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Los Alamos National Laboratory Emergency Management Plan

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Los Alamos National Laboratory

Emergency Management Plan

July 15, 1998

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Los Alamos
NATIONAL LABORATORY

Los Alamos, New Mexico 87545

REVISIONS TO LA-12900

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PREFACE

In accordance with the Department of Energy (DOE) O 151.1 series orders, it is DOE policy to develop and maintain an emergency management system that—through emergency planning and emergency preparedness, and with effective response capabilities—is capable of responding to and mitigating the consequences resulting from emergencies. Proper emergency planning will greatly reduce the potential for loss of life and property damage, as well as increase the safety of all employees and provide protection to the environment. This is consistent with our social contract obligations. Line management must plan for emergencies, provide the necessary emergency training to ensure that employees and the public are protected, and take the emergency actions necessary to mitigate the incident until relieved by authorized personnel. The Emergency Management and Response Office assists Laboratory managers in that effort through the administration of a comprehensive emergency management program.

The Laboratory's Emergency Management Plan incorporates into one document a description of the entire process designed to plan for, respond to, and mitigate the potential consequences of an emergency. This plan, coupled with the building emergency planning program and site specific emergency procedures, presents the requirements, procedures, and information needed to ensure that any emergency experienced at the Laboratory is mitigated in the most expeditious and effective manner.

During emergency situations, clearly identified command and control responsibilities are required to ensure maximum effectiveness and control of emergency response elements. The Emergency Management and Response Office has been given this responsibility and exercises that command and control through the Incident Commander on scene and the Emergency Director in the Laboratory's Emergency Operations Center. The Laboratory's Emergency Director and/or Incident Commander has been designated by the DOE as the person in charge of emergencies occurring on DOE property.

Knowledge of and compliance with the guidance contained in this plan is required to ensure that emergencies are mitigated in the most effective manner and the proper protection is afforded to Laboratory employees, contractors, the public, and the environment.

APPROVED

J. F. Jackson
Deputy Director

JUL 14 1998

EXECUTIVE SUMMARY

This document establishes an Emergency Response Organization capable of responding to the range of emergencies at the Los Alamos National Laboratory and serves as the foundation for emergency planning, preparedness, and response at the Laboratory. Provisions are made for the rapid mobilization of the Emergency Response Organization and for expanding the response commensurate with the extent of the emergency. In addition, management guidelines are established for mitigating a range of emergencies.

Under the provisions of the Laboratory's Emergency Management Plan, the Emergency Director in the Laboratory's Emergency Operations Center is tasked with directing the management of emergency response operations (and post-incident activities). The Emergency Manager in the Emergency Management and Response Group (S-8) provides on-call, 24-hour coverage for emergency response. The Incident Commander is the individual with authority and responsibility for command and control at the incident scene. The Emergency Manager may become the Incident Commander.

When an emergency occurs at the Laboratory, the Laboratory Emergency Response Organization is responsible for all elements of response throughout the duration of the emergency. The Incident Commander is responsible for initial notification and communications, and for providing protective action recommendations to buildings/areas within the emergency response zone and offsite.

The Laboratory's Emergency Management Plan is designed to be compatible with emergency plans developed by local, state, tribal, and federal agencies. It does this by establishing communications channels with these agencies and by setting criteria for notifying each agency when warranted by an emergency.

Chapters in the Emergency Management Plan cover the basic 13 elements of planning, preparedness, and response:

- Emergency Response Organization—The Emergency Response Organization and its management as a cohesive unit during an emergency.
- Offsite Response Interfaces—Laboratory interfaces with the surrounding jurisdictions and entities.
- Operational Emergency Event Classes—Event classes and emergency action levels.
- Notifications and Communications.
- Consequence Assessment.
- Protective Actions and Recovery—Protective actions necessary to preserve life and property and protect the environment.
- Emergency Medical Support.
- Emergency Termination and Recovery—The recovery and reentry process.

- Public Information—Duties of Public Affairs.
- Emergency Facilities and Equipment—Facilities and equipment available for mitigating an emergency.
- Training and Drills—Training requirements for the Emergency Response Organization.
- Exercises—Drills and an exercise program for training and evaluating emergency capabilities and response.
- Program Administration—Overall administration of the Emergency Management Plan.

Appendixes to the manual include a glossary; a reference list of federal regulations and other compliancy documents and guidelines; and checklists, forms, and completion instructions related to emergency procedures.

1.0 INTRODUCTION

1.1 Purpose of the Emergency Management Plan

The Laboratory has developed this Emergency Management Plan (EMP) to assist in emergency planning, preparedness, and response to anticipated and actual emergencies. The Plan establishes guidance for ensuring safe Laboratory operation, protection of the environment, and safeguarding Department of Energy (DOE) property. Detailed information and specific instructions required by emergency response personnel to implement the EMP are contained in the Emergency Management Plan Implementing Procedure (EMPIP) document, which consists of individual EMPIPs. The EMP and EMPIPs may be used to assist in resolving emergencies including but not limited to fires, high-energy accidents, hazardous material releases (radioactive and non-radioactive), security incidents, transportation accidents, electrical accidents, and natural disasters.

The EMP complies with the following: DOE O 151.1; Federal Regulation 29CFR1910.120; Federal Regulation 40CFR300; and DOE Albuquerque Operations Office and Los Alamos Area Office attachments and updates (pertaining to emergency operations). The Laboratory's EMP and EMPIPs establish an emergency management program that

- Assigns responsibilities;
- Guides in categorization and classification;
- Outlines necessary notifications for emergency response personnel and the public;
- Outlines the assessment of Laboratory and offsite hazardous materials conditions during and/or following an emergency;
- Outlines an effective course of action to protect the public and Laboratory personnel in the event of an emergency;
- Provides for implementation of protective actions;
- Guides mitigation of the hazardous materials consequences; and
- Outlines necessary training for emergency response personnel.

1.1.1 Update of the Emergency Management Plan

The EMP will be reviewed and updated when significant changes are required. The update will include corrections for internal and audit findings, drill and exercise findings, external changes in governing standards and references, and changes to Laboratory operations and hazards.

1.1.2 Distribution of Copies

The EMP and EMPIP are primarily for internal Laboratory use and distribution. The EMPIPs are issued to designated responders. The EMP is also available on the World Wide Web. Outside agencies such as local, state, tribal, and federal agencies can request paper copies for use in their emergency planning.

Copies of the EMP will be sent to the DOE Los Alamos Area Office (DOE/LAAO) for review and concurrence. It is the responsibility of the DOE/LAAO to send the EMP to the DOE Albuquerque Office (DOE/ALO) for their review and concurrence. DOE/ALO in turn is responsible for sending the document to DOE Headquarters for review and approval. Distribution of the EMP will not be delayed while awaiting approval of DOE, but may be revised at a later date with their recommendations included.

The contents of this EMP have been reviewed by the Security and Safeguards (S) Division and do not contain classified information or Unclassified Controlled Nuclear Information.

1.2 Scope

The Laboratory's EMP and EMPIP are the management documents for operational emergencies (see Chapter 4). This EMP covers the entire Laboratory (also referred to as the site) as described in Section 1.4. Buildings are referenced by Technical Area (TA) followed by the appropriate building number; e.g., LANSCE is TA-53; the Plutonium Facility is TA-55; Fenton Hill is additionally referred to as TA-57. Some buildings at the Laboratory are referred to as facilities by Laboratory personnel and may be referred to as such in this document. These facilities include but are not limited to the Los Alamos Neutron Science Center (LANSCE) and the Plutonium Facility. Areas and buildings not on Laboratory property may be referred to as offsite, especially in reference to Emergency Planning Zones (discussed in Section 7.6) and emergency response. Figure 1-1 shows the locations of Laboratory Technical Areas.

Laboratory operations (buildings and personnel) at the Nevada Test Site are covered by the Nevada Test Site Emergency Response Plan and EMPIP. Emergencies at the Nevada Test Site involving Laboratory property or personnel are the responsibility of the Emergency Response Organization at the Nevada Test Site.

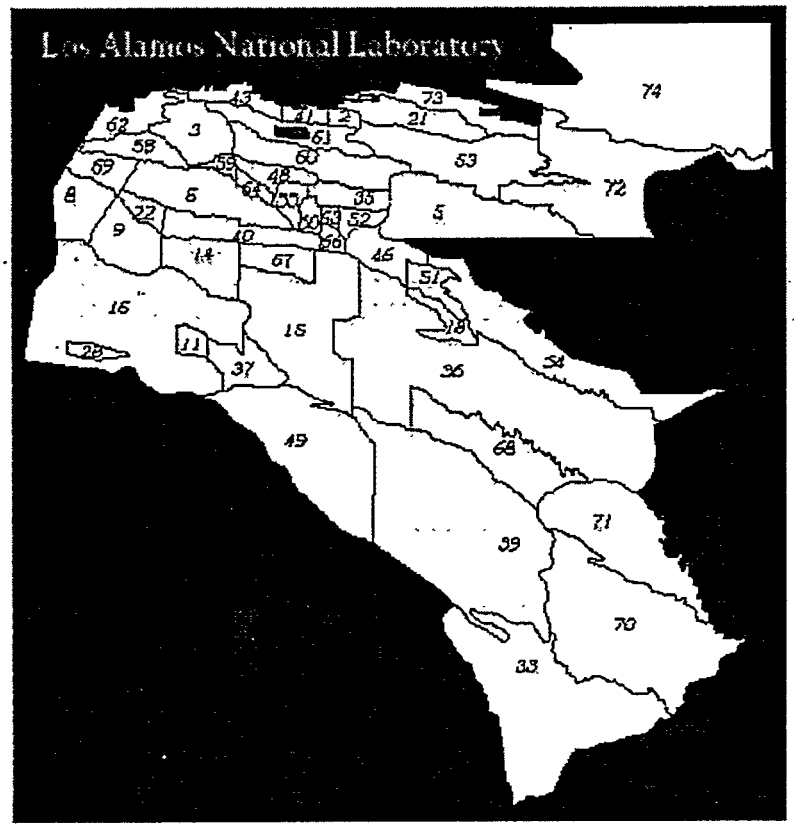

Figure 1-1. Laboratory Technical Areas

1.3 Concept of Operation

The Laboratory emergency management system is composed of three basic elements: planning, preparedness, and response.

- *Planning,* based on hazards assessment and other reports and studies, includes developing and preparing Building Run Sheets, emergency plans and procedures, and EMPIPs, and identifying necessary personnel and resources to provide effective emergency response.
- *Preparedness* includes acquiring personnal and other resources essential for emergency response, training personnel, maintaining resources, and implementing emergency plans and procedures.
- *Response* represents the implementation of planning and preparedness during an emergency and involves making effective decisions, taking necessary actions, and applying resources to mitigate consequences and recover from an emergency.

The EMP and EMPIPs establish the formality of operations for emergency management at the Laboratory. Chapters 2 through 14 of this EMP encompass the following basic elements of planning, preparedness, and response:

- Emergency Response Organization
- Offsite Response Interfaces

- Operational Emergency Event Classes
- Notifications and Communications
- Consequence Assessment
- Protective Actions and Recovery
- Emergency Medical Support
- Emergency Termination and Recovery
- Public Information
- Emergency Facilities and Equipment
- Training and Drills
- Exercises
- Emergency Management Program Administration

The EMP and the EMPIPs provide for the necessary prearrangement, direction, and organization needed to safeguard Laboratory personnel and property and the general public. Additional supporting documents include technical manuals, engineering drawings, Building Run Sheets, and safety analysis reports.

1.3.1 Employee Liability

In the event of an emergency, Laboratory employees should make a good faith effort to mitigate the situation and assist emergency personnel. A Laboratory employee acting in good faith and within the scope of employment will be covered by the Laboratory, even if that employee makes a mistake resulting in harm or damage.

1.3.2 Stop Work Authority

It is important that activities and operations be performed in a manner designed to protect employees, the public, and the environment. Personnel on Laboratory property have "stop work authority" as outlined in LIR 401-10-01.0, *Stop Work and Restart*, available online. This document states, "All individuals have the authority to direct any employee to stop work on any activity that you are personally engaged in that poses a danger to health, safety, or the environment with regard to radiological hazards or any other kind of hazard." After directing an employee to stop work, the individual exercising "stop work authority" must notify line management, the Emergency Management and Response (EM&R) Office (667-6211), and the Environment, Safety, and Health (ES&H) Division Office (667-4218). At the work location, the safety officer or Building Manager is responsible for ensuring that all personnel are aware of the notification procedures. Laboratory and contractor personnel are trained on actions to be taken in an emergency before being given their work assignments. Visitors within the Laboratory must attend the visitors' orientation briefing for the facility they plan to visit. The briefing includes instructions on notification and the required actions in the event of an emergency.

1.3.3 Emergency Manager

An Emergency Manager (EM) is assigned to each Facility Management Unit (FMU) to assist in planning and preparedness activities. The EM is available to provide assistance and review of

emergency documents at the facility or site level. Call EM&R for the name of the EM assigned to your facility. For the complete requirements of Stop Work and Restart, refer to LIR 401-10-01.0.

1.4 Laboratory Description

1.4.1 Overview Site Description

1.4.1.1 Mission. The primary mission of the Laboratory previously was nuclear weapons research, development, and testing to help ensure the nation's nuclear deterrent. The mission of the Laboratory today is to reduce global nuclear danger, support core competencies, and contribute to defense, civilian, and industrial needs. The emphasis now has shifted to reducing and improving the nuclear weapons stockpile and supporting new national and international initiatives. The Laboratory vision is a customer-focused, unified Laboratory where science serves society to enhance global security, preserve the earth, and improve the quality of life through innovations in science and technology. Part of this vision is to manage the business and operations of the Laboratory at a world-class level.

The Laboratory is responsible for:

- Ensuring the safety and reliability of the United States nuclear forces;
- Advising on further arms reductions;
- Participating in the dismantlement of nuclear weapons and the minimization of waste;
- Studying the efficiency of advanced technologies, manufacturing processes, and facilities;
- Pursuing programs focused on preventing the proliferation of weapons of mass destruction;
- Pioneering environmentally safe technologies for testing, maintaining, and dismantling nuclear warheads;
- Developing technologies for environmental restoration; and
- Transferring technologies to private industry to help the public.

In pursuing this mission, the Laboratory will maintain a safe and healthful workplace and protect the environment. No activity or operation will be carried out at the Laboratory unless it can be performed in a manner designed to protect employees, the public, and the environment.

1.4.1.2 Laboratory Technical Areas. The Laboratory's Technical Areas can be combined to form eight primary areas which, together, account for approximately 60% of the total Laboratory land area, 93% of the total Laboratory net square footage, and 99% of the total Laboratory population. (The total Laboratory population as of September 1997 was 13803 employees, including primary and subcontractor employees.) The eight primary areas are listed below.

- *Core Area and Two-Mile Mesa North* (including TAs 3, 43, 58, 59, and 62) contain 58% of the Laboratory population. This area includes the central technical, administrative, and

physical support facilities of the Laboratory as well as experimental science and theoretical/computational science.

- *Two-Mile Mesa South* (including TAs 6, 22, and 40) contains 1% of the Laboratory population. This area is presently used for the research and testing of special detonators and high-explosive systems and as a buffer zone for this function.
- *Pajarito Corridor West* (including TAs 35, 48, 50, 52, 55, 63, 64, and 66) contains 19% of the Laboratory population. Experimental science and special nuclear materials, including radiochemistry, nuclear safeguards studies, analytical, chemistry, reactor development, waste management, and plutonium processing occur in this development area.
- *Pajarito Corridor Central* (including TAs 18, 46, 51, 54, and 65) contains 5% of the Laboratory population. This area includes experimental science where research is performed in chemistry, photochemistry, solar energy, biological exposure effects, and nuclear chain reaction behavior.
- *East Jemez Corridor and Sigma Mesa* (including TAs 2, 41, 60, and 61) contain 2% of the Laboratory population. This area is used primarily for physical support and infrastructure land use activities and is the location of the existing sanitary landfill.
- *Weapons Engineering* (TA-16) contains 3% of the Laboratory population. This area is dedicated to high-explosives research, development, and testing. Functions at this area include engineering design, prototype manufacture, processing, and environmental testing of nuclear weapon warhead systems.
- *Dynamic Testing* (including TAs 8, 9, 14, 15, 22, 36, 39, 40, 67, and 68) contains 3% of the Laboratory population. This extensive area is reserved specifically for high-explosives research, development, and testing.
- *LANSCE* (TA-53) contains 8% of the Laboratory employees. LANSCE is the primary facility in this area. The linear particle accelerator at LANSCE is used for basic physics research, material studies, and isotope production. Other facilities at TA-53 are also accelerator related.

In addition, numerous other technical areas are spread throughout the Laboratory. These technical areas usually have small populations or are in remote areas. The townsite (TA-00) contains utilities presently owned by DOE, which are maintained by the Laboratory's support services contractor for the County of Los Alamos. Negotiations are presently underway to transfer the utilities to the county. Some Laboratory personnel work in buildings leased by the Laboratory.

1.4.1.3 Detailed Facility Description. Table 1-1 lists the Technical Areas that have facilities with a hazard classification, the hazard classification, and the primary hazards identified in the Laboratory Hazards Assessment. Specific building numbers, physical description, location, and a description of the processes and operations are found in the Laboratory document, *Hazards Assessment for Emergency Planning Zones.*

Table 1-1. Facilities with a Hazard Classification

TA	Hazard Classification	Primary Hazard(s)
TA-00	Moderate	Chlorine
TA-03	Low, Moderate	Tritium, Chlorine, Fluorine, Plutonium, Uranium, Curium
TA-16	Moderate	Tritium, Chlorine
TA-18	Low, Moderate	Uranium, Plutonium
TA-33	Moderate	Chlorine Tritium
TA-35	Moderate	Chemicals
TA-50	Low, Moderate	Plutonium, Nitric Acid
TA-54	Low, Moderate	Chlorine, Gas Cylinders, Chemicals, Mixed Waste, Transuranic Waste
TA-55	High	Plutonium, Tritium, Chlorine, Nitric Acid
TA-72	Moderate	Chlorine
TA-73	Moderate	Chlorine

1.4.2 Physical Attributes of the Site

1.4.2.1 Geography. The Laboratory is a government-owned, contractor-operated facility located in the Jemez Mountains 15 air miles northwest of Santa Fe, New Mexico (see Figure 1-2). The Laboratory occupies 43 square miles of federal property in Los Alamos and Santa Fe counties. Most of the Laboratory and community development is confined to mesa tops. Large tracts of the surrounding land are held by the Santa Fe National Forest, Bureau of Land Management, Bandelier National Monument, San Ildefonso Pueblo, General Services Administration, and Los Alamos County.

Communities adjacent to the Laboratory are the town of Los Alamos, which is just north of the Laboratory, and White Rock, to the east-southeast. Most of Los Alamos County, as well as adjoining portions of neighboring Sandoval, Rio Arriba, and Santa Fe counties, is undeveloped. The only significant developments in Los Alamos County are the Laboratory facilities and the associated residential communities.

The Los Alamos area is located in Zone 2 on earthquake probability charts and a major geographical fault line exists just west of the Laboratory. Because the area lies on the Rio Grande structural trough near large faults, earthquakes might be expected to occur at any time or the area may experience tremors from quakes originating in other parts of the trough; however, records indicate that the Los Alamos area has been relatively free of major earthquakes. No geologic evidence indicates that intensive earthquakes have occurred recently in the region. If an earthquake should occur, it probably would be of moderate severity.

