergency Management Duty Officer when he/she determines that an unplanned, significant event poses a real or potential threat to safety, health, or the environment. Additionally, in a security event, the Security Duty Officer is required to inform the EMDO or the LEDO that an Operational Emergency should be declared based on Safeguards & Security and/or law enforcement issues. See the EPlan, Section 5, for specifics on Operational Emergency categorization and classification.

### **1.3.3 Reentry**

The ED, Battalion Chief, and/or Protective Force Division (PFD)/IC will determine when an emergency scene is stable and reentry to specific buildings or areas can occur by non-First Responders. The appropriate ES&H Team provides technical evaluation support. See the EPlan, Section 8, for specifics on protective actions and reentry.

### **1.3.4 Operational Emergency Termination and Recovery**

The emergency will be terminated by the ED when the emergency condition is stabilized and with the input of the IC and, if activated, the Emergency Management Team (EMT) and offsite decision-makers. This concurrence assures there is no longer a threat to employee safety, the public, the environment, or national security. See the EPlan, Section 10, for emergency termination and recovery.

## **1.4 Site Description**

### **1.4.1 Overview Including Function and Mission**

LLNL is operated and managed by Lawrence Livermore National Security, LLC (LLNS). LLNS is a private corporation composed of Bechtel National, the University of California, the Babcock & Wilcox company, URS, Battelle, and the Texas A&M University System. Prior to LLNS assuming control of LLNL on October 1, 2007, LLNL was operated from its inception in 1952 through September 2007 solely by the University of California for the U.S. government.

LLNL is a premier research and development institution for science and technology applied to national security. It is responsible for ensuring that the nation's nuclear weapons remain safe, secure, and reliable. LLNL also applies its expertise to prevent the spread and use of weapons of mass destruction and strengthen homeland security.

LLNL's national security mission requires special multidisciplinary capabilities that are also used to pursue programs in advanced defense technologies, energy, environment, biosciences, and basic science to meet important national needs. These activities enhance the competencies needed for LLNL's defining national security mission.

The Laboratory serves as a resource to the U.S. government and is a partner with industry and academia. Safe, secure, and efficient operations and scientific and technical excellence in its programs are necessary to sustain public trust in the Laboratory.

The Laboratory staff consists of approximately 5,266 Career Laboratory employees as of December 1, 2011. Flex term, Post-Doc, Non-Career, and Supplemental Labor bring the Laboratory population to around 7,500.

LLNL is comprised of two non-contiguous sites – Livermore site and Site 300. Livermore site is located on a one-square-mile site in Livermore, CA (Site 200). A larger (10 square mile) remote explosives/experimental testing site (Site 300) is situated 18 miles to the east with an approximate population of 200.

## Infrastructure Overview

Site 200: (approximate figures – 4<sup>th</sup> Quarter 2011)

- 498 Facilities
  - 190 Buildings
  - 85 Modulares
  - 90 Trailers
  - 31 Tents
  - 59 Other structures
  - 43 Infrastructure (roads, sewer, etc.)
- ≈6.7 million square feet

Site 300: (approximate figures - 4<sup>th</sup> Quarter 2011)

- 216 Facilities
  - 90 Buildings
  - 25 Modulares
  - 5 Trailers
  - 67 Other structures
  - 29 Infrastructure (roads, sewer, etc.)
- ≈400,000 square feet

### 1.4.1.1 Hazards Survey and Hazards Assessment

The actual and authorized hazardous material inventories of the Livermore Site 200 and Site 300 facilities are compared with the evaluation criteria screening thresholds from DOE Guide 151.1-2, *Technical Planning Basis*, to determine the need for further quantitative assessment. Facilities with an inventory of a particular hazardous material in excess of criteria-based values require further evaluation and documentation in the form of a facility-specific Emergency Planning Hazards Assessment (EPA). The results of this evaluation survey are summarized in Table HS-1 of the current version of the *Hazards Survey (April 2011)*. Most of the facilities listed do not require a facility-specific quantitative EPA.

The inventories of hazardous materials further evaluated for planning purposes are derived from safety basis documentation (e.g., documented safety analyses – safety analysis reports/hazard analysis reports/screening documents) to determine the maximum authorized quantities. The facility's Facility Safety Plans (FSPs) are also reviewed to determine administrative limits of materials as permitted by safety basis documents and implemented by the Integration Work Sheets/Safety Plans (IWS/SPs) process in accordance with the LLNL *ES&H Manual*, Part 3: "Safety Analysis and Work Plans and Procedures." If explicit inventory limits are not identified, the maximum evaluation quantity for specific hazardous materials is based upon facility classification or expected or historical maximum quantities, as appropriate. Additionally, use of ChemTrack assessment tools (such as the Maximum Facility Inventory Limit, or MFIL) may be used as available. This process, including requirements for revisions and application of EPA information as the technical basis for emergency planning, is described in greater detail in EPIP-61, *Emergency Planning Hazards Survey and Hazards Assessments*.

Inventories of biological agents and toxins are assessed in accordance with the LLNL *ES&H Manual*, Document 13.1, “Biogovernance,” Document 13.6, “Safe Handling and Use of Biological Research Materials,” the LLNL Institutional Biosafety program, and the requirements of the Centers for Disease Control and Prevention’s standard, “Biosafety in Microbiological and Biomedical Laboratories.” An EPHA has been documented for the facilities associated with Biosafety Levels 2 and 3 operations.

#### **1.4.1.2 Facilities Having Potential for Operational Emergencies Requiring Classification**

Based on hazardous material inventory information, facilities are categorized in the Operational Emergency Hazardous Material (HazMat) Program, and require facility-specific quantitative assessments with associated documentation, the EPHA. To ensure that hazardous materials posing plume release impacts that may produce significant consequences outside the immediate facility are adequately considered, those hazardous materials inventories potentially producing Alert, Site Area Emergency, or General Emergency classifications will be evaluated generically in the North American Emergency Response Guidebook (current version) per EPIP-62, *Emergency Planning Hazards Assessment Documentation for Transportation Events*, and/or in a facility EPHA as required per EPIP-61. The evaluation is commenced and summarized in the *Hazards Survey*. Other listed buildings in the *Hazards Survey* are categorized as Operational Emergency Base Program facilities.

Of the approximately 714 facilities at LLNL, there are just 12 facilities that, by the nature of the hazardous materials present, could experience events causing an Operational Emergency to be declared as described in detail in their respective EPHA documents. Additionally, there is an EPHA for Site 300 and onsite transportation events are covered under EPIP-62. The EPHAs are updated periodically (every three years) or whenever there are significant changes to operations (e.g., new operations not previously considered or new hazardous material inventories). The EPHAs describe facility mission, location, floor plans, utilities, safety systems, worker populations, and operations.

#### **1.4.1.3 Facilities and Operations Located Outside LLNL that Might Impact the Livermore Site 200 and Site 300**

There are offsite (non-DOE) facilities identified in the EPHAs that might negatively impact the Livermore Site 200 by the release of hazardous chemicals such as chlorine gas and ammonia gas. There are no such facilities identified in the Site 300 vicinity. The Sandia National Laboratories/California (SNL/California) site (located directly south of LLNL) is covered by their Base Program.

Vehicles can haul hazardous materials on roads adjacent to the Livermore site and on Corral Hollow road south of Site 300. However, the main thoroughfare is Interstate 580, which is approximately one mile north of both the Livermore site and the northern boundary of Site 300. A railroad runs approximately one-quarter mile north of the Livermore site and one-and-a-half

miles north of the northern boundary of Site 300. The manager of train operations reports that train engineers for Union Pacific Railroad always carry a manifest as well as emergency action plans dealing with the particular contents of a given train. Release of toxic materials from vehicles or trains could negatively impact either site. Grass fires originating offsite could impact Site 300 outer boundaries. The combination of gravel, asphalt, and concrete as roadway, work area, and building construction materials, along with onsite controlled burns, would limit combustible materials available to burn and expose onsite personnel and materials to such fires.

#### **1.4.1.4 Facilities Screened for Hazards Assessments**

The processes used to screen hazardous materials are described in detail in the *Hazards Survey*. Hazards existing at LLNL include chemical hazards such as phosphine, hydrogen chloride, chlorine, and sodium hydroxide. Radiological hazards include plutonium, uranium, tritium and transuranic wastes. The latest *Emergency Readiness Assurance Plan (ERAP)* contains annually updated information on the *Hazards Survey*, EPHAs, and tabulated information related to significant radiological, chemical, and biological hazards authorized in LLNL buildings and facilities.

#### **1.4.2 Physical Attributes of the Sites**

LLNL consists of two sites, the main Laboratory site located in Livermore, California (Site 200) in Alameda County, and the Experimental Test Site (Site 300) located near Tracy, California, on the border between San Joaquin and Alameda counties. (See Figures 1.1, 1.2, and 1.3).

##### **1.4.2.1 Site 200**

The Livermore site is located approximately forty miles east of San Francisco in the Livermore valley in southern Alameda County, State of California. The downtown area of the City of Livermore lies about three miles to the west of the Livermore site. In addition to Livermore, notable urban areas to the west of LLNL are the cities of Pleasanton, Dublin, Danville, and San Ramon, and the densely-populated San Francisco Bay Area.

Urban areas lying in the general northerly direction from LLNL are the cities of Concord, Walnut Creek, Pittsburg, and Antioch; while Tracy, Manteca, Stockton, and Modesto are to the east. To the southwest lie the densely-populated cities of Santa Clara County, which include San Jose.

The Livermore site, which is roughly one square mile, is located in the southeastern part of the Livermore valley. The valley is situated in a section of the California coast range that lies between San Francisco Bay on the west and the northern San Joaquin valley to the east. The Livermore valley is primarily of low relief, although it does contain scattered groups of hills that rise from 300 to 600 meters above the valley floor.

Details on the geography, topography, demography, meteorology, natural phenomena, transportation systems, and utilities can be found in the Environmental Impact Statement/Environmental Impact Report for the Livermore site, the *Environmental Report (current version)* or the safety analysis reports.

#### 1.4.2.2 Site 300

Site 300 is comprised of 7,000 acres in the foothills 18 miles southeast of Livermore (Site 200). The site is operated for the Weapons and Complex Integration Directorate and was established in 1955 as an explosives test site. In October 1955, the first outdoor explosives test was conducted at Building 801. There are approximately 110 employees (Laboratory and subcontractor) that report to Site 300 as their assigned work location.

The base mission of the site from its beginning in 1955 to what it is today has not changed to a large degree. Site 300 supports the Laboratory's nuclear weapons program by destructive and non-destructive tests of high explosives and other non-nuclear weapon components, as well as explosives processing,

Several administrative and service buildings and most non-programmatic functions are generally consolidated near the entrance to Site 300 in the General Services Area. Non-destructive testing is conducted in the Physical, Environmental and Dynamic Test Area to the northeast. The area where high explosives are synthesized, formulated, fabricated and test devices are assembled is to the north in the Process and Chemistry Areas. Firing activities (both indoor and outdoor) take place further north in the East and West Firing Areas. The separation of the firing areas from the Process and Chemistry Areas and the General Services Area illustrates land-use compatibility considerations in site selections. The firing bunkers, where high explosives and other weapon components are detonated on open firing tables and within the Contained Firing Facility, are separated from each other and well away from the boundaries of the site. Scattered throughout the site are earth-covered magazines for storage of high explosives, waste collection and treatment areas, and numerous storage buildings.

While non-programmatic functions have been generally consolidated in the General Services Area, certain facilities such as power substations, the meteorological and radio towers, drinking water system storage tanks, and the Protective Forces Division's office and communications facility are located strategically elsewhere for their special support functions.

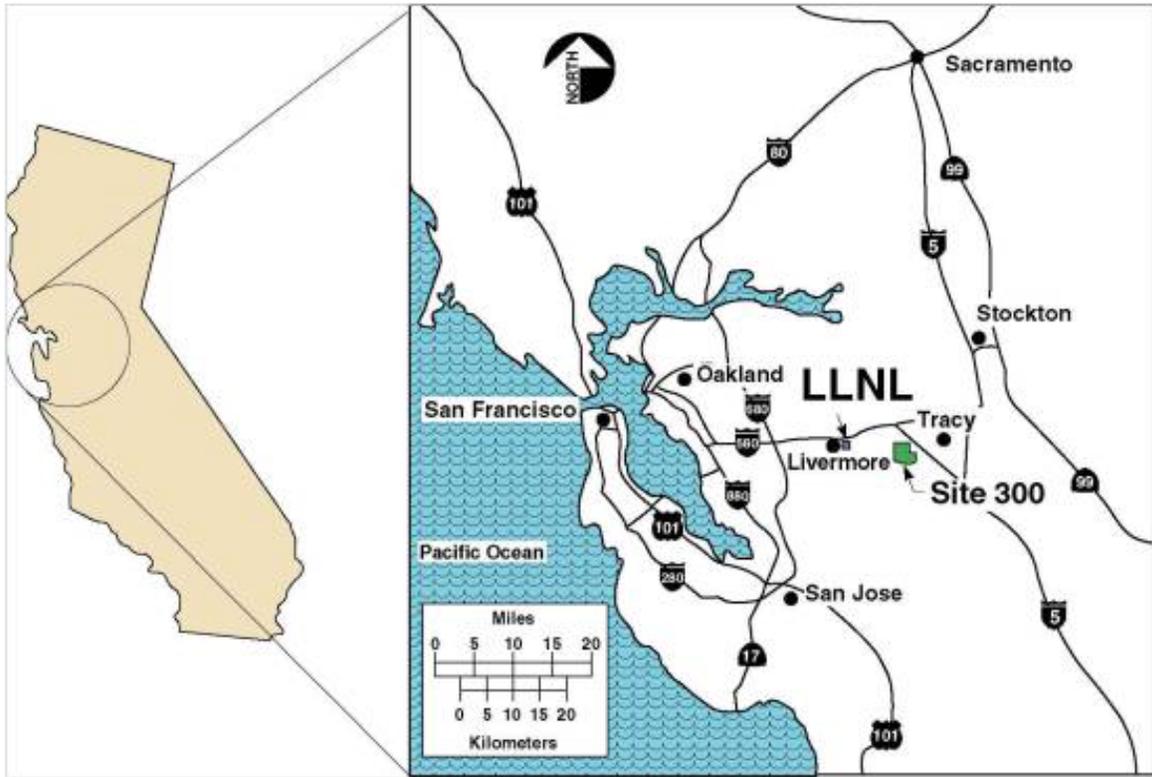


Figure 1.1 Local Area

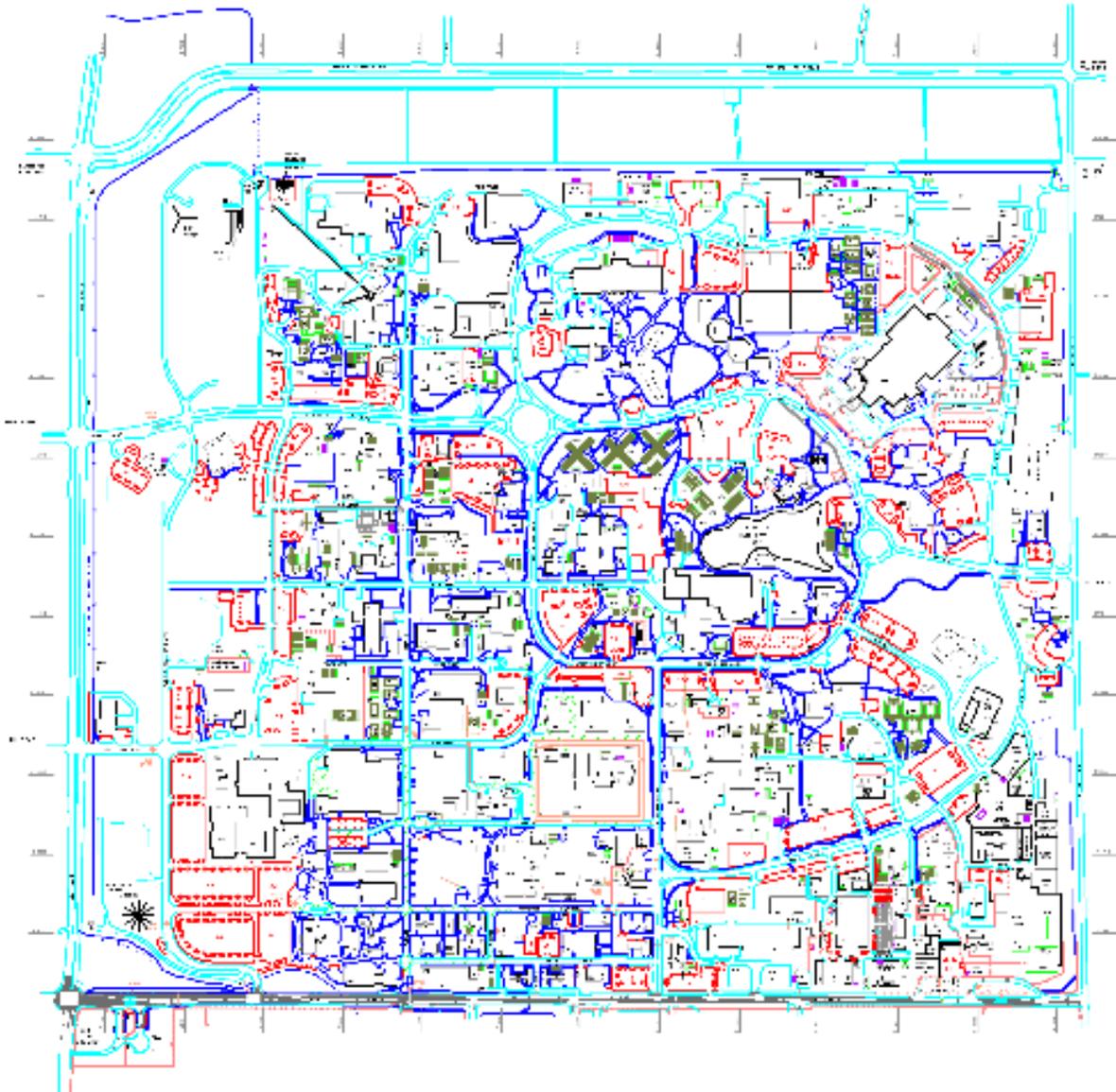


Figure 1.2 Livermore Site 200



**Figure 1.3 Site 300**

### 1.4.2.3 Meteorology

The average wind speed in 2011 at the Livermore Site 200 was 2.3 m/s (5.1 mph); at Site 300 it was 5.6 m/s (12.5 mph).

### 1.4.2.4 Earthquake Hazard Potential at Site 200 and Site 300

A major earthquake is the only credible disaster caused by a natural phenomena hazard that is likely to involve the entire Laboratory and the entire surrounding community. Hazard mitigation at LLNL is achieved by complying with building codes, applying good engineering and housekeeping practices, and providing training programs required for managers and workers.

Although LLNL's Site 200 and Site 300 are somewhat removed from the largest and most active earthquake faults in California, both sites are located close to lesser active and potentially active faults. The most important of these are the Calaveras and Greenville faults, which are the easternmost members of the San Andreas Fault system in the San Francisco Bay region, and are both estimated to be capable of producing earthquakes in the magnitude 6.5 to 7 range (i.e., similar to the size of the 1989 Loma Prieta earthquake). These two faults make the greatest contribution to the seismic hazard at Livermore Site 200, particularly at frequencies of ground shaking of about 1 Hz and above that would be the most damaging to buildings at the sites. For example, a magnitude 5.8 earthquake (followed by a magnitude 5.4 aftershock) on the Greenville Fault in 1980 produced high frequency shaking having an estimated peak acceleration of about 0.3g (g is the acceleration due to gravity) and some instances of significant structural damage at the Livermore Site 200. Comparable high frequency shaking would not be experienced from earthquakes on larger faults of the San Andreas system (i.e., San Andreas, Hayward-Rogers Creek, San Gregorio). Rather, these faults would produce relatively large low-frequency ground motions of longer duration. For example, the 1989 magnitude 7 Loma Prieta earthquake on the San Andreas Fault produced a peak ground acceleration of 0.1g at the Livermore Site 200 but no damage.

The Carnegie-Corral Hollow Fault system passes through Site 300 and 3 km east of the Livermore Site 200. Field investigations by LLNL Geosciences in 1991 suggested that this system should be considered potentially active, in which case it makes significant contributions to the hazard at both sites. Apparently, less active and/or shorter faults that make lesser contributions to the overall hazard include the Las Positas and Verona-Williams faults, and the recently discovered Mount Diablo thrust fault under the Livermore and Sycamore Valleys.

Historical records indicate that about once every 20 years the Livermore Site 200 is subject to an earthquake that can at least knock books off shelves, overturn furniture, cause lighting fixtures to fall, and the like. No active faults are known to underlie Site 200, and there is no historical record of surface rupturing or faulting at the site. Flooding resulting from seismic events would not occur at LLNL from a failure of the Del Valle Reservoir dam, from loss of water from the Patterson Reservoir, or from a break in the South Bay Aqueduct near LLNL.

## 2 Operational Emergency Base Program

### 2.1 Introduction

Each DOE facility/site is required to establish an Operational Emergency Base Program that provides the framework for response to serious events or conditions that involve the health and safety of workers, the public, the environment, and safeguards and security. These events or conditions are not unique to DOE/NNSA operations

The specific requirements that constitute the LLNL Operational Emergency Base Program are the emergency planning and preparedness aspects of DOE Order 151.1C as well as applicable laws/regulations/ordinances.

The objective of the Base Program is to achieve an effective integration of emergency planning and preparedness requirements into an emergency management program that provides capabilities for comprehensive emergency management through communication, coordination, and an efficient and effective use of resources.

The *Hazards Survey* is used to identify the events or conditions that define the scope of the Base Program at LLNL. The *Hazards Survey* is a qualitative examination of the events or conditions specific to LLNL that may require a response of a magnitude to warrant more than precautionary measures from emergency personnel. The description of the potential impacts of such events or conditions contained in the *Hazards Survey* determines the planning and preparedness requirements that apply.

The elements of the Base Program at LLNL are represented and described in documents, plans, and procedures developed and maintained by individual disciplines of the Emergency Response Organization. The required elements of the Base Program are dispersed among ERO discipline documents. This chapter of the EPlan represents a compendium and codification of the existing Base Program elements represented and/or described in other functional documents.

### 2.2 Scope

This section provides a synopsis description of the documented elements that comprise the LLNL Operational Emergency Base Program. These elements include:

- Hazards Survey and Screening
- Program Administration
- Training and Drills
- Facility-Level Base Program
- Readiness Assurance
- Emergency Response Organization
- Offsite Response Interfaces
- Emergency Facilities and Equipment

- Categorization and Classification
- Notification and Communication
- Consequence Assessment
- Protective Actions and Reentry
- Emergency Medical Support
- Emergency Public Information
- Termination and Recovery

### 2.3 Hazards Survey and Screening

The Operational Emergency Base Program at LLNL is based on a comprehensive *Hazards Survey*. The LLNL *Hazards Survey* is an examination of the features, characteristics, and material at risk at LLNL facilities and/or activities to identify the generic emergency events and conditions including natural phenomena such as earthquakes; fires; and other serious events involving or affecting health and safety, the environment, safeguards and security and the potential impacts of such emergencies.

The screening process consists of reviewing the materials inventories of each facility for quantities of hazardous materials that approach the guidelines for reporting or emergency planning requirements. For radiological classifications, DOE-STD-1027, Attachment 1, table A.1 is used for differentiating between Nuclear Facilities and Radiological Facilities. Materials exceeding the quantities listed on the table are screened in for quantitative assessments and documentation in a facility EPHA. For biological classifications, facilities and/or operations with agents in type and quantity as described in DOE Order 151.1C, paragraph 4a (14) I, require an EPHA.

The first step in the chemical screening process is identification of chemicals present at a facility. In most cases, this is done by a review of site chemical and waste inventory databases and a review of existing safety documentation. Current existing databases to be considered include: the Chemical Tracking System, CHEMTRACK (<http://chemtrack.llnl.gov/chemtrack/index.html>) and the hazardous/mixed waste database (Haztrack). Expected or historical quantities may be used if physical or administrative limits do not exist. Area Facility Points-of-Contact (FPOCs) may be consulted for questions regarding chemical inventory.

Chemicals must be quantitatively analyzed in the EPHA unless they may be excluded by one of four criteria:

- Common Public Use Exclusion
- Lab Scale Exclusion
- Low Dispersibility Exclusion
- Low Toxicity Exclusion

### **(1) Common Public Use Exclusion**

Eliminate from further consideration materials that are commonly available to and used by the public, if the formulation and concentration is the same as for products that are distributed without significant restrictions to the public. Examples of products that may be excluded are cleaning products, bleach, motor oil, gasoline, paint, and pesticides not designated restricted use by the U.S. Environmental Protection Agency (EPA).

### **(2) Lab Scale Exclusion**

Eliminate from further consideration materials that are handled, stored and used in amounts that do not exceed laboratory-scale quantities. Laboratory-scale is defined in 29CFR1910.1450 as that for which containers used for reactions, transfer, and other handling of substances are designed to be easily and safely manipulated by one person. For *Hazards Survey* screening purposes, quantities may be considered lab scale if they do not exceed 40 pounds (or 5 gallons for liquids), or 10 pounds for bottled gases.

### **(3) Low Dispersibility Exclusion**

Eliminate from further consideration chemicals that do not present an airborne exposure hazard due to their physical form or other factors. Materials may be excluded if they meet one of the following tests:

- The substance is solid at ambient temperatures and does not contain or include a significant fraction of respirable particles.
- The substance is a liquid that exhibits a vapor pressure (or partial pressure when in solution) of less than 1 mm Hg at 20 degrees C. Note that in aqueous solutions, the hazardous material of concern may have a negligible partial pressure and the reported vapor pressure is really only the partial pressure of the water (e.g., sodium hydroxide solution).

Gases may not be excluded.

Specific dispersibility criteria are therefore:

- Gases – All are readily dispersible;
- Liquids – Only those with a vapor pressure > 1 mm Hg are readily dispersible;
- Solids – Only fine powders (particle diameter < 10 microns) are readily dispersible.

### **(4) Low Toxicity Exclusion**

Eliminate from further consideration chemicals with a National Fire Protection Association (NFPA) 704 Health Hazard rating of 2 or lower. Such materials do not need to be considered in an EPHA. In addition, if a chemical has a Health Hazard rating of 3 or 4 solely due to cryogenic properties (i.e., is a frostbite hazard), it also may be excluded.

All buildings/facilities and/or operations requiring a documented EPHA are included in the Hazardous Material Program. A discussion of the *Hazards Survey* and screening process is found in Section 1.4.1.1 of this EPlan; in the *Hazards Survey* document, current version; and in EPIP-61, *Emergency Planning Hazards Survey and Hazards Assessments*.

## 2.4 Program Administration

A mechanism has been developed to assure the effective administration of the Operational Emergency Base Program at LLNL. This process provides for, among other program elements, the maintenance of the EPlan; the development and maintenance of the readiness assurance process; conduct and development of training and drills; implementation of the Facility-Level Emergency Plan (FLEP) and Disaster/Self-Help Plan; the development and creation of emergency management-related documentation; and the coordination of emergency resources.

The Base Program Administrator is identified in Section 15.1 of this EPlan.

This EPlan and the associated EIPs represent the elements of the LLNL Base Program administration. Implementation of the program is through the following LLNL *ES&H Manual Documents*:

- 22.1 - *Emergency Preparedness and Response*
- 22.2 - *Environmental Emergency Preparedness and Response*
- 22.3 - *Response Plan for Fire in an Explosives Area*
- 22.4 - *Earthquakes*
- 22.5 - *Fire*
- 22.6 - *Exposure to Radiation in an Emergency*
- 22.7 - *Protective Actions: Disaster/Self-Help, Shelter-In-Place, Site Emergency Egress, and Emergency Traffic Control*
- 22.8 - *Continuity Programs*

## 2.5 Training and Drills

The Emergency Management Training and Drill program at LLNL provides workers at LLNL, who may be required to take protective actions such as assembly, evacuation, and/or shelter, with initial training and periodic drills. The training is provided at the time of employment, when employee's responsibilities change, or when the EPlan changes. Initial and periodic refresher training is also provided to applicable personnel who may be required to take action associated with an emergency (i.e., assisting in the safe and orderly evacuation of other employees).