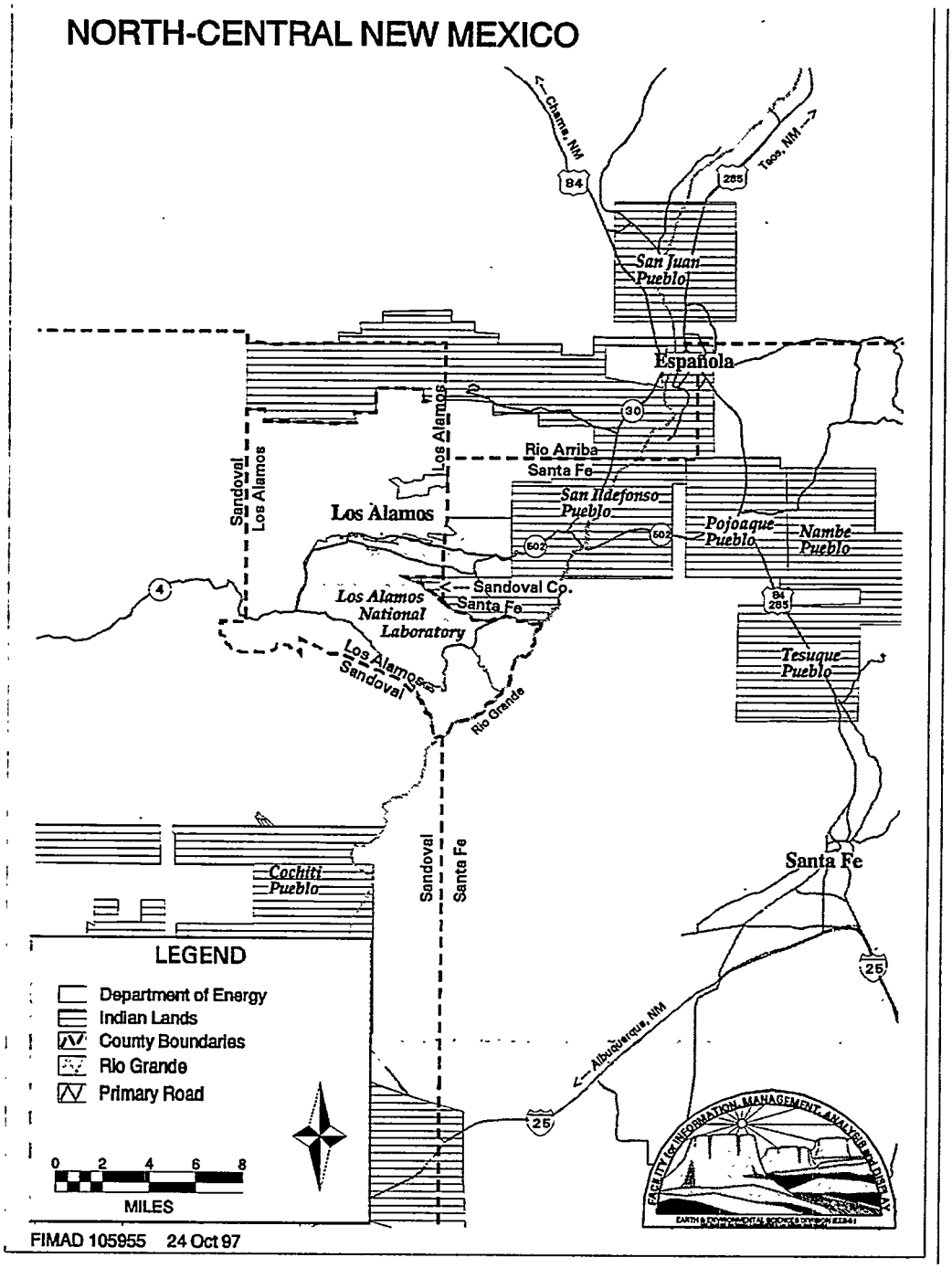

Figure 1-2. North-Central New Mexico

1.4.2.2 Topography and Geology. The Laboratory and adjacent communities are situated on the Pajarito Plateau, which consists of a series of finger-like mesas separated by deep east-west oriented canyons cut by intermittent streams. The mesa tops range in elevation from 7800 feet at the flank of the Jemez Mountain to 6200 feet at their eastern termination above the Rio Grande Valley.

An intensive soil survey of Los Alamos county was prepared and published in June of 1978 under Department of Energy Contract W-7405-ENG.36. As noted in the study, the principal parent materials of the Los Alamos soils are Bandelier Tuff, volcanic rocks, basaltic rocks, and pumice. Textures of these soils range from sandy and clay loams to gravelly, and stony, silty clay loams.

Ground water occurs in three modes in the Los Alamos area: water in shallow alluvium in canyons, perched water, and the main aquifer of the Los Alamos area.

- *Alluvial water.* Intermittent stream flow in canyons of the Pajarito Plateau have deposited alluvium that ranges from less than 3 feet to as much as 100 feet in thickness. The alluviums are quite permeable in contrast to the underlying volcanic tuff and sediments. Intermittent runoff in canyons infiltrates alluvium until its downward movement is impeded by the less permeable tuff and volcanic sediment.
- *Perched water.* Perched water is a ground water body above an impermeable layer that is separated from an underlying main body of ground water by an unsaturated zone. It occurs in limited areas: about 120 feet beneath the mid-reach of Pueblo Canyon and in a second area about 150 to 200 feet beneath the surface in lower Pueblo and Los Alamos Canyons near their confluence. The second area is mainly in the basalt and has one discharge point at Basalt Springs in Los Alamos Canyon.
- *Main aquifer.* The main acquifer of the Los Alamos area is the only aquifer in the area capable of serving as a municipal water supply. The depth to the water table ranges from about 900 to 1200 feet, except in the deeper canyons. Water in the main aquifer is under water table conditions in the western and central part of the Plateau and under artesian conditions in the eastern part and along the Rio Grande. The main aquifer is isolated from alluvial water and perched water by about 350 to 620 feet of dry tuff and volcanic sediments.

1.4.2.3 Population Distribution. The population of Los Alamos County in 1990 was 18,115. The Los Alamos townsite, the original area of development (and now including residential areas known as Eastern Area, Western Area, North Community, Barranca Mesa, and North Mesa), has an estimated population of 11,830. The White Rock area (including the residential areas of White Rock, La Senda, and Pajarito Acres) has about 6,285 residents. About one-third of those employed in Los Alamos commute from other counties. Population estimates for 1990 place about 210,000 people within a 50 mile radius of Los Alamos.

1.4.2.4 Meteorology. Los Alamos has a semiarid, temperate, mountain climate. The average annual precipitation is 18 inches, decreasing with decreased elevation to the east. Forty percent of the annual precipitation occurs during July and August from thundershowers. The rest of the precipitation is from winter storms primarily as snow, with accumulations of about 51 inches annually.

Summers are generally sunny with moderately warm days and cool nights. Maximum temperatures are usually below 90°F. The high altitude, light winds, clear skies, and dry atmosphere allow night temperatures to drop below 60°F after even the warmest days. Winter

temperatures typically range from about 15°F to 25°F during the night to 30°F to 50°F during the day. Occasionally, temperatures drop to 0°F or below.

Surface winds in Los Alamos often vary dramatically with time of day and location because of complex terrain. On the whole, the predominant winds are southerly to westerly over Los Alamos County.

1.4.2.5 Natural Phenomena. Natural phenomena are defined as those conditions that are beyond human control and affect part or all of the Laboratory mission. Natural disasters may include such phenomena as storms (wind, snow, and ice), forest and brush fires, floods, tornadoes, and earthquakes.

- **Storms (Wind, Snow, and Ice).** Major disruptive winds or snow and ice storms that could seriously affect the Laboratory's mission seldom occur. The accumulation of large amounts of snow accompanied by high winds is a remote possibility. Ice storms are of short duration but may create poor driving conditions and loss of electrical power. Although wind storms have historically been of short duration and are of relatively low velocity (under 60 miles per hour), strong winds with gusts exceeding 60 mph are common and widespread during the spring. The biggest hazards posed by these wind storms are dust, debris, and falling and flying objects. Lightning is very common over the Pajarito Plateau. An average year has 60 thunderstorm days, with most occurring during the summer. Hail damage can also occur. Hailstones with diameters up to 0.25 inches are common.
- **Forest and Brush Fires.** The threat of forest and brush fires for the Laboratory is very real. Care must be taken with any outdoor activity that might ignite the surrounding area. Catalytic converters on automobiles parked in unpaved areas may ignite tall grass.
- **Floods.** The possibility of flooding is remote because most of the Laboratory is situated on mesa tops; however, some Laboratory buildings are located in known flood plains and such areas should have flood procedures. Any flooding probably would be of short duration.
- **Tornadoes.** Because mountains surround the Laboratory, the possibility of tornadoes is remote. Historically, no tornadoes have touched down in Los Alamos County. Strong dust devils, however, can produce winds up to 75 mph at isolated spots in the county, especially at the lower elevations.
- **Earthquakes.** As noted in Section 1.4.2.1, a major geographical fault line exists just west of the Laboratory. Although earthquakes might be expected to occur at any time, records indicate that the Los Alamos area has been relatively free of major earthquakes. Although earthquakes have occurred in the area, none have been of sufficient magnitude to cause apparent damage. Observations and published studies indicate that the Los Alamos area is reasonably stable. Should an earthquake occur, it probably would be of moderate severity.

1.4.2.6 Transportation System. Los Alamos County is served by State Road 502, which enters the county from the east and exits the county on the west merging into State Road 4. Between the hours of 7:30 and 8:30 a.m. and 4:30 and 5:30 p.m., heavy traffic is experienced in the county.

All of the major highways are paved two- or three-lane roads, and are passable during all seasons with short delays experienced during and after heavy snowfalls. Hazardous materials are transported primarily by trucks, normally on weekdays between the hours of 8:30 a.m. to 4:30 p.m. The County of Los Alamos controls and operates the Los Alamos Airport for government contractor aircraft and general aviation. Los Alamos County is not served by a rail system.

1.4.2.7 Utility System. The Laboratory is supplied with electricity by a Los Alamos County/DOE power pool and a 20-megawatt, gas-fired generating plant. Electricity is transmitted to the Laboratory and the county over two 115-kilovolt (kV) lines, one from Santa Fe (Norton Generating Station) and one from Albuquerque (Reeves Generating Station). Electricity is distributed throughout the Laboratory via 13.2-kV lines. The 115-kV system includes a loop that ties together three Laboratory substations. This looping ensures a power supply throughout the Laboratory in the event of outages in any major line. Natural gas used by the Laboratory comes from the San Juan Basin in northwest New Mexico. The lines are owned by the DOE but operated and maintained by the Gas Company of New Mexico under contract to the DOE.

The Laboratory heating uses natural gas for forced air furnaces, hot water boilers, and steam boilers. Natural gas is distributed directly to buildings, three steam plants, and a standby plant. Plants maintain reserves of fuel oil for emergency use.

The water supply for the Laboratory and community is from 15 deep wells in 3 well fields. Surface, well, and spring waters are routinely sampled and analyzed for radionuclides, heavy metals, fluorides, nitrates, carbonates, bicarbonates, silica, sodium, magnesium, turbidity, coliform bacteria, trihalomethane, conductivity, and other items as required by federal, state, or local regulations.

1.4.2.8 Contractors. The University of California operates the Laboratory for the DOE. As of September 1997, the University of California had 7141 employees, 1390 affiliates, and 1320 student guests at the Laboratory.

The support services contractor, with oversight from the Facilities Engineering (FE) Division, provides the maintenance support for the Laboratory. This contractor, Johnson Controls Northern New Mexico (JCNNM), is responsible for various aspects of an emergency: providing personnel, equipment, and supplies depending upon the type of emergency. As of September 1997, JCNNM had 1435 employees at the Laboratory.

The security services contractor, with oversight from the Security and Safeguards (S) Division, provides a protective force that is responsible for the protection of life, structures, property, weapons, classified matter, and special nuclear materials. In certain situations the security service inspectors have the authority to make arrests and use deadly force. As of September 1997, the security services contractor had 392 employees at the Laboratory.

Various subcontractors not listed above provide administrative, engineering, and technical support to the Emergency Management Program on an "as-needed" basis. As of September 1997, these contractors had 1214 employees at the Laboratory.

The fire department services contractor, with oversight from the Emergency Management and Response Office, provides fire department services for the Laboratory. The Los Alamos Fire Department is the provider of these services. It is responsible for providing emergency fire, medical, and hazardous materials (HAZMAT) services as well as related non-emergency services.

1.4.3 Emergency Planning

The Emergency Management and Response (EM&R) Group (S-8) in S Division is responsible for the development of the Laboratory's EMP and EMPIPs. The Division Director/Facility Owner is responsible for the development of local emergency plans and fulfilling the planning requirements described in this chapter. EM&R personnel are available to assist in the preparation of any of the required facility documents.

The basis for the emergency management program is identifying applicable planning and preparedness requirements, including the identification and qualitative assessment of facility-specific hazards.

1.4.3.1 Building Emergency Planning Program. The requirements of the Building Emergency Planning Program are described below in Section 1.4.4. These requirements must be met by facility personnel for all buildings that are assigned a structure number and that meet the following criteria:

1. Personnel may be required to occupy the building.
2. The building contains radiological/chemical material (other than cleaning products and office chemicals).
3. The building has a special designator such as nuclear facility radiological facility; hazards waste site; treatment, storage, and disposal (TSD) facility.
4. The building contains classified material.
5. The building contains other significant hazards (e.g., lasers, x-rays, accelerators).

Building Emergency Planning Program requirements are ***not applicable*** for structures such as steam tunnels, retaining walls, roads, culverts, cooling towers, or other similar structures unless they meet one of the criteria above.

1.4.3.2 Facilities Requiring a Quantitative Hazards Assessment. If the facility contains quantities of chemicals or radioactive materials that are more than or equal to the screening thresholds specified below, a Hazards Assessment is required.

- *Chemicals*—the lowest quantity listed as a Threshold Quantity in 29CFR1919.119 or 40CFR68.130 or the Threshold Planning Quantity listed in 40CFR355 shall be used as screening thresholds for those chemicals listed.

- *Radioactive Materials*—For radioactive materials, the quantities listed in 10CFR10.72, Schedule C, requiring consideration of the need for emergency planning for licensed byproduct material facilities shall be used as screening thresholds for the radionuclides listed.

1.4.3.3 Criteria for Excluding Certain Materials. Common hazardous materials, such as vehicle fuel and commonly used small quantities of solvents or gases, that are used in a wide variety of facilities and operating environments can be hazardous to a limited extent by themselves or in combination with other materials. For such materials, the hazard is generally limited to the worker immediately involved and it is not intended that the Hazards Assessment belabor these common, well-understood, and limited hazards. The following criteria should be used to eliminate materials for consideration in the Hazards Assessment:

- The material is commonly used by the general public. This includes any substance to the extent it is used for personal, family, or household purposes or is present in the same form and concentration as a product packaged for distribution and used by the general public (e.g., bleach, motor oil, gasoline).
- The material is a monolithic solid under normal conditions and does not present an airborne exposure concern (e.g., lead bricks).
- The material is not acutely hazardous to humans as a result of inhalation, ingestion, or dermal exposure.
- Per DOE O 151.1, "The material has a vapor pressure of ≤0.5 mmHg @ 25°C and Emergency Response Planning Guideline (ERPG) ERPG-2 or equivalent value of ≥30 ppm." (See *AIHA 1998 Emergency Response Planning Guidelines and Workplace Environmental Exposure Level Guides* handbook for ERPG-2 levels.)
- The amount of material is less than 1 pound and the material is normally used in a laboratory setting.

The possible effect of such materials as initiators or promoters of releases of other more hazardous materials should be considered.

Upon completion of the screening process, some facilities will have no identified hazards requiring further characterization and analysis. The results of the screening process and the basis for the conclusion should be documented.

1.4.3.4 Conclusion

- Facilities not having sufficient quantities of hazardous materials do not require a qualitative Hazards Assessment. If the facilities meet any one of the criteria specified in Section 1.4.3.1, they are subject to the planing, preparedness and response requirements of Chapter III of DOE O 151.1.
- Facilities that require a Hazards Assessment shall be included in the *Hazards Assessment for Emergency Planning Zones* document.

- Buildings that require a Hazards Assessment shall be reviewed at least annually and as changes to operations dictate.

1.4.4 Building Emergency Planning Program

1.4.4.1 Program Overview. A major component of the *planning* portion of the Laboratory's emergency management system is the Building Emergency Planning (BEP) Program. This program provides building-specific information to both emergency responders and building occupants to allow for optimum and safe response, and for mitigation of the incident or emergency. This program satisfies the requirements of DOE O 151.1 for Hazards Survey and gives guidance for facilities to meet 29CFR1910.38 emergency planning requirements.

The scope of the BEP program is described in Section 1.4.3.1, which also provides the planning and preparedness requirements. The building-specific data is documented and disseminated via facility documents, the Building Run Sheet, and the Emergency Procedures Checklist.

- ***Facility Documents.*** These are any documents unique to a building/facility that contain emergency planning information; e.g., Safety Analysis Reports (SAR), local building emergency plans, and safety manuals.
- ***Building Run Sheet.*** The Building Run Sheet is the primary document used by EM&R when responding to a building. The Run Sheet covers initial information regarding a variety of subjects such as security, hazards, and points of contact. A sample Run Sheet is included in Appendix C. Appendix D provides guidance for completing the form. In order to meet the Hazards Survey requirements, the Building Run Sheet includes the following:
  - A brief description of the building's operations.
  - An indication of whether hazardous materials (other than standard office products or cleaning supplies) are used or stored in the facility. If hazardous materials are identified, EM&R performs a preliminary screening to determine the need for a quantitative Hazards Assessment. The methodology for identification and screening of hazardous materials is described in Section 1.4.5.
  - The emergency conditions that may occur at each facility for which some level of planning and preparedness may be required.
  - A qualitative description of the potential impacts of the identified emergency conditions.
- ***Emergency Procedures Checklist.*** This Checklist is a one page form that documents the existence of building/facility emergency procedures. Refer to Appendix E for a copy of the Emergency Procedures Checklist and the Regulatory References for Emergency Procedures form. Refer to Appendix F and G for guidance in completing the Checklist and developing emergency procedures.

1.4.4.2 Responsibilities. Division Directors/Facility Owners and EM&R have the primary responsibilities of fulfilling the requirements of the BEP Program.

Division Directors. The responsibilities of Division Directors include, but are not limited to, the following:

- Designating individuals to coordinate emergency preparedness.
- Ensuring, through cooperation with building management, that information on the Building Run Sheets and Emergency Procedures Checklists (provided by EM&R) is accurate, complete, reviewed at least annually, and returned to EM&R.
- Establishing emergency procedures.
- Ensuring employees are trained in established emergency procedures.
- Notifying EM&R immediately if any changes occur in security and/or access to the building, operations, building configuration, or the addition or deletion of significant hazards (i.e., changes in the safety envelope).

EM&R. Responsibilities of EM&R include, but are not limited to, the following:

- Initiating the preparation of Building Run Sheets and Emergency Procedures Checklists (including query and coordination with designated individuals as to what buildings do and do not meet the reporting criteria).
- Forwarding the aforementioned documents to the designated individuals for review and completion.
- Aiding building/facility personnel in developing emergency procedures.
- Maintaining the BEP Program database in order to document and track the various aspects of the program.
- Notifying the designated individuals of update schedule and procedures.

1.4.5 Hazards Assessment

After the Hazards Survey is completed, those facilities that exceed the screening levels for hazards must complete a Hazards Assessment. This involves defining and describing the facility operations; characterizing the hazards remaining after screening; analyzing emergency events and conditions; and estimating the consequences.

The Hazards Assessment is the basis for the development of the Emergency Planning Zones (EPZ) described in Chapter 7 of this EMP. EM&R is responsible for generating the Laboratory EPZ and a recommended EPZ for each hazardous material facility.

1.4.5.1 Define and Describe the Facility and Operations. A clear, accurate, and unambiguous written and schematic description of the facility and its operations should be provided. This description should provide sufficient detail to support the identification and characterization of all hazards and their potential consequences. For many facilities, the descriptions of the facility

and its operations from current SARs or environmental reports should serve this purpose and may be briefly summarized and incorporated by reference.

DOE offsite transportation activities, identified during the Hazards Survey process as involving hazardous materials in excess of the screening thresholds are also subject to the requirement for Hazards Assessment.