A thorough description of the Training and Drill program at LLNL is available in Section 13 of this EPlan, Implementation Guidance for the Facility-Level Base Program, and EPIP-123, *Emergency Response Organization Training and Drills*.

## 2.6 Facility-Level Base Program

The Facility-Level Base Program requires facility/building planning that deals with those issues specific to the facility/building. It involves taking into account how the ERO normally responds to specific facilities/buildings at LLNL and describing how employees will respond to different types of emergencies, specific worksite layout, structural features, and emergency systems which are described in a FLEP. Procedures are in place requiring each facility or complex to maintain a FLEP in writing. The FLEP must be kept in the workplace and be available to facility occupants for review. At a minimum, each plan will include procedures for reporting a fire or other emergency, exit routes and assembly locations, sheltering in place, emergency shutdown/operating critical plant operations before evacuation, accountability, and rescue or medical duties, if assigned. Each plan will also document appointed Building Emergency Coordinator(s) (BEC) and optional floor monitors (FM) who have responsibility for overseeing the emergency preparedness and response activities in assigned facilities and assisting facility occupants in understanding their responsibilities during a facility-level event.

In addition, as a method of building the Facility-Level Base Program and promoting good operating practices, facilities with EPHAs are also required to have a documented, internal facility-level operational drill/exercise program apart from the institutional-level drill/exercise program. Facility-level operational drills provide supervised, hands-on training for facility occupants utilizing facility-specific response expectations inclusive of protective actions. These drills cover a wide variety of situations identified to be credible, but that are not serious enough to require declaration of an Operational Emergency. Fire alarms, first-aid cases, small spills, operational anomalies (e.g., loss of power or ventilation), and process upsets (e.g., equipment malfunction) are some of the scenarios covered in the facility-level operational drill program. Facility-level operational drills are developed, conducted, and evaluated using objectives and associated evaluation criteria. Guidance documents have been developed on how to implement an operational drill program at the facility-level. While only required at EPHA facilities, the operational drill program is encouraged at all LLNL facilities.

The Facility-Level Base Program is described in detail in the *ES&H Manual* Document 22.1

## 2.7 Readiness Assurance

Readiness Assurance is a continuous program associated with LLNL Emergency Management and is an important element of the Operational Emergency Base Program. The purpose of this process is to lend assurances that the Emergency Management program continues to meet mission requirements. To that end, an Emergency Readiness Assurance Plan (ERAP) is developed annually. This document is approved annually by NNSA/LSO.

In addition to other program descriptions and status reports, the ERAP establishes an annual agenda for determining and monitoring the LLNL Emergency Management program and response readiness capability.

A further description of the Readiness Assurance program is found in the annual ERAP as well as in EPIP-141, *Emergency Programs Administration*.

## 2.8 Emergency Response Organization

LLNL is a multi-program national laboratory. The management structure responsible for strategic emergency planning, preparedness, response, recovery, resource management, readiness assurance, and associated maintenance activities at LLNL is the Emergency Management Department. Response to fire, medical, and hazardous materials incidents on LLNL property is provided by the Alameda County Fire Department (ACFD) under contract to LLNS. The ACFD staffs both LLNL fire stations with cleared, trained firefighters and firefighter/paramedics. Both LLNL and the ACFD have ongoing contacts and mutual-aid agreements with local response agencies

The response to an emergency initially involves the Fire Department and Protective Force Division (PFD) which assigns an Incident Commander to establish control of the incident scene. The on-duty EMDO is notified, who is responsible for categorizing Operational Emergencies and further classifying OEs as Alerts, Site Area Emergencies, and General Emergencies, if required. For OEs categorized as Alert or Operational Emergency Not Requiring Further Classification, the LEDO is also notified and determines further necessary responses.

The Emergency Response Organization is described in Section 3 of this EPlan.

## 2.9 Offsite Response Interfaces

LLNL has established mutual aid agreements with local, county, State, and national organizations including:

- Alameda County
- Alameda County Sheriff's Department
- California Department of Forestry & Fire Protection
- California Highway Patrol
- City of Livermore
- City of Tracy
- Department of Energy/NNSA and Livermore Site Office (LSO)
- Eden Medical Center
- Lawrence Berkeley National Laboratory
- Livermore Police Department
- San Joaquin County Sheriff's Department
- San Ramon Valley Fire Protection District
- Sandia National Laboratories
- State of California Office of Emergency Services
- University of California, Office of the President
- ValleyCare Health System
- Sutter Tracy Community Hospital

Section 4 of this EPlan provides a description of offsite response interfaces.

## 2.10 Emergency Facilities and Equipment

As part of the LLNL Base Program, LLNL has developed a process to optimize the use of emergency facilities and equipment. Emergency facilities have been identified and equipped; the onsite Fire Department, operated under contract by the ACFD, is a well-trained organization equipped with state-of-the-art equipment; and emergency communications are mission adequate.

The LLNL Disaster/Self-Help Program Plan describes an organization that will respond to large scale or regional disasters (e.g., earthquake) impacting LLNL when, for a significant period of time, there may be limited or no immediate response from ACFD or other professional emergency response organizations. It relies on employees to make an initial and continued effort to respond to and control emergencies until professional emergency response personnel can take charge. The Laboratory's Disaster/Self-Help Program is overseen by the Emergency Management Department's Emergency Programs Organization (EPO) and provides Laboratory personnel information on how to respond to large scale emergency situations. Boxes containing emergency supplies are maintained as part of this program.

Section 12 of this EPlan and EPIP-111, *Activation and Operation of the Emergency Operations Center*, provide a description of emergency facilities and equipment responsibilities and organization.

## 2.11 Categorization and Classification

The *Hazards Survey* provides identification of generic emergency events and conditions to be addressed as part of the emergency management system. The survey is used to define those events and conditions that should be categorized as OEs. The LLNL Base Program requires that identification and categorization of OEs be conducted quickly and accurately.

Section 5 of this EPlan and EPIP-41, *Emergency Categorization and Classification*, provide Base Program description and procedures.

## 2.12 Notification and Communication

The LLNL Operational Emergency Base Program requires prompt initial notification of workers, emergency response personnel, and response organizations including DOE elements and State and local organizations in the event of an emergency. Additionally, the Base Program requires the continuing effective communication among response organizations throughout an emergency.

The notification and communication processes established for the Base Program are further described in Section 6 of the EPlan and EPIP-51, *Emergency Notifications*.

### **2.13 Consequence Assessment**

The LLNL Emergency Programs Organization has established a comprehensive Operational Emergency consequence assessment process. These procedures are discussed in the *Hazards Survey*, Section 7 of this EPlan, and in EPIP-61.

### **2.14 Protective Actions and Reentry**

The protective actions and reentry process as discussed in Section 8 of this EPlan begins with development of pre-planned protective actions based on the results from the EPHA, followed by identification of notification requirements, development of plans and procedures for protective actions, and identification of personnel who will be responsible for determining, recommending and implementing protective actions. Specific actions and criteria for developing EPHAs can be found in EPIP-61. Notification requirements and actions are found in EPIP-51. Actions and criteria for determining and implementing protective actions can be found in EPIP-71, *Emergency Protective Actions and Reentry*.

Protective actions associated with self-help and emergency egress are found Volume II, Part 22, “Emergencies/Earthquakes/Fire,” of the LLNL *ES&H Manual*.

### **2.15 Emergency Medical Support**

Fire Department personnel, paramedics and emergency medical technicians are the First Responders to medical emergencies at LLNL. At the Livermore site, patients are evaluated and transported to the appropriate receiving facility in accordance with Alameda County Emergency Medical Services (EMS) policies and procedures. In general, basic life-support patients with work-related injuries are transported to the Health Services Department during normal working hours. Advanced life-support patients, individuals with non-work related injuries, and patients needing emergency medical assistance outside of normal working hours, are transported to the appropriate offsite receiving facility.

A further description of LLNL’s emergency medical support is found in Section 9 of this EPlan.

### **2.16 Emergency Public Information**

In the event of an emergency at LLNL, the PAO will implement news media and public communications according to established procedures and routine protocols, including coordination with NNSA/LSO Office of Public Affairs, with an option to activate the Public Affairs Office Department Operations Center (PAO DOC).

Further discussion of this process and procedures is found in Section 11 of this EPlan and the LLNL Public Affairs Office and NNSA/LSO Office of Public Affairs Emergency Public Information Plan and Procedures.

## 2.17 Termination and Recovery

During an Operational Emergency, timely decisions are required to ensure protective actions minimize the potential for health effects to onsite personnel and the public. The Emergency Director is responsible for terminating the emergency phase, completing appropriate notifications, and initiating the recovery phase.

This process is described in Section 10 of this EPlan and in EPIP-91, *Emergency Termination and Recovery*.

## 3 EMERGENCY RESPONSE ORGANIZATION

### 3.1 LLNL Organization

Lawrence Livermore National Security, LLC operates LLNL for the DOE/NNSA under Contract DE-AC52-07NA27344 (Contract 44) between LLNS and DOE. The LLNL organization chart applicable to the EPlan is shown on Figure 3.1.

#### 3.1.1 *Emergency Programs Responsibilities*

The Laboratory Director, who reports to the LLNS Board of Governors, is responsible for the safe operation of LLNL. A Deputy Director, a Deputy Director for Science & Technology, a Laboratory Executive Officer, four Principal Associate Directors (PADs), a Chief Information Officer, an Independent Audit & Oversight Director, a Legal Counsel, a Security Director, an Environment, Safety, and Health Director, a Contractor Assurance Officer, and a Chief Financial Officer assist the Director in the mission to provide guidance and direction for LLNL. The Director has the authority and responsibility to ensure the Laboratory complies with applicable DOE Orders, as well as other Federal, State, and local regulations.

The Director has delegated responsibility for operational activities, including emergency management, to the Deputy Director. The Facilities & Infrastructure (F&I) Associate Director is responsible for management oversight of LLNL's facility operations programs and integration with other F&I activities, including emergency management.

The Department Head for the Emergency Management Department (EMD) is responsible for the direction of LLNL's comprehensive emergency management and response program and serves as the Emergency Management Program Administrator under DOE Order 151.1C. The Department Head is also the Functional Area Manager (FAM) for the Emergency Management (EM) Functional Area (FA) at LLNL. Under LLNL's management system, the FAM is responsible for assessing and measuring the effectiveness of functional processes - in this case, emergency management - throughout the Laboratory.

When decisions related to the EM FA will have a significant or broad impact on other FAs or the Laboratory at large, the FAM is responsible for presenting the proposed changes to the Operations & Business PAD's Operations Review Board (ORB), and then to the Institutional Operations Review Board (IORB). The IORB, which is represented by all key programs at LLNL, then facilitates the negotiation and decision-making process for approving policy implementation while balancing institutional risk.

The Emergency Programs Organization Manager, reporting to the Emergency Management Department Head, is responsible for the daily activities of the LLNL Emergency Programs Organization, including administration of programmatic activities necessary for LLNL to comply with DOE Order 151.1C.

The EPO Facilities and Equipment Specialist is responsible for the readiness and maintenance of the EOC and other special projects as assigned by the EPO Manager.

The EPO Performance Assurance Specialist is responsible for assessment coordination, commitment tracking and coordination, internal assessment, and the *Emergency Readiness Assurance Plan*. Additional responsibilities include maintaining, reviewing, and updating the EPlan and EIPs.

The EPO Training, Drills and Exercise Specialists are responsible for ERO training, records coordination, exercise and drill development and execution, drill/exercise conduct, and drill/exercise corrective action coordination with the Performance Assurance Specialist.

The EPO Consequence Assessment Analysts utilize hazards surveys to conduct assessments.

The EPO Offsite Liaison is responsible for interface and coordination between LLNL and local, county, State and Federal offsite agencies in the area of emergency planning, preparedness and response.

The EMD Subject Matter Expert (SME) for LLNL's Comprehensive Emergency Management System reports to the Emergency Management Department Head, and assists him/her and the EPO Manager in meeting institutional and regulatory requirements associated with development, management, implementation, and maintenance of LLNL's Comprehensive Emergency Management System. The SME also provides the EPO Manager with ongoing oversight assessment of LLNL's Comprehensive Emergency Management System, with a focus on the effective integration of the various emergency management program elements and response organizations (e.g., ES&H Teams, Fire Department, Protective Forces, etc.). The EMD SME also serves as the alternate EM FAM.

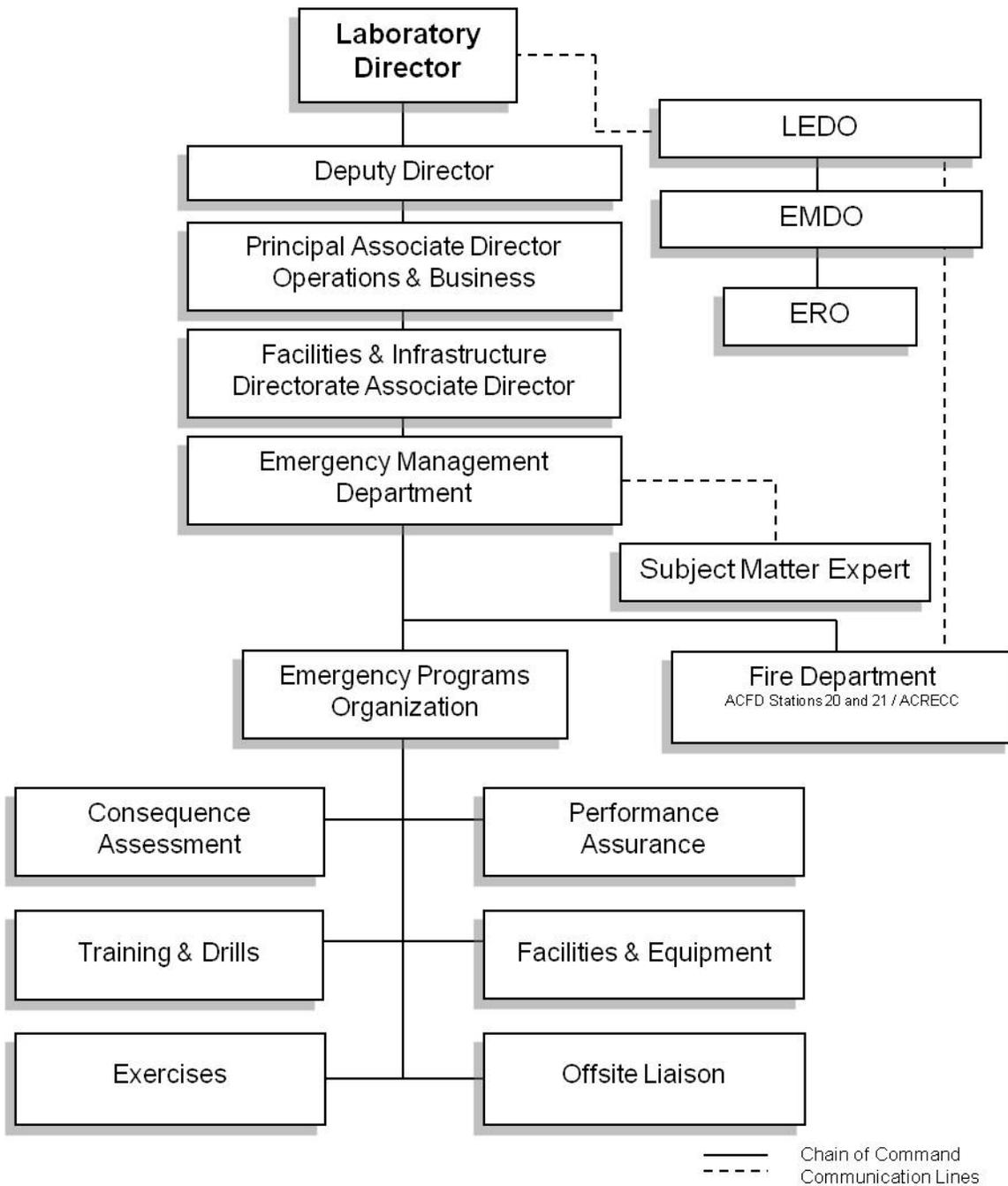


Figure 3.1 LLNL Organization

### **3.1.2 Committees**

#### **3.1.2.1 Emergency Programs Planning Committee**

The Emergency Programs Planning Committee (EPPC), managed by EPO, is composed of representatives from participating or interested onsite entities (e.g., Fire Department, Security Organization, ES&H, affected facilities), and offsite community partner organizations that have indicated an interest in drill and exercise planning. The EPPC aids in the scheduling and planning of exercises and drills. The EPPC meets on a monthly basis throughout the planning cycles and implements EPIP-131.

#### **3.1.2.2 Emergency Management Stakeholder Advisory Group**

The Emergency Management Functional Area Manager (EMD Head) has established, in accordance with LLNL management policy, a standing Stakeholder Advisory Group (SAG) associated with the EM FA. The EM SAG is intended to facilitate collaboration among the LLNL programs and support organizations regarding cross-organizational matters for this functional area. The EM SAG addresses institutional requirements flow down into implementing procedures, upcoming contract changes involving new or revised requirements, implementing policies and procedures, cross-cutting implementation issues, performance monitoring, and recommended program and process improvements. The EM SAG and other LLNL Functional Area SAGs serve to integrate functional area requirements and processes across the Laboratory for consistent and effective implementation.

### **3.2 Emergency Direction and Control**

The LLNL Director has delegated to the LEDO the authority to protect the health and safety of LLNL employees, the public, and the environment; and to maintain the security of the facility during an emergency. LEDOs are senior Laboratory managers who have been appointed, in writing, by the Director and have accepted responsibility for managing institutional response. They will assume the role of ED when the EOC is declared operational.

The LLNL ERO consists of a two-tiered organization, structured to respond to emergencies (see Figure 3.2). Emergency Management Teams at each level provide command and control of the emergency response efforts. The IC is in charge at the scene, and the ED is in charge of the overall site-wide response efforts. The Emergency Management Duty Officer, from the Laboratory's Emergency Management Department, is onsite or on-call at all times, and is responsible for categorizing Operational Emergencies and further classifying OEs as Alerts, Site Area Emergencies, or General Emergencies, if required.

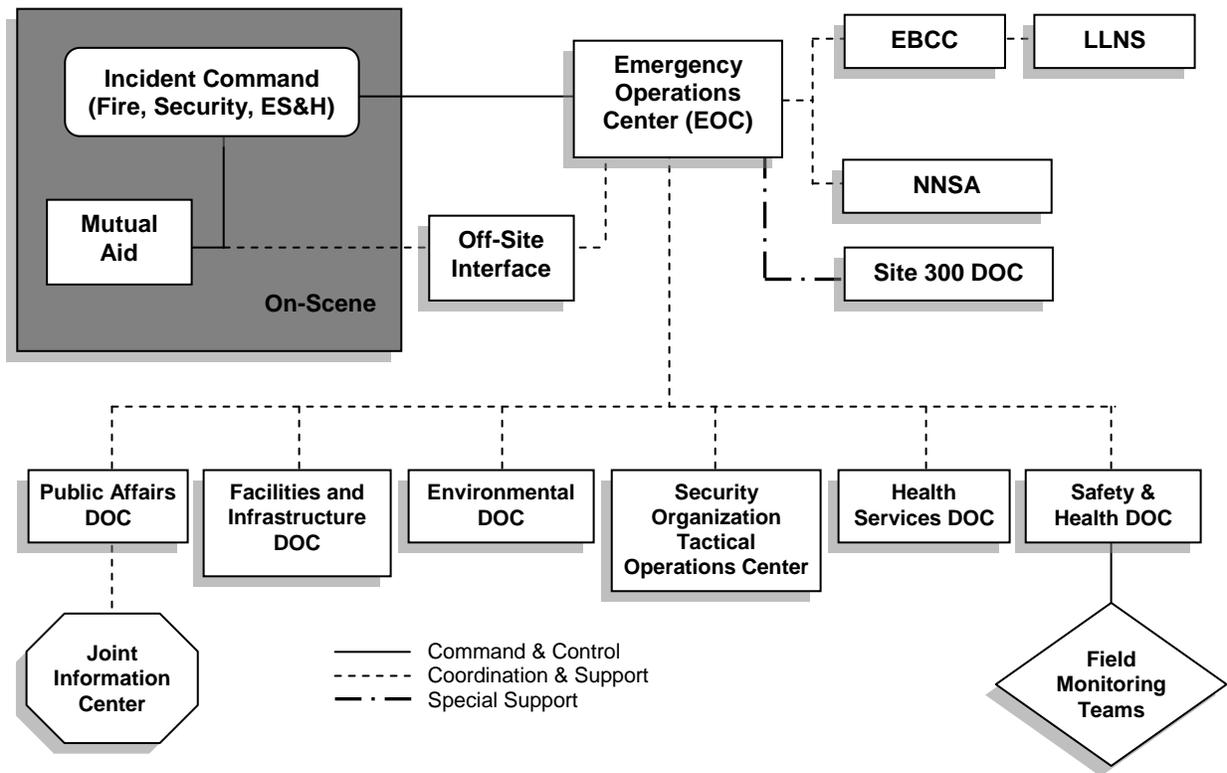


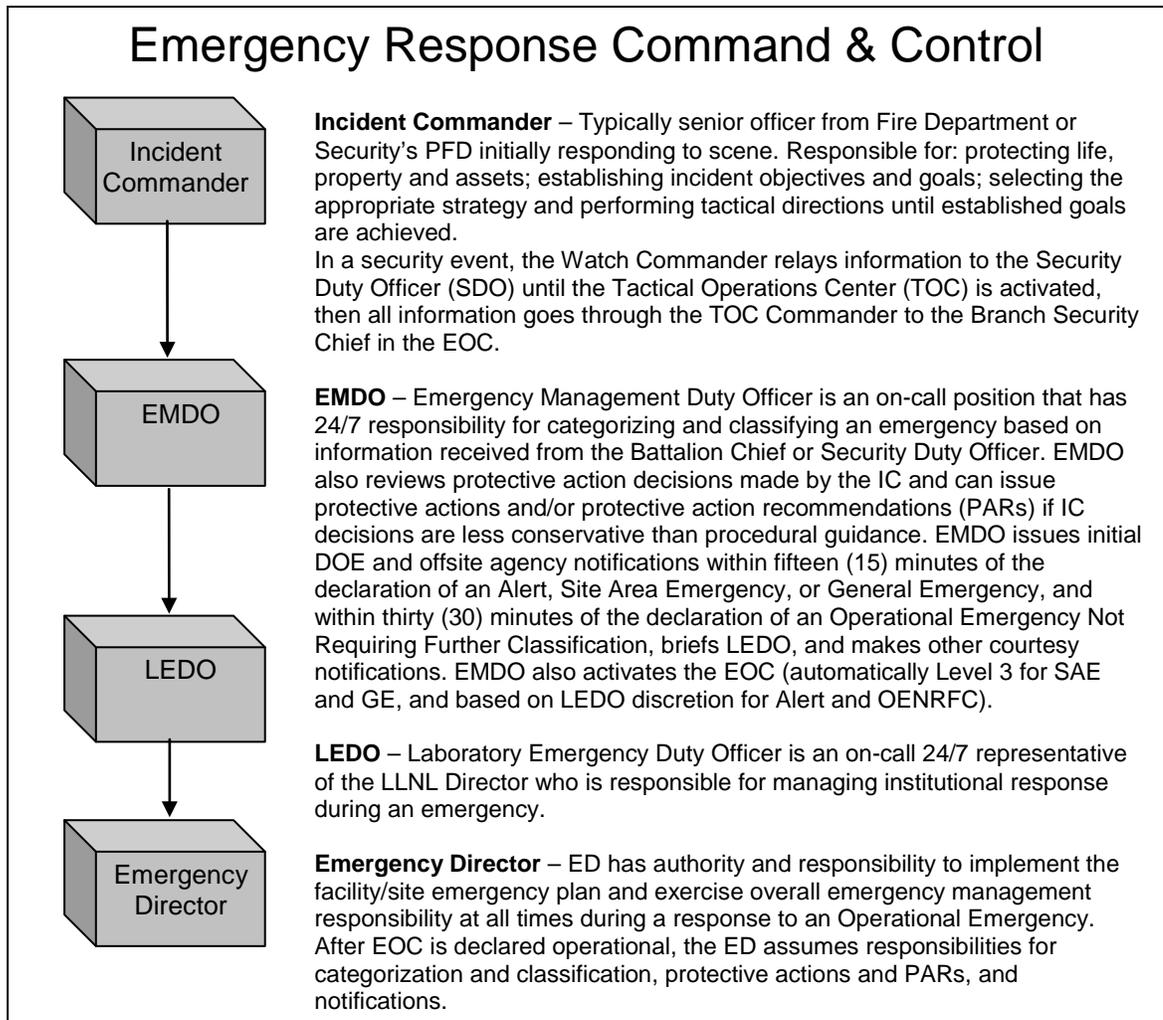
Figure 3.2 LLNL Emergency Response Organization

### 3.2.1 Succession of Authority

When an event requires activation and operation of the EOC, the on-duty LEDO becomes the ED and the back-up LEDO becomes the Liaison Officer. If the on-duty LEDO does not arrive for duty in a timely manner or indicate that he/she is en route, an attempt should be made immediately by emergency management personnel in the EOC to contact the on-duty LEDO. After initial attempts to contact the on-duty LEDO are unsuccessful, the back-up LEDO should assume command and task EOC personnel with contacting another LEDO to fulfill the role of Liaison Officer. In the unlikely event that no LEDO is available to assume the role of Emergency Director, the Emergency Management Coordinator (EMC) will contact the Director's Office, who will designate and authorize a temporary Emergency Director by providing instruction of their responsibilities as described in EPIP-111, *Activation and Operation of the Emergency Operations Center*.

### **3.2.2 General Concept of Operations**

- Any person discovering an abnormal event/condition immediately notifies Fire Dispatch or their supervisor who, in turn, notifies Fire Dispatch.
- The twenty-four hour notification point for LLNL “911” calls is Fire Dispatch/Alameda County Regional Emergency Communication Center (ACRECC) located at LLNL Site 200. Fire Dispatch initiates response by notifying appropriate onsite emergency resources, typically under the command/control of the IC. All 911 calls to ACRECC are monitored by Security’s Central Alarms Station (CAS), who dispatches the Protective Force Division.
- The Battalion Chief/Security Duty Officer (SDO) will gather information about the incident and relay it to the Emergency Management Duty Officer to determine the categorization/classification of the event/situation and implement initial protective actions and, if required, provide protective action recommendations to appropriate offsite authorities.
- Upon categorization of an Operational Emergency, the Incident Commander assumes the role of ED until the EOC is declared operational. The EMDO activates the appropriate level of the ERO, initiates appropriate notifications, including the LEDO. The IC manages the emergency until relieved by the on-duty LEDO who then becomes the ED when the EOC is operational. The IC continues to manage the incident scene. (see Figure 3.3).
- During localized Operational Emergencies at Site 300, the Site 300 manager or designated alternate serves as the DOC Commander. This position coordinates the emergency activities of site personnel and equipment and keeps the EMDO and LEDO informed. The EMDO automatically initiates the ERO activation at Site 200 for support of the Operational Emergency at Site 300 if an event requires a Site Area Emergency (SAE) or General Emergency (GE) declaration. For an Alert or Operational Emergency Not Requiring Further Classification (OENRFC), the EMDO consults with the LEDO to determine the appropriate ERO activation level.



**Figure 3.3 Emergency Response Command and Control**

### **3.2.3 Areas of Responsibility for Command and Control**

- Classification authority resides with the EMDO prior to EOC being declared operational.
- The LEDO is responsible for determining the appropriate level of ERO activation for Alerts and Operational Emergencies Not Requiring Further Classification. A Full Activation is automatically made by the EMDO for Site Area Emergency and General Emergency declarations. The LEDO also has the authority to activate the ERO (EOC and DOCs) for emergency events that are not Operational Emergencies, but where the organizational structure of the ERO and the resources it has increases the effectiveness of LLNL’s response to the event.
- Emergency response efforts and resources committed to the incident scene are under the control of the Battalion Chief or PFD Watch Commander/Sergeant.

- Emergency response efforts and resources used within the LLNL site boundary, but outside the incident scene, are under the control of the ED.
- Committing DOE/NNSA resources rests with the NNSA/LSO Emergency Manager.

### **3.2.4 LLNS and NNSA/LSO EOC Authorities**

#### *The NNSA/LSO Emergency Manager*

During an Operational Emergency and operation of the EOC, the NNSA/LSO Emergency Manager monitors LLNL's overall response, provides support to the LLNL Emergency Management Team, and assists with response and recovery-related issue resolution. The NNSA/LSO Emergency Manager will consult with the LLNL Emergency Director on NNSA/LSO concerns or issues related to LLNL's management of the response and its associated recovery.

The LLNL Emergency Director maintains overall managerial command and control of LLNL's response and EOC operations, unless responsibility for this management is formally transferred to the NNSA/LSO Emergency Manager in accordance with Contract 44 Clause H-2, Performance Direction, and provisions of DOE Order 151.1C, Chapter I, Responsibilities, 9.n. Such a transfer will be completed in an orderly and formal manner, and all EOC personnel will be informed of the transfer. LLNL staff will facilitate this transfer and continue to support the response and recovery actions in accordance with the directions of LLNL management.

The following four NNSA/LSO EMT members support the NNSA/LSO Emergency Manager in the EOC:

#### *ES&H Representative*

Monitors the collection, organization, analysis, interpretation and dissemination of ES&H-related emergency event information (e.g., protective actions, categorization/classification, Emergency Action Levels).

#### *Safeguards & Security Representative*

Monitors coordination of security-related emergency event information, especially those pertaining to Security Condition (SECON) Implementation.

#### *Public Information Officer (PIO)*

Coordinates, in conjunction with LLNL PAO and DOE HQ, media events, press releases, press conferences, and other public information activities.

#### *Emergency Coordinator*

Coordinates the operations and maintenance of the LSO EMT infrastructure in the EOC upon activation and operation.

### 3.3 Emergency Management Operations and Personnel

The LLNL ERO is divided into two categories: First Responder and Emergency Management. The Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) standard [Title 29, CFR 1910.120(q)] classifies First Responders at one of five levels depending on their responsibilities during an emergency (see Figure 3.4). The HAZWOPER standard requires the use of the Incident Command System (ICS) and Unified Command (UC), which defines the operating characteristics, management components, and structure of incident response throughout the life cycle of an emergency response.

The California Standardized Emergency Management System regulations [Title 19, CCR, Division 2], the National Incident Management System [Homeland Security Presidential Directive - 5], and DOE Order 151.1C outline the need for personnel, beyond those specified by the HAZWOPER standard, to respond to any of a broad range of emergencies. The ERO component formed to manage the response actions during emergencies is the Emergency Management Team. The EMT provides for overall management, direction, and control of the emergency response and normally operates from the LLNL Emergency Operations Center.



Figure 3.4 HAZWOPER Levels

#### 3.3.1 Field Emergency Response Organization

The field ERO is called out to respond and mitigate the emergency situation. The ERO operates under the Incident Command System, and is operational within minutes of activation.

To ensure an acceptable level of emergency response capability, the size and configuration of the field ERO is maintained to provide an overall response capability that includes the application of the necessary level of resources to mitigate consequences to workers, the public, the environment, national security and to initiate recovery from an Operational Emergency.

The field ERO consists of personnel from the Fire Department (Fire, HazMat, EMS), the ES&H Teams, and the Security Organization's PFD.

##### 3.3.1.1 Alameda County Fire Department

The onsite Fire Department has primary responsibility for providing the LLNL and Sandia National Laboratories/California with emergency response services for fire, technical rescue, hazardous materials, and emergency medical incidents. The onsite Fire Department is administratively a part of the Emergency Management Department and is operated and staffed by the Alameda County Fire Department (ACFD) under contract to LLNS. Two full-time stations are staffed by the ACFD at LLNL, with eight firefighters at Site 200 (Station #20) and four at Site 300 (Station #21). A Battalion Chief is on duty for all LLNL emergencies.

The ACFD operates the Alameda County Regional Emergency Communications Center. Located at LLNL, the center also coordinates mutual aid request for the County of Alameda.

### **3.3.1.2 Environment, Safety, and Health Teams**

The ES&H Teams are composed of ES&H specialists and technicians from the Environment, Safety, and Health Directorate. The ES&H Teams provide direct support to Laboratory programs/facilities and are the key interface between line organizations and ES&H support organizations. During emergencies, they provide technical support and consultation to the on-scene Incident Commander, be it Security or Fire. The IC works closely with the area ES&H Team through the ES&H Team Leader to develop an incident action plan for controlling emergencies. This plan identifies health and safety requirements, strategic goals, and tactical objectives to protect life, the environment, and property. Under the direction of the IC, a liaison (e.g., ES&H Team Leader, deputy, or technician supervisor) for the cognizant ES&H Team will coordinate all ES&H Team activities at the emergency scene.

During normal working hours, ES&H Team members respond to the emergency scene and report to the IC.

### **3.3.1.3 Protective Force Division**

The LLNL Security Organization's Protective Force Division provides rapid uniformed and armed protection response for the Laboratory. The Protective Force Division derives its authority under Section 161K of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2201K), to carry firearms while engaged in the performance of official duties and to make arrests without warrant for violations of the Atomic Energy Act of 1954.

### **3.3.2 Emergency Operations Center**

The Emergency Operations Center provides centralized coordination for the overall LLNL response to an Operational Emergency, but is not involved in tactical decisions. It establishes and maintains communication with the various Department Operation Centers and IC. It develops the primary situation and damage/consequence assessment information. In consultation with the EBCC, it sets overall policy and priorities for responding to the emergency and for initial recovery activities. At the discretion of the LEDO, the EOC may also be activated for events that are not Operational Emergencies.

The EOC also handles Multi-Agency Coordination required by SEMS/NIMS. Specifically, this involves the communication, coordination, and cooperation between LLNL and entities/jurisdictions involved in the response by providing information and insight for the decision-makers in these entities/jurisdictions. The general composition of the EOC consists of representatives from LLNL and NNSA. Typical EOC cadre configuration is shown in Figure 3.5. The procedure for activation and operation of the EOC is EPIP-111.

The EOC is organized according to SEMS/NIMS functional areas:

**Table 3.1 EOC Functional Areas**

<b>Emergency Management Team</b>	This is the area where the Emergency Director and his/her command staff (Liaison Officer, Public Information Manager, and Emergency Management Coordinator) operate, providing guidance and direction for the overall emergency response and recovery operations.
<b>Operations</b>	This area represents the field emergency response and support organizations - the actual on-scene emergency responders. It is responsible for the assessment and implementation of field operations.
<b>Planning and Intelligence (P&amp;I)</b>	This area is responsible for receiving, evaluating, and analyzing all information related to the emergency event and providing updated status reports to the EMT and field operations. It is responsible for creating and distributing an EOC Incident Action Plan. It is also responsible for hazardous material release consequence assessment, facility/site damage assessment, and developing specialized technical assessments of the event
<b>Administration, Logistics, &amp; Finance</b>	This area is responsible for procuring and staging supplies, personnel, and material support necessary to conduct the emergency response. It documents expenditures, purchase authorizations, damage to property, equipment usage, vendor contracting, and other legal/business issues. This area is also responsible for Workers Compensation and Claims, and coordinating the Employee Assistance Program's (EAP) Critical Incident Stress Management (CISM). It is also responsible for EOC-related communication equipment and information technology systems.

### LLNL Emergency Operations Center (EOC)

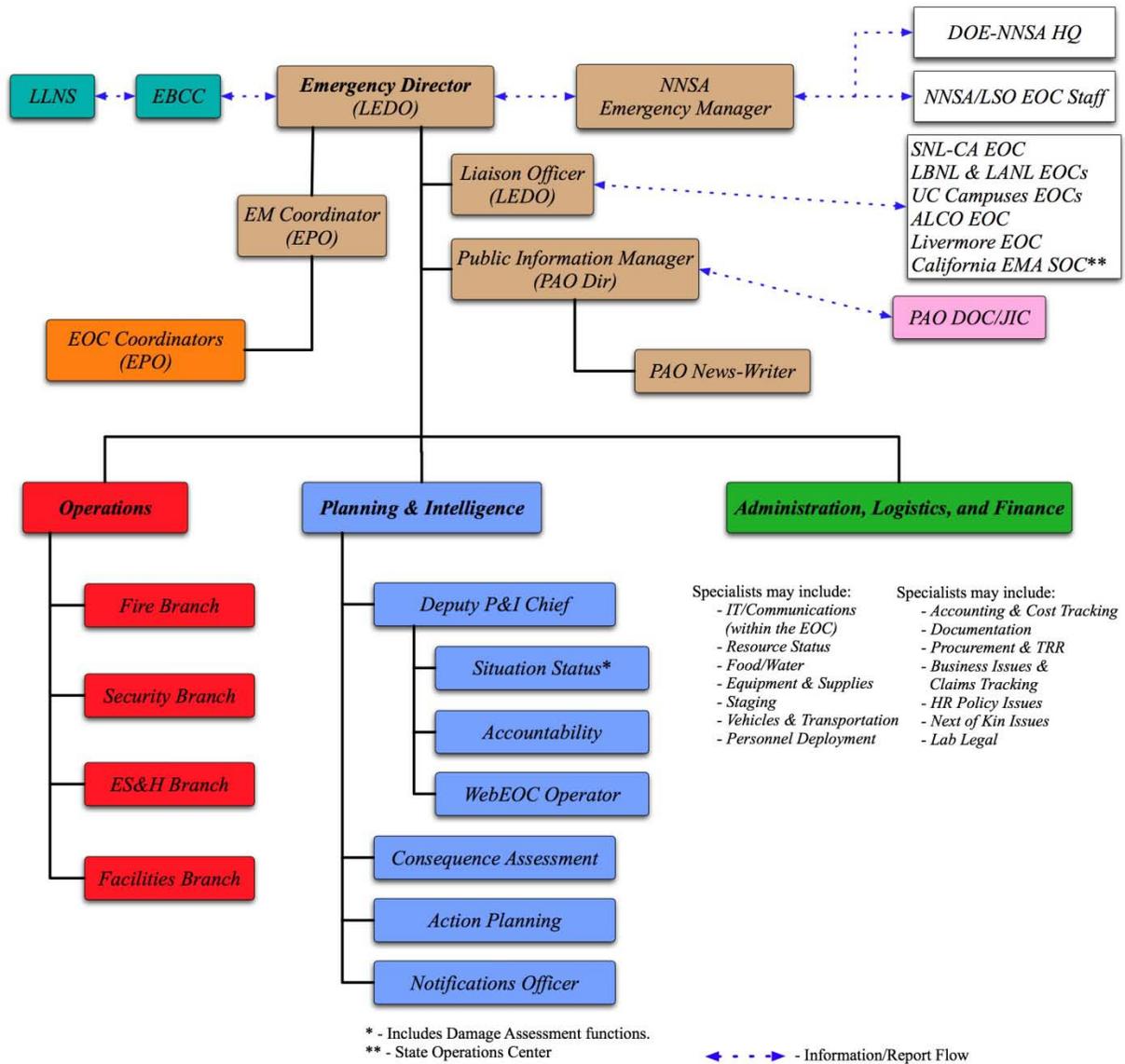


Figure 3.5 Emergency Operations Center

### **3.3.2.1 Emergency Management Team**

The EMT includes five positions, plus several additional personnel who assist management, as described below.

The EMT consists of the following positions:

- NNSA/LSO Emergency Manager – Federal oversight, serving on behalf of the Cognizant Field Element manager.
- Emergency Director - Always filled by the on-duty Laboratory Emergency Duty Officer unless replaced due to succession issues.
- Liaison Officer - Filled by back-up LEDO.
- Emergency Management Coordinator - Filled by a senior member of the LLNL Emergency Management Department.
- Public Information Manager - Filled by LLNL Director of Public Affairs or designee.

Other positions supporting the EMT are:

- NNSA/LSO Public Affairs Officer – Federal oversight, providing emergency public information support to the NNSA/LSO Emergency Manager.
- WebEOC<sup>®</sup> Operator – Located in EMT room and reports to the EMC.
- Newswriter – Located in PAO Office or EOC, but directly reports to the Public Information Manager.
- EOC Coordinators – One covers P&I/Operations/Logistics/Finance and Administration Sections; and one is roving as needed. All report to the EMC.

### **3.3.2.2 Operations Section**

This section is managed by the Operations Chief.

Positions reporting to the Operations Chief are the Fire Branch Lead, Security Branch Lead, ES&H Branch Lead, Facilities Branch Lead, and the Amateur Radio Emergency Services (ARES) Lead.

### **3.3.2.3 Planning and Intelligence Section**

This section is managed by the Planning and Intelligence (P&I) Chief.

Positions reporting to the P&I Chief are the Deputy P&I Chief, Action Planning Leads, Accountability Lead, Notifications Officer, Damage Assessment Lead, Situation Status Lead, Consequence Assessment Team Lead and Modeler, and WebEOC<sup>®</sup> Operator 2.

### 3.3.2.4 Administration, Logistics, and Finance Section

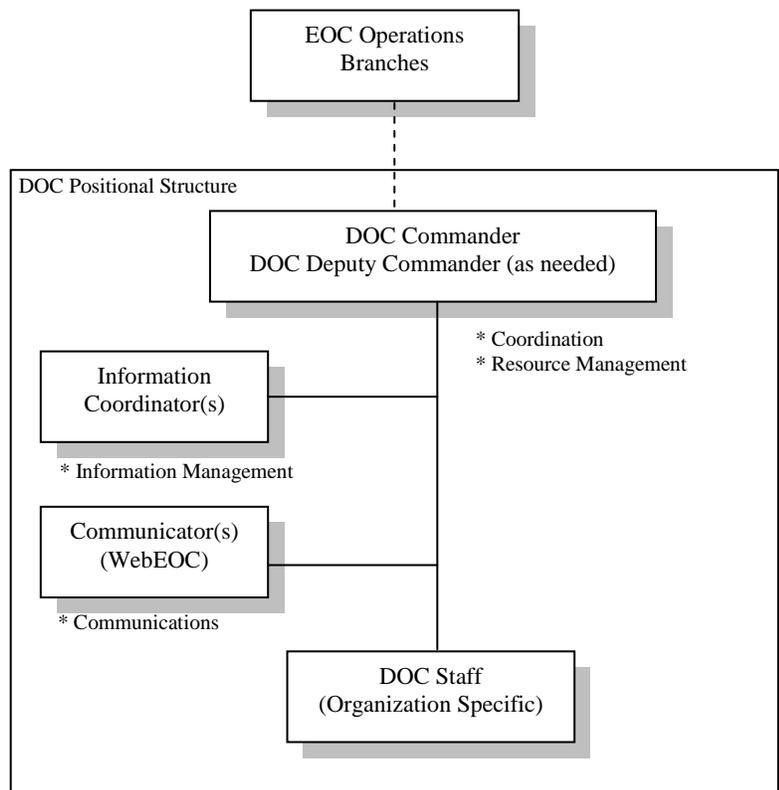
This section is managed by the Administration, Logistics, & Finance Chief.

Specialist staff that may be contacted to support Logistics include Communications, Resource/Supplies, Care/Shelter, and Transportation personnel.

Specialist staff that may be contacted to support Finance and Administration include Cost and Budget, Procurement, Human Resources, Compensation and Claims, and Legal personnel.

### 3.3.3 Department Operations Centers

Essential response organizations at LLNL have DOCs that provide support to the EOC and manage their field and/or regulatory responses from these centers. These DOCs are located at various sites throughout the Laboratory (see Figure 3.6 for basic DOC structure). These centers are connected with the EOC via the WebEOC<sup>®</sup> system and by telephone. Individual DOC Plans outline the operations specific to each DOC's response activities. The DOC Plans are reviewed periodically by EPO staff and revisions recommended to reflect changes to the EPlan.



JIC staff is part of PAO DOC.

Field Monitoring Teams (FMT) are part of Safety & Health DOC.

**Figure 3.6 Basic DOC Structure**

### **3.3.3.1 Environmental**

The Environmental DOC staff is responsible for evaluating the emergency situation to determine potential or actual impacts to the environment; meeting regulatory reporting requirements; marshaling necessary personnel to assist in the response, cleanup, and disposal of hazardous substances; modeling potential environmental impacts from airborne releases; identifying appropriate clean-up standards and levels; coordinating interactions with environmental regulatory agencies; and notifying Federal, State, and local agencies on environmental issues. The DOC also provides logistical support to Environmental Functional Area field personnel on the ES&H Teams. The DOC can provide personnel to support the Field Monitoring Teams deployed through the Safety & Health DOC.

### **3.3.3.2 Safety & Health**

The Safety & Health DOC staff is responsible for evaluating health and safety implications during an emergency. These personnel have expertise in explosives safety, fire protection, health physics, industrial hygiene, biological safety, industrial safety, and criticality safety. They can be called in to advise the DOC and/or EOC. The DOC is responsible for the deployment of the Field Monitoring Teams that collect data for the consequence assessment effort in the EOC. The DOC also provides logistical support for department and ES&H Team operations during major emergencies. Action and status information on DOC activities are summarized and relayed to and from the EOC.

### **3.3.3.3 Health Services Department**

The Health Services Department DOC provides medical management of incident casualties, including medical decontamination.

### **3.3.3.4 Facilities and Infrastructure**

The Facilities and Infrastructure DOC coordinates and controls personnel, equipment, and resources for plant maintenance and utilities. Action and status information is summarized and relayed to and from the EOC. The EMT representative from Facilities & Infrastructure Directorate acts as the point-of-contact for both the Facilities and Infrastructure DOC and other organizations within the Operations and Business Principal Directorate (i.e., Business Directorate, Nuclear Operations Directorate, etc.) that may be needed during the Operational Emergency.

### **3.3.3.5 Public Affairs Office**

The Public Affairs Office DOC coordinates and releases LLNL information to employees and the public. It also functions as the focal point for outside news inquiries associated with the emergency and directs activities at the Joint Information Center (JIC), if activated.

### **3.3.3.6 Security Organization's Tactical Operations Center**

LLNL's Protective Force Division staffs the TOC, which supports the Security IC in tactical matters and the Laboratory's EMT in Operational Emergency response. If the emergency is security driven, the center serves as the primary focal point for the Security IC. The TOC also serves as the point-of-contact for outside law enforcement agencies.

### **3.3.3.7 Site 300**

The Site 300 DOC coordinates the activities of Site 300 and reports results to the LEDO or to the ED if the Livermore site EOC is operational. In addition to the emergency response resources integral to Site 300, additional support may be drawn from the Livermore site.

### **3.3.4 Executive Business Coordination Center**

In the Executive Business Coordination Center, the Laboratory Director and/or designated executive staff gather to monitor the progress of the emergency, provide business continuity, and maintain contact with the Lawrence Livermore National Security, LLC parent companies in accordance with LLNS notification policies and protocols. A LEDO, if available, is assigned to the EBCC by the ED to provide liaison with the EOC. The Emergency Management Department Head has responsibility for coordinating procedures and policies for the operation of the EBCC.

Members of the EBCC include:

- Laboratory Director/Deputy Director (or designee)
- Chief of Staff
- EOC liaison (LEDO)
- PAO liaison, as needed
- Associate Director (AD) (or designee) as necessary to address issues of continued operations

The EBCC's primary responsibilities include:

- Monitor progress of an Operational Emergency at LLNL and provide business continuity at the Laboratory.
- If requested by PAO, serve as the official LLNL spokesperson.
- Notify and inform key LLNL constituents and stakeholders.
- Provide direction for the resumption of research, programmatic, and administrative activities.
- Concur on a team to manage the recovery process.

The EBCC's support responsibilities include:

- Provide overall direction for policy issues.
- Provide overall direction for the institutional priorities in the business recovery process.

### **3.3.5 ERO Duty Officers (Onsite/On-call)**

#### **3.3.5.1 Laboratory Emergency Duty Officer**

LLNL has an authorized LEDO available onsite or on-call 24 hours-a-day, 7 days-a-week to take the actions necessary to protect the health and safety of employees, the public, and the environment, and to maintain the facility's security during abnormal and emergency situations. The LEDO represents the Laboratory Director as the senior LLNS official at LLNL during an emergency affecting the Laboratory. The LEDO serves as a consultant to the IC, the Director's Office, and cognizant senior management. During an Operational Emergency, the LEDO or EMDO may activate the EOC, at which time the LEDO becomes the Emergency Director when the EOC is declared operational.

#### **3.3.5.2 Emergency Management Duty Officer**

LLNL has an authorized EMDO available onsite or on-call 24 hours-a-day, 7 days-a-week to categorize and classify events and to implement/recommend protective actions necessary to protect the health and safety of employees, the public, and the environment per procedures. Protective actions issued by EMDOs should never be less conservative than the actions implemented by the IC without the concurrence of the on-scene IC. The EMDO also makes immediate DOE and offsite agency notifications within fifteen (15) minutes of the declaration of an Alert, Site Area Emergency, or General Emergency, and within thirty (30) minutes of the declaration of an Operational Emergency Not Requiring Further Classification. The EMDO also makes other courtesy notifications at the request of the LEDO or as defined in EPIP-51. The EMDO briefs the LEDO on all events, including the protective actions implemented and/or recommended. Unless the event has been classified as a General Emergency, which requires automatic full activation of all facilities, including the JIC, or a Site Area Emergency which requires full activation of all facilities, the EMDO consults with the LEDO to determine the appropriate level of ERO activation, and then carries out ERO activation protocols.

#### **3.3.5.3 Battalion Chief**

An Alameda County Fire Department chief officer (Battalion Chief) is available on duty 24 hours-a-day, 7 days-a-week to supervise and lead the Fire Department companies responding to emergencies at LLNL. The Battalion Chief that is physically resident at LLNL has responsibility for six Alameda County Fire Stations - Station 8 (Livermore, CA), Stations 16/17/18 (Dublin, CA), and Stations 20/21 (LLNL). The Battalion Chief is responsible for Fire Department management responses and mitigation of fire, technical rescue, HazMat, and medical emergencies. When an event occurs at LLNL, the Battalion Chief notifies and consults with the EMDO, who is responsible for categorizing the event and further classifying Operational Emergencies as necessary.

#### **3.3.5.4 Security Duty Officer**

The Security Organization has a Security Duty Officer (SDO) available on-call 24 hours-a-day, 7 days-a-week representing the Security Director, principally for off-hours security or related emergencies and events. The SDO is authorized to make decisions and order execution of overall site-wide security response efforts, while the IC is in charge at the scene. The SDO also plays an initial role of notification and assurance that the appropriate managers are informed and attending to the situation.

#### **3.3.5.5 Environmental Duty Officer**

The Environmental Functional Area has established an Environmental Duty Officer (EDO) position which is on-call 24 hours-a-day, 7 days-a-week, and coordinates off-hours environmental emergency response and reporting activities and provides input and support to other First Responders for compliance with environmental regulations. The EDO also coordinates response from other EP environmental specialists. The EDO also supports the LLNL's BioWatch Program by being the on-call 24 hours-a-day, 7 days-a-week contact. The EDO directs questions and requests to the appropriate BioWatch Program personnel.

#### **3.3.5.6 Occurrence Reporting Duty Officer**

An Occurrence Reporting Duty Officer (ORDO) is on-call 24 hours-a-day, 7 days-a-week. During an Operational Emergency, the ORDO is available for providing assistance to the LEDO or EMDO in calling out the ERO and in making offsite notifications. Once the EOC is operational, the ORDO is present in the EOC to make written notifications to the DOE Headquarters Operations Center and other offsite entities.

#### **3.3.5.7 Public Affairs Duty Officer**

A Public Information Officer from the LLNL Public Affairs Office is on duty 24 hours-a-day, 7 days-a-week, principally to respond to off-hours inquiries from the news media. The PAO Duty Officer is usually the initial PAO contact point in the event of an off-hours LLNL emergency situation.

### **3.4 Activation of the Emergency Response Organization and Response Facilities**

#### **3.4.1 Operational Emergency Activation**

In the event of an Operational Emergency, the EMDO will:

1. Notify the LEDO
2. Activate the EOC and DOCs, based on event classification and in accordance with the EPlan and EPIP procedures (see Table 3.2). Activation of all facilities is automatic for General Emergencies. Activation of all facilities, except the JIC (LEDO discretion in consultation with the PAO Manager), is automatic for Site Area Emergencies. For other

emergency events, Operational Emergencies at the Alert level, or OEs Not Requiring Further Classification, activation is based on LEDO guidance.

3. Provide initial offsite notifications.

The EMDO will engage the *Communicator! NXT* to notify the requested ERO staff and offsite agencies. *Communicator! NXT* is a digital call/paging system. A back-up paging system is also available if *Communicator! NXT* becomes disabled.

The time it takes to declare the EOC “operational” during normal working hours is within sixty (60) minutes of EOC activation notification. During non-working hours, EOC “operational” status is within a minimum of sixty (60) minutes and a maximum of 120 minutes of EOC activation notification.

The EOC organizational structure develops in a top-down modular fashion that is based on the size and complexity of the incident. The staffing level or functional areas are determined based on the need to effectively manage the incident. The ED may declare the EOC **operational** when they have sufficient situational awareness and have established the level of organization needed.

The key staffing or functional areas for declaring the EOC **operational** would include:

- **Management** functional area:
  - Emergency Director
  - Public Information Manager \*
  - Emergency Management Coordinator / EOC Coordinator
- **Operations Section** functional area:
  - Operations Section Chief
- **Planning & Intelligence Section** functional area:
  - Consequence Assessment Analyst (*HazMat event only – may also be filled by an off-duty EMDO*) or Planning & Intelligence Section Chief

\* *Either in the EOC or direct communications established (e.g., PAO DOC or JIC).*

EPIP-111, *Activation and Operation of the Emergency Operations Center*, provides detailed implementation guidance.

**Table 3.2 Activation of Emergency Operations Facilities and Selected Response Assets**

	EOC	DOCs	JIC	Field Monitoring Teams
Operational Emergency (Not Requiring Further Classification)	Note 1	Note 1	Note 2	No
Alert	Note 1	Note 1	Note 2	Note 1
Site Area Emergency	Yes	Yes	Note 2	Yes
General Emergency	Yes	Yes	Yes	Yes

Note 1: At the discretion of the ED/LEDO.

Note 2: Public Affairs option, depending upon the nature of the event

### **3.4.2 Non-Operational Emergency / Significant Event Activation**

The EOC and the various DOCs may be activated for events that are not declared Operational Emergencies. This could occur when emergency management (e.g., LEDO, EMDO, EBCC, etc.) consider the support available from these entities would be of assistance in responding to the event, such as, the loss of major utility services to LLNL. Under these situations, the ERO will operate using its procedures as appropriate guidance (i.e., naming a Recovery Manager would not be a necessary condition for termination).

## **3.5 Declaration of an Emergency**

### **3.5.1 Operational Emergencies**

Declaration of an Operational Emergency may require the activation of the emergency response facilities and the availability of personnel and resources to continuously assess pertinent information for decision-makers; conduct appropriate assessments, investigation, or preliminary sampling and monitoring; mitigate the event consequences; and prepare for other response actions should the situation become more serious and require additional ERO mobilization.

At the declaration of an Alert, the ED/LEDO may direct the EMDO to activate emergency response facilities. These facilities provide personnel and resources to continuously assess pertinent information; conduct appropriate assessments, investigations, or preliminary sampling and monitoring; mitigate the severity of the event consequences; and prepare for other response actions should the situation become more serious requiring additional ERO mobilization.

Declaration of a Site Area Emergency requires activation of emergency response facilities including the responses listed under Alert, in addition to initiation of predetermined protective actions for onsite personnel; notification and assembly of additional emergency response personnel and equipment to activate response centers and to establish communications, consultation, and liaison with offsite authorities; provision of information to the public and media; implementation of protective actions; and mobilization of additional emergency response assets for immediate dispatch should the situation become more serious.

Declaration of a General Emergency requires the same response as for a Site Area Emergency, in addition to the notification of offsite authorities to provide recommendations for public protective actions and JIC activation.