1.4.5.2 Characterize Hazards. After the facility hazards have been identified and screened (in accordance with paragraphs 1.4.3.2 and 1.4.3.3), further characterization of hazards that exceed screening thresholds is necessary. Information that describes and quantifies the hazards should be assembled and documented to support the development of scenarios and analysis of possible releases. This requirement pertains only to hazards that have been determined to exceed the screening thresholds.

Both radioactive and non-radioactive hazardous materials should be included in a tabulation with the following information on each.

- The maximum quantity of the material in appropriate units (pounds, kilograms, curies, becquerels) and its storage or process locations.
- A description of the conditions under which the material is stored or used, including process systems or containers that hold the material and barriers that may impact its release or dispersion, such as shipping containers, buildings, berms, sumps, or catch basins.
- The properties of the material that are needed for determination of source term and consequence analysis, such as the physical form and chemical characteristics of the material (e.g., solid, liquid, gaseous, particle size, flammability, chemical reactivity, density), radiological characteristics, and the temperature and pressure conditions under which the material is stored, processed, used, or transported.

1.4.5.3 Analyze Emergency Events and Conditions. The objective of this step is to determine the combinations of events and conditions that could cause releases of each hazardous material characterized and the magnitudes of those possible releases. The term "release" is used here to mean, primarily, an airborne release, because this pathway typically represents the most time-urgent situation and requires a rapid, coordinated, emergency response on the part of the facility, collocated facilities, and surrounding jurisdictions to protect workers, the public, and the environment. Releases to aquatic and ground pathways, although a matter of serious concern in terms of potential environmental and long-term public health consequences, in most instances do not have the same time urgency as the airborne release. When a release to an aquatic or ground pathway could have a near-term effect on the workers or the public (e.g., through a community water supply), it should be considered in the Hazards Assessment.

The Hazards Assessment should postulate and analyze events covering the full range of possible initiators and severity levels.

- Initiating events and mechanisms considered in the Hazards Assessment should include traditionally defined "accidents" as well as those arising from external causes and malevolent acts. "Accident" initiators should include causes such as corrosion, manufacturing defects, malfunctioning equipment or control systems, and procedural or human error. External causes that should be considered include impacts of natural phenomena, accidents at nearby facilities, and vehicle or aircraft crashes.
- High-probability, low-consequence events need to be addressed in facility emergency plans because of their potential impacts on workers in the affected facility and those nearby. Both malevolent acts and "severe" events should be included in the Hazards Assessment because they represent the upper end of the consequence spectrum, for which prompt recognition and response may be essential to mitigation of both the event and its health and safety consequences.

The methodology for the analysis of these events is contained in DOE O 151.1-1, Volume 2, and is available on the World Wide Web at 222.explorer.doe.gov.

1.4.5.4 Estimate Consequences. The methodology, modeling, facility/site boundary, receptors, wind speed/stability, and other details required to perform consequence calculations are contained in DOE O 151.1-1, Volume 2. The results of the release scenarios are then tabulated in the *Hazards Assessment for Emergency Planning Zones* document.

Hazards Assessments shall be reviewed annually and updated prior to significant changes to the facility or hazardous material inventories.

2.0 EMERGENCY RESPONSE ORGANIZATION

The Emergency Response Organization is composed of both dedicated emergency organizations and individuals, and those specifically designated to assume emergency duties during an emergency. The Emergency Response Organization may include onsite and offsite elements. They may be either specifically preplanned or integrated into the Emergency Response Organization upon arrival on the scene. In unique situations, additional resources may interface with the Emergency Response Organization but not become an integrated element of the Emergency Response Organization.

The Emergency Response Organization has overall responsibility for coping with and minimizing or mitigating the effects of any emergency at the Laboratory. This responsibility includes the following functions:

- Incident categorization and emergency classification;
- Notifications;
- Protective actions and protective action recommendations;
- Incident management and decision making;
- Onsite emergency resource coordination and incident mitigation;
- Consequence assessment;
- Medical operations;
- Public information;
- Security;
- Communications;
- Recovery and reentry;
- Administrative support; and
- Onsite support, coordination and liaison.

Successful Emergency Response Organization operation is dependent on

- Coordination among on-scene Emergency Response Organization elements,
- Smooth integration of offsite resources into the Emergency Response Organization, and
- Close cooperation between on-scene and Emergency Operations Center operations.

This EMP, with its associated implementing procedures in the EMPIP, is intended to provide for coordination, integration, and cooperation between the Laboratory Emergency Response Organization, offsite emergency resources, DOE field elements, and the DOE national response assets identified in Section 2.1.

2.1 Organization Structure

The Emergency Response Organization includes, but is not limited to, the following:

- Emergency Operations Center staff, including technical and administrative support personnel.
- The principal members of the Incident Command staff (e.g., the support services contractor, engineering field operations, and environmental representatives).
- Laboratory specialized teams (e.g., Hazardous Materials Response, Crisis Negotiation, Hazardous Devices).
- Facility-specific emergency response teams (e.g., Plutonium Facility).
- Selected support personnel (e.g., security, medical).
- Protective Force, including the Special Response Team.
- Los Alamos Police and Fire Departments.
- Emergency Management and Response (EM&R) Office personnel, including the emergency managers.
- Wildland/urban interface fire support personnel.

Neither the general Laboratory employee population nor all line managers are considered part of the Emergency Response Organization; however, selected individuals from each group may be called upon to work with the Emergency Response Organization on an as-needed basis. Figure 2-1 presents the relationship of the Emergency Response Organization to the overall Laboratory organization.

There are also several types of "first responders" that are not part of the Emergency Response Organization. One is a person trained in first aid at the "first responder" level. Another is the individual who is a "hazardous materials first responder." A third is an individual who happens to be a "first responder" by virtue of arriving first at the scene of an incident. Any of the three may become part of the Emergency Response Organization if they respond as part of an emergency team or if they have specifically designated individual duties.

2.1.1 Los Alamos National Laboratory

The Laboratory Director is responsible for ensuring that an adequate emergency preparedness program is developed and maintained. The Director has delegated the authority for administering and implementing the emergency management program to the Director of Security and Safeguards (S Division). Responsibility for the Laboratory emergency management program, which includes planning, preparedness, and response, and fire department services oversight, is vested in the EM&R Group Leader. The EM&R Group Leader is responsible for writing, coordinating, and issuing the Laboratory's EMP and its implementing procedures (EMPIPs) with input from relevant elements within and outside the Laboratory. The EM&R Group provides response coordination for emergencies, maintains the Emergency Operations Center, and develops and directs emergency response training and exercises for the Laboratory.

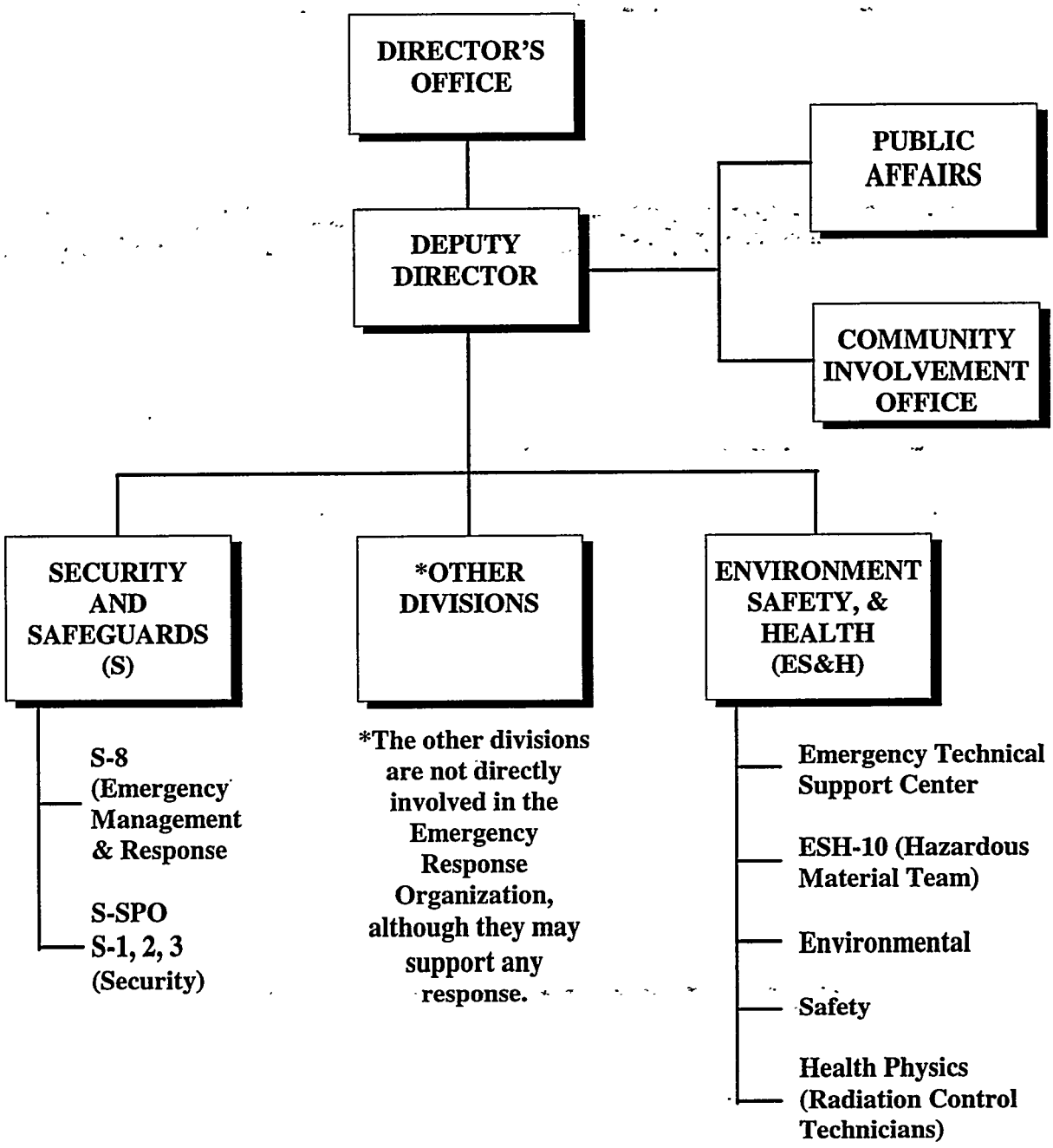

Figure 2-1. Laboratory Emergency Response Organization

2.1.2 Department of Energy

- **DOE Albuquerque and Los Alamos Area Offices.** The Laboratory is part of the DOE Albuquerque Operations Office complex. The DOE Los Alamos Area Office administers the contract under which the University of California operates the Laboratory for DOE, and is responsible for communication and coordination with the Albuquerque Operations

Office. The DOE Los Alamos Area Office Manager is responsible for ensuring the Laboratory has an adequate emergency management program that encompasses preparedness, planning, and response. The Los Alamos Area Office has delegated responsibility to the Laboratory for the management of incidents on DOE property, excluding leased property in the Los Alamos area.

- **DOE National Response Assets.** The DOE has a variety of national response assets available in an emergency. These include the Nuclear Emergency Search Team, Accident Response Group, Radiological Assistance Program, Aerial Measuring System, Atmospheric Release Advisory Capability, Federal Radiological Monitoring Assessment Center, and the Radiation Emergency Assistance Center/Training Site. The DOE Headquarters Emergency Operations Center is the primary point of contact for all initial requests for DOE assistance. This Center shall notify and refer requests to the appropriate program office with operational responsibility for the asset. Further information on these assets is discussed in Section 3.2.

2.1.3 Offsite Emergency Support Organizations

The offsite support agencies are discussed in Chapter 3 of this EMP. These agencies may interface either on the scene or with the Emergency Operations Center, depending on the type and location of the incident. Offsite support agencies include, but are not limited to, the following:

- New Mexico State Police
- New Mexico Civil Emergency Preparedness Division
- New Mexico Environmental Improvement Division
- New Mexico Highway Department
- Los Alamos Police Department
- National Park Service
- United States Forest Service

2.1.4 Committees

- **Exercise Planning Committee.** The EM&R Office is assisted in carrying out its preparedness responsibilities by the Laboratory's Emergency Exercise Committee. This committee is composed of representatives from the major organizations of the Emergency Response Organization.
- **Local Emergency Planning Committee.** This committee is composed of representatives from each of the following: the DOE, the Laboratory, the county, the National Forest Service, the National Park Service, and others. The committee meets to review, analyze, and discuss emergency planning, preparedness, and response issues. The State of New Mexico participates on a casual basis.

2.2 Emergency Direction and Control

Initial direction and control of the Emergency Response Organization is provided by the duty Emergency Manager, a senior member of the EM&R Office staff. The Emergency Manager makes appropriate notifications, activates the Emergency Response Organization, and proceeds to the scene. The Laboratory Director, through the Director of Security and Safeguards, has given the Emergency Managers authority to assume incident command with full responsibility for all actions at the scene.

Section 2.2.1 discusses the Incident Command System, which is used in response to all emergencies, and Incident Command System staffing positions. Section 2.2.2 discusses the Emergency Operations Center, which supports the Incident Commander responsible for tactical operations on scene, and the Emergency Operations Center staff. Section 2.2.3 discusses the succession of authority of the Emergency Operations Center.

2.2.1 Incident Command System

The Laboratory uses the Incident Command System in response to all emergencies. The Incident Command System is based on the on-scene management structure protocols of the National Interagency Incident Management System (NIIMS). The Incident Command System provides

- Modular organization;
- Common terminology;
- Integrated communications;
- Unified command structure;
- Consolidated action plans;
- Manageable span of control;
- Designated incident facilities; and
- Comprehensive resource management.

The Incident Command System is developed in a modular manner from the top down. There are four functional command branches: operations, logistics, planning, and administrative. In addition, several command staff functions—safety, liaison, and information—may also be implemented. These general staff functions may be performed by the Incident Commander or delegated. Whether command or support, each branch provides staff to a level appropriate for the response needed to mitigate the incident.

On-scene operations generally include a variety of emergency response organizations and individuals. The senior person from each organization, together with functional specialists and the duty Emergency Manager, comprise the command and general staff. Additional technical or management representation may be integrated into the Emergency Response Organization as needed. The staff positions are illustrated in Figure 2-2. The Emergency Operations Center is discussed in Section 2.2.2. Other position descriptions are described below.

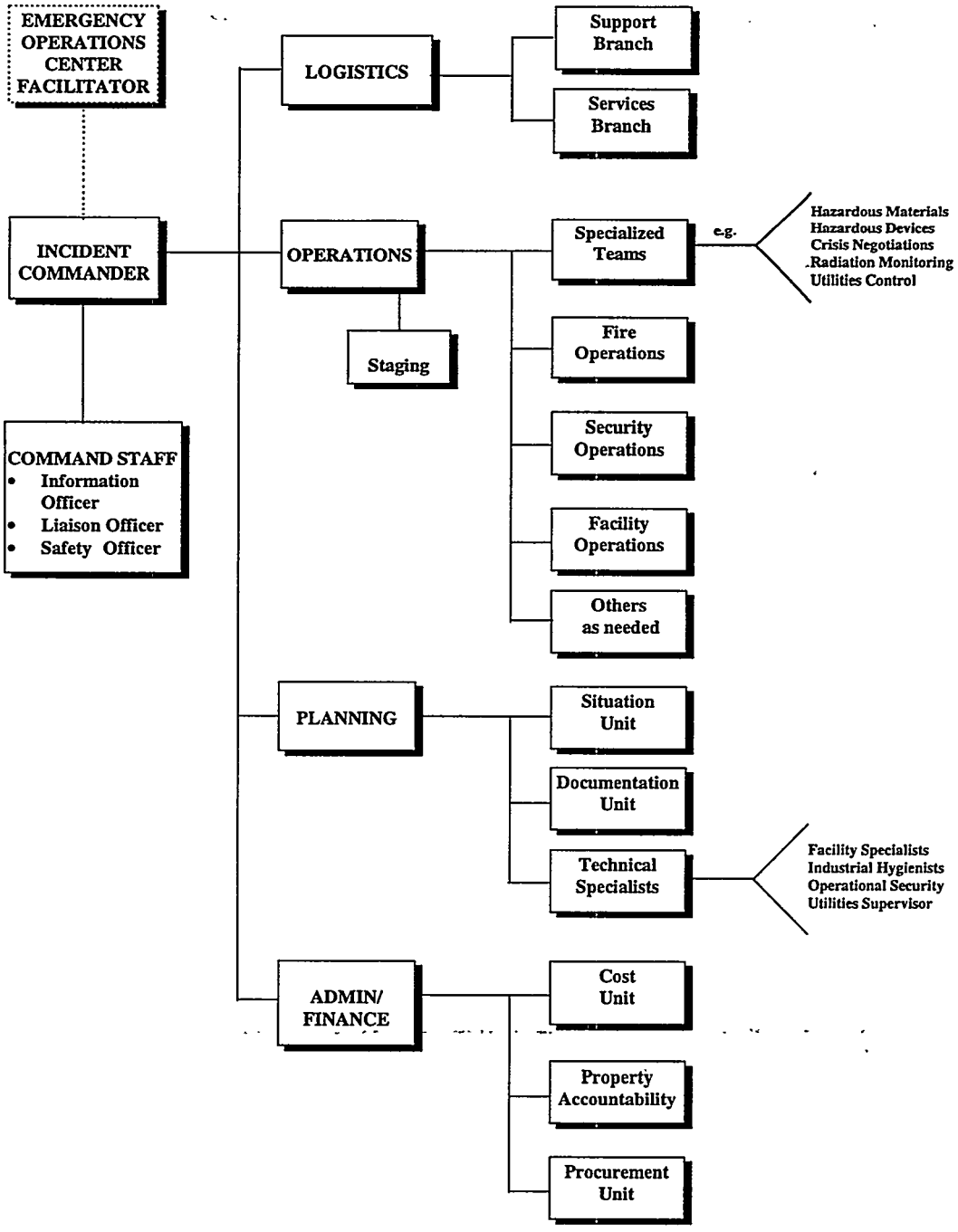

Figure 2-2. Incident Command System Staffing

- ***Incident Commander.*** The Incident Commander is responsible for all actions at the scene and for providing on-scene coordination and control of emergency events through implementation of the Incident Command System. The Incident Command is located at the Incident Command Post, which is established (or moved) a safe distance from the incident. The Emergency Manager responds to the emergency scene. After being briefed by the initial Incident Commander, Laboratory personnel, and other knowledgeable individuals, the Emergency Manager may assume the responsibilities of Incident

Commander. In some instances, depending on the type of incident, the Senior Fire Department Representative, Senior Police Representative, or other appropriate trained individual will be the Incident Commander.

The Incident Commander has authority at the emergency scene. The Incident Commander gathers and evaluates information, directs resources and activities to accomplish goals, develops a responsive organization to ensure proper incident management, coordinates the overall operation, communicates effectively within the organization, gathers and assigns resources, and evaluates the overall effectiveness of the strategic plan. If the Emergency Operations Center (discussed in Section 2.2.2) is activated, the Incident Commander reports to the Emergency Director.

The Incident Commander will ensure Laboratory compliance with federal, state, and local regulations, including but not limited to the Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation and Liability Act; Emergency Planning and Community Right-to Know Act; Clean Air Act; Clean Water Act; Safe Drinking Water Act; Toxic Substances Control Act; Hazardous Materials Transportation Act; Superfund Amendments and Reauthorization Act; and Historic Preservation Requirements. The Incident Commander will also ensure compliance with all applicable Laboratory regulations and requirements.

- ***Logistics Section Chief.*** The Logistics Section Chief, a member of the general staff, is responsible for providing facilities, services, and material in support of the incident. The section chief participates in development and implementation of the Incident Action Plan and activates and supervises the branches and units within the logistics section.

- ***Operations Section Chief.*** The Operations Section Chief, a member of the general staff, is responsible for the management of all operations directly applicable to the primary mission. The Operations Section Chief activates and supervises organization elements in accordance with the Incident Action Plan and directs its execution. The Operations Section Chief also directs the preparation of unit operational plans, requests or releases resources, makes expedient changes to the Incident Action Plan as necessary, and reports such actions to the Incident Commander.