### **3.5.2 LLNL State of Emergency**

Depending on the scope and scale of the emergency, the Laboratory Director, or Deputy Director acting for the Director, may elect to declare a “State of Emergency” at LLNL in accordance with LLNL Personnel Policies & Procedures Manual (Section G - VII.4). This is a formal mechanism for the Laboratory Director to authorize exceptions to provisions of Laboratory policies and procedures when such exceptions are in the best interest of LLNL operations or will facilitate or enhance LLNL's response to the emergency. Such a declaration would allow for the use of

predetermined deviations from Laboratory policies and procedures, for example, the authorization of paid emergency leave if the Laboratory site was closed for an extended period of time due to a pandemic public health emergency. This would be an appropriate declaration to an ongoing emergency situation that effectively prevented employee attendance at work and continuance of work at LLNL. A sample 'Declaration of a Laboratory Emergency' can be found in Appendix E of ES&H Manual Document 22.8, Continuity Programs.

### **3.6 Other Emergency Response Assets**

#### **3.6.1 Field Monitoring Teams**

When required, the Worker Safety & Health Functional Area and Radiation Safety Functional Area and the Environmental Functional Area provide onsite (outside the immediate incident scene) and offsite monitoring capabilities to the EOC Consequence Assessment function through the use of a pool of team members. When an emergency classification of Site Area Emergency or General Emergency is declared, the Field Monitoring Team (FMT) will be called in to supply real-time monitoring data to refine the results of the analytical models. Field monitoring data is also used to support the adequacy of emergency response actions taken to protect workers and the public. The ED and/or consequence assessment analyst will request the activation of the FMT through the Safety & Health DOC.

Prior to any deployment, the FMT will have an approved monitoring plan. When ES&H Teams are being deployed onsite only, the Safety & Health DOC Commander will review and approve the monitoring plan; in the case of offsite deployment, the ED will provide final review and approval after consulting with appropriate offsite agencies.

#### **3.6.2 Technical Support**

A Health Services representative may be requested to advise the EMT on issues including health implications of emergency situations, triage, treatment, and transport of injured individuals.

The National Atmospheric Release Advisory Center (NARAC) may be requested through the Consequence Assessment function in the EOC to advise the EMT on the implications of toxic or radiological releases. NARAC, a part of LLNL's Global Security Principal Directorate, provides real-time assessments of the consequences from an atmospheric release of radioactive or toxic material.

Using professional staff, numerical models, computer systems, and network links about the country, NARAC can transmit information about an accident, exercise, or potential accident in the form of graphic plots of contours of dose and/or air concentration and ground deposition of toxic materials.

### **3.6.3 Credibility Assessment**

The Security Organization's SDO will advise the EMT regarding the credibility of any potential incident such as terrorist activities or bomb threats. The assessment will be based on information provided by the IC/Watch Commander and the Office of Investigative Services at LLNL.

### **3.6.4 Structural Evaluation Assessment Field Teams**

The F&I DOC is supported by five Structural Evaluation Assessment Field Teams to:

- Respond to any emergency such as:
  - Earthquake, flood, high wind or tornado damage assessment.
  - Accident, explosion, or fire recovery assessment.
- Aid or provide consultation to First Responders in situations where poor or degraded structural integrity cause a potential life-safety hazard.

Each Structural Evaluation Assessment Field Team consists of three people, including a Structural Engineer, an Architect, and a Building Inspector. At least one member of each team has been trained as a Safety Assessment Program (SAP) Responder for the California Emergency Management Agency (Cal EMA).

The Structural Evaluation Assessment Field Teams will assemble at the F&I DOC, where they collect resources and wait for instructions. Teams will be dispatched by the EOC through the F&I DOC. The Teams will contact the F&I DOC when arriving at, and leaving from, each facility or location. Before leaving a facility or location, the Team will complete the Evaluation Safety Assessment Form and tag all major building entrances – GREEN: re-entry for normal occupancy permitted; YELLOW: restricted use permitted; RED: do not enter or occupy.

In the event of an emergency such as a major seismic event, buildings will need to be inspected by the Structural Evaluation Assessment Field Teams. Because this resource is limited and there will be an urgent need to reoccupy certain facilities to deal with the emergency, these inspections will be done in accordance with the priorities listed in Appendix F of EPIP-71, *Emergency Protective Actions and Re-entry*.

## **3.7 ERO Positions**

The following are the defined positions of the ERO at LLNL, some of which are staffed by multiple persons (e.g., EOC Coordinators, Action Planning Leads, Field Monitoring Teams, JIC staff, etc.). The number of defined positions also does not include specialist positions or staff augmentation positions such as Human Resources or Legal positions that may be called upon because of their specialties. The defined positions are listed below:

## FIELD EMERGENCY RESPONSE ORGANIZATION

### **Alameda County Fire Department**

- Battalion Chief
- Incident Commander (Chief Officer, Captain)
- ACRECC/Fire Dispatcher

### **Security Organization**

- Security Duty Officer
- PFD Watch Commander/Incident Commander/TOC Commander
- TOC/CAS Dispatcher
- PFD Field Staff (Sergeants)

### **ES&H Team Management**

- ES&H Team Leader
- ES&H Team Deputy Leader
- ES&H Team Technician Supervisor
- ES&H Team Technicians
- ES&H Team Disciplines

## MULTI-AGENCY COORDINATION SYSTEM

### *EOC*

#### **EOC Management Section**

- Emergency Director
- Liaison Officer
- Emergency Management Coordinator
- EOC Coordinators
- Public Information Manager
- PAO Newswriter (matrixed to EMT, but located in PAO office)
- WebEOC<sup>®</sup> Operator

#### **Operations Section**

- Operations Chief
- Fire Branch Lead
- Security Branch Lead
- ES&H Branch Lead
- Facilities Branch Lead
- Amateur Radio Emergency Service Lead

**Planning and Intelligence Section**

- Planning and Intelligence Chief
- Deputy Planning and Intelligence Chief
- Situation Status Lead
- Damage Assessment Lead
- WebEOC<sup>®</sup> Operator
- *GIS (Graphic Information Systems)/Map Display Operator\**
- Action Planning Lead
- Notifications Officer
- Accountability Lead
- Consequence Assessment Team Lead
- Consequence Assessment Team Modeler

**Administration, Logistics, and Finance Section**

- Administration, Logistics, and Finance Chief
- Logistics Section Staff (e.g., Resources/Supplies; Care/Shelter; IT/Communications Support Staff)
- Finance and Administration Section Staff (e.g., Cost and Budget; Procurement; Compensation and Claims, Human Resources)

\* - *Position slated to be added in CY2012*

***DOCs***

- DOC Commander
- DOC Information Coordinator
- DOC WebEOC<sup>®</sup> Operator
- Field Monitoring Team (FMT) Coordinator
- PAO DOC/JIC Staff
- DOC Staff

***EBCC***

- Executives
- WebEOC<sup>®</sup> Operator

## 4 OFFSITE RESPONSE INTERFACES

### 4.1 Overview

In the event of an emergency at LLNL, a number of offsite resources are available for mitigation, response, and recovery activities associated with the response. It is the purpose of this section to briefly describe those Federal, State, local, and private agencies that may be involved in an Operational Emergency response. In addition, the interfaces between LLNL and these agencies are discussed, including documented agreements.

The Emergency Programs Organization is the point-of-contact with offsite agencies for non-security emergency planning, preparedness, and response. This includes, but is not limited to, offsite planning coordination for LLNL, inter-agency meetings, and information transfer. The Fire Department has ongoing contacts with local response agencies through mutual aid agreements and actual response. LLNL Public Affairs Office is the point-of-contact with offsite agencies in the area of public education. Additionally, the Emergency Management Department Head and Emergency Programs Organization Manager meet regularly with their counterparts from the three other Bay Area DOE facilities (LBNL, SNL-CA, and SLAC) to discuss common issues and approaches to emergency management, as well as resource sharing during emergency events.

Memoranda of Understanding (MOUs), Memoranda of Agreement (MOAs), and mutual aid agreements exist among specific functional LLNL organizations and departments and their counterparts. The Security Organization develops and signs security/law enforcement-related MOUs for LLNL. The Fire Department develops and signs MOUs related to the fire/emergency medical services/HazMat arena and provides these services at LLNL under contract with LLNS. The Emergency Management Department develops and signs MOUs associated with local medical facilities. A list of the existing MOUs/MOAs is located in the current ERAP.

In addition, DOE/NNSA maintains a number of emergency response assets and inter-agency agreements with other Federal agencies that may be called upon for support.

#### **4.1.1 Department of Energy/National Nuclear Security Administration**

DOE/NNSA is the lead Federal agency for emergencies at LLNL, except for certain security situations when the Federal Bureau of Investigation (FBI) may be the lead. The resources available from DOE/NNSA are extensive and include those from Federal agencies that are part of the *National Response Plan*. These assets include:

- Aerial Monitoring System
- Accident Response Group
- National Atmospheric Release Advisory Center

- Joint Technical Operations Team
- Radiological Assistance Program
- Radiation Emergency Assistance Center/Training Site

The LLNL ED initiates the request for support of NNSA/LSO assets depending upon the nature and severity of the event. DOE/NNSA HQ Operations Center (OC) approves these requests via NNSA/LSO.

Depending on the severity of an event at LLNL, DOE/NNSA HQ may activate their OC. A technical support center, located in the DOE Germantown, Maryland facility, can support the OC. Both of these facilities can communicate via telephone, the Emergency Communications Network, facsimile, and video conferencing.

The twenty-four hour notification point of contact is the OC Watch Room, which is collocated with the OC. During an Operational Emergency, LLNL makes notifications to the OC.

## **4.2 Other Federal Agencies**

The FBI maintains primary jurisdiction under the Atomic Energy Act for incidents involving the protection of special nuclear material and any crime involving Federal property. In an emergency situation involving security incidents, the FBI will be notified (as required) by the Security Organization and may be provided workspace in the EOC or the TOC.

An MOU exists between the FBI, San Francisco Office, NNSA/LSO, and the Security Organization, which encompasses emergency response and law enforcement. The Emergency Readiness Assurance Plan provides a list of MOUs; however, the actual MOUs are maintained in the Emergency Management Department files.

The FBI has the authority to assume command from the LLNL ED during a situation involving a security threat. Under these circumstances, the ED is responsible for ensuring that the LLNL ERO implements FBI orders. The Fire Department IC retains non-security command and control at the scene.

## **4.3 State Government**

The Alameda County Office of Homeland Security and Emergency Services (ALCO OHS & ES) takes the lead for offsite response. In that lead role, they would coordinate with the State for assistance and resources.

The State of California's emergency assistance is based on a statewide mutual aid system designed to ensure that additional resources are provided to and among local jurisdictions whenever their own resources are committed or inadequate. State agencies are obligated to provide available resources to assist local jurisdictions in emergencies at the direction of the California Emergency Management Agency (Cal EMA).

The Department of Homeland Security (DHS) developed a National Incident Management System under Homeland Security Presidential Directive (HSPD) –5, Management of Domestic Incidents. NIMS is similar to California’s Standardized Emergency Management System which was adopted through legislation and regulation in the 1990’s. Under SEMS, the State’s assistance is accessed by requesting resources through the operational area coordinator and the Alameda County Sheriff’s Office of Emergency Services (OES). Fire and mutual aid resources are requested through the local and State mutual aid system. The Fire Department, operated by the Alameda County Fire Department, complies with the requirements of SEMS/NIMS for First Responders.

Cal EMA is the lead State agency in any response to assist Alameda County and is responsible for making statewide resources available.

The California State Department of Health Services provides trained personnel to assist with monitoring and decontaminating personnel, evaluating the extent of any contamination, and monitoring offsite ingestion pathways.

#### **4.3.1 California Emergency Management Agency**

LLNL has several MOUs with Cal EMA. These MOUs include an agreement for California disaster and civil defense, an agreement for temporary transfer of vehicular equipment, and an agreement for use of radio equipment.

Coordinators designated by State agencies assist California’s emergency management staff headed by the director of Cal EMA or a designated representative. Cal EMA is the lead State agency for emergency management, including planning, response coordination, recovery coordination, mitigation efforts, and training.

Emergency responsibilities of Cal EMA include:

- Development of the State Emergency Plan
- Receiving and disseminating emergency alerts and warnings
- Coordinating emergency response and recovery activities with the Federal Regional Operation Center and the JIC
- Processing and acting on mutual aid requests
- During emergencies, activating and operating the State Operations Center and regional emergency operations centers and participate in the disaster field office activities
- In coordination with the Federal government, directing and coordinating recovery programs to mitigate future disaster

When the State Operations Center and regional operations centers are activated, the following actions will be taken to support the situation:

- Establish and maintain communications with other EOCs and DOCs
- Deploy field representatives as needed to assess the situation
- Coordinate and deploy immediate assistance, as requested, through mutual aid
- Establish/confirm air and ground routes into affected areas
- Determine the need for staging areas, mobilization centers, and disaster support areas, and coordinate their establishment
- Provide/deploy technical assistance to supported elements as needed
- Mobilize and stage key resources to address the potential threat
- Monitor and prioritize scarce resources as the situation dictates

Other State agency responsibilities are to provide mutual aid to local jurisdictions appropriate to the emergency situation (*State of California Emergency Plan, June 2009*).

#### **4.3.2 California Highway Patrol**

Upon request, the California Highway Patrol supports the Security Organization by responding with personnel and equipment, including helicopter support when warranted. The California Highway Patrol, in responding to an emergency request for assistance to LLNL, will render support to the Security Organization by maintaining traffic supervision and control over roadways to LLNL operating under a Joint Incident Command system. The nature of the emergency response agreement between LLNL and the California Highway Patrol includes assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

### **4.4 Local Organizations**

#### **4.4.1 Alameda County Sheriff's Office of Emergency Services**

The ALCO OHS & ES is the lead offsite response coordination agency for major emergency and disaster situations at or affecting the Livermore site. The Fire Department Battalion Chief or the Security Watch Commander at LLNL is the point-of-contact for those requests for resources for mutual aid systems, such as fire or law enforcement mutual aid, respectively.

The County operates its EOC in coordination with these organizational response levels: field response, local government, operational area, regional, and State. The County EOC operates according to SEMS, including the primary SEMS functions of Command/Management, Operations, Planning/Intelligence/Logistics, and Finance/Administration.

If the emergency situation requires that the general public be warned, the emergency public information is issued by the cognizant local agency, such as the City of Livermore or Tracy, County of Alameda or San Joaquin, depending upon the area impacted by the incident.

#### **4.4.2 Alameda County Sheriff's Department**

Upon request, the Alameda County Sheriff's Department responds with personnel and equipment, including a special response unit when warranted, to support the Security Organization. Support activities are coordinated by the Security Organization representative in the TOC and may include assistance in responding to security threats and assistance in evacuating the site. The emergency response agreement between the Alameda County Sheriff's Department and LLNL covers assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

#### **4.4.3 San Joaquin County Office of Emergency Services**

San Joaquin County Office of Emergency Services serves in the same capacity for Site 300 as Alameda County OHS & ES.

#### **4.4.4 San Joaquin County Sheriff's Department**

Upon request, the San Joaquin County Sheriff's Department responds with personnel and equipment to support an LLNL Site 300 emergency or an immediate officer rescue or backup. The emergency response agreement between the San Joaquin County Sheriff's Department, LLNL, and Site 300 managers covers assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

#### **4.4.5 Alameda County Agreement for Mutual Fire Assistance**

LLNL is a signatory to the Alameda County Mutual Aid Plan for mutual fire assistance. This agreement confirms that, upon request, the associated fire services will respond with personnel and equipment to support LLNL emergencies. These agencies, in responding to an emergency request for assistance, render support to the Alameda County Fire Department.

#### **4.4.6 Livermore/Pleasanton Fire Department**

The Livermore/Pleasanton Fire Department is responsible for coordinating disaster planning and emergency response activities for the Cities of Livermore and Pleasanton. The Livermore/Pleasanton Fire Department coordinates its activities with the Alameda County OHS & ES, the primary offsite agency for emergencies involving radioactive material. The Livermore/Pleasanton Fire Department assists other responding agencies in locating and providing needed equipment and resources and in updating city officials. In addition, if the primary communication links become unavailable, the Livermore/Pleasanton Fire Department assists in the activation of the amateur radio emergency services network, Tri-Valley Amateur Radio Emergency Service.

#### **4.4.7 Livermore Police Department**

The Livermore Police Department may be requested to support an LLNL emergency or an immediate officer rescue or backup. In responding to an emergency request for assistance, they

render support to the Security Organization by responding to security threats, controlling traffic, controlling facility access and assisting with evacuation of the site. The Security Organization representative in the TOC or designee coordinates support activities. The law enforcement assistance agreement between Livermore Police Department and LLNL covers assistance calls and assistance requests under the State *Region II Mutual Aid Law Enforcement Plan*.

#### **4.4.8 Tracy Fire Department**

The Tracy Fire Department is responsible for coordinating disaster planning and emergency response activities for the City of Tracy. The Tracy Fire Department coordinates its activities with the San Joaquin County OES, the primary offsite agency for emergencies involving radioactive material in San Joaquin County.

#### **4.4.9 Offsite Medical Facilities**

MOUs are in place with ValleyCare Health System, Eden Medical Center, and Sutter Tracy Community Hospital to provide medical support and to assist the LLNL Health Services Facility, if needed. These facilities have the capability to assist in the treatment of contaminated or contaminated/injured victims resulting from a hazardous radioactive material release at LLNL (see Section 9 of this EPlan).

#### **4.4.10 City of Livermore Disaster Council**

The City of Livermore Disaster Council was formed to develop emergency planning and preparedness partnerships with local agencies in order to enhance the ability to respond to disasters. The council meets monthly.

#### **4.4.11 Alameda County Emergency Manager's Association (ALCO EMA)**

The purpose of ALCO-EMA is to recruit a wide range of emergency managers from public agencies, nonprofits, and the private sector into an organization/association dedicated to sharing among, contributing to, improving upon, learning from, and empowering those involved in the field of emergency management.

#### **4.4.12 California Emergency Services Association (CESA)**

The California Emergency Services Association has the mission of preserving and protecting property through emergency preparedness and disaster mitigation. The membership is composed of emergency managers and planners from all levels of government (city, county, State, Federal, special districts), hospital/medical professionals, education representatives, public service organizations, business/industry emergency planners and other individuals interested in this field. CESA is divided into three geographic Chapters-Inland, Coastal and Southern. Each chapter has regularly scheduled Board meetings and holds informational seminars and training sessions throughout the year.

#### **4.4.13 Tribal Organizations**

There are no tribal organizations with emergency response or regulatory control responsibilities relevant to LLNL.

#### **4.5 Private Organizations**

The Tri-Valley ARES is a private, volunteer organization of individually-licensed amateur radio service operators who, having passed a written examination, have demonstrated their technical and operating skills in radio communications and are licensed by the Federal Communications Commission.

A Memorandum of Understanding has been executed between LLNL and the Tri-Valley ARES for LLNL employees who are members of Tri-Valley ARES to support LLNL with communication services during emergency conditions. Under this MOU, the LLNL Emergency Director is authorized to activate the volunteer communications resources of the Tri-Valley ARES to provide emergency and disaster communications support to LLNL.

There are no other private organizations with emergency response or regulatory control responsibilities relevant to LLNL.

#### **4.6 Memoranda of Understanding/Memoranda of Agreement**

The Emergency Management Department coordinates the administration of MOUs and MOAs with external entities that provide onsite emergency response and management support to LLNL. These agreements are maintained as part of the Laboratory's commitment to an emergency management program that is consistent with the State of California Standardized Emergency Management System. MOUs and MOAs related to onsite emergency response are developed and executed in accordance with LLNL policies and procedures.

The Security Organization maintains MOUs with the California Highway Patrol, Alameda and San Joaquin County Sheriff's Departments, and the City of Livermore Police Department to provide and receive law enforcement assistance. NNSA/LSO maintains the MOU with the FBI. Assistance from the FBI comes under their jurisdiction for events involving special nuclear material, threats or uses of weapons of mass destruction and crimes on Federal property, State, county, and City of Livermore assistance is accomplished per the provisions of the State *Region II Mutual Aid Law Enforcement Plan*.

The Emergency Management Department maintains MOUs with Eden Medical Center, ValleyCare Health System, and Sutter Tracy Community Hospital for providing and receiving assistance in the treatment of chemically-, biologically-, and/or radiologically-contaminated persons in need of additional medical care.

The sponsoring internal organization (Security, ES&H, etc.) is responsible for completing the appropriate review-and-approval process for each type of MOU/MOA; additional review as to legal form/content and contractual compliance is performed by Laboratory Counsel. The Emergency Management Department Head has concurrence on all MOUs/MOAs dealing with external agencies providing onsite emergency response (e.g., Fire Department/Emergency Management) at LLNL and for entities that provide assistance to LLNL personnel in the event of an onsite emergency (i.e., offsite medical facilities). The Security Director has been given the authority to sign/manage all MOUs/MOAs with external Law Enforcement Agencies in support of the Laboratory. However, NNSA/LSO maintains the MOU with the FBI.

The sponsoring internal organization is responsible for keeping the official signature copy of the MOU/MOA. MOU/MOA copies are retained by the sponsoring organization and the Emergency Management Department in accordance with relevant retention schedules. Prior to scheduled renewal dates, MOUs/MOAs are to be reviewed, as appropriate, by the sponsoring internal organization to determine if updating of the MOU/MOA is necessary. The current ERAP, which is maintained in the EPO files, contains a list of the current MOUs relating to emergency management.

## 5 EMERGENCY CATEGORIZATION AND CLASSIFICATION

This section provides an overview of the process used for categorization and classification of Operational Emergencies. Specific actions and criteria for categorization and classification of OEs are described in EPIP-41 and EPIP-42, *Emergency Management Duty Officer Procedure*.

In accordance with DOE requirements, Operational Emergencies at LLNL are defined as unplanned, significant events or conditions representing a potential or actual degradation in the level of safety. Operational Emergencies are characterized by:

- a requirement for resources from outside the immediate/affected area or local event scene to supplement the initial response, and
- a requirement for time-urgent notifications to initiate response and/or protective actions activities at locations beyond the event scene.

Most events at LLNL that involve an emergency response (fire, medical, HazMat, etc.) are not Operational Emergencies. The event severity/complexity and the expected or required response determine if an Operational Emergency declaration is warranted.

An Operational Emergency is a *major* unplanned or abnormal event or condition that:

- Involves or affects DOE/NNSA facilities and activities by causing or having the potential to cause serious health and safety or environmental impacts;
- Requires resources from outside the immediate/affected area or local event scene to supplement the initial response; and,
- Requires time urgent notifications to initiate response activities at locations beyond the local event scene.

Operational Emergencies involving the actual or potential airborne release of hazardous materials from an on-site facility or activity may also require further classification (i.e., an Alert, Site Area Emergency, or General Emergency), based on the measured or predicted radiation dose or hazardous material concentration at specific locations (e.g., the site boundaries).

## 5.1 Definitions

### 5.1.1 Operational Emergency Categories

An Operational Emergency may be *categorized* for the following types of emergencies:

- Health and Safety
- Environmental
- Safeguards & Security
- Hazardous Materials
- Offsite emergency affecting LLNL
- Fire, emergency medical, mass casualty or other emergency at the discretion of the EMDO, LEDO, or ED

Of these categories, Hazardous Materials Operational Emergencies may be further classified as Alert, Site Area Emergency, or General Emergency. Safeguards & Security Operational Emergencies may be further classified based on the potential for a release of hazardous materials and the projected consequences. If an Operational Emergency does not involve hazardous material(s) or meet the criteria for an Alert, Site Area Emergency, or General Emergency, it is classified as an Operational Emergency Not Requiring Further Classification. Additional detail may be found in EPIP-41.

### 5.1.2 Hazardous Materials Operational Emergency Classifications

Hazardous Materials Operational Emergencies may be classified in order of increasing severity.

#### 5.1.2.1 Alert

An Alert shall be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- An actual or potential substantial degradation in the level of control over hazardous materials (radiological and non-radiological) such that the radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to have significant impacts (Protective Action Guide – PAG or Acute Exposure Guideline Level – AEGL-2 exceeded) at or beyond 30 meters from the release point, but not at or beyond 100 meters and/or the facility boundary.
- An actual or potential substantial degradation in the level of safety of a facility or process that could, with further degradation, produce a Site Area Emergency or General Emergency.

### 5.1.2.2 Site Area Emergency

A Site Area Emergency shall be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- An actual or potential major failure of functions necessary for the protection of workers or the public. The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to have significant impacts (PAG or AEGL-2 exceeded) at or beyond the facility boundary, but not at or beyond the nearest site boundary.
- An actual or potential major degradation in the level of safety or security of a facility or process that could, with further degradation, produce a General Emergency.

### 5.1.2.3 General Emergency

A General Emergency shall be declared when events are predicted, in progress, or have occurred that result in one or more of the following situations:

- An actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of hazardous materials (radiological or non-radiological) to the environment.
- The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to have significant impacts (PAG or AEGL-2 exceeded) at or beyond the site boundary.

A description of the PAG and AEGL criteria is provided in Section 7 of this EPlan and in EPIP-71. Operational Emergencies are reported to LEDOs, DOE and affected offsite agencies. See EPIP-51.

## 5.2 Criteria for Operational Emergencies Not Requiring Further Classification

In some cases, an event may occur that, while it does not meet the criteria for a classifiable Operational Emergency, does pose a major concern for personnel health and safety, environmental impact, or security. In general, an Operational Emergency Not Requiring Further Classification is defined as either a hazardous materials event that does not meet the criteria for an Alert, or a health and safety, environmental, security, hazardous biological agent/toxin, or offsite transportation event. The following table provides examples of potential indicators for Operational Emergencies Not Requiring Further Classification.

**Table 5.1 Potential Indicators for Operational Emergencies Not Requiring Further Classifications**

<b>Operational Emergency Category</b>	<b>Indicator(s)</b>
Health and Safety	<p>Discovery of radioactive or other hazardous material contamination from past NNSA operations that is causing or may reasonably be expected to cause uncontrolled personnel exposures exceeding protective action criteria.</p> <p>An offsite hazardous material event not associated with LLNL operations that is observed to have or is predicted to have an impact on an LLNL site such that protective actions are required for onsite LLNL workers.</p> <p>An occurrence that causes or can reasonably be expected to cause significant structural damage to LLNL facilities, with confirmed or suspected personnel injury or death or substantial degradation of health and safety.</p> <p>Any facility evacuation in response to an actual occurrence that requires time-urgent response by specialist personnel, such as hazardous material responders or mutual aid groups not normally assigned to the affected facility.</p> <p>An unplanned nuclear criticality resulting in actual or potential facility damage and/or release of radioactive material to the environment.</p> <p>Any non-transportation-related mass casualty event.</p> <p>Activation of the LLNL Disaster/Self-Help Plan.</p>
Environment	<p>Any actual or potential release of hazardous material or regulated pollutant to the environment, in a quantity greater than five times the reportable quantity specified for such material in 40 C.F.R. 302, that could result in significant offsite consequences such as major wildlife kills, wetland degradation, aquifer contamination, or the need to secure downstream water supply intakes.</p> <p>Any release of greater than 1000 gallons (24 barrels) of oil to inland waters, or a quantity of oil that could result in significant offsite consequences (for example, need to relocate people, major wildlife kills, wetland degradation, aquifer contamination, and need to secure downstream water supply intakes). Oil, as defined by the Clean Water Act [33 U.S.C. 1321], means any kind of oil and includes petroleum.</p>
Security	<p>Actual unplanned detonation of an explosive device or a credible threatened detonation resulting from the location of a confirmed or suspicious explosive device.</p> <p>An actual terrorist attack or sabotage event involving an LLNL site/facility or operation.</p> <p>Kidnapping or the taking of hostage(s) involving an LLNL site/facility or operation.</p> <p>Actual theft or loss of a Category I or II quantity of special nuclear material or other hazardous material that, if released, could endanger workers, the public, or the environment.</p> <p>Damage or destruction of a site or facility by natural or malevolent means sufficient to expose classified information to unauthorized disclosure.</p>

Operational Emergency Category	Indicator(s)
Hazardous Biological Agent or Toxins Release	Any actual or potential release of a hazardous biological agent or toxin outside of the secondary barriers of the biocontainment area.
Offsite Transportation Activities	<p>The radiation dose from any release of radioactive material or the concentration in air from any release of other hazardous material is expected to require establishment of an initial protective action zone. (“Protective action zone” is defined in the Emergency Response Guidebook).</p> <p>Failures in safety systems threaten the integrity of a nuclear weapon, component, or test device.</p> <p>A transportation accident that results in damage to a nuclear explosive, nuclear explosive-like assembly, or Category I/II quantity of special nuclear material.</p>

### 5.3 Emergency Action Levels

Upon arrival at an incident scene, the Battalion Chief gathers information about the incident and contacts the EMDO, who consults with the Battalion Chief to determine whether or not the incident is an Operational Emergency based on the general criteria above and guidance provided in EPIP-41. If a release or potential release of radiological or non-radiological hazardous material poses a threat to workers and/or the public, the EMDO may also declare an Alert, Site Area Emergency, or General Emergency based on severity. The categorization will be declared following event recognition/identification/discovery by the EMDO using the applicable emergency action levels (EALs), which provide guidance to classify a Hazardous Materials Operational Emergency under conditions of limited real-time availability of event-specific data.

For security-related incidents, the PFD Watch Commander gathers information about the incident and contacts the SDO, who consults with the EMDO to determine whether or not the incident is an Operational Emergency based on the general criteria above and guidance provided in EPIP-41.

Emergency Action Levels are specific, pre-determined, observable criteria used by the EMDO to detect, recognize, categorize and classify an Operational Emergency. For each facility for which an Alert, Site Area Emergency or General Emergency is defined, the EALs describe on-scene indicators and list the distance to the nearest site boundary and describe the conditions and indicators upon which the classification is based, including the maximum distances at which the PAG or AEGL values would be observed. Emergency Action Levels are developed for potential Operational Emergencies, including radiological and non-radiological releases, terrorism and sabotage (malevolent acts), fires, explosions and natural phenomena. Locations of controlled copies of the EAL books may be found in Emergency Programs Organization files.

Emergency Action Levels are developed from scenario input data and results provided in the facility EPHAs. This information provided in the EALs for identified accidents or emergency event scenarios corresponds to the initiating conditions, accident mechanisms, equipment or system failures, event indicators, and contributing events. The EPHAs also provide a quantitative estimate of the consequences of each release at specific receptor locations, such as the facility boundary, site boundary, and the maximum distance at which the PAG or AEGL is exceeded. This last estimate allows determination of the emergency classification associated with the release.

Emergency Action Levels in use at LLNL also allow for discretionary implementation by the responsible EMDO. The EMDO Handbooks are updated when EALs change due to revisions to EPHAs. Additionally, the EMDO will use the North America Emergency Response Guidebook (or “Orange Book” – latest edition) for categorization and classification of transportation-related HazMat events; and the NNSA/OST Protective Action Recommendation (PAR) cards similarly for NNSA/OST shipment events.

Additional detail regarding EAL development and use may be found in EPIP-61, EPIP-62, and EPIP-41.

Appropriate protective actions are implemented for onsite personnel by the IC and recommended for offsite populations by the Battalion Chief, PFD IC, EMDO, or ED. Actions and criteria for determining and implementing protective actions can be found in EPIP-71.

Under Unified Command, declaration of an Operational Emergency may be warranted based on law enforcement or security concerns not involving or potentially involving hazardous materials. In this case, the EMDO declares the Operational Emergency and determines the categorization and classification based on a description of the situation provided by the SDO. Further classification of a Security Operational Emergency as an Alert, Site Area Emergency, or General Emergency is based on the potential for a release of hazardous materials and the projected consequences. If the event does not involve hazardous materials or if the projected consequences do not meet the criteria for a classifiable Operational Emergency, the event is declared an Operational Emergency Not Requiring Further Classification. The Protective Force Division procedures describe notification of Security Organization management and the Battalion Chief. These notification guidelines are provided for in the Protective Force Division’s emergency contingency plans.

Depending upon the event, the SDO, in consultation with the LSO Security Representative, may recommend implementation of a Security Condition (SECON) level commensurate with the threat posed to LLNL by the event. Actions and criteria for implementing a security condition level are described in the LLNL *Security Condition (SECON) Implementation Plan*.

Upon declaration of a classifiable Operational Emergency, the EMDO and/or LEDO will activate the ERO per established procedures. The staffing required for an Operational Emergency Not Requiring Further Classification or an Alert is determined by the LEDO and

may consist of personnel from the field response organization, EOC, DOCs, and JIC. For an Operational Emergency event classified as a Site Area Emergency, the ERO and all emergency response facilities, with the exception of the JIC, are activated by the EMDO. For an Operational Emergency event classified as a General Emergency, the ERO and all emergency response facilities, including the JIC, are activated by the EMDO. The LEDO or Emergency Director may choose to activate the JIC for any level of Operational Emergency at his/her discretion, in consultation with the PAO Manager. Specific actions and criteria for activation and operation of the EOC, including minimum required staffing, can be found in EPIP-111.

## 6 EMERGENCY NOTIFICATIONS AND COMMUNICATIONS

Protocols are in place for the prompt initial notification of Laboratory emergency response personnel, onsite personnel, and offsite emergency response personnel/organizations including LLNS parent organizations, NNSA/LSO, NNSA/DOE HQ, and other Federal, State, and local organizations. Communication systems are also in place to provide for continuing effective communication among the EROs, both offsite and onsite, throughout an Operational Emergency.

### 6.1 Notifications

#### 6.1.1 Onsite/Offsite Notifications

When a potential Operational Emergency not involving hazardous materials occurs, the IC is responsible for notifying emergency response personnel and potentially-impacted onsite personnel of initial protective actions. The Fire Department Battalion Chief, or Security Duty Officer for security events, is required to contact the EMDO, who may categorize the event as an Operational Emergency and initiate notifications, including appropriate offsite authorities and the LEDO per EPIP-51.

If the Operational Emergency involves or has the potential to involve hazardous materials, the EMDO may further classify the event as an Alert, Site Area Emergency, or General Emergency, brief the LEDO, call-out the ERO, and initiate offsite agency notifications per EPIP-51. The LEDO notifies the Director's office and other applicable senior LLNL and LLNS management in accordance with notification policies and protocols.

If a Site Area Emergency or General Emergency has been declared, the entire ERO and supporting emergency response facilities, with the exception of the JIC (at Site Area Emergency), will be activated. If an Operational Emergency Not Requiring Further Classification or Alert has been declared, the level of activation will be determined by the LEDO/ED per Table 3.2. The ERO will be called out via *Communicator! NXT*, a PC-based, digital system that uses telephones to relay appropriate event information and activate pagers. A manual call-out back-up system, utilizing the Occurrence Reporting Duty Officer, is also available. The EMDO has the responsibility for offsite notifications until the EOC has been declared operational and the on-duty LEDO has assumed the role of ED and accepts responsibility for all subsequent notifications.

#### 6.1.2 Offsite Agency Notification

The offsite agencies in the following list will be notified within fifteen (15) minutes of the declaration of an Operational Emergency involving hazardous materials (Alert, Site Area

Emergency, or General Emergency). In an Operational Emergency not involving hazardous materials, offsite agency notifications will be accomplished within thirty (30) minutes.

Offsite officially required notifications are made to:

**For all Operational Emergencies:**

- NNSA/LSO duty officer
- DOE/NNSA HQ Operations Center – Watch Office
- Alameda County Sheriff Department Dispatch Center (San Leandro, CA)
- Alameda County Sheriff Department OES (Dublin, CA)
- Alameda County Regional Emergency Communication Center (LLNL)
- State of California Emergency Management Agency Warning Center

**Site 200 (Livermore Site) Operational Emergencies also include:**

- City of Livermore Police Department Dispatch Center
- Livermore/Pleasanton Fire Department Dispatch Center
- Sandia National Laboratories/California Security Dispatch Center

**Site 300 Operational Emergencies also include:**

- City of Tracy Fire Department Dispatch Center
- City of Tracy Police Department Dispatch Center
- San Joaquin County Sheriff Department Dispatch Center
- San Joaquin County Sheriff Department OES

Follow-up notifications will be provided on an hourly basis (from the previous notification), or whenever the classification of the emergency event changes, protective action recommendations are revised, or the emergency has been terminated.

Each of the agencies listed above has provided primary and back-up numbers to be called for initial notifications in addition to facsimile numbers to receive follow-up hard copy. These numbers are reviewed and verified on a quarterly basis per EPIP-51. To ensure consistency of the information provided, notifications are made using the “LLNL Emergency Notification Form,” Appendix B of EPIP-51.

Initial notifications are made by the EMDO using the *Communicator! NXT* system. The EMDO will fill out the notification form, and then read the information into the *Communicator! NXT*, which sends the information to all offsite agencies as well as the EOC Coordinators. If the *Communicator! NXT* malfunctions, the EMDO can verbally provide the notification information using Appendix B of EPIP-51 to the Occurrence Reporting Duty Officer, or EOC staff (Notifications Officer), and it can then be manually transmitted to designated agencies.

After the EOC has been declared operational, the ED assumes responsibility for subsequent notifications, which are normally handled by the Notifications Officer. Offsite agencies should initially be notified via the *Communicator! NXT* system. In addition, the EMDO should provide an additional prompt oral communication to DOE HQ OC following any emergency declaration, followed by telefax and/or e-mail, per EPIP-51. If for any reason, the EMDO fails to make prompt oral notification to DOE HQ OC, the Liaison Officer or Notification Officer will make the initial prompt oral notifications to DOE HQ OC following EOC activation, based on information provided on the initial Emergency Notification Form. The Liaison Officer also establishes communications with offsite EOCs. Once initial verbal notifications are completed, the Notifications Officer makes all follow-up notifications to DOE HQ OC and is responsible for overseeing the notification process within the EOC to ensure further notifications and/or updates are completed in accordance with EPIP-51.

When notified of an emergency at LLNL, the Alameda County Sheriff's OES notifies other appropriate State of California entities. The Alameda County OES also coordinates and authorizes use of the State of California's emergency broadcast system.

### **6.1.3 Department of Energy Assets**

When there is a need for existing offsite DOE assets to support the emergency response, the ED will make a request through the NNSA/LSO EMT or duty officer.

### **6.1.4 National Nuclear Security Administration Field and Headquarter Notifications**

Upon categorization of an Operational Emergency and/or declaration of a classified emergency, the NNSA/LSO duty officer and the DOE/NNSA HQ OC are notified via telephone, telefax and/or e-mail, as a part of the offsite notification process per EPIP-51. They will also be notified via *Communicator! NXT* as a back-up. The NNSA/LSO duty officer and DOE/NNSA HQ OC will continue to receive subsequent notifications and updates throughout the emergency.

## **6.2 Communications**

**Emergency communications** is defined as the ability of emergency responders to exchange information via data, voice, and video as authorized, to complete their missions. Emergency responders at all levels must have interoperable and seamless communications to manage emergency response, establish command and control, maintain situational awareness, and function under a common operating picture, for a broad scale of incidents.

Emergency communications consists of three primary elements:

1. **Operability** – The ability of emergency responders to establish and sustain communications in support of mission operations.

2. **Interoperability** – The ability of emergency responders to communicate among jurisdictions, disciplines, and various levels, using a variety of frequency bands, as needed and as authorized. System operability is required for system interoperability.
3. **Continuity of Communications** – The ability of emergency response agencies to maintain communications in the event of damage to or destruction of the primary infrastructure.

The LLNL Emergency Communications Plan describes the communications systems, procedures, and protocols to establish the three primary elements.

### **6.2.1 Secure Communications**

The LLNL EOC has the capability for secure communications using a secure telephone unit and secure facsimile for connectivity to DOE/NNSA HQ OC. NNSA's Emergency Communications Network/Video-Teleconferencing equipment is located in the support area of the EOC.

### **6.2.2 Communications with Offsite Agencies**

The primary communications system for official initial offsite notification is *Communicator! NXT*. This is a PC-based digital communications system. Once the EOC is operational, telefax is the primary means of offsite notification and *Communicator! NXT* becomes the back-up.

The National Warning System (NAWAS) is the special purpose telephone system that provides the capability for selective dissemination of warnings and emergency information nationwide, within Federal Emergency Management Agency (FEMA) Regional areas, within National Weather Service (NWS) regional forecast areas, and within statewide areas. The primary National Warning Center (NWC) is the FEMA Operations Center (FOC) located at the Mt. Weather Emergency Assistance Center in Berryville, Virginia, with alternate locations in the country.

Although NAWAS is a national system, the day-to-day operation is under the control of individual states. In California it is known as the California Warning Alert System (CALWAS) and is operated by California Office of Emergency Services. LLNL is an official NAWAS/CALWAS station and the Protective Force Division's Central Alarm Station (CAS) is the monitoring and communication point for NAWAS/CALWAS at LLNL. A national and state test is conducted daily on NAWAS/CALWAS and its operational status is checked and logged by the CAS.

During an emergency warning alert, the Cal EMA or the national center operator will announce which agencies, such as LLNL, are required to listen. The CAS operator then obtains the information directed at LLNL and notifies ACRECC. The CAS only notifies Cal EMA of LLNL emergency conditions via NAWAS/CALWAS if instructed by the IC, LEDO, SDO, or PFD supervisor.

### 6.2.3 Other LLNL Communications Systems

Communications requirements fall into three general categories:

- Emergency instructions to onsite populations at LLNL
- Initial notifications to members of the ERO
- Operational communications between emergency response facilities (e.g., EOC, DOCs) and field response elements.

The following systems are utilized to satisfy these requirements:

- **Phone Systems:** Telephones, Cell Phones, Satellite Phone, Blackberry's, iPhone's, and Fax Machines.
- **Electronic Systems:** Computers, Email, Communicator! NXT and WebEOC.
- **Radio Systems:** 400 MHz trunk radio system, LLNL pager system, and Ham Radios (ARES).

The dedicated Emergency Voice Alarm (EVA) system is the primary tool used to notify Laboratory workers of expected protective actions and additional general information. Site 300 notifications are through the administrative building page system or via 400 MHz radio system.

Other communications systems include a dedicated emergency information telephone message system (4-LLNL).

The LLNL trunk radio system through the Fire Dispatch Center provides for communication among emergency responders and from the incident scene to the IC and the Battalion Chief. The EOC has the capability of monitoring these radio communications.

When the emergency response facilities are operational, communications between the EOC and the DOCs, including the JIC, will be made primarily via the WebEOC<sup>®</sup> and Laboratory telephone system. ARES, portable cellular/satellite telephones, and handheld 400MHz radios may be used as backup communications tools for inter-facility communications.

Communications systems or networks are maintained in a state of readiness through scheduled operational tests. These tests and their periodicity, as well as communications issues identified during tests, drills and exercise, are documented in After-Action Reports (AAR) and tracked to resolution, as discussed in EPIP-141.

## 7 CONSEQUENCE ASSESSMENT

Consequence assessment is the process used to evaluate the impacts of a release of radioactive or other hazardous materials. Consequence assessment at LLNL is an ongoing process that begins with recognizing that an incident has occurred, continues through various phases of response to the incident, and concludes with cleanup and remediation. As such, the process includes performing timely initial assessments of plume projection consequences necessary to support initial decisions and the continuous process of refining those initial assessments as more information and resources become available.

### 7.1 Consequence Determination

Consequence assessment is conducted in three phases during the response to a hazardous material incident:

- Upon recognition of the emergency, tabulated results of consequence calculations from the appropriate EPHAs and related EALs provide guidance in making an initial estimate of the consequences. These documents are described in EPIP-61 and this section.
- The timely initial assessment is performed in the initial stage of response when requested by the LEDO/ED. The consequence assessment team verifies the consistency of the EAL-based consequences by reconstructing the modeling of the EAL-based scenario. The model is then run again, using available event and meteorological information to project event-specific plume consequences.
- The continuous assessment phase begins with the timely initial assessment and continues throughout the response and mitigation. Modeling performed in this phase is supplemented by data gathered by the FMTs deployed by the Safety & Health DOC. This will ensure that, as the event unfolds, changes in variables associated with consequence assessment are addressed and updated.

#### 7.1.1 Initial Consequence Assessment

When there is an incident or the imminent potential for an incident that might release significant quantities of radioactive materials or toxic chemicals, the EMDO, with guidance from the EALs in the EMDO Handbook, makes a preliminary consequence assessment. The EALs provide input for event detection, recognition, categorization and classification. Based on the assessment, the EMDO will consult with the Battalion Chief or Security Duty Officer and:

- Initiate protective actions, if warranted, for emergency responders and affected onsite facilities and personnel
- Recommend protective actions, if appropriate, to offsite agencies
- Ensure appropriate on-scene evaluations and recommendations are communicated to the LEDO/ED
- Confer with the LEDO/ED on emergency classification and the need for offsite notification

The initial assessment of the EMDO may be augmented by the consequence assessment team based on EAL data evaluation from predefined incident scenarios for the facility and/or operations described in the associated EPHA.

### **7.1.2 Timely Initial Assessment**

Within about the first thirty minutes of the response, assessments should be performed leading to an estimate of the upper bound of the potential consequences of the release. If this assessment is completed in a timely manner, it may provide additional data for determining the appropriate classification of the Operational Emergency. To aid in the timeliness of information, the results should be based upon pre-calculated results and upon simplified calculation methods including computer codes and calculated values. These actions may be initiated by first response personnel and may be augmented with the continuous assessment process once the consequence assessment team and ERO staffs are available.

### **7.1.3 Continuous Assessment**

Continuous consequence assessment consists of re-evaluation as additional information is gathered and emergency conditions become better defined. This process is ongoing through recovery and return to normal operations in accordance with EPIP-71 and EPIP-91. This process ensures that the data are available for decision-makers to ensure that appropriate protective actions are maintained and adjusted as needed. The mitigative or ameliorative progress is monitored and communicated to the affected parties. This process is similar to the timely initial assessment process, but is cyclical, with increasing levels of sophistication in the analysis tools, input accuracy, technical expertise, and field monitoring feedback. Additionally, sensitivity analyses (such as release impacts from changes in atmospheric conditions) may be performed to determine which potential indicators could trigger recasting of decisions related to protective actions. Consequence assessment during recovery and planning for the return to normal operations can include continued environmental sampling to verify the effectiveness of restoration activities. Consequence assessment is also performed to minimize the further spread of hazardous materials. Final measurements demonstrate that consequences from the hazardous materials release are reduced to acceptable levels, or specific areas isolated, during recovery.

## 7.2 Coordination

The ED is responsible for coordinating with Federal, State, and local organizations to ensure accurate and timely consequence assessments, determinations, and coordinated responses. This coordination is outlined in EPIP-111. The EOC, supported by the DOCs, can provide the expertise to locate and track hazardous materials; estimate the integrated impact of hazardous materials released onsite, offsite and into the environment; and locate and recover materials, especially those with national security implications.

## 7.3 Emergency Planning Hazards Assessments

As an integral part of emergency preparedness, hazards surveys and assessments are performed and updated as needed. See EPIP-141 for a discussion of EPHA review cycles and Temporary Change Notice process. See EPIP-61 for a discussion of the requirements, processes, and procedures used to perform and document the *Hazards Survey* and the facility EPHAs that form the quantitative technical bases for the LLNL emergency management program.

## 8 PROTECTIVE ACTIONS AND REENTRY

This section provides an overview of the protective action process, including criteria for protective actions, determining pre-planned protective actions, implementing and/or recommending protective actions during an Operational Emergency and a discussion of the reentry process. Protective actions are defined as physical measures, such as evacuation or sheltering, taken to prevent potential health or security hazards.

The process begins with development of pre-planned protective actions based on the results from the EPHA, followed by identification of notification requirements, development of plans and procedures for protective actions, and identification of personnel who will be responsible for determining, recommending and implementing protective actions. Specific actions and criteria for developing EPHAs can be found in EPIP-61. Notification requirements and actions are found in EPIP-51. Actions and criteria for determining and implementing protective actions can be found in EPIP-71.

The Laboratory has procedural actions for protection of onsite personnel and recommendations to offsite agencies in the event of an Operational Emergency. Protective action criteria are levels of hazardous material that, if observed or predicted, indicate action is needed to prevent or limit exposure to the hazard.

The IC will direct protective actions for affected onsite personnel based on the initial size-up. If initial projections indicate that a hazardous material plume may extend beyond the site boundary or that protective action criteria may be exceeded offsite, the EMDO will make protective action recommendations to offsite agencies through procedure EPIP-51:

- Stand by for further information from LLNL
- Shelter the public in suggested areas per local jurisdictional procedures
- Evacuate the public in suggested areas per local jurisdictional procedures

Protective actions for the public may be ordered only by public officials or their designees, the EMDO/ED will make recommendations only.

### 8.1 Protective Action Criteria

#### 8.1.1 Protective Action Guides (Radiological)

The protective action criteria (PAC) for radiological materials are contained in the Environmental Protection Agency's (EPA) *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*, EPA 400-R-92-001 (May 1992). The protective action guide (PAG) is the value that is used to classify Operational Emergencies and to initiate appropriate protective actions. Implementation of these protective actions is described in EPIP-71.

The PAG is defined in EPA 400-R-92-001 as the projected 50-year total effective dose equivalent from exposure and intake during the early phase of the event. The total effective dose equivalent is calculated as the sum of the effective dose equivalent from external source exposure and the committed effective dose equivalent from inhalation during the early phase of the event. Consistent with Table 2-1 of EPA 400-R-92-001, a PAG of one to five rem is typically assumed. At LLNL, the lowest value, one rem, is used for doses resulting from direct radiation or the uptake of materials that have a physical or biological half-life that is short compared to fifty years (for example, tritium). Five rem is used for doses resulting from the uptake of long half-life materials.

The value used for the threshold for early lethality for a radiological release is a projected total effective dose equivalent of 100 rem. The intent is to approximate the dose at which sensitive groups within any large population would begin to show an increase in mortality.

Postulated radiological release scenarios and the PAGs used are described in the EPHAs.

### **8.1.2 Acute Exposure Guideline Levels (Chemical)**

The protective action criteria for chemical materials are listed by the temporary emergency exposure limit (TEEL), published and maintained on the DOE chemical safety website. These values for airborne concentrations of released materials are based on requirements in the Occupational Safety and Health Administration, EPA, and other exposure limits. Sixty-minute final and interim acute exposure guideline levels (AEGL<sub>60s</sub>) – as a first choice, and emergency response planning guidelines (ERPGs) developed by the American Industrial Hygiene Association – as a second choice, have been incorporated into the TEEL list, where available. The following three reference value levels are defined for each material as follows:

- AEGL<sub>60-1</sub>/ERPG-1/TEEL-1 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor.
- AEGL<sub>60-2</sub>/ERPG-2/TEEL-2 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action.
- AEGL<sub>60-3</sub>/ERPG-3/TEEL-3 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects. This is considered the threshold for early lethality for chemical releases.

AEGL<sub>60-2</sub>, ERPG-2, or TEEL-2 is used for the classification of emergency events and the initiation of protective actions at LLNL.

Postulated chemical release scenarios are also described in the EPHAs.

## 8.2 Emergency Planning Zones

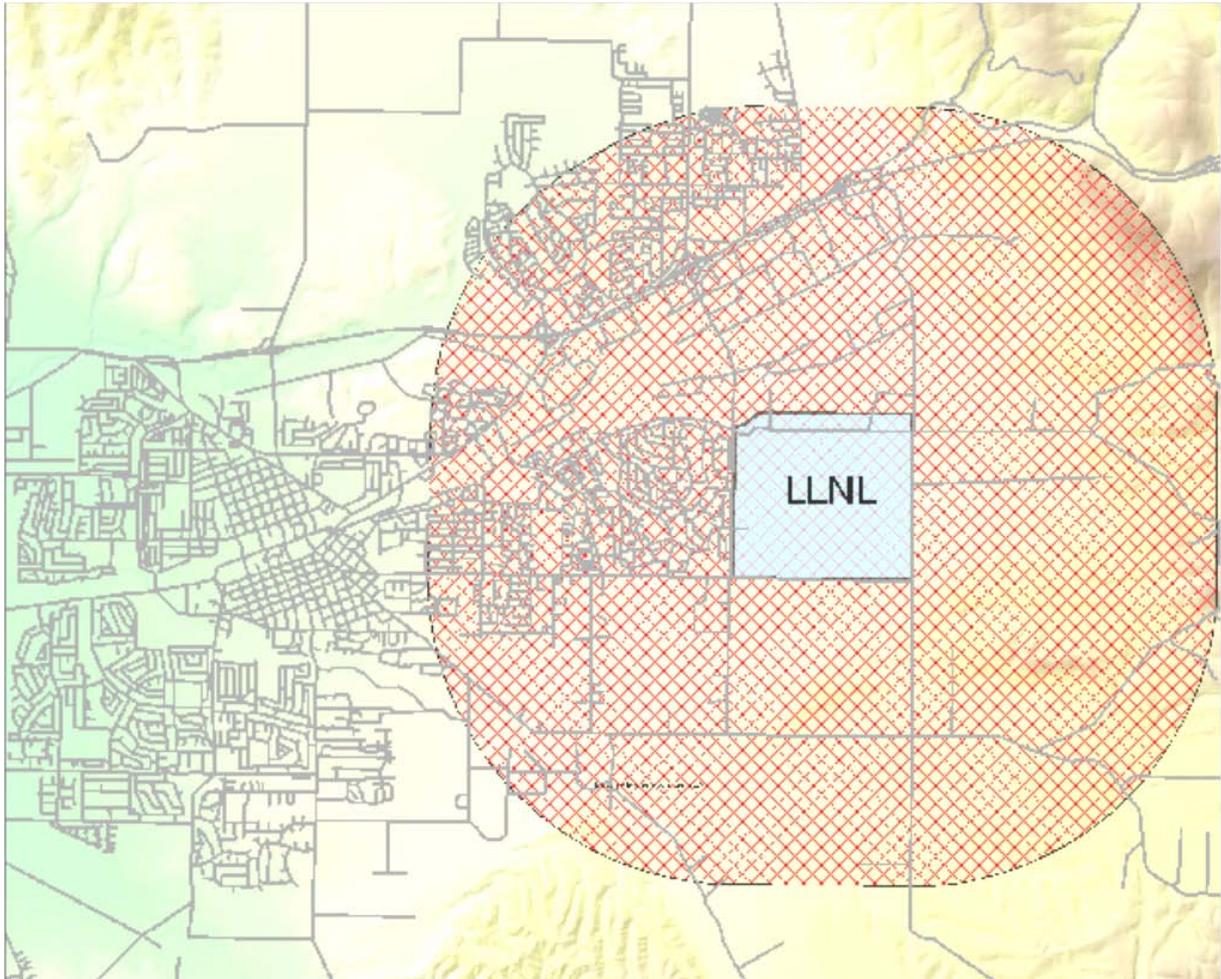
The Emergency Planning Zone (EPZ) for hazardous material accidents with potential offsite consequences are described and analyzed in the individual facility EPHA. In general, an EPZ is an area within which the results of an EPHA indicate the need for specific planning to protect people from the consequences of hazardous material releases. For Livermore site and Site 300, it was determined that a 2-mile composite EPZ was appropriate based upon a summary of the EPZs for individual facilities onsite. The development and identification of this composite EPZ may be found in the *2008 Emergency Preparedness Hazards Assessment Composite Emergency Planning Zone*. Figures 8.1 and 8.2 of this EPlan depict the results of the EPZ development process for the LLNL Livermore site and Site 300, respectively.

The EPZ is characterized by specific criteria, called EALs, including pre-planned and discretionary protective action recommendations, which are used to classify a specific response event under conditions of limited real-time availability of event-specific data. If EALs are exceeded, it is initially the responsibility of the EMDO to declare the Operational Emergency and classify it appropriately (i.e., Alert, Site Area Emergency, General Emergency) according to EPIP-41 and EPIP-42. The EMDO, in consultation with the Battalion Chief or PFD IC/Watch Commander, also has the responsibility to recommend appropriate protective actions (for example, sheltering or evacuation) **for the affected area** per the applicable EALs and EPIP-71.

For hazardous material events not specified in the EALs, appropriate protective actions and protective action distances may be determined based on information in the *Emergency Response Guidebook, latest available edition*.