- ***Planning Section Chief.*** The Planning Section Chief, a member of the Incident Commander's general staff, is responsible for the collection, evaluation, dissemination, and use of information about the development of the incident and status of resources. The Planning Section Chief requires information to (1) understand the current situation, (2) predict the probable course of incident events, and (3) prepare alternative strategies and control operations for the incident.

- ***Administrative/Finance Section Chief.*** The Administrative/Finance Section Chief is responsible for all financial and cost analysis aspects of the incident and for supervising members of the administrative section.

- ***Command Staff Functions.*** Command staff functions include safety, liaison, and information. These functions may be performed by the Incident Commander or delegated. The safety function involves identifying potentially unsafe situations and minimizing

risks to the on-scene Emergency Response Organization. If the incident involves hazardous material, a Safety Officer is required, as per 29CFR1910.120. The function will be assigned by the Incident Commander. The liaison function involves coordinating any assisting/cooperating offsite agencies and ensuring they are integrated into the Incident Command System organization. The information function involves coordinating information activities, including public affairs, and ensuring sensitive issues are handled properly with the media and the public.

- ***Organizational Representatives/Technical Advisors.*** Organizational representatives are included in the Incident Command staff as required for effective mitigation of the incident. Those representatives may be from Security Operations and Systems, the Protective Force, Operations and Maintenance Services, the Los Alamos Police Department, the Los Alamos Fire Department, Environmental, Safety and Health (ES&H), and Facility Management, as well as other technical advisors. These resources may be assigned to any of the four functional command branches—operations, logistics, planning, or administrative—as appropriate.

- ***Specialized Team Supervisors/Leaders.*** The specialized teams include the Laboratory's Hazardous Materials Response Team, Hazardous Devices Team, and Crisis Negotiation Team. The supervisors (or representative) of these teams are part of the Incident Command staff and report to the Incident Commander.

  The Hazardous Materials Response Team Group Supervisor coordinates the team and radiological field monitoring activities and arranges for the response of necessary health and safety personnel. The Hazardous Devices Team Supervisor is responsible for coordinating a team composed of select personnel from throughout the Laboratory and the Los Alamos Police Department. Team members have received formal public safety training in procedures to render safe and/or remove and destroy suspected improvised explosive devices, incendiary devices, explosives, explosive chemicals, pyrotechnics, and ammunition. The Crisis Negotiation Team Leader is responsible for coordinating a team made up of select personnel from throughout the Laboratory. The function of the Crisis Negotiation Team is negotiation in certain events.

2.2.2 Emergency Operations Center

Activation of on-scene elements of the Emergency Response Organization (Incident Command System) occurs with relative frequency at the Laboratory. Activation of the Emergency Operations Center portion of the Emergency Response Organization occurs infrequently at the Laboratory.

When the Emergency Operations Center is activated, a senior Laboratory official serves as the Emergency Director. The Emergency Director's immediate staff includes the senior manager available from the DOE Los Alamos Area Office and senior management representatives from divisions affected by the incident. Representatives commonly required are from the ES&H Division, Security and Safeguards Division, Public Affairs Office, and the specific facility involved. The Emergency Director and staff provide strategic guidance, make major or long-

range decisions, and support the Incident Commander, who is responsible for tactical operations on scene.

The Emergency Operations Center staff provides support to the Incident Commander through strategic planning of Laboratory response activities outside of the affected facility and by requesting offsite emergency response support. Emergency Operations Center personnel may perform the duties listed in their position descriptions (see below) and detailed in their checklist in the EMPIPs. The Emergency Operations Center staff consists of the Emergency Management Team, Emergency Technical Support Center Team, and Administrative Support staff.

2.2.2.1 Emergency Management Team. The Emergency Management Team provides issue determination, decision-making, and strategic planning of Laboratory response activities and support to the Incident Commander's staff. The Emergency Management Team members are Division Leaders or designees who report to the Emergency Director and provide assistance and coordination of resources within their area of expertise. These include the Security and Safeguards Division, ES&H, the Public Affairs Office, the Facility Management Representative, and other Division representatives as needed for the incident. The Emergency Management Team also includes the Emergency Director, Deputy Emergency Director, DOE Los Alamos Area Office Representative, and Emergency Operations Center Facilitators. The Team also may include Los Alamos County representatives and law enforcement, state, and local political representatives. Position descriptions of the Emergency Management Team are illustrated in Figure 2-3 and described below.

- ***Emergency Director.*** The Emergency Director is the Laboratory Director or designee. The Emergency Director is responsible for the direction of emergency response operations (and post-accident activities) necessary to protect life, property, and the environment.
- ***Deputy Emergency Director.*** The Deputy Emergency Director is a senior Laboratory official. The Deputy Emergency Director assumes the role and responsibilities of the Emergency Director upon direction of, or in the absence of, the Emergency Director. The Deputy Emergency Director is the Emergency Operations Center Chief of Staff and assists in overall strategic planning of the emergency response.
- ***DOE Los Alamos Area Office Representative.*** The DOE Los Alamos Area Office Manager or designee functions as the DOE Los Alamos Area Office Representative. This individual is responsible for representing DOE in the Emergency Operations Center and being the point of contact for DOE Albuquerque and DOE Headquarters.
- ***Emergency Operations Center Facilitators.*** The Facilitators (Primary and Secondary) are responsible for coordinating the Emergency Operations Center administrative and support staff and for coordinating the information exchange between the Emergency Director and the Emergency Operations Center staff.

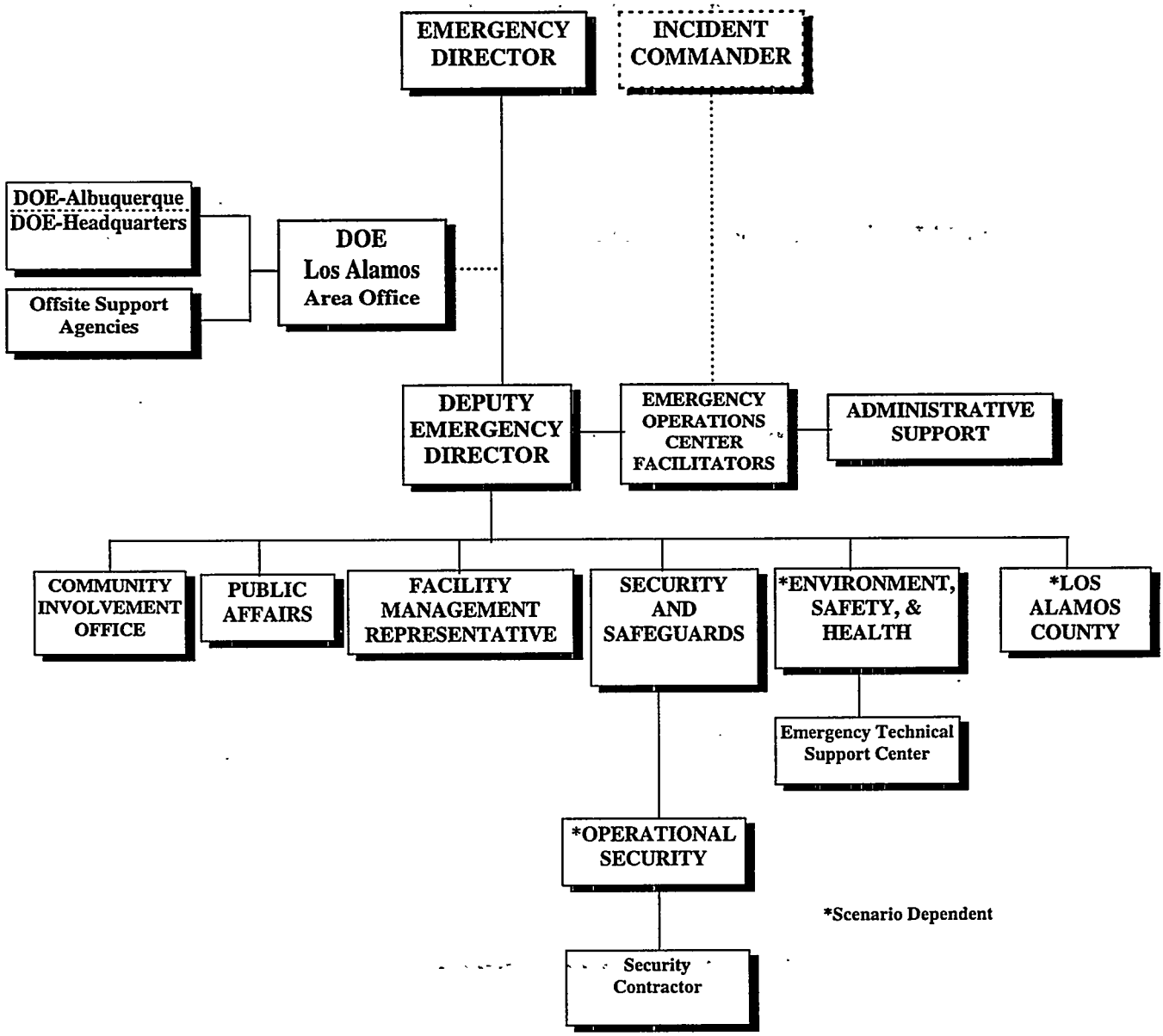

Figure 2-3. Emergency Management Team

2.2.2.2 Emergency Technical Support Center Team. The Emergency Technical Support Center Team provides fact gathering and technical support, and makes recommendations for and implementation of, action items assigned by the Emergency Management Team. The Team is made up of technical specialists from various environmental, safety, and health groups. These specialists provide real-time, Laboratory-specific meteorology, incident-specific dispersion modeling for hazardous and/or radiological atmospheric releases, and releases to the ground and water. The Emergency Technical Support Center Team interprets the modeling results in terms of potential harm to Laboratory employees, the public, and the environment. The team provides technical support to the Emergency Response Organization at the incident scene. This support may include, for example, toxicology information, chemistry of materials involved, special hazards (e.g., criticality), and technical specifications for protective equipment, as well as current updates on weather conditions. The Emergency Technical Support Center Coordinator reports to the ES&H Representative.

2.2.2.3 Administrative Support Staff. The Administrative Support staff answers telephones, operates office equipment, and assists the rest of the Emergency Operations Center staff as needed. The Administrative Support staff, under the leadership of the Secondary Facilitator, consists of individuals that provide the following services:

- Maintaining the Emergency Operations Center status boards/screens and distributing status board information in accordance with the EMPIPs;
- Operating or repairing equipment within the Emergency Operations Center; and
- Operating all Emergency Operations Center communications systems and services, including radio operations and telephone operations.

In addition, the Administrative Support staff includes a Notification Specialist. This person is trained to perform notifications and is responsible for making official notifications per EM&R Notification Checklists.

2.2.3 Succession of Authority

As previously noted, the Director of the Laboratory is responsible for overall response and mitigation of emergencies at the Laboratory. The Director has delegated the authority for administering and implementing the emergency management program to the Director of Security and Safeguards (S Division). The responsibility for the Laboratory Emergency Management Program, which includes response and mitigation, is vested in the EM&R Group Leader. The Laboratory Director has designated the Laboratory Incident Commander (or Emergency Director if the Emergency Operations Center is activated) as the person in charge of all DOE emergencies on all Laboratory and DOE property.

The positions of Emergency Director and Deputy Emergency Director are filled from a pool of trained senior managers. The remainder of the Emergency Operations Center Team is trained at least three-deep at each position.

The succession of authority of the Emergency Operations Center is established by the Emergency Director, Deputy Emergency Director, or—in their absence—the senior Laboratory management representative present. Current response listings are maintained by the EM&R Office.

Certain Emergency Response Organization positions are staffed on a duty roster basis, providing for 24-hour staffing capability and extended operations. Duty roster positions include:

- Duty Emergency Manager;
- DOE Los Alamos Area Office Duty Officer;
- Laboratory Emergency Teams (Crisis Negotiation, Hazardous Materials Response);
- Occupational Health Group physician or physician assistant;
- Environmental Regulatory Group Representative;
- Security and Safeguards;
- Occurrence Investigation Group Representative;
- Support services contractor representative and their environmental representative; and
- Accident Response Group, Radiation Assistance Program, Nuclear Emergency Search Team (NEST), and NEST Threat Assessment representatives.

Additionally, the Protective Force and Los Alamos Police and Fire Departments are fully staffed at all times.

2.3 Emergency Management Operations

The Incident Command System in the field, in conjunction with the Emergency Operations Center Emergency Director and associated positions, provides overall command and control of the emergency (see Figure 2-4). The roles and responsibilities of this organization are discussed above in Section 2.2.1.

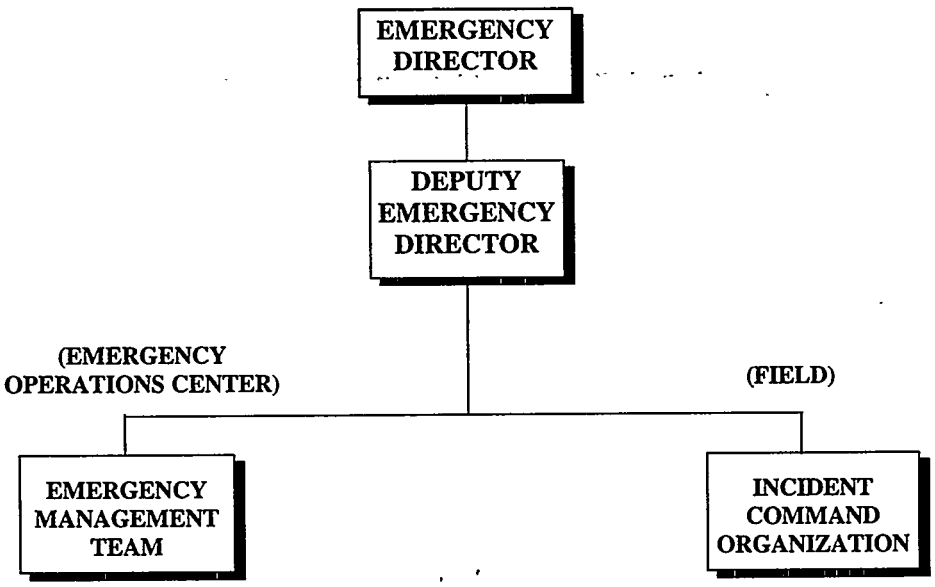

Figure 2-4. Emergency Management Operations

In the event of an emergency condition, the initial, on-scene personnel and/or the Facility Manager or their designee (e.g., Building Manager) are responsible for the following:

- Immediate alarm activation (if appropriate);
- Calling 911, ensuring that line management is notified, and ensuring that the EM&R Office (7-6211) or their Facility Manager is notified;
- Evacuation, sheltering, and/or accountability of personnel;
- Recognizing and assessing the scope of the emergency condition, and reporting to the Command Post;
- Ensuring, if possible, that building/process safety systems and engineered safety features are engaged;
- Assisting with emergency response actions required in regaining control of the emergency;
- Assisting with the analysis of the potential or actual hazardous material impact within the emergency planning zone and advising the Incident Commander;
- Assisting, as needed, with necessary actions to terminate or mitigate hazardous material consequences and participating with the Incident Command Staff; and
- Conducting or assisting with recovery efforts at the request of the Incident Commander.

Initial notifications of incidents are directed to either the Laboratory Central Alarm Facility or the EM&R Office. If the call goes to the 911 center, the emergency telecommunications operators dispatch fire, rescue/ambulance, and security forces as appropriate and notify the duty Emergency Manager.

The first arriving Emergency Response Organization member, trained in basic incident command procedures, will become the initial Incident Commander. Upon notification of the emergency, the duty Emergency Manager proceeds to the scene. The duty Emergency Manager (or other qualified members of the EM&R Office staff), immediately determines what elements of the Emergency Response Organization should be activated. At the conclusion of briefings with the initial Incident Commander, building personnel, and other emergency units/teams, the Emergency Manager may become the Incident Commander. In some instances, depending on the type of incident, the senior fire department representative, senior police representative, or other appropriate trained individual will be the Incident Commander. The Incident Commander is responsible for:

- Classification of the incident per DOE O 151.1;
- Notifications using the EM&R Notification Checklists;
- Assignment of responsibility for on-scene consequence assessment;
- Maintenance of communication with the EM&R Office or the Emergency Operations Center (if activated);

- Recommendation of activation of the Emergency Operations Center at the Site Area Emergency or General Emergency classification, or if the situation warrants;
- Confirmation of personnel accountability;
- Management of on-scene mitigation of the incident;
- Call-out of appropriate Emergency Response Organization personnel;
- Maintaining command and control over the incident and related protective actions; and
- Handling field activities including logistics, planning, administrative, and operations or designating personnel to fill these positions.

The Incident Commander recommends activation of the Emergency Operations Center to the Director of Security and Safeguards based on the Emergency Action Levels (EAL), the facility-specific EAL, or a subjective analysis of the situation in those cases that do not meet the published criteria. Upon concurrence of the Director of Security and Safeguards, the Emergency Operations Center of choice (based upon location and safety) may be activated and the level of staffing determined. The EMPIPs provide for full, partial, or phased activation of the Emergency Operations Center, depending on the severity and nature of the incident.

Provision is made in the EMPIPs for inclusion of federal, state, tribal, or local emergency management personnel in the Emergency Operations Center Team. The EMPIPs also contain specific guidance for designated Emergency Response Organization positions including those in the Emergency Operations Center and key on-scene operational positions.

When the Emergency Operations Center is being activated, an Emergency Manager assumes the Emergency Director position until relieved by the Laboratory Director or designee; at such time, the Emergency Manager becomes a facilitator. The Emergency Operations Center will be declared activated by the Emergency Director when the following have been accomplished:

- Emergency Director is located in the Emergency Operations Center and has been briefed on the emergency situation and emergency response actions by the Emergency Manager at the Emergency Operations Center;
- Emergency Operations Center is prepared for communications with and notifications to offsite agencies; and
- Emergency Operations Center is sufficiently staffed and prepared to make emergency classification decisions.

Overall strategic plans for management of the emergency are the responsibility of the Emergency Director. This long-range planning allows the Incident Commander to focus on immediate conditions and mitigation at the emergency scene. The Emergency Director ensures that required support is provided to the incident scene. Radio is the primary link between the Emergency Operations Center and personnel at the scene. Other means include facsimile, still-video, and cellular telephone. If it becomes necessary to change the location of the Emergency Operations Center, the Emergency Director may initiate such action and communicate the change to everyone in the Emergency Response Organization.

The Emergency Director is aided in his command-and-control efforts by the inclusion in the Emergency Operations Center staff of second-level specialists in each of the functional areas. The adjacent Emergency Technical Support Center personnel can assist with meteorological information and dispersion calculations, and protective action recommendations. The EM&R Office personnel assist as facilitators with the Emergency Operations Center staff, overseeing the planning, preparedness, and operation of the Emergency Technical Support Center.

At all levels in the Emergency Response Organization, and in all locations, any change in or relief of personnel may take place only after a face-to-face detailed briefing. Team Leaders will be responsible for replacement of their personnel.

The Security and Safeguards (S) Division will provide a DOE-approved derivative classifier familiar with the emergency area and with classification guides for the Laboratory. The classifier will review information leaving the Laboratory (including press releases and DOE O 232.1 reports) before the information is approved by the Emergency Director. Additional information leaving the Emergency Operations Center by facsimile, radio, telephone, video transfer, and computer shall be evaluated for classified content. It may also be necessary to provide classifiers to the Emergency Media Center and the scene.

The first steps in termination, reentry, and recovery are normally managed by the Incident Commander. See Chapter 9 for more detail on emergency termination and recovery procedures.

3.0 OFFSITE RESPONSE INTERFACES

The potential magnitude of some emergencies may warrant the interface, coordination, and use of offsite individuals, organizations, and agencies at the federal, state, local, tribal, and private level. Because it is imperative that these support groups be available on short notice, written agreements have been entered into with some offsite organizations.