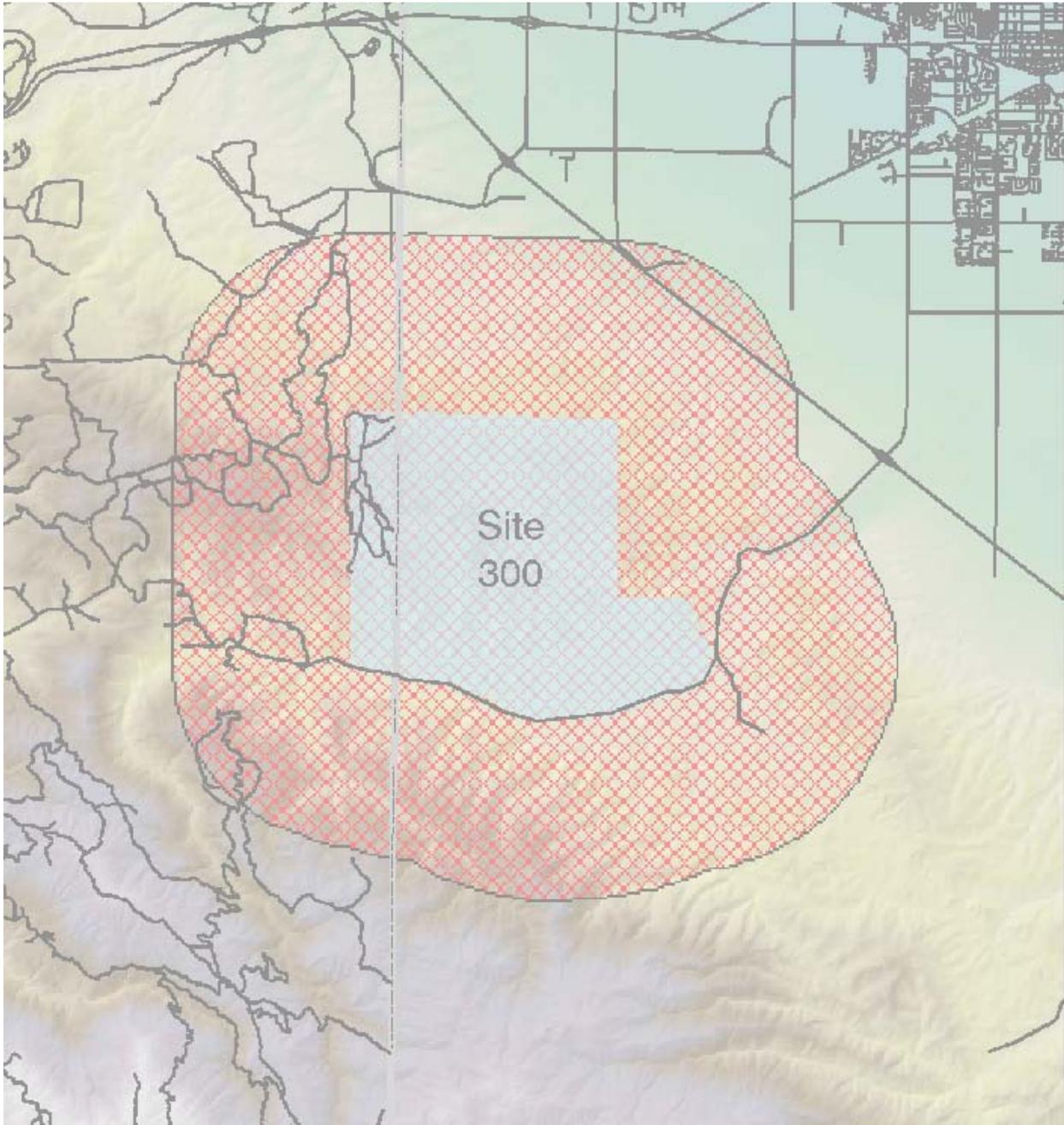
Offsite response agencies are notified of Operational Emergencies at LLNL, and offsite protective action recommendations are provided by the EMDO or ED to offsite agencies when a General Emergency is declared.

LLNL emergency response personnel will notify and coordinate with appropriate offsite emergency response agencies and organizations for sheltering and/or evacuation activities per EPIP-51. Mutual aid agreements, which are maintained in the Emergency Management Department files, permit the Laboratory to assist in offsite protective actions.



**Figure 8.1 LLNL Livermore Site Emergency Planning Zone**

NOTE: Cross-hatched area depicts the two mile EPZ surrounding LLNL's Site 200



**Figure 8.2 LLNL Site 300 Emergency Planning Zone**

NOTE: Cross-hatched area depicts the two mile EPZ surrounding LLNL's Site 300

## **8.3 Protective Action Implementation**

### **8.3.1 Protective Action Categories**

The primary objectives of protective actions are:

- Severe early health effects should be avoided by taking protective actions to limit individual doses or exposures to levels below the threshold for those effects
- The risk to individuals should be limited by taking protective actions which produce a positive net benefit to the individuals involved, such as, the risk to the individual from taking the protective action is lower than the risk from exposure or dose that is thereby avoided
- The overall risk to workers and the public should be limited, to the extent practicable, by reducing the population or collective dose (or exposure)

Protective actions, when implemented individually or in combination, accomplish these objectives. However, they are not limited to sheltering and evacuation.

Following implementation of initial protective actions and prior to activation of the EOC, the IC and EMDO should continuously evaluate the situation to determine if modifications to the initial protective actions are warranted. Following EOC activation and operation, responsibility for ensuring protective actions are adequate is assumed by the ED.

### **8.3.2 Onsite Protective Actions**

Evacuation and/or sheltering are likely to be the most effective protective actions that can be taken to minimize risk to workers close to the event scene. Workers closest to the scene of an emergency will probably be subjected to the highest risk from the effects of the accident conditions with the least warning time. Depending on the particular circumstances of the emergency, either method of protective actions, or a mix of the two, may be implemented to avoid or minimize the exposure of individuals to the hazardous materials released.

Sheltering may be the appropriate protective action when:

- Workers have access to a facility that provides protection
- The dose or exposure will be less than that associated with evacuation
- It places workers in a position where additional instructions can be rapidly disseminated
- Rapid evacuation is impeded
- Plume arrival is imminent

Actions performed to shelter include closing doors and windows, turning off external make-up air for heating, ventilation, and air conditioning (HVAC) if possible, and remaining indoors until an “all clear” is issued by the IC or ED.

Evacuation may be appropriate when:

- No facility protection is available or facility habitability is uncertain
- Concentrations may exceed the threshold for early lethality (100 rem or AEGL<sub>60-3</sub>/ERPG-3/TEEL-3)
- Plume arrival is not imminent

Facility-specific evacuation plans and routes are included in the corresponding Facility Safety Plans (FSPs), FLEPs, and/or Disaster/Self-Help Plans. The Facility-Level Base Program and Disaster/Self-Help Program are administered by the Emergency Programs Organization. Per Document 22.1, *Emergency Preparedness and Response*, of the *ES&H Manual*, facility management is responsible for the development and maintenance of plans required by the Facility-Level Base Program and Disaster/Self-Help Program. Site-wide evacuation will be conducted per existing traffic control protocols. Evacuation of offsite locations, if recommended, will be conducted by the appropriate offsite authorities using their established procedures and protocols.

Subsequent protective action options following shelter or evacuation orders may include:

- Personnel decontamination
- Equipment decontamination
- Medical care (for example, administration of a chelating agent)
- Ad hoc respiratory protection
- Access control
- Shielding

### **8.3.3 Offsite Protective Action Recommendations**

LLNL protective action recommendations for protection of offsite populations are developed using the same criteria as onsite protective actions. Offsite recommendations are implemented at the discretion and direction of local authorities who will implement the recommended protective actions per local jurisdictional procedures.

## **8.4 Personnel Accountability/Evacuation**

A system of evacuation and accounting for facility personnel is described in the LLNL *ES&H Manual*, FLEPs and/or Disaster/Self-Help Plans, and in individual FSPs, as applicable.

Following an evacuation order, onsite personnel will be accounted for by one of the following systems:

- **Roll-call system:** A roll-call system records the movement of personnel to and from a facility or area. The system provides an immediate accounting of occupants in an area. Although this system is preferred, it is feasible in only a few LLNL facilities.
- **Exception system:** Accounting for personnel is accomplished by requiring all persons in the facility to report to a designated muster point immediately upon leaving the building.

At the muster point, the names of personnel present are recorded, and designated facility personnel determine which persons are presumed to be missing based on occupant lists for the building or other information regarding the location of personnel.

## **8.5 Reentry**

Where structural damage is apparent, reentry activities may fall into two general categories. The first type generally involves activities necessary to account for personnel and/or rescue activities and can only be carried out by Fire Department personnel. The second involves reentry into the affected area for the purpose of assessing the situation and planning recovery operations. This function also belongs to the Fire Department, assisted by Facilities and Infrastructure and ES&H Teams.

This section addresses the determination of appropriate actions for the rescue and recovery of persons and the protection of health and property during emergency response. Reentry activities related to recovery planning and event termination are described in Section 10 of the EPlan and in EPIP-91.

- CFR 835.1302 contains requirements to be met when conducting these operations in response to a radiological hazard. The regulation provides dose guidelines for the control of exposure during specific types of activity. Although the regulation is designed for response to radioactive releases, the basic principles apply to most chemical hazardous material responses. The regulation begins with three basic principles: “1) The risk of injury to those individuals involved in rescue and recovery operations shall be minimized; 2) Operating management shall weigh actual and potential risks to rescue and recovery individuals against the benefits to be gained; and 3) Rescue action that might involve substantial risk shall be performed by volunteers.”

Reentry by First Responders to specific building or areas during an Operational Emergency must be approved by the on-scene IC (either the Fire Department Battalion Chief or PFD Watch Commander for security events), with the assessment that the facility be reentered safely.

Detailed guidance and criteria regarding reentry activities may be found in EPIP-71.

## **8.6 Termination of Protective Actions**

During an Operational Emergency, onsite protective actions will be modified or lifted at the direction of the ED following recommendation by the IC. This information will be communicated to appropriate onsite emergency response and facility personnel through established emergency communication systems. Changes to recommendations for affected offsite

agencies will be communicated per EPIP-51 following coordination with local decision-makers. Additional guidance for termination of protective actions may be found in EPIP-91.

## **8.7 Shutdown of Operations**

Shutdown of operations in facilities directly involved in the emergency is the responsibility of facility personnel, where practicable. If this is not feasible, shutdown will be performed by knowledgeable emergency response personnel.

Shutdown of operations in facilities not directly involved in the emergency is the responsibility of operations personnel in the building or facility. Site response guides and facility procedures (e.g., Safety Plans - including FSPs and IWS/SPs) address shutdown for normal operations and Operational Emergencies. These procedures, which are developed and maintained by facility personnel and reviewed by the cognizant ES&H Team, are available to assist the operators in placing the building in a safe condition.

In addition, facility operations personnel are trained in the operation of the systems and take appropriate corrective actions based on their training, knowledge, and experience.

The Laboratory Director may declare that a public emergency exists that effectively prevents employees' attendance at work or the continuance of work at the Laboratory in a normal and orderly manner. A public emergency may include a natural disaster, such as fire, flood, earthquake or major storm, a man-made disorder, such as a demonstration, riot, or act of sabotage, or a significant disruption of electrical power or water service.

## **8.8 Records**

Declaration of an Operational Emergency may result in activation of the LLNL EOC. The Emergency Management Department's Emergency Programs Organization staff maintains records of information and actions relating to the activation of the EOC during an emergency. As part of these records, an After-Action Report is prepared by the EMC Coordinator. This report will be due in conjunction with the Final Occurrence Report (see DOE M 231.1-1, *Occurrence Reporting and Processing of Operations Information*). Refer to EPIP-91 for After-Action Report format.

## 9 EMERGENCY MEDICAL SUPPORT

This section describes the system for medical support of Laboratory personnel, including those with radiological and/or hazardous material contamination during an Operational Emergency. See Section 12 of this document for specific facility and equipment information.

### 9.1 Medical Response System

Alameda County Fire Department personnel, paramedics and emergency medical technicians, are the First Responders to medical emergencies at LLNL. At the Livermore site, patients are evaluated and transported to the appropriate receiving facility in accordance with Alameda County Emergency Medical Services policies and procedures. In general, basic life-support patients are transported to the Health Services Department during normal working hours. Advanced life-support patients, as well as patients needing emergency medical assistance outside of normal working hours, are transported to the appropriate offsite receiving facility. ValleyCare Medical Center in Pleasanton is the primary destination. Patients who meet Alameda County critical trauma criteria are transported to Eden Medical Center in Castro Valley (designated trauma center for southern Alameda County). During normal working hours, the Health Services Department provides treatment for ill and injured employees on a walk-in basis in addition to scheduled services.

For Site 300, the primary offsite receiving facility is Sutter Tracy Community Hospital. For critical trauma patients, air ambulance transport may be utilized to transport patients to Eden Medical Center in Castro Valley or San Joaquin General Hospital in Stockton. The Site 300 satellite clinic is currently supported by a registered nurse providing a more limited range of services than those provided at the Livermore site, including walk-in services, scheduled appointments, and evaluation of ambulance transport-basic life support patients. Consultation with a physician at the Livermore site will be obtained according to established patient treatment policies and procedures.

In the event of a multi-casualty incident at either site, the IC, in consultation with the Health Services Medical Director or designee, will resolve issues of triage and transport in accordance with ACFD emergency operations policies and procedures and the internal Health Services Department disaster plan.

In the event of a site-wide incident, such as an earthquake, where outside resources may be limited, the Disaster/Self-Help Plan is implemented. This plan provides for additional support in the areas of triage and transport of injured personnel by first-aid trained volunteers.

The Laboratory maintains MOUs with Eden Medical Center, ValleyCare Medical Center, and Sutter Tracy Community Hospital for services in the event of a chemical, biological, or radiological incident. Included in the MOU are provisions for joint training, drills and exercises, equipment maintenance, personnel support and procedures including chelation for internal transuranic contamination. The ERAP provides a list of MOUs and is housed in the EPO files.

## 9.2 Staff

Alameda County Fire Department personnel at LLNL are trained and certified as Emergency Medical Technician-I by Alameda County and the State of California. Additionally, some fire personnel are State of California licensed and Alameda County certified paramedics who provide twenty-four hour, seven days-a-week coverage to the Laboratory as members of each company. See Section 12 of this document for additional staff and equipment information.

The Health Services Department, an Accreditation Association for Ambulatory Health Care accredited organization, is managed by a physician and includes physicians, nurse practitioners, registered nurses, clinical psychologists, physical therapists, x-ray technician, medical assistants and administrative personnel. Physician specialty training may include occupational medicine, emergency medicine, internal medicine, and preventive medicine. Nurse practitioners and nurses specialty training may include occupational health, adult health and emergency medicine. All professional staff members who work in the treatment area have received basic life support training. Staff members who are authorized to function in the decontamination area have received radiation casualty management training from the Radiation Emergency Assistance Center/Training Site (REAC/TS). Physicians and nurse practitioners maintain advanced cardiac life support training. All licensed professional staff maintain current state licenses. Psychologists are available and trained in crisis intervention.

The satellite clinic at Site 300 is staffed by a registered nurse during normal work hours, providing basic health services and first aid. Off-hour support is provided by the Fire Department.

## 9.3 Equipment and Supplies

There are approximately fifty emergency boxes with first-aid supplies located throughout the Livermore site and Site 300; the directorate Disaster/Self-Help coordinators are responsible for maintaining these emergency boxes. The Disaster/Self-Help Program Plan provides a recommended set of supplies that areas may augment based upon numbers of personnel supported.

Patients contaminated with radioactive or toxic materials are treated in the Livermore site's Health Services Department decontamination area. This area is designed to protect the environment from contamination (see also Section 12). Bioassay and whole-body counting equipment for radiological contamination assessment is provided by the Radiation Protection Functional Area.

Equipment, instrumentation, and personal protective equipment for the support of radiological incidents are housed at Sutter Tracy Community Hospital, ValleyCare Medical Center and Eden Medical Center in accordance with the MOUs, as well as at the main Health Services site. The Radiation Protection Functional Area is responsible for maintenance of this equipment.

Medical supplies for the administration of chelation therapy for patients with internal radiological contamination are stored in the Fire Department ambulances for transport to

ValleyCare and Eden Medical Centers as well as at the main Health Services site. This equipment and medication is supplied and maintained by the Health Services Department.

#### **9.4 Transportation**

Injured personnel are transported from the scene to either Health Services or the appropriate offsite facility (see Section 9.1 above) by Fire Department ambulance (two at the Livermore Site 200; one at Site 300). Personnel with known or suspected contamination are transported to the decontamination entrance of the Health Services Department.

Critically-injured and chemically-, biologically-, or radiologically-contaminated victims are transported directly to Eden Medical Center by the Fire Department. Air ambulance service is requested in accordance with Alameda County critical trauma protocols and ACFD emergency operations policy and procedure by the IC. The ACRECC is responsible for dispatch of the next available air ambulance. LLNL will provide equipment and expertise, as needed, at the receiving facilities in support of chemically-, biologically-, or radiologically-contaminated victims in accordance with the MOUs.

Communication to the receiving facility is the responsibility of the initiating organization. LLNL will communicate in accordance with the Alameda County EMS policy and procedure, and will also notify the Health Services Department of the transport. Medical staff at the Health Services Department will contact the receiving hospital regarding personnel transported from either medical facility.

#### **9.5 Communications**

In addition to dispatching for the Livermore site and Site 300, ACRECC provides dispatch service for a large portion of eastern Alameda County (see also EPlan Section 12.1.7). ACRECC is located at the Livermore site and operates under Alameda County EMS and Cal EMA policies and procedures. When operational, the EOC monitors 400 MHz emergency radio traffic between the IC and dispatch. This radio is also monitored by the Health Services Department during normal work hours. The IC will keep the Health Services Department informed about the status of situations involving injured personnel. During normal work hours, the Health Services Department has responsibility for notifications to Laboratory management and family members with regard to ill or injured employees; outside of normal work hours, the LEDO has notification responsibility. In the event of an Operational Emergency, LLNL will utilize the State Incident Command System for communication and mobilization of resources at the direction of the IC.

Additional communication tools include the WebEOC<sup>®</sup> communication system and the ARES network. The WebEOC<sup>®</sup> communication system is used by the EOC and the DOCs to record and monitor information during Operational Emergency events.

## 10 EMERGENCY TERMINATION AND RECOVERY

This section describes the responsibilities for Operational Emergency termination and recovery. Recovery includes incident assessments and investigation, recovery planning, scheduling, repair, restoration and return or relocation.

### 10.1 Emergency Termination

During an Operational Emergency, timely decisions are required to ensure protective actions minimize the potential for health effects to onsite personnel and the public. The ED is responsible for terminating the emergency phase, completing appropriate notifications and entry into the recovery phase when the following general criteria are met:

- The emergency condition no longer exists and it appears unlikely conditions will deteriorate sufficiently to cause another emergency;
- Implemented personnel protective measures, both onsite and offsite, are relaxed or restricted to controlled areas;
- Evacuated areas may be re-entered though some clean-up and repair may be on-going or required, or the areas will be isolated/controlled;
- The IC recommends that the ED consider termination;
- The EMT concurs if the EOC is activated and operational;
- Affected offsite response organizations concur; and
- If required, a recovery manager is appointed, a recovery organization is established, and a recovery plan is developed.

Specific criteria and actions for terminating an emergency and initiating recovery operations can be found in EPIP-91.

### 10.2 Recovery Operations

The purpose of the recovery effort is to return the affected facilities and areas to normal operations following the termination of emergency response. Normally, the Fire Department IC will formally transfer control of the incident scene (facility and local affected area) to the ES&H Team leader upon stabilization of the scene and completion of Fire Department activities. However, the PFD IC may elect to retain control of the incident scene as a crime scene.

Prior to emergency termination, the incident scene must be preserved so critical evidence will not be lost. This evidence is needed to determine what caused the incident (the root cause of the event) and prepare a formal accident report in accordance with Part 4: *Feedback and*

*Improvement of the ES&H Manual.* Requirements and guidance for scene preservation are found in Contractor Assurance Office procedure *PRO-0081, Accident/Incident Scene Management (Post Emergency Response)*. The incident scene has the potential to be a crime scene; as such, appropriate actions need to be taken to preserve the scene until appropriate law enforcement assumes control, if applicable.

The ED, IC, or ES&H Team leader will use established reentry provisions when the emergency condition has stabilized and radiological or other hazardous material releases, if any, have been controlled and contained within established limits. The IC or ES&H Team leader must authorize reentry actions that are conducted prior to the termination of the emergency.

Operational planning for facility reentry is the responsibility of the IC or ES&H Team leader until the emergency has been terminated and will require detailed planning and consideration of safety precautions, including the use of appropriate protective clothing, respiratory protection, and specific criteria for aborting reentry.

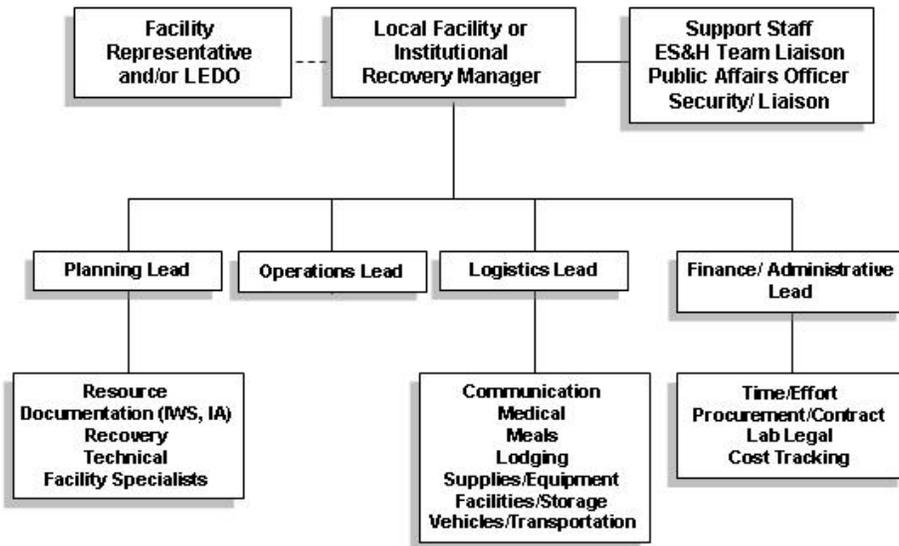
The ED is responsible for appointing a recovery manager who is knowledgeable of the affected facility and will be responsible for developing and coordinating plans and schedules for recovery operations for both the facility and LLNL site. Plans and schedules for recovery operations must consider methods for protecting workers, other onsite personnel, and the general public. Once a recovery manager has been appointed, local planning for facility level recovery will require recovery manager approval of the plan.

The EOC, in coordination with NNSA/LSO and appropriate offsite agencies, is the focal point for the development of information to be disseminated to Federal, State, and local organizations regarding the emergency status and recovery operations. Recovery planning status information for the public will be released through appropriate State/local government agencies at either the JIC or individual agency public affairs offices.

See EPIP-91 for more information on recovery operations.

### **10.2.1 Recovery Organization**

Prior to emergency termination, a recovery organization will be established and led by the recovery manager. The recovery team is divided into four functional areas – Operations, Planning, Logistics, and Finance/Administration. Support staff to the team may include, but is not limited to, advisors from the following: Environmental Functional Area, Worker, Safety & Health Functional Area, Health Services Department, Facilities & Infrastructure Directorate, Public Affairs Office, and the Security Organization. Administrative, logistical, communications, and personnel support for the recovery effort are the responsibility of the recovery manager's department or program. Figure 10.1 depicts the organizational structure for a recovery team.



**Figure 10.1 Recovery Team Model**

The responsibilities of the recovery manager may include:

- Meeting with the EBCC and/or Laboratory Director to develop a prioritization of critical programs, facilities, and operations for recovery
- Development of the overall strategic recovery plan following an Operational Emergency that interrupts normal operation of the Laboratory
- Development and/or approval of a written recovery plan for a facility
- Selecting personnel to lead the recovery team functional areas: Finance/Administration, Logistics, Operations, and Planning
- Requesting support staff/liason (e.g., ES&H, Security, Public Affairs) be assigned to the recovery team
- Managing the recovery effort
- Coordinating Laboratory interactions with contractors, vendors, and offsite organizations
- Communicating and coordinating with offsite Federal, State, and local officials as needed
- Approving media releases (in coordination with the EBCC and NNSA/LSO) regarding recovery
- Ensuring that recovery operations are documented
- Issuing a final report

Once the emergency has terminated, the appointed recovery manager reports to the Laboratory Director and/or EBCC. Since the EOC needs to be ready to activate in response to another Operational Emergency, the recovery team will most likely work out of a location other than the EOC, such as the EBCC, a DOC, or facility.

### **10.2.2 Reentry Phase**

Any facility that shows evidence of structural damage should not be entered by unqualified personnel. Fire Department personnel, assisted by F&I Structural Evaluation Assessment Field Teams and ES&H Teams, are qualified to enter a structurally-damaged building for situation assessment and recovery planning.

Where structural damage has clearly not occurred, reentry activities at a facility and locally affected areas are initiated when the emergency conditions have stabilized such that damage assessments can be safely accomplished. These activities should be conducted prior to the termination of the emergency to assist in recovery planning, or they may be conducted post-termination during the recovery phase of operations. Reentry planning should consider:

- Assessment of radiological or hazardous material contamination to determine areas potentially affected
- Review of exposure histories of personnel who will participate in reentry activities
- Availability and adequacy of installed instrumentation and/or portable monitoring equipment

The reentry plan should also describe: areas to be surveyed, anticipated contamination levels, protective equipment and shielding requirements, decontamination requirements and communications requirements. The recovery manager or ES&H Team Leader is normally responsible for the reentry phase during the post-termination recovery phase.

### **10.2.3 Recovery Phase**

Once conditions have stabilized and termination of the emergency has been recommended, the recovery phase may be initiated. Steps in this process include:

- Assessment of the health and safety of potentially affected workers
- Assessment of hazards from the impacted facilities
- Assessment of the airborne release or ground spill
- Assessment of damage to critical systems and functions
- Assessment of potentially-compromised security systems
- Assessment of the root cause of the event (accident investigation)

The recovery manager has responsibility for the recovery phase. Once this phase begins, the recovery team, in conjunction with the ES&H Team leader, will provide the above assessments to the recovery manager. See EPIP-91 for more information on recovery operations.

#### **10.2.4 Recovery Plan**

The recovery plan, developed by the recovery team, is based on the information developed as described in Section 10.2.3 above, and may consist of the following elements:

- Identification of the impacted area through sampling and monitoring surveys.
- Identification of impacted facilities within the impacted area, and prioritization of these facilities based on their functional importance. The identified facilities will also include affected utility systems such as power, water, and communications.
- Characterization of hazards and identification of appropriate remediation methodologies.
- Identification of available recovery resources and those that must be obtained from an alternate source.
- Prioritization of recovery tasks.
- Recovery schedule. The schedule may be updated as new resources are acquired and priorities are identified or shifted.
- Procurement of additional resources to support recovery operations.
- Notifications to and coordination with offsite agencies, including applicable regulatory notifications (e.g., the EPA).
- Identification of procedures and ES&H documentation (e.g., IWSs, DSA, USQs) needed for the recovery effort.
- Identification of critical activities and priority for resumption.

#### **10.2.5 Resumption of Normal Operations**

When the criteria established by the recovery team have been met and approval has been granted by cognizant organizations and agencies, the affected areas and facilities may be returned to normal operations, or operations relocated as necessary.

## 11 PUBLIC INFORMATION

The Laboratory's Public Affairs Office is responsible for providing timely and accurate information to the community, news media and Laboratory workforce during and following an Operational Emergency at LLNL. During an emergency, the Public Affairs Office will act as the single point of contact for the news media, and as a principal source of information for Laboratory employees and community officials.

When appropriate during an emergency, the LEDO will activate the Laboratory's EOC. When the EOC is activated and operational, the Public Affairs Office Director or designee will serve as the Public Information Manager on the EMT in the EOC. Information developed for release to the public will be reviewed and approved by the Public Information Manager and the ED, with approval of the NNSA/LSO Emergency Manager or designee in the EOC. Public information releases also require a Derivative Classifier (DC) review if the EMT determines that the subject matter may involve sensitive or classified information.

The Director of Public Affairs at LLNL is responsible for preparation and maintenance of an *Emergency Public Information (EPI) Plan* for LLNL. This plan, which is reviewed annually and revised as needed, defines the handling of emergency public information requirements associated with responses to accidents or incidents involving LLNL. The EPI Plan is considered part of the LLNL Emergency Management System, and is issued by the LLNL Public Affairs Office with review and concurrence by the LLNL Emergency Management Program Administrator.

Per the EPI Plan, news media will be informed of an Operational Emergency within one hour of event categorization should events require this action. An initial, pre-approved news release may be orally disseminated to local news media organizations. A written copy of such an initial oral news release will be issued to news media upon activation of the EOC.

The Public Information Manager will maintain contact with the emergency public information organization at NNSA/LSO and with LLNS, LLC.

### 11.1 Public Information Organization

The Public Information Manager directs the emergency response activities of the Public Affairs Office. The Public Information Manager is supported by a Newswriter located in the EOC and by personnel staffing the Public Affairs Office DOC or, if activated, the JIC.

Specialists in news media relations, community relations, and employee communications, supported by administrative and technical support personnel, staff the Public Affairs Office DOC or the JIC. Under the direction of a Public Affairs Office DOC Commander, who reports to the Public Information Manager, the PAO staff will respond to news media and public inquiries, issue news releases and other formal communications, host visiting news media, arrange news

conferences and interviews, and monitor news media reports. The Public Affairs Office DOC Commander will apprise the ED and the EMT, through the Public Information Manager, of news media, community and employee interest in the emergency as well as rumors concerning emergency conditions or response.

## **11.2 Public Information Facilities**

### ***11.2.1 Public Affairs Office Department Operations Center***

The PAO DOC serves as a communication center and work area for LLNL emergency public information staff and a briefing center for news media. The PAO DOC will be activated and used in the event of an Operational Emergency that does not require or warrant JIC activation, or may be utilized until the JIC can be activated. New emergency information will be released from the PAO DOC via press releases and media briefings. Media monitoring, response to public and media telephone inquiries, employee communications, community relations, and rumor control will be handled from the PAO DOC. The PAO DOC includes work areas, a communications center and a news media briefing area capable of seating approximately twenty members of the media. (Note: The PAO DOC communications center is in B111, while the media briefing area is in T6575.) The PAO DOC is equipped with telephones, network lines for computer hookup, overhead and video projection capability, public address system, podium, copier, fax machine, radio and television sets, restroom facilities and adequate parking.

Key LLNL Public Affairs Office staff are equipped with pagers, cellular phones, laptop computers and two-way radios with access to Laboratory frequencies. A PAO duty officer is on-call twenty-four hours-a-day, seven days-a-week.

### ***11.2.2 Joint Information Center***

A JIC may be established at the Robert Livermore Community Center. The JIC is the location for coordination and release of information in the event of an LLNL emergency with potential for offsite health and safety impact and need for public protective action. Public information officers from Federal, State, and local EROs will come together at the JIC to coordinate and release emergency information to the public through the news media. Emergency information will be released from the JIC via press releases and media briefings. Once activated, media monitoring, response to public and media telephone inquiries, employee communications, community relations, and rumor control will be handled from the JIC. A senior NNSA public information officer at this location will work with the LLNL JIC Manager to ensure coordination of information with offsite agency spokespersons. The JIC is equipped with telephones, network lines for computer hookup, overhead and video projection capability, public address system, podium, copier, fax machine, radio and television sets, restroom facilities and adequate parking.

An alternate location for the JIC is at the Alameda County OES in Dublin, California.

LLNL Public Affairs Office representatives may be dispatched to an emergency scene if conditions permit or to a local hospital to meet with news media that may travel to these locations.

### **11.2.3 Robert Livermore Community Center**

The Alternate PAO DOC/JIC is located at the Robert Livermore Community Center at 4444 East Avenue in Livermore, CA. The Palo Verde Room at this location would serve as a work area for PAO staff and spokespersons, while the Larkspur Room would serve as the News Media Room. This facility is equipped with telephones, phone lines for computer hookup, overhead and video projection capability, visual aids, informational handouts for news media, public address system, podium, copier, fax machine, restroom facilities, and adequate parking.

## **11.3 Public Education**

The LLNL Public Affairs Office has established an emergency public education program to ensure that information is disseminated annually to the public concerning emergency points-of-contact, protective actions, emergency response activities, and how the public will be notified should an emergency occur.

In coordination with appropriate offsite agencies, a brochure has been developed instructing the public about how they will be alerted and notified by local officials and actions to take in the event of a community emergency affecting the Tri-Valley area. In addition, as an on-going activity, LLNL provides communications to Laboratory neighbors concerning safety, hazards, and emergency preparedness. Information will be strategically communicated using existing PAO community outreach and education programs.

## **11.4 Public Inquiries**

In the event of an Operational Emergency, the Public Affairs Office will be the single LLNL point-of-contact for the news media and a principal source of information for Laboratory employees and community officials. Public Affairs Office personnel will respond to calls for information from the general community as resources allow and will use news releases and other approved information to provide emergency public information to the public.

The Public Affairs Office will also make available and publicize through the news media a telephone number and website the public may contact for updated emergency information. If the JIC is activated, all calls from the public and media will be referred there for response. Local government will support response to local public calls concerning the offsite emergency response and public health and safety.

### **11.5 National Nuclear Security Administration Field and Headquarters Coordination**

NNSA/LSO will assign a public affairs officer to the EOC who will be responsible for communicating with the DOE/NNSA HQ public affairs representative. If necessary, the LLNL Public Information Manager may communicate directly with the HQ representative or delegate such activity to the PAO DOC Commander or JIC Manager.

## **12 EMERGENCY RESPONSE FACILITIES AND EQUIPMENT**

Emergency facilities and equipment support the ERO. Emergency facilities include the EOC, the DOCs (including Site 300 DOC), the JIC, the TOC, and their alternate locations, if any.

Equipment includes information management and communication systems that are capable of transmitting required notifications of emergency events and necessary exchanges of information. Various emergency alarm systems are installed to provide Laboratory workers the emergency protective actions that may be required. Transportation equipment, personal protective equipment, consequence assessment equipment and other equipment used for an emergency are specified in Section 12.2.

### **12.1 Emergency Facilities**

#### ***12.1.1 Emergency Operations Center***

The Site 200 EOC is the coordination and control point for Operational Emergency support efforts. It provides a location and a system from which the ED and EMT assess, evaluate, coordinate, and direct emergency support activities. It is the focal point for emergency notifications and reports and for liaison with Federal, State, and local response organizations.

The facility that houses the EOC is constructed with a steel girder frame on a concrete slab foundation to seismic standards level PC-2. The building is protected by an automatic fire sprinkler system. Essential emergency electrical components are connected to emergency power with a back-up diesel generator.

Due to the presence of the EOC, the space within the facility housing the EOC is identified as an emergency facility. This space has been constructed with positive air pressure ventilation and dedicated and separate generator back-up.

A recent project was completed that improved the habitability of the EOC and expanded the conference areas. The current location for the EOC is a temporary location. LLNL management has begun examining permanent sitting and construction options for the relocation of the EOC.

### **12.1.2 Alternate Emergency Operations Center**

If habitability or accessibility issues preclude use of the EOC at Site 200, the EOC location will move to the Building 323 Fire House Conference Room. This facility houses communications equipment and redundant consequence assessment resources. In the event that both the EOC and Alternate EOC are deemed uninhabitable, the Emergency Programs Organization maintains a vehicle (Mobile EOC1) that is equipped with communications equipment (i.e., radios, laptops, power supply), EOC documentation, and the Command Board System.

### **12.1.3 Department Operations Centers (DOCs)**

The Laboratory uses DOCs as technical support centers. These centers are located throughout the Laboratory within organizations that may be called upon by the ED to ensure an adequate level of support for the onsite response and recovery activities. These organizations include the Environment, Safety, and Health Organization DOCs (Environmental; Safety & Health; Health Services Department), Facilities & Infrastructure DOC, the Public Affairs Office DOC, the Security Organization (Tactical Operations Center), and Site 300. Each DOC maintains the communications and information management capabilities that are necessary to enable connectivity with the EOC. The physical configuration of individual DOCs is the responsibility of each organization, but includes, at a minimum, telephone, fax, WebEOC<sup>®</sup> connectivity, and ARES support.

Site 300 has the capability to operate independently using their DOC in the event of an incident primarily affecting that site. The Site 300 DOC may be activated at the request of the on-scene IC, the Site 300 manager, or the on-duty LEDO. In the event of Site 300 DOC activation, the Site 200 EOC may also be activated at the discretion of the LEDO, should the emergency warrant notifications or additional emergency resources from the Livermore site.

### **12.1.4 Joint Information Center**

In the event of an Operational Emergency with potential for offsite health and safety impact, a JIC may be established at the Robert Livermore Community Center or, alternatively, at the Alameda County Office of Emergency Services. Public information officers from LLNL, NNSA/LSO, Federal, State, and local emergency response organizations will come together at the JIC to coordinate and release emergency information to the public through the news media. See Section 11, Public Information.

### **12.1.5 Security Control Centers**

**Tactical Operations Center** In the event of a security-based emergency, LLNL Security Organization will activate the PFD TOC, a master coordination and control center for security-related OE efforts. A complete description of the PFD TOC, as well as its operation and function, is available in the Protective Force Division's Tactical Operations Center Order.

**Central Alarm Station** The Protective Force Division's CAS is one of two continually-staffed security consoles that are operational twenty-four hours a day, seven days a week. The CAS is the primary dispatch center for the Protective Force Division. Additionally, the CAS is the primary telephone operator for LLNL during weekday off-hours, weekends, and holidays. To respond to the Laboratory needs, the CAS has the ability to contact qualified technical experts in response to requests from the Laboratory's emergency response program, the DOE National Emergency Response Program, LEDOs, NNSA/DOE, facility points-of-contact, Fire Department, and the Laboratory's EOC.

### **12.1.6 Fire Department**

Alameda County Fire Department maintains fire department stations at two LLNL locations that are staffed twenty-four hours-a-day. Alameda County Fire Station 20 is located at Site 200. The station houses fire apparatus, firefighters and the LLNL Emergency Management Department's administrative staff. Station 20 is nominally 18,000 square feet in area and was renovated in 1996.

Alameda County Fire Station 21 is located at Site 300. The facility houses fire apparatus, firefighters and officers. Station 21 is nominally 6,800 square feet in area and was placed in service in September 1999.

Both facilities are designed to meet Uniform Building Code seismic standards for an important facility. As such, they are designed to remain functional after a major earthquake. Both stations are connected to back-up generators that will provide power during an extended power outage.

The ACFD, in addition to its contract for fire/emergency medical services at LLNL, provides services to approximately 506 square miles with a daytime population of 384,000 people. The department consists of 4 Battalions totaling 28 Fire Stations, 25 Engine Companies, 7 Ladder Truck Companies, a Heavy Rescue Vehicle, Hazardous Materials Response Vehicle, Air/Light Support Unit, and a Dozer all of which are potentially available for response assistance at LLNL.

### **12.1.7 Alameda County Regional Emergency Communications Center (ACRECC)**

The ACFD operates the ACRECC, a fully-staffed dispatch facility that is operational twenty-four hours-a-day, seven days-a-week. Currently, ACRECC is located at LLNL with plans by Alameda County to relocate it to the City of Dublin. There is a dispatch supervisor and eight dispatchers on duty in ACRECC during a shift. This dispatch center is the primary dispatch center for the ACFD (including onsite Fire Department services at LLNL). A total of more than 50 fire stations are dispatched by ACRECC.

The fire dispatch activates the LLNL Emergency Voice Alarm System (EVA), which is the primary means of notification to employees at LLNL during emergencies.

The fire dispatch handles over 100,000 fire and medical emergency assistance calls each year from residents of the county and several cities within the county.

Services provided by ACRECC include:

- Full Emergency Fire and EMS dispatch services for the Alameda County Fire Department (including stations covering LLNL, Sandia National Laboratories-CA, and Lawrence Berkeley National Laboratory), the cities of Alameda and Fremont, and Camp Parks Reserve Force Training Area
- Dispatch of ambulances providing services to the Alameda County EMS District including Emergency Medical Dispatch pre-arrival instructions for all agencies covered by the EMS District.
- Fire and Rescue Mutual Aid resource coordination for all of the County of Alameda
- Alameda County-wide fire department equipment status and location tracking through Computer Aided Dispatch (CAD)
- Fire Alarm Monitoring and testing for Camp Parks Reserve Force Training Area, LLNL, Sandia National Laboratories-CA and the Lawrence Berkeley National Laboratory
- Dispatching and tracking of LLNL hot work permits, fire alarm and fire suppression shutdowns
- Hospital coordination for multi-casualty incidents and hospital diversions within the County of Alameda
- Call-outs for Alameda County Emergency Medical Services, Alameda County Public Health and Alameda County Environmental Health for all of Alameda County

### **12.1.8 Medical Facilities/Decontamination Center**

LLNL maintains a 25,600 square foot single-story medical facility at the Livermore site designed to meet the health care needs of Laboratory personnel. Professional staff includes physicians, nurse practitioners, registered nurses, an x-ray technician, clinical psychologists, medical assistants, and administrative personnel. Available services include injury and illness treatment, physical examinations and counseling. In addition, the facility includes a decontamination area designed for the treatment of injured or non-injured radiologically or chemically-contaminated personnel. The medical facility maintains an emergency entrance for ambulance traffic and a separate decontamination entry area.

The medical facility is built on a concrete slab floor and is constructed of fire-resistant materials. The building is designed to withstand moderate earthquakes. The entire facility is protected by an automatic fire sprinkler system; automatic fire detection, heating, ventilation, lighting, and overhead communications systems are also provided. Essential emergency power is provided by an emergency generator. In addition, a 5,000-gallon emergency supply of water is maintained.

The decontamination area is divided into three to five rooms for a total of approximately 1,265 square feet, which include: hot/warm/cold dressing rooms, airlocks, showers, supplies and fan rooms. The heating and ventilation is independent from the main HVAC. This system includes a high-efficiency air particulate (HEPA) filter system. In addition, drainage from the decontamination area is collected in a waste retention system.

Adjacent to the medical facility is a large open triage area for emergencies involving large numbers of people. The triage area provides room for staging of different levels of patient care as well as providing easy access for vehicles transporting patients. A storage kiosk has four closets that hold emergency supplies, water, and telephones. Electricity and outside lights have back-up emergency power.

The satellite medical facility at Site 300 provides physical exams and first-aid services. Located adjacent to the Fire Department, the medical facility is approximately 1,320 net square feet in area and includes exam rooms, a medical laboratory, and a shower room for minor contamination or chemical spills. The entire facility, built in 1999, is protected by an automatic fire sprinkler system; heating, ventilation, lighting, and overhead communications systems are also provided. The facility is designed to the same seismic standards as Station 21 and shares the standby generator. Ambulance access is available to the facility, which is staffed with a registered nurse full-time, Monday through Friday.

## **12.2 Emergency Equipment**

During an emergency, LLNL has a variety of specialized equipment located at Site 200 as well as Site 300. This equipment is maintained by both LLNL and its subcontractors.

**12.2.1 Communications Equipment**

**Table 12.1 Communications Equipment**

<b>Telephone System</b>	Phones are located at all major buildings, operations areas, and some hazardous waste management units. For emergency reporting purposes, at least one readily-accessible analog telephone is located in each LLNL facility that is routinely occupied. This telephone is in an area that is not subject to being locked. For a larger facility, multiple telephones are placed so that the travel distance from any location in the facility to the nearest telephone is no more than 200 feet ( <i>ES&amp;H Manual</i> , Document 22.5, “Fire,” Section 4.13-Emergency Reporting). An emergency situation onsite can be reported by dialing 911. These calls are answered by the Fire Department emergency dispatch center and monitored by the PFD CAS. During the workday, emergency medical calls are monitored by the Health Services Department. The telecommunications system in the EOC has classified and unclassified telephones and ring-down service to the dispatch center and Site 300. Analog phone lines are also located in the EOC as back up to the primary electricity-based phone system.
<b>Radio Systems</b>	Radios are used by appropriate personnel, such as the Fire Department, Security Organization and the ERO. Incoming and outgoing radio communications are monitored and recorded in the dispatch center. The 400 MHz radios are the first line of communication for onsite emergency response. Both sites and all onsite Fire Department apparatus have trunked 800 MHz frequency capability that is used for communication with offsite fire/medical response agencies and provides a back-up system for LLNL responses. Dispatch consoles for fire and security are interconnected via a shared central electronic bank providing dispatchers the ability to communicate with each other.
<b>PA Systems</b>	The site evacuation page systems are used to communicate emergency alarms and instructions to onsite workers. Fire dispatch makes all announcements on the evacuation page system. Speakers are located throughout operations areas and all major buildings.
<b>Paging Systems</b>	The primary emergency communications system for activation of the ERO members consists of an automated paging system.
<b>Group Page for the Hearing Impaired</b>	Employees who self-identify as hearing impaired are issued an alphanumeric pager to wear at all times while onsite. This group page will be activated by fire dispatch to notify these employees about emergency announcements made onsite.
<b>WebEOC®</b>	WebEOC® is a web-based emergency information system that provides access to information that can be simultaneously shared among emergency response ES&H Teams, decision-makers, and organizations during the planning, response and recovery phase of an OE. This system is utilized in the EOC, TOC, DOCs, EBCC, JIC and Site 300. DOE/NNSA HQ OC has WebEOC® connectivity with LLNL.

### **12.2.2 Heavy Construction Equipment**

A complete list of heavy construction equipment is available from the Facilities and Infrastructure Department Office, or during an Operational Emergency, from the Facilities and Infrastructure DOC.

### **12.2.3 Contamination Assessment Equipment**

Bioassay and whole-body counting equipment for radiological contamination assessment is provided by the Radiation Protection Functional Area.

### **12.2.4 Alarm Equipment**

**Employee emergency alarm systems.** Employee emergency alarm systems at LLNL consist of the evacuation page and the nuclear criticality accident alarm systems. When an emergency occurs that could endanger the health and safety of personnel, employee alarm systems and protective actions are initiated either locally or site-wide, depending on the extent of the problem.

**Radiation alarm signal.** The radiation alarm signal is a clarion horn sound. This sound indicates a radiation emergency and is accompanied by rotating red/magenta beacon lights on the outside or inside of buildings that might be affected. Further instructions over the site evacuation page system or from the assembly point leader will be provided following the activation of a radiation alarm.

**Fire alarms.** Fire alarms are activated by automatic fire protection and/or detection systems such as sprinkler system water flow, smoke and heat detectors, or manual pull boxes. LLNL fire alarms are monitored continuously by ACRECC. Personnel will be notified of the activation of a fire alarm via the EVA system, controlled by ACRECC.

### **12.2.5 Rescue Team Equipment**

The Fire Department manages and maintains onsite apparatus and equipment used in fire fighting, technical rescue, hazardous material and emergency medical responses. Additional specialized resources are available from other Alameda County Fire stations.

### **12.2.6 Sanitation, First Aid and Survival Equipment**

Assembly points are equipped with basic first-aid supplies and additional supplies as determined by the Disaster/Self-Help Program. There are approximately fifty supply boxes located throughout the site to house these supplies.

### **12.2.7 Transportation Equipment**

The Fire Department operates three paramedic-staffed ambulances twenty-four hours-a-day, seven days-a-week basis; two ambulances service the Site 200, and one services Site 300. Mini-motor coaches, operated by the Laboratory Fleet Management Department, can be used to transport injured employees if requested by the on-scene IC or the ED.

### **12.2.8 Personal Protective Equipment**

Personal protective equipment is maintained by the Environment, Safety, & Health Directorate and housed at various locations throughout the site. Personal protective equipment for the Fire Department meets National Fire Protection Association standards.

### **12.2.9 Hazardous and Radioactive Material Monitoring Equipment**

Air particulate samplers, air vapor samplers, hand-held combustible gas analyzers, portable radiation detectors, and other equipment are maintained onsite by the ES&H Directorate to respond to releases of hazardous materials identified in EALs for LLNL facilities

### **12.2.10 Damage Containment Equipment**

The Emergency Management Department maintains some containment equipment, and other equipment is staged in the Laboratory corporation yard. During an emergency, information about specific equipment is available from the IC and the Facilities and Infrastructure DOC.

### **12.2.11 Fire Department Equipment**

The Fire Department manages and maintains apparatus and equipment used in fire fighting, technical rescue, hazardous material and emergency medical responses. Inventories are available at the Fire Department. Apparatus and equipment meet National Fire Protection Association standards.

### **12.2.12 Emergency Power Equipment**

Buildings containing systems that may be needed during a power outage are supplied with emergency generators. Portable generators are available through both the Emergency Management Department and Facilities & Infrastructure.

### **12.2.13 Logistic Support Equipment**

Logistic support equipment is maintained and supplied by the various EMT organizations and is available through the IC or DOCs. Additionally, the EMD maintains facility key plans and run cards for all facilities.

### **12.2.14 Consequence Assessment Equipment**

The consequence assessment workspace in the EOC has two PCs with current versions of plume projection software (Hotspot, EPIcode, and ALOHA computational models) for calculating airborne release consequences associated with hazardous materials incidents. The atmospheric release modelers in the EOC and Safety & Health DOC have direct connectivity to NARAC, which is located at LLNL, and it is used as the secondary computational model for Operational Emergencies. There is an additional PC for monitoring atmospheric (weather) data and WebEOC<sup>®</sup> data. Similar PCs with computational models are located in the Safety & Health DOC and are capable of verification and/or backup as needed. There is also a dedicated ring down telephone between the EOC and Safety & Health DOC modeling workspaces. Additionally, a laptop computer with the computational models is located in the EOC's consequence assessment workspace and is capable of providing backup.

#### **12.2.14.1 Meteorological Monitoring**

LLNL has two meteorological monitoring towers, one located at each site. SNL/California has an additional tower that can be monitored by LLNL. In addition to LLNL's internal website for meteorological conditions, a dedicated PC located in the Safety & Health DOC directly polls and monitors these towers and serves as a redundant processor of meteorological data at LLNL.

## 13 TRAINING AND DRILLS

The goal of the ERO training and drill program is to ensure that the ERO is prepared to carry out emergency response functions during an Operational Emergency. The ERO training and drill program is administered in accordance with Emergency Management Department procedure EPIP-123 and the *ES&H Manual* Document 40.1, "Training Program Manual."

There are two emergency management training program categories at LLNL: Emergency Preparedness Training and Emergency Response Organization Training. They are designed to meet the following goals:

- Provide general instructions to the onsite population regarding potential hazards, methods of alerting and protective actions that may be ordered
- Provide training to members of the ERO
- Provide problem solving drills to the members of the ERO to enhance their skills
- Continually improve emergency management/emergency response training incorporating new ideas and lessons learned
- Provide appropriate offsite agencies the opportunity to participate in selected LLNL training
- Provide a cadre of trained evaluators and controllers for the drill/exercise program

### 13.1 Courses

The actual functions performed and responsibility levels of the ERO position are used as the basis for an individual's required training courses. Institutional training requirements for a specific position are approved by the LLNL training program committee and are identified in the Laboratory's course catalog. Non-institutional courses may be scheduled as needed.

### 13.2 Training Requirements

Each ERO training course is developed with terminal and enabling learning objectives that are contained in a course syllabus. The course syllabus also contains additional design elements such as duration, method of delivery, prerequisites and credit hours (where applicable) and retraining frequency. An outline and complete matrix of the ERO training courses and associated ERO drills are contained in EPIP-123.

### **13.3 Examinations**

Student examinations, which may be written, web-based, or hands-on demonstration of skills, are based on course learning objectives. These examinations are provided with initial and refresher ERO training courses. Results of ERO training course examinations are maintained by the records office of the Safety and Education Training Division within the ES&H Directorate. Examination materials are maintained in a location available only to Emergency Programs Organization instructional staff and other authorized personnel.

#### **13.3.1 Remedial Training Policy**

Remedial training is additional training provided to a participant who did not correctly answer the required number of test questions or who was unable to successfully complete a formal training session. Because remedial training requirements are lesson-specific, they are incorporated into each lesson plan or practical so they are ready for use in case they are needed.

For example, the lesson plan for EM9001, *Initial Emergency Response Organization (ERO) Training*, states that after all participants have completed the test, the instructor will review the test questions with all students. Any questions answered incorrectly, the instructor will re-cover the material to the extent necessary to ensure understanding of the material with which the participant had difficulty.

Likewise, with the practical evaluations and lesson plans, the practical evaluator will discuss the participant's performance and, as necessary, remediate any "failed" items. The areas requiring remedial training are noted on the practical evaluation sheet.

The remedial training is intended to raise the individual's competency to a level that allows attainment of the knowledge and skills required to successfully complete the lesson or demonstrate the skill proficiency required to perform the job.

### **13.4 Recordkeeping**

The Livermore Training Records and Information Network (LTRAIN) requirements tracking module is the Laboratory database used to track the training requirements applicable to a person's assignment at the Laboratory. LLNL training policy requires that course completion records be entered into LTRAIN within ten business days. Additionally, a summary of the ERO training requirements for emergency response personnel and emergency preparedness courses provided at LLNL is included in EPIP-123. EPIP-123 also describes recordkeeping for training, instructor qualification, and training support provided to complement the basic cadre of ERO training that is made available to LLNL staff. The Safety and Education Training Division is responsible for entering ERO training records into LTRAIN.

### **13.5 Site Personnel**

A web-based training curriculum has been developed for LLNL site personnel for emergency conditions and is available to site visitors, vendors and sub-contractors. A second web-based training program has been developed to inform LLNL personnel of any changes or modification to the EPlan.

The LLNL Disaster/Self-Help Program is primarily designed to handle emergencies that would result from a regional earthquake or other similar catastrophe. The Disaster/Self-Help Program provides an organization that will respond to emergencies at LLNL when there may be no immediate response from the LLNL ERO or other professional emergency response organizations. Personnel assigned to Disaster/Self-Help organizational positions are typically not emergency response professionals. The Disaster/Self-Help Program is also designed to train employees who assist in the safe and orderly evacuation of other employees.

The Facility-Level Base Program differs from the Disaster/Self-Help Program in that it focuses on events where professional emergency response personnel are immediately available to take charge of the emergency response efforts at a facility or localized area. The Facility-Level Base Program training provides information on the development of the Facility-Level Emergency Plan (FLEP), the roles and responsibilities of those implementing the plan, and the roles and responsibilities of the facility/building occupants

### **13.6 Offsite Training Support**

Regular meetings of the City of Livermore Disaster Council, the ALCO EMA, and CESA are scheduled and held to share training opportunities and plan cooperative responses to emergency conditions (also see Section 4 of this EPlan).

### **13.7 Offsite Personnel Training**

LLNL provides selected training to appropriate offsite responders on an as-needed basis. For those service support organizations (mutual aid) that may enter the site as a part of their response, training also includes site access procedures and site familiarity. In addition, appropriate offsite agencies are offered the opportunity to participate in annual drills/exercises and response personnel training. EPIP-123 summarizes the offsite training provided.

LLNL provides radiological emergency training to the local offsite medical facilities (Eden Medical Center, Castro Valley; ValleyCare Medical Center, Pleasanton; and Sutter Tracy Community Hospital, Tracy) on an alternating annual basis. A drill is conducted at these facilities in coordination with this training.

### **13.8 Instructor Training and Qualification**

Staff members who have met instructor qualification requirements are used to deliver emergency preparedness training curriculum. The qualification of available staff is administered by the Safety and Education Training Division leader, upon completion of criteria set forth in EPIP-123.

### **13.9 Drills**

The emergency preparedness drills provide a supervised, “hands-on” training component for members of the ERO as well as provide an opportunity for the ERO to demonstrate and maintain individual and organizational capabilities. Training courses have also been identified as having a “hands-on” or “on-the-job” training component. The applicability and frequency of the drills associated with ERO training courses are described in EPIP-123.