3.1 Overview

The DOE Los Alamos Area Office, with assistance from the Emergency Management and Response (EM&R) Office, initiates, coordinates, reviews, and renews all written agreements. In these agreements, the offsite organizations outline their resources and responsibilities, assuring their response to a call for aid. Copies of these agreements reside on file at the DOE Los Alamos Area Office and the EM&R Office. The request for emergency assistance may be initiated by the Incident Commander or Emergency Director. For federal response, the DOE Los Alamos Area Office Manager makes the request; however, if the DOE Los Alamos Area Office Manager cannot be reached, in an emergency the EM&R Office may directly contact the necessary organizations for emergency assistance. The DOE Los Alamos Area Office will be notified as soon as possible if emergency assistance is requested by the EM&R Office.

The Laboratory will use the Incident Command System (described in Section 2.2.1) in response to all emergencies. This System enables the Emergency Response Organization to participate with a minimum of confusion and hesitation. Participating agencies should have a clear understanding of their responsibilities and coordination within the Incident Command System.

Communication with participating response agencies should be clear, using limited (and well understood) acronyms, ***no*** code words or brevity codes, and ***no*** chemical, fire, or police jargon. Radio call signs for organizations should be functional.

State, local, and tribal governments are encouraged to prepare their own response plans for those areas where the Laboratory Emergency Planning Zone extends beyond DOE property. These governments participate in Laboratory drills and exercises.

3.2 Federal Agencies

The Department of Energy is assigned the role of Lead Federal Agency for emergencies at the Laboratory. The responsibilities of DOE under the Federal Radiological Emergency Management Plan are as follows:

- Coordinate federal response actions at the Laboratory;
- Develop or evaluate offsite protective actions and reentry recommendations, and help implement those actions if requested by the state/local authorities; and

- Coordinate the offsite radiological monitoring, assessment, evaluation, and reporting activities of federal agencies and other activities outlined in the Federal Radiological Monitoring and Assessment Plan.

Four of the DOE national emergency response resources and responsible organizations are listed below.

- *Aerial Measuring System.* This aerial detection system measures extremely low levels of gamma radiation and locates and tracks airborne radiation. The system also includes aerial photography and multi-spectral scanning capabilities. The DOE responsible organization is the Nevada Field Office.
- *Atmospheric Release Advisory Capability.* This computer-based, emergency response and preparedness system provides rapid predictions of the transport, diffusion, deposition of radionuclides or other toxic materials released into the atmosphere, and dose projections to people and the environment. The DOE responsible organization is the San Francisco Field Office.
- *Federal Radiological Monitoring Assessment Center.* This is a temporary facility for the production of compiled, quality-controlled monitoring and assessment data for the lead federal agency and the state, tribal, or local authorities involved in a radiological event. The DOE responsible organization is the Nevada Field Office.
- *Radiation Emergency Assistance Center/Training Site.* This site is available for 24-hour direct or consultative assistance regarding medical and health physics problems associated with radiation accidents in local, national, and international incidents. The DOE responsible organization is the Oak Ridge Field Office.

In addition to the above, at the request of the DOE the Laboratory provides select personnel for assistance on several specialized teams. These teams also include members from other DOE complexes. The Laboratory personnel from these teams may respond to specific types of offsite and Laboratory emergencies. These three teams are listed below.

- *Nuclear Emergency Search Team.* This team provides technical assistance and responds to incidents involving lost or stolen nuclear weapons and special nuclear materials, nuclear explosive threats, and radiation dispersal threats. The Laboratory provides highly trained personnel and resource equipment from several Laboratory Divisions. The DOE responsible organization is the Nevada Field Office.
- *Accident Response Group.* This group is the primary response element for events or accidents involving nuclear weapons. The group is trained in weapon recovery and in evaluating, collecting, handling, and mitigating radioactive and other weapons-associated hazards. The Accident Response Group members at the Laboratory are highly trained personnel from various Laboratory Divisions with resource equipment. Their specially equipped vans are capable of responding to remote sites world-wide. The DOE responsible organization is the Albuquerque Field Office.

- *Radiological Assistance Program Team.* This team provides radiological assistance to other federal agencies, state, tribal, and local governments, as well as Nuclear Regulatory Commission licensees requesting assistance for events involving radioactive materials. The Radiological Assistance Program team responds to evaluate radiological conditions, identify and isolate the involved area, assist with access control, and monitor personnel, equipment, and materials entering and exiting the controlled area. The team participants from the Laboratory are principally health physicists and radiation control technicians. The DOE responsible organizations are the regional coordinating offices.

Support from the DOE may be augmented by several other federal agencies including the Federal Emergency Management Agency, Environmental Protection Agency, Nuclear Regulatory Commission, Health and Human Services Department, United States Department of Agriculture, Department of Commerce, Department of Defense, Department of Interior, Defense Nuclear Agency, United States Forest Service, Federal Bureau of Investigation; Federal Aviation Administration, United States Coast Guard, and the National Oceanic and Atmospheric Administration.

Joint Powers agreements exist between the DOE and the Federal Bureau of Investigation, Department of Justice, National Park Service, Department of Energy Nevada Operations, and the National Transportation and Safety Board. The DOE has established a combined agreement for fire protection assistance between the Bureau of Indian Affairs, National Park Service, National Forest Service, and the New Mexico State Forestry Department.

Representatives from the National Park Service and National Forest Service are members of the Local Emergency Planning Committee, which meets on a quarterly basis to address emergency management issues. These agencies are the primary federal agencies involved with the Laboratory emergency management program on a routine basis.

3.3 State of New Mexico Services

At the request of the Incident Commander or the Emergency Director, certain state agencies may be called by the DOE Los Alamos Area Office Manager. An agreement exists with the State of New Mexico (general agreement), New Mexico State Police, Army National Guard, and the Department of Public Safety.

The state agencies discussed below are responsible for the emergency response functions assigned them by the Emergency Management Act or the Emergency Management Task Force. Procedures for performing these functions are detailed in the *Procedure Manual of the New Mexico Hazardous Materials Emergency Response Program.* State agencies and their functions are as follows.

- **New Mexico State Police.** The New Mexico State Police will be notified for offsite events, release, emergency, or those emergencies spreading beyond the Laboratory boundaries. New Mexico State Police have the primary responsibility for management of hazardous material incidents outside of DOE property. The nearest State Police Emergency Response Officer will be directed to the scene and may relieve the Laboratory

Incident Commander. The State Police are responsible for notifying the Governor's office. The New Mexico State Police also have jurisdiction for transportation accidents that occur on state highways. In an emergency, the State Police provide:

- Central coordination;
- On-scene coordination;
- Notifying emergency response personnel;
- Warning approaching motorists;
- Communications;
- Law enforcement;
- Traffic control;
- Crowd control;
- Public information;
- Transportation of emergency response personnel;
- Vehicular accident assessment; and
- Recordkeeping.

- **Civil Emergency Preparedness Division.** The Civil Emergency Preparedness Division may provide the following notifications concerning the emergency:
  - Warning nearby residents;
  - Advising social services, such as the Red Cross; and
  - Notifying residents of the affected area of evacuation.

- **Environmental Improvement Division.** The Environmental Improvement Division has the following bureaus within its jurisdiction: Radiation Protection, and Ground Water Quality and Hazardous Waste. The Environmental Improvement Division may provide the following support to the local area:
  - Public health;
  - Environmental monitoring;
  - Protective response;
  - Hazardous and radioactive material accident assessment; and
  - Exposure control.

- **Emergency Medical Services Bureau.** The Emergency Medical Services Bureau may provide guidance on rescue operations and emergency medical services, and may assist in the evacuation of bedridden persons.

- **State Fire Marshal.** The State Fire Marshal may provide the following assistance to fire and rescue response:
  - Flammable accident assessment;
  - Protective response; and
  - Exposure control.

- **New Mexico Highway Department.** The New Mexico Highway Department may:
  - Provide, in conjunction with the State Police, transportation for emergency workers to the scene of the incident;

- Locate state-owned or contracted mass transportation vehicles for evacuation of residents and assist in the designation of alternate routes for the traveling public around the area of a major release; and
- Assist in setting up roadblocks to divert traffic from the accident area.

3.4 Local Support

The governmental jurisdictions surrounding the Laboratory that are within the Emergency Planning Zone include Los Alamos, Santa Fe, and Sandoval Counties; San Ildefonso Pueblo; the Santa Fe National Forest; and Bandelier National Monument.

Agreements exist with Los Alamos County (general agreement and specific traffic control, and police response), Los Alamos Medical Center, Española Hospital, and St. Vincent Hospital. The Laboratory also has a contract with Los Alamos County for provision of fire department services by the Los Alamos Fire Department. The local support groups (medical support, fire support, and law enforcement agency support) report to the Incident Commander.

- **Medical Support.** Medical emergencies may require the transport of injured persons from the Laboratory to an offsite medical facility. Transportation to medical facilities is normally provided by the Los Alamos Fire Department ambulances. The ambulances are equipped with radios to maintain communications with the medical facilities and Laboratory emergency response units.

  The primary Laboratory medical facility is equipped to handle injured personnel, with or without contamination, in addition to the Los Alamos Medical Center, St. Vincent Hospital, and Española Hospital. These hospitals have agreed to accept injured personnel from radiological/hazardous materials-related accidents for emergency medical, surgical treatment, and observation.

- **Fire Support.** The Los Alamos Fire Department (LAFD) provides manual fire suppression services. The LAFD can be notified using the red alarm pull boxes and by calling 911. In cases where LAFD support would be provided at the Laboratory, the LAFD Incident Commander directs LAFD personnel at fire operations. As the incident warrants, the Incident Commander retaining overall responsibility for the emergency response effort at the affected building may be the LAFD Incident Commander.

  Hazardous materials information is provided by the building personnel and/or the Laboratory Hazardous Materials Response Team Group Supervisor in instances involving hazardous materials.

- **Law Enforcement Agencies.** The nature of an emergency at the Laboratory may require that the local law enforcement agencies be activated to assist in the emergency effort. These agencies may provide the following emergency support:
  - Controlling matters of civil disorder within their respective jurisdictions;
  - Furnishing personnel and equipment as necessary to supplement the Laboratory security services;

- Controlling access to areas affected by the emergency within their jurisdictions; and
- Directing area evacuation outside the Laboratory boundary.

3.5 Tribal Organizations

At this time, the Laboratory has no Memorandums of Understanding with any tribes. The Laboratory notifies Pueblos of events that might impact their area or people. Procedures for notification are contained in the EMPIPs and the Early Dismissal/Closure/Delayed Opening Plan.

3.6 Private Organizations

Other than the local organizations previously mentioned in Section 3.4, no other private organizations have formal agreements with the Laboratory for assistance; however, private organizations may be called as required in an emergency.

3.7 Memorandums of Agreement and Memorandums of Understanding

The DOE Los Alamos Area Office (with input from the EM&R Office) is responsible for Memorandums of Agreement with offsite organizations and agencies. The Memorandums of Agreement are to be reviewed annually and updated as necessary. A change in original signatures to a given agreement does not require revision of that letter; however, a change in applicability of content does require a revision. Original copies of the Memorandums of Agreement are to be kept by the DOE Los Alamos Area Office, with duplicate copies on file in the Memorandum of Agreement Book at the EM&R Office.

Table 3-1 lists the present agreements between the DOE and external agencies, including policy letters, agreements, and Memorandums of Understanding.

Table 3-1. Policy Letters, Agreements, and Memorandums of Understanding Between the Department of Energy and External Agencies

Date	Memorandum of Understanding
1/14/93	Department of Energy and Los Alamos County Mutual Assistance and Emergency Preparedness. **Signed by:** Jerry Bellows, Area Manager, Los Alamos Area Office; James Flint, Los Alamos County Administrator; John Lewis, Assistant County Attorney.
3/19/92	Department of Energy/Albuquerque—State of New Mexico Memorandum of Understanding for Mutual Assistance and Emergency Management. **Signed by:** B. Twining, Department of Energy/Albuquerque; R. Bara, Department of Public Safety.
10/17/90	Los Alamos National Laboratory—Lawrence Livermore National Laboratory Memorandum of Understanding. **Signed by:** Allen Tiedman, Los Alamos National Laboratory; Philip Coyle, Lawrence Livermore National Laboratory.
12/13/89	Department of Energy/National Park Service—Patrol Agreement. **Signed by:** G. Eric Bell, Department of Energy/Los Alamos Area Office; E. Lopez, National Park Service.
3/17/88	Department of Energy Nevada Operations Office and Department of Energy/Albuquerque—Management for Tonopah Test Range and Pacific Missile Range. **Signed by:** R. Romatowski, Department of Energy/Albuquerque; N.C. Aquilina, Nevada Operations Office.
7/22/88	(Revised) Mutual Fire Protection Assistance—Department of Army Corps of Engineers/Bureau of Indian Affairs/Department of Energy—Los Alamos Area Office/United States Forest Service/National Park Service/New Mexico Department of Energy, Minerals and Natural Resources. **Signed by:** All Agencies.
12/21/87	National Transportation Safety Board—Department of Energy Letter of Agreement—Aircraft. **Signed by:** Herbert W.R. Banks, National Transportation Safety Board Director; Mary L. Walker, US Department of Energy.
6/23/86	Department of Energy/Los Alamos Area Office—St. Vincent Hospital. **Signed by:** H. Valencia, Department of Energy/Los Alamos Area Office; Hugh Hallgren, St. Vincent Hospital.
11/29/85	Department of Energy/Los Alamos Area Office—Los Alamos Medical Center. **Signed by:** H. Valencia, Department of Energy/Los Alamos Area Office; G. Bryant, Los Alamos Medical Center.
12/30/85	Department of Energy/Los Alamos Area Office—Espanola Hospital. **Signed by:** H. Valencia, Department of Energy/Los Alamos Area Office; Luis Torres, Espanola Hospital.
3/11/85	Command of Department of Energy's Security by the Federal Bureau of Investigation. **Signed by:** C.A. Robinson, Operational Safety—Division Office; R.G. Romatowski, Department of Energy/Albuquerque.

Table 3-1. Policy Letters, Agreements, and Memorandums of Understanding Between the Department of Energy and External Agencies (cont.)

Date	Memorandum of Understanding
4/14/83 11/20/74	Los Alamos Police Department/Los Alamos Area Office; Traffic Control & Response. **Signed by:** K. Braziel, Los Alamos Area Office; Los Alamos Police Department.
8/23/83	Department of Defense/Department of Justice/Federal Bureau of Investigation, Use of Federal Military Force in Domestic Terrorist Incidents. **Signed by:** John O. Marsh, Jr., Secretary of Army; Jeffrey Harris, Acting Associate Attorney General, Department of Justice; William H. Wester, Director, Federal Bureau of Investigation.
6/7/83	Energy Research and Development Administration/Los Alamos National Laboratory. **Signed by:** Ralph E. Caudle, Director, Office of Safeguards and Security Defense Programs.
9/22/83	Laboratory Coordination and Processing Procedures for Arrests Made by Department of Energy Federal Officers within New Mexico. **Signed by:** Ralph E. Caudle, Director, Office of Safeguards and Security Defense Programs (6/7/83); Roy B. Crouch, (same position, 9/22/83).
6/11/76	Energy Research and Development Administration and Federal Bureau of Investigation responding to nuclear threat incidents. **Signed by:** Assistant Administrator for National Security; Clarence M. Kelly, Federal Bureau of Investigation.
6/18/75	Support during limited hostile incidents. **Signed by:** Jason R. Arter, Chief, Security and Fire Protection Branch, Los Alamos Area Office.

4.0 OPERATIONAL EMERGENCY EVENT CLASSES

The Laboratory encourages a positive attitude toward assessing and reporting occurrences to ensure that management is kept informed of events that may:

- Affect or endanger the health and safety of employees or the public;
- Seriously impact the intended purpose of the Laboratory's facilities or programs; or
- Have a significant adverse effect on the environment.

Emergencies are reviewed for categorization in accordance with DOE O 151.1 and grouped into two broad categories: *operational emergencies* and *energy emergencies*. Energy emergencies are handled by the DOE Headquarters; however, Laboratory support may be provided upon request by the DOE. This EMP document addresses only operational emergencies. Information in this chapter can be used as guidance for assessing the problems, classifying an operational emergency, and determining the necessary response to mitigate the event.

4.1 Definitions

Operational Emergencies. Operational Emergencies are unplanned, significant events or conditions that require time-urgent response from outside the immediate/affected site/facility or area of the incident. Such emergencies are caused by, involve, or affect DOE facilities, sites, or activities and represent, cause, or have the potential to cause the events or conditions described later in Tables 4-1 through 4-5. Incidents that can be controlled by employees or maintenance personnel in the immediate/affected site/facility or area are not Operational Emergencies. Incidents that do not pose a significant hazard to safety, health, and/or the environment and that do not require a time-urgent response are not Operational Emergencies.

Note that the initiating events described in Tables 4-1 through 4-5 are not all-inclusive. Other initiating events that warrant categorization as Operational Emergencies shall be included in facility-specific procedures. Less severe events are reported through the "Unusual Occurrence" and "Off-Normal Occurrence" process described in DOE O 232.1.

Operational Emergencies are further divided into (1) events that do not require further classification, and (2) events that require further classification. Those events that require further classification involve the release of hazardous materials. The three classes of hazardous material operational emergencies in order of increasing severity are defined as:

- Alert;
- Site Area Emergency; and
- General Emergency.

Events That Do Not Require Further Classification. An Operational Emergency shall be declared when events occur that represent a significant degradation in the level of safety at a site/facility and require time-urgent response efforts from outside the site/facility. These events

do not require further classification (i.e., as Alert, Site Area Emergency, or General Emergency). Events that do not require further classification are summarized in Tables 4-1 through 4-4.

Events Requiring Further Classification. Events listed as Operational Emergencies that serve as initiating events for the release of hazardous material and that do require further classification (i.e., as Alert, Site Area Emergency, or General Emergency) are classified in Table 4-5.

Non-Emergency Significant Events. Oral notification of ***all*** non-emergency significant events is to be made immediately to the DOE Headquarters Operations Center. Other Federal agencies are to be notified in accordance with applicable regulations and state and local officials are to be notified in accordance with applicable regulations, ordinances, and mutual agreements. Non-emergency significant events include unusual occurrences (see DOE O 232.1) such as explosions, serious fires, building evacuations or other personnel protective actions, facility or multiple injuries, release of radioactive and non-radioactive materials in excess of permits or requirements, doses of exposures above established statutory limits, bomb-related incidents, sabotage, loss of special nuclear material, and the disruption of operations (e.g., weather related). In addition, any occurrence that may result in a significant concern by the affected state, tribal, local officials, press, or general population or that could damage the credibility of the DOE, or that may result in inquiries to DOE Headquarters are to be reported immediately.

Table 4-1. Definition of Health and Safety Operational Emergencies

HEALTH AND SAFETY. The following events or conditions represent, cause, or have the potential to cause serious health and safety impacts to workers or members of the public.
1) Discovery of radioactive or other hazardous material contamination from past DOE operations that is causing or may reasonably be expected to cause uncontrolled personnel exposures exceeding protective action criteria.
2) An offsite hazardous material event not associated with DOE operations that is observed to have or is predicted to have an impact on a DOE site such that protective actions are required for onsite DOE workers.
3) An occurrence that causes or can reasonably be expected to cause significant structural damage to DOE facilities, with confirmed or suspected personnel injury or death or substantial degradation of health and safety.
4) 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.
5) An unplanned nuclear criticality resulting in actual or potential facility damage.
6) Any non-transportation-related mass casualty event.
7) An ES&H related event that based on the opinion, judgment, experience of the Emergency Manager/EM&R Group Leader/S Director/Emergency Director should be categorized as an ES&H Operational Emergency.

Table 4-2. Definition of Environmental Operational Emergencies

ENVIRONMENT. The following events or conditions represent, cause, or have the potential to cause serious detrimental effects on the environment.
1) Any actual or potential release of hazardous material or regulated pollutant to the environment, in a quantity greater than five times the Reportable Quantity (RQ) specified for such material in 40CFR302.4, 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.
2) Any release greater than 1,000 gallons (24 barrels) of oil to inland waters; greater than 10,000 gallons (9238 barrels) of oil to coastal waters; or a quantity of oil that could result in significant offsite consequences (e.g., need to relocate people, major wildlife kills, wet-land degradation, aquifer contamination, 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.]
3) An event involving the environment that based on the opinion, judgment, experience of the Emergency Manager/EM&R Group Leader/S Director/Emergency Director should be categorized as an Environmental Operational Emergency.