## 14 EXERCISES

### 14.1 Exercises

Exercises are conducted to evaluate emergency response training and to evaluate LLNL's ability to respond to an emergency. The exercise critique and evaluation process provides feedback for improving plans, facilities, equipment, training and emergency response performance.

Participation in exercises is required for personnel who would be expected to participate in an actual emergency response. Emergency exercises require substantial effort to plan and coordinate effectively. The use of a realistic scenario and adequate controls enhances the validity of the exercise to evaluate operational procedures and EIPs.

An exercise is a comprehensive performance test of the integrated capabilities of the ERO.

Exercises test the adequacy and effectiveness of:

- Organizational command and control
- Implementation procedures
- Notifications and communications networks
- Emergency equipment
- Training
- ERO performance
- Overall emergency response program performance

Exercise-specific objectives define the exercise scope, specify the emergency response functions to be demonstrated, identify the extent of organizational/personnel participation, and identify the spectrum of exercise activities to be accomplished or simulated. Not all emergency response elements are demonstrated in every exercise, and a systematic approach is used to demonstrate all ERO capabilities over a period of five years.

The LLNL exercise program validates the various emergency response elements over a multi-year period. The program provides periodic drills and exercises to evaluate emergency response capabilities and ensure that members of the ERO are prepared to respond appropriately to an actual emergency. The program also ensures that the local offsite organizations are offered participation in an exercise at least every three years.

Specifically, the exercise program provides the following:

- Management and administration of the exercise planning process
- Conduct of exercises
- An evaluation process
- An improvement process that includes lessons learned and corrective actions

#### **14.1.1 Evaluation and Corrective Actions**

Exercises are formally evaluated based on evaluation modules developed from exercise objectives and implementing procedures. Evaluators have technical expertise in the area being evaluated, are formally trained on the exercise evaluation process and also receive training specific to the exercise they will evaluate.

Controllers are assigned to each venue participating in the exercise. Controllers are also formally trained, including exercise-specific training. Controllers and evaluators, who participate annually in an exercise within their area of expertise, are considered current for the drill/exercise component of ERO training.

Following an exercise, each venue conducts a hot-wash of exercise events. An all-hands critique, to include representatives from all venues, is also held. Critique information is documented, and findings and observations are developed. Findings and observations are then analyzed and corrective action plans are developed, if applicable. Modifications to organizational plans and procedures as a result of these corrective actions are the responsibility of the individual organizations.

## **14.2 Exercise Design and Development**

Planning and scheduling of exercises requires the involvement and cooperation of multiple organizations at LLNL. To that end, the EPPC was developed. The EPPC is chartered to provide consistent direction and guidance for the planning, preparation, conduct, control and evaluation of integrated drill and exercise activities at LLNL. See EPIP-131 for a more detailed discussion of the EPPC, its membership and charter.

A scenario development working group is established for each exercise evolution at LLNL. This group is co-chaired by a representative from the organization of primary focus for the exercise, and contains members from the planning committee along with selected specialists. DOE Guide 151.1-3, *Programmatic Elements*, Table 3-1 provides the general framework for the planning process at LLNL.

### **14.2.1 Offsite Coordination**

Exercise activities associated with offsite organizations are coordinated by the EPPC. Offsite partners of LLNL include, but are not limited to, SNL/California, Livermore/Pleasanton Fire Department, Alameda County Fire Department, Livermore Police Department, Alameda County Office of Emergency Services, the California Highway Patrol, and the Zone 7 Water Agency.

### **14.2.2 Exercise Package**

The exercise package contains all the documentation necessary to execute, control, and evaluate the exercise; however, the extent of information will vary with the scope and complexity of the specific exercise. The exercise package is developed in three sections:

- Design and development
- Scenario materials
- Control and evaluation

#### **14.2.2.1 Design and Development Documents**

The design and development documents provide the foundation of the exercise development process and include the following:

**Exercise purpose.** The purpose defines the reason(s) for developing the exercise. It includes DOE Orders.

**Scope.** The scope identifies participating organizations, the extent of participation, and the requirements satisfied by the conduct of the exercise.

**Specified objectives.** Each exercise objective clearly states what is to be demonstrated. Objectives should be measurable and attainable. Evaluation criteria are developed to define how objectives will be measured by exercise evaluators.

**Design and development guidelines.** This section describes limitations placed on the design and development of the exercise, the exercise protocol, and a list of pre-approved simulations.

- Limitations are management policies and guidelines of concern to the exercise developers and scenario designers. They include such issues as conducting exercises on weekends, overtime restrictions or authorizations, and financial constraints.
- Protocols (rules of conduct) remind responders of drillmanship and safety issues.
- Pre-approved simulations list the major simulations applicable to the exercise. Examples include, but are not limited to, pre-determined meteorological data, use of a smoke generator to simulate fire/smoke, and use of protective equipment.

**Safety planning.** A safety plan is developed for each exercise. During an exercise, all participants must comply with established safety rules and practices. Participants must understand that the safety of exercise participants, non-participants, the public and the environment is the highest priority. The plan addresses generic and specific safety concerns, mitigative solutions, and required actions/notifications if a safety concern or emergency occurs during an exercise.

**Security Planning.** A security plan is developed for each exercise. Planning and management of exercises include provisions for participation of appropriate security personnel.

Persons involved in exercise planning must be sensitive to information or activities that may have security implications. An exercise security plan documents security concerns and solutions. The exercise security plan addresses generic and specific security concerns, mitigative solutions, and required actions/notifications if a security problem or emergency occurs during the exercise.

The exercise security plan establishes parameters for exercise design, development, and conduct in view of identified security issues. Controllers are responsible for conducting the exercise within security limitations; however, all participants must comply with security requirements. Special provisions are made for visitors and observers since they may not be familiar with site security requirements.

#### 14.2.2.2 Scenario Material Documents

Scenario materials provide the framework, based on the design and development documents, for which the participants will respond. The scenario materials consist of the following:

**Scenario narrative.** The scenario narrative is a summary of the background, initial conditions, initiating events, and expected responder actions. It contains descriptions of the simulated emergency situation, including the overall sequence of events, details, supporting data, and timing of activities.

**Master scenario events list.** The master scenario events list contains all the details required for the control organization to manage the exercise, including the message injects, contingencies, and other control tools.

**Message injects.** Message injects include instructions to controllers to begin simulations, insert information, provide earned information and contingency messages. They are formatted/presented in a manner that would be observed by responders in a real event.

**Exercise data.** Data varies greatly depending on the scope of the exercise. Exercise data may include general and facility-specific, meteorological, hazardous material, and medical information.

- **General facility information** is important when non-facility personnel participate in the exercise. This information includes a facility description; area, site, and facility maps; mission description; and emergency information.
- **Specific facility information** provides operational data at the time of the event. These data may include diagrams, schematics, and data tables that augment the scenario.
- **Meteorological data** provide weather conditions and forecasts, both real and simulated, as required.
- **Hazardous material data** may include radiation or chemical plume plots and tables, decontamination levels, and exposure levels. The technical basis and assumptions used to develop this are provided.
- **Medical information** includes a description of medical conditions and moulage procedures, actor behavior instructions, and vital signs.

### 14.2.2.3 Control and Evaluation Documents

This section of the exercise package provides the materials needed to evaluate and safely control an exercise. This section contains the following:

**Evaluator and controller organization.** This document identifies the number, qualifications, and providing organization of the evaluators and controllers.

**Evaluator instructions.** This document provides the instructions used by each evaluator. These include the methodology for recording observations, interaction with responders, discussion of the evaluator tools, and schedule of events from the exercise-specific training through the completion of the evaluation report.

**Evaluator modules.** The evaluator module lays out the exercise objective with the evaluation criteria. An evaluator module is normally tailored to each evaluator position. It will include an evaluator's timeline to time-record observations and a series of checklists to record observations of evaluation criteria. The evaluator modules are based on the evaluated organization's plans and procedures.

**Controller instructions.** This document provides the instructions used by each controller. These include methodology for recording observations, interactions with responders, discussion of providing information, discussion of the use of contingency messages, and schedule of events from the exercise-specific training through the evaluator/controller critique.

**Telephone directory.** This section consists of the internal communications directory of the control organization.

### 14.2.2.4 Administrative and Logistics Documents

**Administrative section.** This section contains the master exercise schedule from initial planning meetings through final evaluation and corrective action plan, and any other exercise-related administrative information.

**Logistic section.** This section, based on the exercise scope, may contain the following:

- Source and list of exercise simulations
- Health and safety items for participants (e.g., meals and water)
- Transportation plan to move participants
- Controller and evaluator vests and communications equipment

### 14.3 Evaluation Standards

LLNL uses the following performance measures for exercise evaluation:

**Superior performance.** The responders met their exercise objective. Their performance in accomplishing this objective demonstrated innovative and highly effective completion of their assigned tasks. This rating must be justified and assignment of this rating is strictly limited.

**Met.** The responders met their exercise objective.

**Met with improvement items.** The responders met their exercise objective in accordance with plans and procedures, but there was difficulty in documented areas.

**Not met, weakness.** The responders did not meet their exercise objective, and the objective does not have a direct impact on the health and safety of the workers or responders. This rating must be justified.

**Not met, deficiency.** The responders did not meet their exercise objective, and the objective does have a direct impact on the health and safety of the workers or responders. This rating must be justified.

### 14.4 Evaluation Report

The evaluation report is a compilation of comments and observations by the evaluators. Their completed evaluator modules will be collected and compiled by the Emergency Programs Organization. The written report will be reviewed by the EPPC for accuracy and completeness.

The final report will be delivered to NNSA/LSO within thirty working days after the exercise. Emergency Programs Organization will publish and distribute the final report.

The final report will include:

- Executive summary
- A list of organizations, the number of objectives, and the classification of the objectives
- A discussion of performance
- Discussion of corrective actions
- The completed evaluator modules (limited distribution only) as an attachment.

## **15 PROGRAM ADMINISTRATION**

### **15.1 Emergency Programs Administration**

The Head of the LLNL Emergency Management Department serves as the Emergency Management Program Administrator.

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The Emergency Management Department includes Emergency Programs Organization. The Emergency Programs Organization Manager manages the emergency preparedness program under the oversight of the Emergency Management Department Head.

### **15.2 Documentation**

The Emergency Programs staff ensures adequate documentation and maintenance of technical data that supports the overall Emergency Programs Organization. This information generally falls into three categories: technical supporting information, emergency preparedness documents, and records. The program administrator ensures that up-to-date (and controlled, if applicable) copies are maintained, information is properly distributed and documents are updated when needed or required. Technical supporting information includes diagrams, illustrations, maps, procedures, equipment lists, and document references.

In addition to supporting information, Emergency Programs Organization administers the development of documents such as hazards assessments, ERAPs, and EPZ documentation. Records that are important to maintain in an auditable form include training records, drill and exercise records, evaluation reports and records resulting from actual Operational Emergencies.

#### **15.2.1 Document Control**

The Emergency Programs Organization Manager is responsible for LLNL Emergency Programs document distribution and updates. Format, content and overall control of these documents is described in EPIP-141.

### **15.3 Self-Assessment**

The Emergency Programs Organization staff conducts an annual self-assessment of the Emergency Programs preparedness based on EPIP-141. An assessment plan is developed and approved prior to the assessment. Deficiencies, weaknesses, and/or issues from the self-assessment are incorporated into the LLNL Issues Tracking System (ITS).

### **15.4 Emergency Readiness Assurance Plan**

The annual ERAP provides documentation of the emergency planning and preparedness activities for LLNL and is based on the format prescribed by DOE Guide 151.1-3, *Programmatic Elements*, Appendix C. This format summarizes emergency preparedness program activities for the preceding fiscal year and projections for activities for the next fiscal year, and may be augmented with additional guidance from NNSA/LSO. Once the ERAP has been signed off by the Emergency Management Department Head, it is delivered to NNSA/LSO.

#### **15.4.1 Emergency Preparedness Corrective Action Tracking**

Deficiencies, weaknesses and/or issues related to emergency preparedness and planning are formally tracked using the ITS system. The EPO self-assessment, ERAP, and other facets of emergency preparedness process maintenance are described in EPIP-141.

## ATTACHMENT A: Acronyms and Definitions

Term	Description
<b>AAR</b>	After-Action Report
<b>ACFD</b>	Alameda County Fire Department
<b>ACRECC</b>	Alameda County Regional Emergency Communication Center. Located at LLNL it is operated and managed by the Alameda County Fire Department. Handles dispatching of Alameda County Fire Department stations 20 and 21 at LLNL. Also known as Fire Dispatch.
<b>Activate</b>	The order or direction from the responsible authority (e.g., LEDO, EMDO) to make the EOC or another emergency response facility operational.
<b>Activation</b>	Actions taken to activate, staff, set up, and make operational an emergency facility in support of emergency activities. Includes notification of the emergency response organization staff and notification of off-site agencies.
<b>AD</b>	Associate Director
<b>AEGL</b>	Acute Exposure Guideline Level
<b>Alert</b>	An Operational Emergency that is expected to have significant impacts (Protective Action Guide or AEGL <sub>60-2</sub> /ERPG-2/TEEL-2 exceeded) at or beyond thirty meters from the release point, but less than 100 meters and/or the facility boundary
<b>ARES</b>	Amateur radio emergency services network.
<b>BEC</b>	Building emergency coordinator
<b>CAD</b>	Computer Aided Dispatch
<b>Cal EMA</b>	California Emergency Management Agency (formerly Office of Emergency Services – OES) California Emergency Management Agency. The State of California, Alameda County, Contra Costa County, and San Joaquin County all operate independent Offices of Emergency Services with whom LLNL may interface during an Operational Emergency.
<b>CALWAS</b>	California Warning Alert System
<b>CAS</b>	Central Alarm Station
<b>Communicator! NXT</b>	PC-based emergency notification system.
<b>Contract 44</b>	Prime Contract DE-AC52-07NA27344 between the DOE and the Lawrence Livermore National Security, LLC codifying the partnership that owns, manages, and operates LLNL.
<b>CRD</b>	Contractor Requirements Document

**ATTACHMENT A: Acronyms and Definitions**

<b>Term</b>	<b>Description</b>
<b>DC</b>	Derivative Classifier
<b>DHS</b>	Department of Homeland Security
<b>DOC</b>	Department Operations Center. Department Operations Centers are operated as necessary by Environmental Functional Area, Worker Safety & Health and Radiation Safety Functional Areas (Safety & Health), Health Services Department, Facilities and Infrastructure Directorate, Public Affairs Office, Security Organization (the Tactical Operations Center), and Site 300.
<b>DOE</b>	U.S. Department of Energy
<b>DOE/NNSA HQ</b>	Department of Energy /National Nuclear Security Administration Headquarters
<b>EAL</b>	Emergency Action Level. Specific criteria which provide guidance to classify an Operational Emergency
<b>EBCC</b>	Executive Business Coordination Center
<b>ECN/VTC</b>	Emergency Communications Network/Video Teleconference
<b>ED</b>	Emergency Director. The Laboratory Emergency Duty Officer becomes the emergency director when the Emergency Operations Center is activated and operational for an Operational Emergency. The emergency director directs the Laboratory's institutional response from the Emergency Operations Center.
<b>EDO</b>	Environmental Duty Officer
<b>EFA</b>	Environmental Functional Area
<b>EMC</b>	Emergency Management Coordinator
<b>EMD</b>	Emergency Management Department (within the Facilities & Infrastructure Directorate)
<b>EMDO</b>	Emergency Management Duty Officer
<b>EMS</b>	Emergency medical service
<b>EMT</b>	Emergency Management Team. The emergency director/Laboratory Emergency Duty Officer, discipline managers and staff who report to the Emergency Operations Center during Operational Emergencies.
<b>EOC</b>	Emergency Operations Center
<b>EPA</b>	U.S. Environmental Protection Agency
<b>EPHA</b>	Emergency Planning Hazards Assessment
<b>EPI</b>	Emergency public information
<b>EPIP</b>	Emergency Plan Implementing Procedure

**ATTACHMENT A: Acronyms and Definitions**

<b>Term</b>	<b>Description</b>
<b>EPlan</b>	Emergency Plan
<b>EPO</b>	Emergency Programs Organization. Emergency preparedness and planning group that is part of the Emergency Management Department in Facilities & Infrastructure Directorate.
<b>EPPC</b>	Emergency Programs Planning Committee, which is composed of representatives from each LLNL emergency management team-represented organization including Health Services and any offsite community partner organization that wants to participate in and help to plan drills and exercises.
<b>EPZ</b>	Emergency Planning Zone. For LLNL, the emergency planning zone is defined as a two-mile planning area surrounding the plant site.
<b>ERAP</b>	Emergency Readiness Assurance Plan – annual emergency preparedness report update and projection.
<b>ERO</b>	Emergency Response Organization. Primary and alternate management and support personnel trained to carry out emergency response activities according to the EPlan and Emergency Plan Implementing Procedures.
<b>ERPG</b>	Emergency Response Planning Guideline (non-radiological threshold)
<b>ES&amp;H</b>	Environment, safety, and health
<b>EVA</b>	Emergency Voice Alarm system
<b>F&amp;I</b>	Facilities and Infrastructure
<b>FA</b>	Functional Area
<b>FBI</b>	Federal Bureau of Investigation
<b>FEMA</b>	Federal Emergency Management Agency
<b>FLEP</b>	Facility-Level Emergency Plan
<b>FM</b>	Floor monitor
<b>FMT</b>	Field monitoring team
<b>FOC</b>	FEMA Operations Center
<b>FPOC</b>	Facility Point-of-Contact
<b>FSP</b>	Facility Safety Plan
<b>GE</b>	General Emergency
<b>General Emergency</b>	An Operational Emergency that is expected to have significant impacts (PAG or AEGL <sub>60-2</sub> /ERPG-2/TEEL-2 exceeded) at or beyond the site boundary.

**ATTACHMENT A: Acronyms and Definitions**

<b>Term</b>	<b>Description</b>
<b>HazMat</b>	Hazardous materials
<b>HAZWOPER</b>	Hazardous Waste Operations and Emergency Response
<b>HEPA</b>	high-efficiency particulate air filter
<b>HSD</b>	Health Services Department
<b>HVAC</b>	heating, ventilation, and air conditioning
<b>IC</b>	Incident Commander (Fire and/or Security)
<b>ICS</b>	Incident Command System
<b>ISM</b>	Integration Safety Management
<b>ITS</b>	Issues Tracking System
<b>IWS</b>	Integration Work Sheet
<b>JIC</b>	Joint Information Center
<b>LEDO</b>	Laboratory Emergency Duty Officer – represents the Laboratory Director. Onsite or on-call at all times.
<b>LLNL</b>	Lawrence Livermore National Laboratory, including the Livermore Site 200 and Site 300.
<b>LLNS</b>	Lawrence Livermore National Security, LLC (Livermore, CA). The management and operations contractor for LLNL, composed of Bechtel National, the University of California, BWX Technologies, Washington Group International, Battelle, and the Texas A&M University System.
<b>LSO</b>	Livermore Site Office
<b>LTRAIN</b>	Livermore Training Records and Information Network
<b>MACS</b>	Multi-Agency Coordination System
<b>MFIL</b>	Maximum Facility Inventory Limit
<b>MOA</b>	Memorandum of Agreement
<b>MOU</b>	Memorandum of Understanding
<b>NARAC</b>	National Atmospheric Release Advisory Center. A part of LLNL's Chemistry, Materials, Earth & Life Sciences (CMELS) Directorate, supports the DOE, the Department of Defense, and the LLNL Emergency Operations Center by providing real-time assessments of the consequences from an atmospheric release of radioactive or toxic material.
<b>NAWAS</b>	National Warning System
<b>NFPA</b>	National Fire Protection Association

## ATTACHMENT A: Acronyms and Definitions

Term	Description
<b>NIMS</b>	National Incident Management System
<b>NNSA/LSO</b>	National Nuclear Security Administration/Livermore Site Office
<b>NNSA/OST</b>	National Nuclear Security Administration/Office of Secure Transport
<b>NWC</b>	National Warning Center
<b>NWS</b>	National Weather Service
<b>OC</b>	Operations Center (DOE/NNSA HQ)
<b>OE</b>	Operational Emergency
<b>OENRFC</b>	Operational Emergency Not Requiring Further Classification
<b>Operational</b>	State of the EOC, or any other emergency facility, once directed to activate, when activation steps have been completed, minimum staffing is present, and vital equipment is available to support the facility's operations.
<b>ORDO</b>	Occurrence Reporting Duty Officer
<b>OSHA</b>	Occupational Safety and Health Administration
<b>P&amp;I</b>	Planning & Intelligence
<b>PA</b>	protective action
<b>PAC</b>	protective action criteria
<b>PAG</b>	Protective Action Guide (radiological threshold). PAG is defined as the fifty-year committed effective dose equivalent of one to five rem. At LLNL, the lowest value, one rem, is used for doses resulting from direct radiation or the uptake of materials that have a physical or biological half-life that is short compared to fifty years. Five rem is used for doses resulting from the uptake of long half-life materials. 100 rem is used as the threshold for early lethality.
<b>PAO</b>	Public Affairs Office
<b>PAR</b>	Protective Action Recommendation
<b>PFD</b>	Protective Force Division
<b>PIO</b>	Public information officer
<b>REAC/TS</b>	Radiation Emergency Assistance Center/Training Site
<b>Recovery</b>	The operational phase following mitigation of an Operational Emergency. The recovery phase involves those actions taken, after a facility has been brought to a stable condition, to return the facility to normal operation. The recovery phase includes accident assessments and investigation, recovery planning and scheduling, and repair and restoration.

**ATTACHMENT A: Acronyms and Definitions**

<b>Term</b>	<b>Description</b>
<b>Reentry</b>	Time-urgent actions performed during emergency response such as search and rescue, mitigation, damage control, and accident assessment
<b>SAE</b>	Site Area Emergency
<b>SAP</b>	Safety Assessment Program
<b>SDO</b>	Security Duty Officer
<b>SECON</b>	Security Condition
<b>SEMS</b>	Standardized Emergency Management System
<b>Site Area Emergency</b>	An Operational Emergency that is expected to have significant impacts (PAG or AEGL <sub>60-2</sub> /ERPG-2/TEEL-2 exceeded) at or beyond the facility boundary, but not beyond the nearest site boundary
<b>Shelter</b>	Protective action taken to reduce exposure to a risk (i.e., passing plume or to a plume containing easily filtered particulates such as transuranic compounds, or a security-related threat). Actions generally include: closing doors and windows; if deemed practical for a HazMat event, turning off HVAC; and remaining indoors until an all clear is issued.
<b>SNL/California</b>	Sandia National Laboratories
<b>SP</b>	Safety Plan
<b>TCN</b>	Temporary Change Notice
<b>TEEL</b>	Temporary Emergency Exposure Limit (non-radiological threshold). Values for airborne concentration thresholds of released materials which are based on requirements in the Occupational Safety and Health Administration, Environmental Protection Agency, and other exposure limits. Temporary Emergency Exposure Limit 2 (TEEL-2) is used for the classification of emergency events and the initiation of protective actions. Temporary Emergency Exposure Limit 3 (TEEL-3) is used as the threshold for early lethality.
<b>Termination</b>	Conclusion of an Operational Emergency, including classified emergencies: Alert, Site Area Emergency, or General Emergency.
<b>TOC</b>	Tactical Operations Center (Security DOC)
<b>UC</b>	Unified Command
<b>WebEOC®</b>	Emergency information management system used to display information in the EOC and DOCs, and provide situational awareness for the EMT during the course of an Operational Emergency.

**ATTACHMENT B: Index of Emergency Response Documents**

Title	Location
LLNL Emergency Plan	EPO
EPIP-41, Emergency Categorization & Classification	EPO
EPIP-42, Emergency Management Duty Officer Procedure	EPO
EPIP-51, Emergency Notifications	EPO
EPIP-52, Transport and Notification of Ill, Injured, or Deceased LLNL Workers	EPO
EPIP-61, Emergency Planning Hazards Survey and Hazards Assessments	EPO
EPIP-62, Emergency Planning Hazards Assessment Documentation for Transportation Events	EPO
EPIP-71, Emergency Protective Actions and Reentry	EPO
EPIP-91, Emergency Termination and Recovery	EPO
EPIP-111, Activation and Operation of the Emergency Operations Center	EPO
EPIP-123, Emergency Response Organization Training and Drills	EPO
EPIP-131, Exercises	EPO
EPIP-141, Emergency Programs Administration	EPO
EPIP-142, Emergency Programs Organization Roles and Responsibilities	EPO
LLNL EPI Plan	PAO
LLNL Emergency Public Information Procedure	PAO
LLNL <i>ES&amp;H Manual</i> , Document 22.1, Emergency Preparedness and Response <a href="http://www.llnl.gov/es_and_h/hsm/doc_22.01/doc22-01.html">http://www.llnl.gov/es_and_h/hsm/doc_22.01/doc22-01.html</a>	Online
LLNL <i>ES&amp;H Manual</i> , Document 22.2, Environmental Emergency Preparedness and Response <a href="http://www.llnl.gov/es_and_h/hsm/doc_22.02/doc22-02.html">http://www.llnl.gov/es_and_h/hsm/doc_22.02/doc22-02.html</a>	Online
LLNL <i>ES&amp;H Manual</i> , Document 22.3, Response Plan for Fire In an Explosives Area <a href="http://www.llnl.gov/es_and_h/hsm/doc_22.03/doc22-03.html">http://www.llnl.gov/es_and_h/hsm/doc_22.03/doc22-03.html</a>	Online
LLNL <i>ES&amp;H Manual</i> , Document 22.4, Earthquakes <a href="http://www.llnl.gov/es_and_h/hsm/doc_22.04/doc22-04.html">http://www.llnl.gov/es_and_h/hsm/doc_22.04/doc22-04.html</a>	Online
LLNL <i>ES&amp;H Manual</i> , Document 22.5, Fire <a href="http://www.llnl.gov/es_and_h/hsm/doc_22.05/doc22-05.html">http://www.llnl.gov/es_and_h/hsm/doc_22.05/doc22-05.html</a>	Online
LLNL <i>ES&amp;H Manual</i> , Document 22.6, Exposure to Radiation in an Emergency <a href="http://www.llnl.gov/es_and_h/hsm/doc_22.06/doc22-06.html">http://www.llnl.gov/es_and_h/hsm/doc_22.06/doc22-06.html</a>	Online
LLNL <i>ES&amp;H Manual</i> , Document 22.7, Protective Actions: Disaster/Self-Help, Shelter-In-Place, Site Emergency Egress, and Emergency Traffic Control <a href="http://www.llnl.gov/es_and_h/hsm/doc_22.07/doc22-06.html">http://www.llnl.gov/es_and_h/hsm/doc_22.07/doc22-06.html</a>	Online

**ATTACHMENT B: Index of Emergency Response Documents**

Title	Location
LLNL <i>ES&amp;H Manual</i> , Document 22.8, Continuity Programs <a href="https://esh-int.llnl.gov/man/22.8.pdf">https://esh-int.llnl.gov/man/22.8.pdf</a>	Online
Central Alarm Station (CAS) Emergency Procedures	CAS
Emergency Notification for Control of Emergencies	EMD Office
ES&H Directorate Field Monitoring Team Procedure	ES&H Teams Division
Livermore Fire Department Hazardous Materials Emergency Response Plan	EMD Office
LSO Duty Officer Occurrence Reporting and Emergency Event Notifications	LSO
LSO Emergency Response Oversight Process	LSO
Management Notification Chain for LLNL Emergencies	EMD Office
Operation of the Decontamination Facility, B663	HSD
DOC Procedure – Environmental DOC	EFA
DOC Procedure – Facilities & Infrastructure DOC	F&I
DOC Procedure – Health Services Department DOC	HSD
DOC Procedure – Public Affairs Office DOC (see Emergency Public Information Plan and Procedures)	PAO
DOC Procedure – Safety & Health DOC	ES&H Directorate
DOC Procedure – Security DOC (see TOC Order)	Security
DOC Procedure – Site 300 DOC	Site 300
Response to Emergencies in the Superblock	EMD Office
Response to Injuries Involving Exposure to Hydrogen Cyanide	EMD Office
Security Conditions Order	Security Organization
Tactical Operations Center (TOC) Order	TOC