Table 4-3. Definition of Safeguards and Security Operational Emergencies

SECURITY AND SAFEGUARDS. The following events or conditions represent, cause, or have the potential to cause degradation of security or safeguards conditions with actual or potential direct harm to people or the environment.
Actual unplanned detonation of an explosive device or a credible threatened detonation resulting from the location of a confirmed or suspicious explosive device.
An actual terrorist attack or sabotage event involving a DOE site/facility or operation.
Kidnapping or the taking of hostage(s) involving a DOE site/facility or operation.
Actual theft or loss of a Category I or II quantity of Special Nuclear Materials or other hazardous material that, if released, could endanger workers, the public, or the environment.
Damage or destruction of a site or facility by natural or malevolent means sufficient to expose classified information to unauthorized disclosure.
An event involving the environment that based on the opinion, judgment, experience of the Emergency Manager/EM&R Group Leader/S Director/Emergency Director should be categorized as a Safeguards and Security Operational Emergency.

Table 4-4. Definition of Transportation Operational Emergencies

OFFSITE DOE TRANSPORTATION ACTIVITIES. The following events or conditions represent an actual or potential release of radiological or non-radiological hazardous materials from a DOE shipment.
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. ["Initial protective action zone" is defined in DOT RSPA 1996 North American Emergency Response Guide Book (NAERG 97) as amended or updated.]
Failures in safety systems threaten the integrity of a nuclear weapon, component, or test device.
Damage to a nuclear explosive, nuclear explosive-like assembly, or Category I/II quantity of Special Nuclear Materials as a result of a transportation accident.
An event involving the environment that based on the opinion, judgment, experience of the Emergency Manager/EM&R Group Leader/S Director/Emergency Director should be categorized as a Transportation Operational Emergency.

Table 4-5. Events Requiring Further Classification

Operational Emergencies shall be classified as either an Alert, Site Area Emergency, or General Emergency, in order of increasing severity, when events occur that represent a specific threat to workers and the public due to the release or potential release of significant quantities of radiological and non-radiological hazardous materials. Classification aids in the rapid communication of critical information and the initiation of appropriate time-urgent emergency response actions. Events listed as Operational Emergencies that serve as initiating events for the release of hazardous materials will be classified under the provisions cited below.
ALERT. An Alert shall be declared when events are predicted, are in progress, or have occurred that result in one or more of the following: An actual or potential substantial degradation in the level of control over hazardous materials (radiological and non-radiological). The radiation dose from any release to the environment of radioactive material or a concentration in air of other hazardous material is expected to exceed either: • the applicable Protective Action Guide or Emergency Response Planning Guideline at or beyond 30 meters from the point of release to the environment or • a site-specific criterion corresponding to a small fraction of the applicable Protective Action Guide or Emergency Response Planning Guideline at or beyond the facility boundary or exclusion zone boundary. It is not expected that the applicable Protective Action Guide or Emergency Response Planning Guideline will be exceeded at or beyond the facility boundary or exclusion zone boundary.
An actual or potential substantial degradation in the level of safety or security of a nuclear weapon, component, or test device that would not pose an immediate threat to workers or the public.
An actual or potential substantial degradation in the level of safety or security of a facility or process that could, with further degradation, produce a Site Area Emergency or General Emergency.

Table 4-5. Events Requiring Further Classification (cont.)

An event involving hazardous material that based on the opinion, judgment, experience of the Emergency Manager/EM&R Group Leader/S Director/ Emergency Director should be classified as an Alert.
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 exceed the applicable Protective Action Guide or Emergency Response Planning Guideline beyond the facility boundary or exclusion zone boundary. The Protective Action Guide or Emergency Response Planning Guideline is not exceeded at or beyond the site boundary.
An actual or potential threat to the integrity of a nuclear weapon, component, or test device that may adversely impact the health and safety of workers in the immediate area, but not the public.
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.
An event involving hazardous material that based on the opinion, judgment, experience of the Emergency Manager/EM&R Group Leader: S Division Director/Emergency Director should be classified as a Site Area Emergency.
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.
Actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of hazardous material (radiological or non-radiological) to the environment. The radiation dose from any release of radioactive material or a concentration in air from any release of other hazardous material is expected to exceed the applicable Protective Action Guide or Emergency Response Planning Guideline at or beyond the site boundary.
Actual or likely catastrophic failures in safety or security systems threatening the integrity of a nuclear weapon, component, or test device that may adversely impact the health and safety of workers and the public.
An event involving hazardous material that based on the opinion, judgment, experience of the Emergency Manager/EM&R Group Leader/S Division Director/Emergency Director should be classified as a General Emergency.

4.2 Emergency Action Levels

Emergency Action Levels (EALs) are defined as specific criteria used to recognize and categorize operational emergencies. EALs are developed for potential operational emergencies identified by the hazards assessment. General Laboratory EALs have been developed and are presented in Table 4-6. Responses for EALs are presented in Tables 4-7 through 4-9. EALs form the basis for notification, participation of offsite organizations, and determination of what and when protective measures should be implemented. Facility-specific EALs shall be developed in accordance with the hazards assessment process. EAL initiating conditions (e.g., individual instrument readings, equipment status, valve positions, parameter values, Laboratory and/or offsite monitor readings) and hazardous initiating conditions (e.g., fire, security breach, weather) should be observable and recognizable in a timely manner by responsible personnel.

The EALs and related information should be consistent and integrated with this EMP and the EMPIP as well as with criteria established by offsite federal, state, tribal, and local organizations. EALs should be reviewed annually by line management and the Emergency Management and Response (EM&R) Office.

Table 4-6. Generic Laboratory Emergency Action Levels

Incident	Alert	Site Area Emergency	General Emergency
Natural Disaster:			
Flooding	Major damage to one or more hazardous material Laboratory structures.	Severe damage to a hazardous material facility.	N/A
High Winds/Tornadoes	High winds strike, causing major damage to one or more hazardous material structures.	High winds cause major damage to a hazardous material facility. --------or-------- Tornado visually seen striking a hazardous material facility causing extensive damage.	N/A
Landslide	Earth and debris cause major damage to one or more hazardous material structures.	N/A	N/A
Winter Storm	Accumulation of snow on a hazardous material facility approaches roof design load limits.	N/A	N/A
Wildland Fire	Major fire not under control that threatens hazardous material facilities.	Major fire not under control that has spread to hazardous material facilities.	Fire in a high or moderate hazard facility resulting in a release of hazardous material to the environment or the general public that meets the criteria established for exposure to toxic material or radiation (Emergency Response Planning Guideline, level 2, or 1 rem [short biological half life] or 5 rem [long biological half life] Total Effective Dose Equivalent).

Table 4-6. Generic Laboratory Emergency Action Levels (cont.)

Incident	Alert	Site Area Emergency	General Emergency
Earthquakes	A seismic event felt by personnel, with some breakage of windows and disturbance of tall objects at a high or moderate hazardous material facility. ---------or--------- A seismic event produces a ground acceleration between .02g and .05g, which has been confirmed.	A seismic event with evidence of falling building debris in a hazardous material facility. ---------or--------- A seismic event produces a ground acceleration between .05g and .12g, which has been confirmed.	A seismic event causes severe damage (walls fallen, underground pipes broken, ground cracked) at a hazardous material facility. ---------or--------- A seismic event produces a ground acceleration >.12g, which has been confirmed.
Fire/Explosion:			
Fire	A fire in a hazardous material or radiologically controlled area that may result in exposure to workers, but will not exceed the applicable Protective Action Guide or Emergency Response Planning Guideline level 2 at the facility boundary.	A fire in a hazardous material or radiologically controlled area that may result in a release to the environment which is expected to exceed the applicable Protective Action Guide or Emergency Response Planning Guideline level 2 at or beyond the facility boundary.	A fire in a high or moderate hazard facility resulting in a release of hazardous material to the environment or the general public that meets the criteria established for exposure to toxic material or radiation (Emergency Response Planning Guideline, level 2, or 1 rem [short biological half life] or 5 rem [long biological half life] Total Effective Dose Equivalent).
Explosion	An unplanned explosion in a hazardous material operations area resulting in structural or process related damage.	An explosion causing major damage and/or injury in a hazardous material area/facility.	An explosion in a high or moderate hazard facility resulting in a release of hazardous material to the environment or the general public which meets the criteria established for exposure to toxic material or radiation (Emergency Response Planning Guideline, level 2, or 1 rem [short biological half life] or 5 rem [long biological half life] Total Effective Dose Equivalent).
Transportation Accident:			
Airplane Crash	Severe injuries as a result of a plane crash on hazardous material facility property.	Injuries and damage as a result of a plane crash in a hazardous material facility of the Laboratory.	Crash on Laboratory property of an aircraft carrying hazardous material resulting in exposure to the general public at Protective Action Guide or Emergency Response Planning Guideline levels.
Loss of Control of Hazardous Material:			
Non-radiological HAZMAT	Release > the Emergency Response Planning Guideline (level 2) within an area that requires evacuation of a building.	Release > the Emergency Response Planning Guideline (level 2) at a facility boundary or that requires evacuation of multiple buildings.	Release > the Emergency Response Planning Guideline (level 2) at the site boundary.

Table 4-6. Generic Laboratory Emergency Action Levels (cont.)

Incident	Alert	Site Area Emergency	General Emergency
Exposure to Radiation:			
Radioactive Plume	>100 mrem Total Effective Dose Equivalent but <500 mrem Total Effective Dose Equivalent from an accidental release of radioactive material to the general public. --------or-------- >1 rem [short biological half life] or 5 rem [long biological half life] Total Effective Dose Equivalent in a facility from an accidental release of radioactive material to Laboratory workers.	>500 mrem Total Effective Dose Equivalent but <1 rem Total Effective Dose Equivalent from an accidental release of radioactive material to the general public. --------or-------- >1 rem [short biological half life] or 5 rem [long biological half life] Total Effective Dose Equivalent, calculated at a facility boundary, from an accidental release of radioactive material to Laboratory workers.	>1 rem [short biological half life] or 5 rem [long biological half life] Total Effective Dose Equivalent from an accidental release of radioactive material to the general public.
Hazardous Material Operational Emergencies	The dose from a release of hazardous materials (radiological or non-radiological) expected to be limited to small fractions of the appropriate Protective Action Guide or the Emergency Response Planning Guideline level-2 exposure levels at or beyond the facility boundary.	The dose from a release of hazardous materials (radiological or non-radiological) expected to exceed the appropriate Protective Action Guide or the Emergency Response Planning Guideline level-2 exposure levels at the facility boundary but not expected to exceed appropriate exposure levels offsite.	The dose from a release of hazardous materials (radiological or non-radiological) that can reasonably be expected to exceed Protective Action Guide or the Emergency Response Planning Guideline, level-2 exposure levels offsite.
Nuclear Weapons, Components, or Test Devices Operational Emergencies	An actual or potential substantial degradation of the level of safety or security of a nuclear weapon, component, or test device that would not pose immediate threat to the workers or the public.	An actual or potential threat to nuclear weapons, component, or test device that may adversely impact the health and safety of the workers in the immediate area, but not the public.	Actual or likely catastrophic failures in safety or security systems threatening the integrity of a weapon, components, or test device that may adversely impact the health and safety of workers and the public.
Safeguards and Security Operational Emergencies	An actual or potential substantial degradation of the level of safety or security of a facility or process that could, with further degradation, produce a Site Area Emergency or General Emergency.	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.	

Table 4-7. Response for HAZMAT and Security Operational Emergencies: Alert

ALERT
Declaration of an Alert requires availability of personnel and resources to:
Continuously assess pertinent information for Department of Energy decision makers, Laboratory personnel, offsite authorities, the public, and other appropriate entities.
Conduct appropriate assessments, investigations, or preliminary sampling and monitoring.
Mitigate the severity of the occurrence or its consequences.
Prepare for other response actions should the situation become more serious, requiring emergency response organizations to mobilize or activate resources.

Table 4-8. Response for HAZMAT and Security Operational Emergencies: Site Area Emergency

SITE AREA EMERGENCY
Declaration of a Site Area Emergency requires availability of personnel and resources to:
Provide continuous assessment and update of pertinent information for DOE decision makers, Laboratory personnel, offsite authorities, the public, and other appropriate entities.
Conduct appropriate assessments, investigations, or preliminary sampling and monitoring.
Mitigate the severity of the occurrence or its consequences.
Prepare for other response actions should the situation become more serious.
Initiate predetermined protective actions for onsite personnel.
Notify and assemble emergency response personnel and equipment to activate the Emergency Operations Center.
Establish communications, consultation, and liaison with offsite authorities.
Provide information to the public and the media.
Implement or assist in any evacuations and sheltering.
Mobilize action of appropriate emergency response groups, or protective/security forces for immediate dispatch should the situation become more serious.

Table 4-9. Response for HAZMAT and Security Operational Emergencies: General Emergency

GENERAL EMERGENCY
Declaration of a General Emergency requires availability of personnel and resources to:
Provide continuous assessment and update of pertinent information for Department of Energy decision makers, Laboratory personnel, offsite authorities, the public, and other appropriate entities.
Conduct appropriate assessments, investigations, or preliminary sampling and monitoring.
Mitigate the severity of the occurrence or its consequences.
Mobilize and dispatch appropriate emergency response groups, equipment, and/or security forces.
Initiate predetermined protective actions for onsite personnel.
Activate fully the Emergency Operations Center and the Emergency Response Organization.
Establish communications, consultation, and liaison with offsite authorities and recommend predetermined protective actions for the public.
Provide information to the public and the media.
Implement or assist in any evacuation and sheltering.
Request and dispatch appropriate DOE national response assets.

4.3 Classification System

Each event that may release hazardous material (***Events Requiring Further Classification***) shall be reviewed for event classification in accordance with DOE O 151.1. Classification assigns an event, based on considerations of its nature and severity, to one of three levels of operational emergency designation per DOE O 151.1 or a less severe categorization in accordance with DOE O 232.1.

4.3.1 Department of Energy Order 151.1 Emergencies and Response

As previously stated, Operational Emergencies that release hazardous materials that involve or affect the Laboratory are divided into three classifications depending on severity: Alert, Site Area Emergency, and General Emergency. The Notification Specialist or EM&R Office personnel will make appropriate notifications to the DOE, state, local, and tribal officials of the Operational Emergency as crucial information becomes available but no later than 15 minutes after classification of the event as an Operational Emergency.

4.3.2 Department of Energy Order 232.1 Occurrences

In accordance with DOE O 232.1, the term "Occurrence" will be used for an unplanned, unwanted significant incident or event originating either at the Laboratory or offsite (in areas that are the responsibility of the Laboratory).

The term "Facility Manager" is specific to DOE O 232.1. Each Laboratory directorate will ensure designation of Facility Manager(s) and designees for facilities in their directorate. The directorate will ensure that the Facility Managers and designees have direct line responsibility for operation of facilities or buildings, including the authority to direct physical changes. The Facility Manager or designee is responsible for occurrences that take place in the area of their assignment.

Notification of the facility representative and DOE shall be made by ESH-7 in accordance with DOE O 232.1. The Facility Manager may be assisted in categorizing DOE O 232.1 occurrences by the ES&H Occurrence Investigation Group or the Emergency Manager/Incident Commander.

5.0 NOTIFICATION AND COMMUNICATIONS

Recognition of emergencies and the importance of timely notification and communication is the responsibility of Laboratory employees, contractors, and visitors. Limited emergency information and telephone numbers are provided on a card to Laboratory personnel and to visitors who are at the Laboratory 10 days or longer. Additionally, each Laboratory telephone book contains emergency numbers and information, and numerous special lists of phone numbers are available on the Laboratory network(s). The Emergency Management and Response (EM&R) Office uses EM&R Notification Checklists for all notifications during any incident.

5.1 Laboratory Personnel Responsibilities

Laboratory personnel discovering or reporting an emergency or incident shall perform the following actions:

- **For fire or smoke, pull an alarm box and then call 911 or EM&R at 7-6211.**
- **For a suspicious package or possible explosive device, call 911. *Do not use a fire pull station.***
- **For all other emergencies or incidents, call 911, EM&R at 7-6211, or the proper Facility Manager.**
- **If you are unsure whether the incident is an emergency or are unable to determine the proper Facility Manager, call EM&R at 7-6211.**
- **Notify the line management.**
- **For a non-emergency, call the proper Facility Manager (see LIR 201-00-04.0, *Los Alamos National Laboratory Incident Reporting Process*).**

A 911 caller should stay on the telephone until released by the operator. If the 911 call is made from a cellular phone, the caller must specify their location. If possible, someone must be directed to meet the arriving emergency response unit(s) to assist them in getting into the proper location and to brief them on the emergency. When the reporting person dials 911 or uses a pull alarm box, the Central Alarm Facility (which is staffed on a 24-hour basis) may initiate emergency response, notify the EM&R Office, or notify the duty Emergency Manager. The duty Emergency Manager will determine what additional resources are needed and the notifications that are required.

Building personnel upon hearing a fire alarm, ***shall evacuate*** to the appropriate designated area. A designated person shall initiate a 911 call to report the alarm condition. If time permits, personnel should quickly secure all classified documents and exit with necessary personal belongings (e.g., purse, keys, coat). For all other types of alarms, local emergency procedures must be followed.

Personnel on Laboratory property have "stop work authority" and should make appropriate notifications as outlined in LIR 401-10-01.0, *Stop Work and Restart*, and as discussed in Section 1.3.2 of this Emergency Management Plan.

5.2 Notifications

5.2.1 General

The duty Emergency Manager or the EM&R Office may make the notifications. The Notification Specialist or someone from the Emergency Operations Center is responsible for the initial notification and for follow-up messages, which are prearranged and standardized in the Laboratory EMPIPs. Persons to notify may include the following:

- Laboratory personnel;
- Laboratory emergency response units/teams;
- DOE Los Alamos Area Office, Albuquerque Office, and Headquarters;
- State, local, and tribal authorities and governmental agencies; and
- General public.

Notification documentation (incoming and outgoing) should include times, names of people involved in making the notifications, and any other pertinent information that will be kept as part of the incident file (refer to the current version of the "LANL EM&R Incident Record" form). Initial notifications are normally made via telephone, radio, or face-to-face briefings.

Follow-up information and notice of termination of an emergency will be made to Laboratory management and personnel and to federal, state, and local agencies by the Notification Specialist, EM&R Office, or the Public Affairs Officer. Continuing notifications should be made periodically during the event. Notice of a change in categorization/classification should be made in accordance with the time requirements for the initial notification. Upon termination of an emergency, notifications should be made as soon as possible.

5.2.2 Offsite Notifications

Notification procedures for initial emergency notifications per DOE O 151.1.VIII.4.a are discussed in the paragraphs that follow.

5.2.2.1 Hazardous Materials/Nuclear Weapons/Security Operational Emergency. The Emergency Operations Center personnel shall notify the following ***within 15 minutes*** and all others on the EM&R Notification Checklists ***within 30 minutes*** of the declaration of an Alert, Site Area, or General Emergency:

- New Mexico State Police Dispatch (who notify State officials);
- Los Alamos Police Department (who notifies the County Emergency Manager and local officials);

- Laboratory Community Involvement Office (who notifies surrounding Pueblo Governments). After hours, the Emergency Operations Center personnel will notify the Pueblo Governments;
- DOE Los Alamos Area Office On-Call Duty Officer;
- DOE Albuquerque Office Emergency Operations Center; and
- DOE Headquarters Emergency Operations Center.

5.2.2.2 Operational Emergency (Non-Hazardous Materials). The Emergency Operations Center personnel shall notify the following and all others on the EM&R Notification Checklists ***within 30 minutes*** of the declaration of an other than hazardous material Operation Emergency:

- DOE Los Alamos Area Office On-Call Duty Officer;
- DOE Albuquerque Office Emergency Operations Center;
- DOE Headquarters Emergency Operations Center;
- New Mexico State Police Dispatch (who notifies State officials);
- Los Alamos Police Department (who notifies the County Emergency Manager and local officials); and
- Laboratory Community Involvement and Outreach Office (who notifies surrounding Pueblo Governments).

5.2.2.3 Non-Emergency Significant Events. Non-emergency significant events may include unusual occurrences (see DOE O 232.1) such as explosions, serious fires, building evacuations or other personnel protective actions, fatality or multiple injuries, releases of radioactive and non-radioactive materials in excess of permits or requirements, doses or exposures above established statutory limits, bomb-related incidents, sabotage, loss of special nuclear material, disruption of operations (e.g., weather-related), or any occurrence that may result in a significant concern by the affected state, tribal, local officials, press or general population, or that could damage the credibility of the DOE, or that may result in inquires to DOE Headquarters. The Emergency Operations Center personnel shall, ***as soon as possible***, notify all offices on the EM&R Notification Checklists of the non-emergency significant event if the incident affects their interests or geographical areas. Notifications include but are not limited to:

- DOE Los Alamos Area Office Duty Officer;
- New Mexico State Police Dispatch (who notify State officials);
- Los Alamos Police Department (who notifies the County Emergency Manager and local officials); and
- Laboratory Community Involvement Office (who notifies surrounding Pueblo Governments).

5.2.3 Onsite Notifications

In accordance with DOE O 151.1VII.4, the Emergency Operations Center personnel shall notify the applicable Laboratory organizations of all incidents per the EM&R Notification Checklists as soon as possible. EM&R personnel, primarily the duty Emergency Manager, shall establish effective communications with event scene responders and response facilities using the resources described in Section 5.3. Emergency status reports shall be forwarded to affected Laboratory management and representatives and the DOE Los Alamos Area Office representative on a continuing basis until the emergency is terminated. Following termination of emergency response, the Occurrence Investigation Group (ESH-7), shall coordinate with the proper Facility Manager and submit the final occurrence report per DOE O 232.1.

EM&R maintains a duty Emergency Manager at all times. After hours an "on-call" Emergency Manager is available for all responses. After hours the EM&R phone (7-6211) is transferred to the Central Alarm Station, which is continually manned. The Central Alarm Station contacts the duty Emergency Manager either by radio, telephone, or cell phone to report information or for a required response. The duty Emergency Manager can initiate a group/individual page to rapidly assemble the EM&R staff at the Emergency Operations Center or request individual assistance.

5.2.4 Department of Energy Assets

Requests for offsite DOE assets will be made through the DOE Los Alamos Area Office on-call person to the DOE Albuquerque Office. Assets located in other regions (e.g., additional Radiological Assistance Program teams, Aerial Measuring System) will be requested through the DOE Headquarters Emergency Operations Center.

5.2.5 Department of Energy Field and Headquarters Emergency Operations Center Notification

Notification of DOE field and headquarters for DOE O 151.1 occurrences is discussed in Section 5.2.1.

Notification of DOE field and headquarters for DOE O 232.1 occurrences is performed by the Laboratory Occurrence Investigation Group.

Notification of non-emergency significant events is discussed in Section 5.2.2.

5.3 Communications

Communication among Emergency Response Organization personnel throughout the emergency is conducted via common radio frequencies, facsimile system, telephones, and mobile telephones. Communication equipment (secure and non-secured) is discussed in Section 11.2.1.

5.3.1 Secure Communications

Notifications or communications concerning controlled or classified information shall be handled in accordance with DOE orders using Laboratory approved communications as detailed in the EMPIPs for the Security and Safeguards representative.

Secure communications can be accomplished by using the equipment listed in Section 11.2.1, which includes the Emergency Communications Network (ECN), Secure Telephone Units (STU), secure fax, and encrypted radios.

5.3.2 Emergency Communications

The Laboratory and the surrounding community can be notified using one or more of the following methods/systems:

- Site Wide Area Notification System (SWANS)
- Laboratory Trunked Radio System
- Local UHF and VHF Radio Nets
- Laboratory Newsbulletin and Bulletin Board (Web-based)
- Update—Telephone with recording with TDD (telecommunications device for the deaf) capability
- Alphanumeric pager network for the deaf employees
- Electronic Mail
- Facscimile machine systems
- Sounding the appropriate facility alarm
- Laboratory telephone system
- Community Alert Network
- Local cable TV channel (PAC 8)
- Local radio stations
- Coordination with Laboratory Public Affairs Office; broadcasts on local TV stations.

6.0 CONSEQUENCE ASSESSMENT

Consequence assessment involves evaluating and interpreting hazardous materials measurements or other information to provide a basis for decision making. Planning, preparedness, and response involve identifying provisions and chronological steps for a consequence assessment capability.

6.1 Initial Consequence Determination

The initial requirements for consequence assessment shall be determined by the accident sequences and potential consequences of the releases. Initially, consequence assessment will be simple, providing timely information for event classification and initial protective action decision making.

Immediately upon recognition of the indicators of an emergency, a rough estimate of the consequences is made by the Facility Manager/First Responders/Facility Personnel. To estimate the consequences, these indicators are compared to Facility Specific/General Emergency Action Levels (EALs) to determine the level of severity of the emergency. Facility personnel will immediately take necessary protective actions. Facility personnel provide the EAL classification (Alert, Site Area Emergency, General Emergency) to the Incident Commander. The Incident Commander shall as soon as possible classify the incident using all the available information (e.g., meteorological conditions, EAL, Timely Initial Assessment (TIA) tools, simple computer programs) and order the proper notifications. The Incident Commander shall immediately assess the emergency conditions upon arrival at the scene to determine the response and resources required to bring the emergency under control. On-scene initial consequence assessment may involve the analysis of physical indicators, use of TIA tools, and/or simple Gaussian dispersion modeling performed on a portable computer.

As personnel arrive in the Emergency Operations Center, the Emergency Technical Support Center can provide large-scale consequence assessments (i.e., within and beyond the Emergency Planning Zone) and/or long-time release data of hazardous materials. To perform dispersion calculations, the Emergency Technical Support Center uses real-time meteorological data and documented hazards assessment for the specific facility involved. Specific procedures and methods are found in the EMPIPs.

6.2 Continued Consequence Determination

The Incident Commander continues the assessment of the emergency. This may include:

- Calling for additional qualified emergency personnel and equipment to assist in determining the appropriate assessment and protective action decisions, including projections of Laboratory and offsite consequences; and

- Requesting appropriate monitors and evaluators for the specific indicators necessary to continually assess the consequences of emergency events and to monitor safety, health, environmental, and security conditions that may affect or intensify the emergency.

Continual modeling of plumes, as generated by the Emergency Technical Support Center, may indicate an immediate response, such as a specific protective action decision. These models rely on a set of default assumptions. In these cases, it is appropriate to use assumptions that maximize potential exposures and doses and minimize the time available for protective actions. The Emergency Technical Support Center will continually update the meteorological conditions, integrate the field data to refine the source term, and normalize the modeling.

As the emergency escalates, consequence assessment will provide for continuing assessments of the effects of the accidental release during the course of the emergency. Backup equipment and personnel may be necessary to permit continuing consequence assessments. Common communications shall exist between all personnel involved in lengthy consequence assessment.

The post-emergency assessment provides the basis for decisions about reentry, recovery, and return to normal operations. The post assessment is helpful for the analysis of actual accident conditions for the purposes of critique and lessons learned. The collection and retention of data compiled during the emergency is valuable for the assessment of the decisions and actions taken and may be required for investigation purposes.

6.3 Coordination

Emergencies at the Laboratory will be assessed either at the scene or by the Emergency Technical Support Center. The Emergency Operations Center, based on recommendations of the Emergency Technical Support Center, will coordinate with federal, state, tribal, and local organizations to locate, track, and recover hazardous materials released to the environment, especially those with national security implications. The Emergency Operations Center will estimate the integrated impact of such releases on the public and the environment. Results of the consequence assessment will be made available to federal, state, local and tribal agencies through the formal notification procedures established in the EMPIPs.

7.0 PROTECTIVE ACTIONS AND RECOVERY

The Laboratory is responsible for ensuring that timely recommendations for specific protective actions are taken in response to emergency conditions involving hazardous materials (radiological and non-radiological) at the Laboratory. The Laboratory is responsible for alerting personnel, informing offsite populace, recommending sheltering or evacuation, or taking other remedial or protective actions as the emergency demands.

In an emergency, the risk to personnel or to the public is not under control. Exposure may be limited by some form of intervention or protective action. The Protective Action Guides and Emergency Response Planning Guidelines provide guidance to the decision maker as to what essential protective actions are required. Further, the Protective Action Guides and Emergency Response Planning Guidelines discourage those protective actions that would result in net harm to personnel. The recommended protective action will most likely be made under emergency conditions, yet based on the risks and costs incurred by taking the action.

Provisions are in place for specific actions to be taken in response to emergency conditions as discussed in Section 2.3. To protect Laboratory personnel and the public, the following provisions have been made for protective actions.

- The Emergency Management and Response (EM&R) Office will make timely recommendations through appropriate routes to notify federal, state, tribal, or local authorities of protective actions, such as sheltering or evacuation, for the general public. These procedures are detailed in the EMPIPs.
- The Protective Action Guides and Emergency Response Planning Guidelines are prepared in conformance with DOE-approved guidance. These guides are applicable to the actual or potential release of hazardous materials to the environment and may be used in protective action decision making. Section 7.1 discusses these guides in more detail.
- Limited on-scene hazardous material decontamination is provided by the Hazardous Materials Response Team. Decontamination is also available at area medical facilities by trained medical personnel with assistance from trained Environment, Safety, and Health (ES&H) Division personnel. Contaminated equipment may be properly packaged and transported to TA-50 to the decontamination facility.
- Any personnel contamination determinations made by the Hazardous Materials Response Team or other ES&H Division responders will be documented and the results transmitted to the appropriate medical facility.
- If the Resource Conservation Recovery Act (RCRA) applies to the incident, the Los Alamos National Laboratory Hazardous Waste Facility Permit, Attachment D (Contingency Plan) will be invoked.

Guidance on criteria to use in planning protective actions for radiological emergencies is published by the Environmental Protection Agency (EPA) and, for emergency exposure situations, see 10CFR835. Non-radiological emergencies shall use the *Emergency Response Planning Guidelines and Workplace Environmental Exposure Level Guides Handbook*, published by the American Industrial Hygiene Association. If Emergency Response Planning Guidelines have not been published for the material of concern, the Laboratory will develop or use Temporary Emergency Exposure Limits (TEELs) using DOE-approved methodology.

7.1 Protective Action Guides

The Laboratory uses the EPA's Protective Action Guide, which is defined as "the projected dose to reference man, or other defined individual from an unplanned release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended." The Protective Action Guide values should reflect a balance of risks and costs to onsite personnel, public health and safety, and the environment, weighed against the benefits obtained from the protective actions.

There are three time phases common to nuclear incident sequences; within each, different considerations apply to most protective actions. These time phases are termed Early, Intermediate, and Late Phases.

- **Early Phase.** The Early Phase (emergency phase or plume pathway) is the initial period of a nuclear incident when immediate decisions for effective use of protective actions are required and must therefore usually be based on the status of the facility (or other incident site) and the prognosis for worsening conditions. The immediate concern is dose avoidance from the inhalation of gases or particulate plumes, direct whole body exposure from the radiation source or plumes, and immediate physical harm from fire, explosions, terrorist acts, or other security incidents. Protective actions based on the Protective Action Guide may be preceded by precautionary actions during this period. This phase may last from hours to days.
- **Intermediate Phase.** The Intermediate Phase (ingestion pathway) is the period beginning after the source and releases have been brought under control and reliable environmental measurements are available for use as a basis for decisions on additional protective actions. The concern during the Intermediate Phase is with regard to contamination of food, water, and pasture and any continuing release or exposure from deposition. This phase may last from weeks to many months.
- **Late Phase.** The Late Phase (recovery phase) is the period beginning when recovery actions designed to reduce radiation levels for unrestricted use are begun, and ending when all recovery actions are completed. This phase may last from months to years.

Protective Action Guides for the Early Phase and Intermediate Phase, and for Emergency Workers are summarized in Tables 7-1 to 7-4 at the end of Section 7.1. Table 7-1 presents the Protective Action Guides for the Early Phase. The calculation of projected doses should be based on realistic dose models, to the extent practicable. Doses incurred before the initiation of a protective action should not be included. Similarly, doses that may occur from food or water,

long-term exposure to deposited materials, or long-term inhalation of resuspended materials should not be included for decisions on whether to shelter or evacuate in the early phase. In practical applications, dose projection will usually begin at the time of anticipated (or actual) initiation of release. For those situations where significant dose has already occurred before implementing protective action, the projected dose for comparison to a Protective Action Guides should ***not*** include this prior dose.

Table 7-2 presents the Protective Action Guides for the Intermediate Phase (ingestion pathway), adopted by the U. S. Food and Drug Administration in FDA 83-8211. Table 7-3 presents the EPA's Intermediate Phase Protective Action Guides for exposure to deposited radioactivity. It is an objective of the Intermediate Phase Protective Action Guides to ensure that doses in any single year after the first year (2 rem from first year) will not exceed 0.5 rem, and the cumulative dose over 50 years (including first and second years) not exceed 5 rem. Projected dose considers exposure rate decay and, generally, weathering. Protective Action Guides for the Late Phase have not yet been developed by the EPA.

The Protective Action Guides for emergency workers, based on DOE guidance, are presented in Table 7-4. For radiation exposure levels, planned exposure for protection of property and personnel should be limited to 10 rem, as per 10CFR835.202. Under special circumstances, workers may be permitted to receive a dose of 25 rem to the whole body and 125 rem to the thyroid. To avoid unnecessarily restricting action, a rigid upper limit of exposure for lifesaving action is not specified; rather, judgment is left up to officials in charge to evaluate any proposed action involving further exposure. Requests to allow this level of exposure should be evaluated, and consideration should be given to previous exposure history, age of worker (potential future exposure and if reproduction is a factor), and assurance that individuals are volunteers.

The potential for various types of radiological emergencies exists at the Laboratory. Radiation monitoring personnel are assigned to buildings involved in radiological work. Radiation monitoring personnel are qualified to take readings for determining possible exposure levels. When a Laboratory radiological emergency or activation of an alarm occurs, evacuate the building. If possible, the resident Radiological Control Technician shall exit with portable equipment, monitor the area of assembly, and meet the Incident Commander for a briefing and assignment. In addition to the local Radiological Control Technician, the Hazardous Materials Response Team may be deployed to the scene and will request additional radiological resources as needed.

Airborne releases of radiological material allows for rapid dispersion over a large area in a short period of time. The Emergency Technical Support Center has a plume modeling program in place to estimate the consequences of an airborne release. Releases of liquids may present unique problems as a result of flowing into drains, ditches, sewers, or surrounding canyons. Liquid spills are usually controlled by pooling the liquid as close to the source as possible. The pooled liquid may then be absorbed or pumped into an appropriate disposal vessel.

Table 7-1. Early Phase Protective Action Guides

Projected Dose (rem) to the Population	Recommended Actions
< 1*	No planned protective actions. Previously recommended protective actions may be reconsidered or terminated.
1 to < 5*	Seek shelter as a minimum. Evacuation and/or shelter in place should be considered. Monitor environmental contamination levels. Control access.
> 5*	Potential evacuation or mandatory shelter in place. Monitor environmental levels and adjust area for potential evacuation based on these levels. Control access.
> 25**	Possible administration of appropriate chelating agents (requires the approval of state medical officials).

*The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent incurred from all significant inhalation pathways during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively.

**Committed dose equivalent to the thyroid or other internal organs including bones from radioiodine.

Table 7-2. Intermediate Phase, Ingestion Pathway (Radiological) Protective Action Guides

Projected Dose (rem) to the Population via the Food Pathway	Recommended Actions
Whole Body > 0.5 and < 5 Thyroid > 1.5 and < 15	Preventive Protective Action Guides—Take protective actions having minimal impact to prevent or reduce the radioactive contamination of human food or animal feeds. Protective actions may include washing all produce, destroying produce, delaying harvest, taking farm animals off pasture, and restricting drinking surface waters.
Whole Body 5 and above Thyroid 15 and above	Emergency Protective Action Guide—Isolate food containing radioactivity to prevent its introduction into commerce and determine whether condemnation or another disposition is appropriate. Protective actions may include discarding contaminated milk and milk products, relocating the general public, controlling access, and decontaminating people and property.

Table 7-3. Intermediate Phase, Deposited Radioactivity Protective Action Guides

Projected Dose (rem) to the Population for Exposure to Deposited Radioactivity*	Recommended Actions
< 2 rem	Apply simple dose reduction techniques. These protective actions should be taken to reduce doses to as low as reasonably achievable levels.
≥ 2 rem	Relocate the general population.

*The projected sum of effective dose equivalent from external gamma radiation and committed effective dose equivalent from inhalation of resuspended materials, from exposure or intake during the first year.

Table 7-4. Protective Action Guides (Radiological) for Emergency Workers

Emergency Exposure Situations		
(a) The risk of injury to those individuals involved in rescue and recovery operations shall be minimized. (b) Operating management shall weigh actual and potential risks to rescue and recover individuals against the benefits to be gained. (c) Rescue action that might involve substantial personal risk shall be performed by volunteers. (d) Each individual selected shall be trained in accordance with 10CFR835.902 and briefed beforehand of the known or anticipated hazards to which the individual will be subjected. (e) The dose limits for individuals performing these operations are given below.		
Dose Limit (Whole Body)	**Activity Performed**	**Conditions**
5 rem*	All	
10 rem	Protection of major property.	Where lower dose limit is not practicable.
> 10 rem	Lifesaving or protection of large populations	Where lower does limit is not practicable.
>25 rem	Lifesaving or protection of large populations	Only on a voluntary basis to personnel fully aware of the risks involved.

*The lens of the eye dose limit is three times the listed value. The shallow dose limit to the skin of the whole body and the extremities is ten times the listed value. These doses are in addition to and accounted for separately from the doses received under the limits in 10CFR835.202 and 10CFR835.205.

7.2 Emergency Response Planning Guidelines

Table 7-5 at the end of Section 7.2 presents Protective Action Guides for airborne releases of hazardous chemicals. Release of materials outside a building resulting in limits above the exposure limits may require evacuation of the building; however, first consideration shall be given to sheltering in place (staying inside with doors and windows closed and intake air turned off).

The non-radiological protective actions for airborne releases of hazardous chemicals outside buildings or releases migrating outside buildings are based on the American Industrial Hygiene Association's *The Emergency Response Planning Guidelines and Workplace Environmental Exposure Level Guides Handbook.* The values given in the handbook are intended to provide estimates of concentration ranges where it is reasonable to anticipate observing adverse affects as described in the definitions below.

- **Emergency Response Planning Guideline-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.

- **Emergency Response Planning Guideline-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 an individual's ability to take protective action.

- **Emergency Response Planning Guideline-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.

Emergency Response Planning Guideline-2 shall be used as the criteria at which protective actions will be taken. If an Emergency Response Planning Guideline is unavailable for a material, or has not been developed by Laboratory personnel, appropriate decisions by qualified responding ES&H Division personnel shall be made using toxicological data.

The current American Conference of Governmental Industrial Hygienists' handbook, *Threshold Limit Values for Chemical Substances and Physical Agents*, shall be used as the Protective Action Guide for an accidental release of materials inside a room or building. The Short Term Exposure Limit shall be used as the criteria at which protective actions shall be taken. The Short Term Exposure Limit is "the concentration to which workers can be exposed continuously for a short period of time without suffering from 1) irritation, 2) chronic or irreversible tissue damage, or 3) narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue, or materially reduce work efficiency, and if the daily Threshold Limit Value Time-Weighted Average is not exceeded. A Short Term Exposure Limit is further defined as a 15-minute Time-Weighted Average that should not be exceeded any time during a workday." Accidental releases exceeding the Short Term Exposure Limit or other exposure limit will be

cause for evacuation of the area until the exposure limit returns to a safe level as determined by ES&H Division responders.

Table 7-6 presents Protective Action Guides for emergency workers for exposure to hazardous materials. The personal protective equipment recommended is the minimum required. More stringent personal protective equipment may be used where it is available and no additional risk is incurred by using it.

Table 7-5. Protective Action Guides for Hazardous Chemicals

Projected Concentration	Recommended Action
< Emergency Response Planning Guideline-1	No planned protective actions.
> Emergency Response Planning Guideline-1 and < Emergency Response Planning Guideline-2	Notification of the public. No mandated protective actions unless the projected exposure is prolonged (>1hr). Protective actions may be considered.
> Emergency Response Planning Guideline-2 and < Emergency Response Planning Guideline-3	Seek shelter as a minimum. Consider evacuation unless constraints make it impractical. Monitor environmental contamination levels. Control access.
> Emergency Response Planning Guideline-3	Mandatory evacuation. Monitor environmental levels and adjust area for evacuation based on these levels. Control access. Seek shelter if evacuation is not immediately possible and duration of exposure is short (minutes).

Table 7-6. Protective Action Guides (Non-Radiological) for Emergency Workers

Projected Concentration Limit to Emergency Workers	Recommended Actions
< Short Term Exposure Limit	No protective actions required unless activities exceed 15 minutes.
> Short Term Exposure Limit and < Immediately Dangerous to Life and Health	Personal protective equipment and air purifying respirators required. Self-contained breathing apparatus required in certain instances.

7.3 Records

After an emergency involving contamination, the Incident Commander or other emergency official may authorize personnel to be examined, tested, and treated at a medical facility. Personnel background exposure records, initial exposure levels, and subsequent treatment shall be documented by the appropriate ES&H Division groups. Laboratory personnel and emergency responders working in and responding to areas containing hazardous materials are required to have routine physical examinations to monitor the effects of possible exposure.

Offsite emergency response personnel shall be monitored for exposures to hazardous materials by qualified Laboratory personnel. Exposure monitoring shall be documented by the ES&H Division Records. Logs of the emergency operation will be collected by the Emergency Management and Response Office and later moved to a permanent archive. Paper records are kept by Emergency Management in accordance with 36CFR1228. Audio recording of telephone and radio transmissions are archived for one year.

7.4 Personnel Accountability/Evacuation

Emergency information will be posted in each Laboratory building. Visitors to the building will be briefed on evacuation exits, routes, location of assembly areas, types of alarms, and other applicable emergency procedures. Laboratory facilities shall be able to identify any missing persons or establish that no persons in the facility are in need of assistance or rescue within 30 to 45 minutes from the recognition and classification of an emergency. The objective of accountability and sweep procedures is to ensure that search, rescue, and assistance efforts can be initiated promptly to help provide for the safety of facility personnel who my be injured, trapped, or unaware of the emergency condition. The building emergency plan shall include details for predetermined shelter/evacuation criteria, assembly areas, transportation methods, and evacuation routes. The appropriate member of the Emergency Response Organization will search for missing personnel. The Building Manager or representative must report to and remain at the Command Post until released by the Incident Commander.

To control offsite personnel exposures to hazardous materials in an emergency, the Laboratory has the authority to establish roadblocks within the DOE Federal Reservation boundaries to prohibit and control the movement of vehicular traffic through or adjacent to the Laboratory during emergencies. The Los Alamos Police Department and New Mexico State Police may be requested to establish roadblocks as necessary in their jurisdictions; Laboratory security services will establish onsite or perimeter blocks.

7.5 Reentry

7.5.1 Reentry for "Rescue and Recovery"

Requirements to be met when conducting reentry operations for rescue and recovery operations in response to a radiological hazard are contained in 10CFR835.1302. 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 any type of hazardous material response. The regulation begins with three basic principles: "1) The risk of

injury to those individuals involved in rescue 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."

7.5.1.1. General Considerations. The risk of injury to persons involved in rescue and recovery activities should be minimized, to the extent practical. Control of exposures should be consistent with the immediate objectives of saving human life; protection of health, property, and the environment; and recovering deceased victims.

- Personnel who are managing response activities should exercise judgment to evaluate any proposed action involving exposure. Evaluation should consider risk versus benefit; e.g., weighing the risks of health impacts, actual or potential, against the benefits (social, economic, etc.).
- Before dispatching any reentry teams, the Incident Commander should ensure that the activities have been coordinated with the head of the organization providing the reentry team members. For example, if the fire department is providing the reentry personnel, the Incident Commander will coordinate with the responsible fire department officer on the scene. This coordination should ensure that all operational and safety concerns are resolved prior to team dispatch.
- The EPA has prepared and published guidance and criteria for controlling exposures to radiological hazards in the *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.* EPA limits for workers performing emergency services apply only to doses incurred during an emergency. Per 10CFR835.202(a), exposures received in emergency exposure situations resulting from DOE activities are not included in meeting the occupational exposure limits to general employees. The EPA manual also provides tables with general information that may be useful in advising workers of risks of acute and delayed health affects associated with large doses of radiation.

7.5.1.2 Emergency Situations. Dose criteria and judgment factors for three types of emergency action—saving of human life or protection of large populations, protection of health and property, and recovery of deceased victims—are discussed below. Requirements for emergency exposure during rescue and recovery activities are contained in 10CFR835.1302.

- **Saving of Human Life or Protection of Large Populations.** If the victim is considered to be alive, the course of action should be determined by the Incident Commander and the Incident Commander's staff. The potential amount of exposure to rescue personnel should be evaluated, and an exposure objective should be established for the rescue mission. The evaluation of the inherent risks should consider:
  - The reliability of the prediction of injury from measured/estimated exposure rates. In this context, consideration should be given to the uncertainties associated with the specific instruments and techniques used to estimate the exposure rate. This is especially crucial for exposure to radiation when the estimated dose approximates 100 rad (1 gray) or more.

- The effects of acute external and/or internal exposure.
- The capability to reduce risk through physical mechanisms such as the use of protective equipment, remote manipulation equipment, or similar means.
- The progress of mitigative efforts that would decrease or increase risk.
- The probability of success of the rescue action.

- **Protection of Health and Property.** When the risk (probability and magnitude) of the hazard either bears significantly on the state of health of people or may result in loss of property so that immediate remedial action is needed, the following criteria should be considered:
  - When it is deemed essential to reduce a potential hazard to protect health or prevent a substantial loss of property, a planned exposure objective for volunteers should be established not to exceed 10 rem (0.1 sievert) for an individual in a year. Under special circumstances, an exposure objective for volunteers not to exceed 25 rem (0.25 sievert) in any one year may be set.
  - When the risk of exposure following the incident is such that life might be in jeopardy, or there might be severe effects on health or the public or loss of property inimical to the public safety, the criteria for saving of human life should apply.

- **Recovery of Deceased Victims.** The recovery of deceased victims should be well planned. Except as provided below, the amount of exposure received by persons in recovery operations should be controlled within existing occupational exposure limits.
  - When fatalities are located in inaccessible areas due to high risk, and when the recovery mission would result in exposure in excess of occupational exposure limits, special remote recovery devices should be considered for use in retrieving bodies.
  - When it is not feasible to recover bodies without personnel entering the area, the official in charge may approve personnel to exceed occupational exposure limits. This approval, for an individual, should not exceed 10 rem (0.1 sievert) in any one year.

7.5.2 Reentry for Other than "Rescue and Recovery"

Reentry is a planned activity that is conducted to determine or verify the status of building conditions. Normally reentry into buildings is made when the emergency situation is under control and more deliberate planning can be made for the necessary activities that need to be performed. Before the initial reentry, the following considerations shall be included in the planning:

- Assessment of hazardous material surveillance data to determine buildings potentially affected;

- Review of exposure histories of personnel required to participate in reentry operations;
- Determination of equipment of adequacy for monitoring and survey instrumentation;
- Review and revision of security access lists to prevent unauthorized or unintentional entry into hazardous areas; and
- Review of survey team plans. This review includes all of the following:
  - anticipated contamination levels
  - survey equipment required
  - shielding requirements and availability
  - protective clothing and equipment required
  - access control procedures including exposure control limits and personnel dosimetry requirements
  - decontamination requirements
  - communications requirements.

Reentry teams shall be tasked with as many of the following tasks as required:

- Determine the initial required recovery operations including personnel rescue;
- Perform hazard, casualty, or damage assessment;
- Conduct comprehensive surveillance of facilities;
- Isolate and post areas;
- Assess conditions of building equipment and structures;
- Re-establish building security;
- Restore or operate equipment (as qualified) to provide vital services for the building; and
- Perform materials control and accountability functions (as qualified).

Reentry will include the use of appropriate protective clothing and respiratory protection and shall include a detailed plan (including criteria and signals) for aborting reentry.

Detailed planning, consideration of all safety precautions, and approval of the Incident Commander with concurrence of the Emergency Director (if the Emergency Operations Center is activated) is required before entering any of the following:

- Toxic or radioactive atmospheres
- Oxygen-deficient atmospheres
- Areas with downed power lines
- Areas with fire, explosion, or structural collapse
- Areas with special nuclear materials
- Flooded areas that may have energized electrical circuits.

Emergency reentry is governed by exposure control considerations and may be limited to existing occupational exposure limits as determined by the appropriate safety personnel. Entry into hazardous atmospheres will require adequate protective and monitoring equipment. **Exposure for response personnel will not exceed 25 rem unless for life saving attempts. All planned exposures above normal occupational limits are voluntary and require the permission of the Incident commander or Emergency Director** (if the Emergency Operations Center is activated). Employees receiving exposures in excess of occupational limits will be reviewed by Occupational Medicine personnel who may apply appropriate restrictions and remedial actions.

7.5.3 Offsite Reentry

In Laboratory emergencies involving offsite populace, reentry is the responsibility of local and state authorities with input and guidance provided by the Laboratory. This assistance typically consists of environmental monitoring and assessment of action necessary to support restoration.

7.6 Emergency Planning Zones

The Emergency Planning Zone for the Laboratory has been developed in accordance with DOE O 151.1 through the hazards assessment process. A complete description and basis for establishing the Emergency Planning Zone, and for establishing Emergency Planning Zones for individual facilities, is found in the Laboratory's *Hazards Assessment for Emergency Planning Zones* document. The Emergency Planning Zone determinations for Laboratory facilities are based on a spectrum of potential accidents ranging from minor to beyond design basis. The Emergency Technical Support Center/Incident Command Staff will recommend protective actions to the Incident Commander/Emergency Director in accordance with established procedures. The Incident Commander/Emergency Director will specify any evacuation routes, areas of sheltering, recommendations to surrounding jurisdictions, and other criteria relating to protective actions for affected persons.

The Emergency Planning Zone selected conforms to natural and jurisdictional boundaries, is large enough to support an effective response at and near the scene of an emergency, and would provide the capability of extending response activities outside the Emergency Planning Zone if conditions warrant. The maximum distances to Protective Action Guide or Emergency Response Planning Guideline level impacts for most of the analyzed accident scenarios fall within the selected Emergency Planning Zone.

The Emergency Planning Zone for the Laboratory includes all or portions of Los Alamos County, Santa Fe County, Sandoval County, San Ildefonso Indian Pueblo, Bandelier National Monument, National Park Service, and General Service Administration lands. Emergency preparedness is accomplished through planning with these respective agencies. Within these planning areas, protection of the public is accomplished by sheltering, evacuation, and access controls as provided for in state, county, and tribal emergency plans. The principal concern within the planning area is direct exposure from a passing plume of hazardous materials. Also of concern is long-term exposure from contaminated ingested materials. Close monitoring of ingestible materials such as water, crops, livestock, and wildlife is performed.

There are no major industrial facilities located within the Laboratory's Emergency Planning Zone. In addition to the Los Alamos townsite, (which has various businesses, schools, a hospital, etc.), Bandelier National Monument and Santa Fe National Forest Service Land are public use facilities of concern. The general topography and land use within the Emergency Planning Zone is the same as for the Laboratory, as described in Section 1.4.2.

The Laboratory Emergency Planning Zone (Figure 7-1) is specifically defined as follows:

- All of Los Alamos County;
- The section of Sandoval County which is triangular in shape and located on San Ildefonso Pueblo;
- The portion of Sandoval County which is northeast of Alamo Canyon and includes Bandelier National Monument and Santa Fe National Forest Land;
- The portion of Bandelier National Monument which is adjacent to Los Alamos County and lies northwest of the Rio Grande River;
- The portion of Santa Fe County which is adjacent to Los Alamos County and lies northwest of the Rio Grande River;
- The portion of San Ildefonso Pueblo which is adjacent to Los Alamos County and lies west of the Rio Grande River and south of State Road 4;
- The General Services Administration facilities which are located within Los Alamos County;
- The portion of the Santa Fe National Forest which lies within the preceding descriptors.

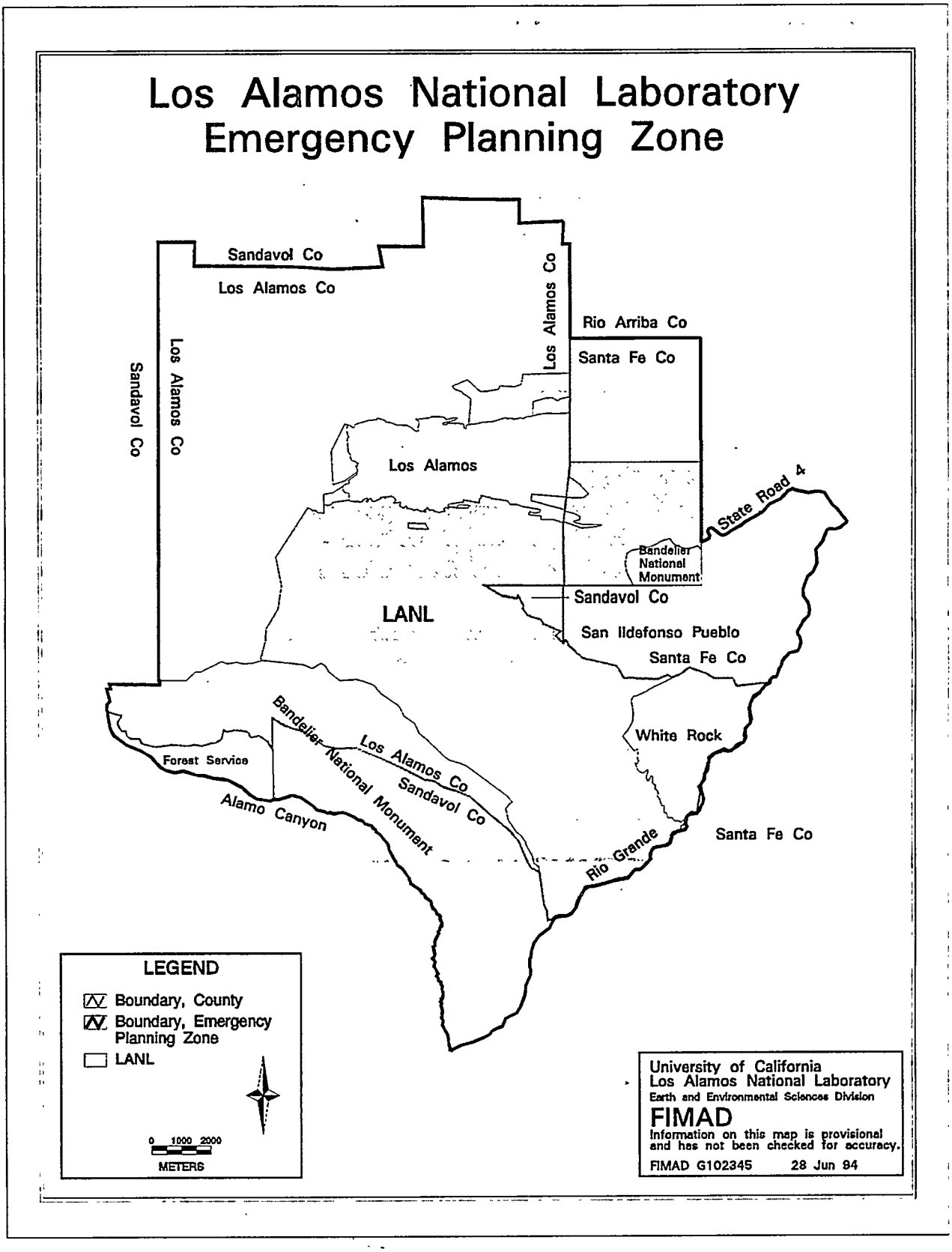

Figure 7-1. Laboratory Emergency Planning Zone

7.7 Communication

Protective action recommendations will be coordinated with affected local, county, tribal, and state officials. Communications can be relayed through the Community Alert Network, Site Wide Area Notification System (SWANS) radios, local cable television, and local radio stations. Timely notification and communication (see Chapter 5) to offsite personnel will be provided, including updates on the emergency.

7.8 Termination of Protective Actions

Actions for termination and recovery are included in Chapter 9 of this Emergency Management Plan.

7.9 Shutdown of Operations

Shutdown operations are the responsibility of the affected building personnel. Building emergency plans and associated procedures shall cover shutdown of all operations for emergencies and normal operations. Specific emergency operating procedures shall also be available to assist the operators in placing operations in a safe condition. In addition, operating personnel shall be trained in the operation of the systems and be capable of taking appropriate corrective actions based on their training, knowledge, and experience.

Personnel should meet arriving emergency responders and give them information about conditions, processes, actions taken, and the exact location of the problem. These personnel should remain at the Incident Command Post to provide further information until dismissed.

8.0 MEDICAL SUPPORT

Medical support at the Laboratory encompasses immediate medical care, transportation of injured persons to medical facilities, and provisions for offsite care and treatment. This support is provided by the Occupational Medicine Group in the Environment, Safety and Health (ES&H) Division. The Occupational Medicine Group is located in the onsite Occupational Medicine Facility (TA-3-409).

8.1 Emergency Treatment Procedure

Occupational Medicine provides emergency treatment to employees of the Laboratory, security services, support services, fire department services, and the DOE Los Alamos Area Office. Other personnel, including contract personnel, subcontract personnel, and visitors, may also receive emergency treatment. Additionally, Occupational Medicine may respond to the scene of an emergency. Occupational Medicine may consult with offsite medical personnel concerning the follow-up treatment of patients treated offsite for job incurred injuries or illnesses.

The Emergency Management and Response (EM&R) Group notification procedure includes alerting Occupational Medicine in the event of emergencies involving Laboratory personnel in work-related accidents or hazardous releases. In an off-hours Laboratory emergency, the Incident Commander will notify the on-call Occupational Medicine representative for response, assistance, or advice as the emergency warrants. Responders will be responsible to and receive their assignment from the Incident Commander.

The Laboratory has one clinic, the Occupational Medicine Facility, equipped to deal with injuries or illnesses. Hours are 8:00 am to 5:00 pm weekdays and the telephone number is 667-0660. Patients requiring extended observation or treatment will be sent to local hospitals.

Evaluation and treatment for accidents involving hazardous material (radiological and non-radiological) contamination is provided by the Occupational Medicine Facility. The TA-55 Emergency Response Team, with the help of ES&H Radiological Control Technicians, provides emergency assistance and decontamination for Plutonium Facility personnel if the person is medically stable. More extensive decontamination at an emergency scene may be provided by the Hazardous Materials Response Team.

The Los Alamos Medical Center emergency room is equipped to handle seriously injured or ill patients. St. Vincent Hospital in Santa Fe is the primary referral center. The Espanola Valley Hospital in Espanola may be used for medical services in a mass casualty event.

Outside normal work hours, individuals with job-incurred injuries and illnesses, including patients contaminated with hazardous material, shall be referred to the Los Alamos Medical Center for treatment. The Los Alamos Medical Center will make arrangements for further medical evaluation and treatment.

The Occupational Medicine staff participates in drills and exercises at the Laboratory. The Occupational Medicine Group has its own procedures, which are contained in the Environment, Safety and Health Emergency Operations Plan.

8.2 Staff

The Occupational Medicine Group Leader has overall responsibility for medical activities at the Laboratory. The Occupational Medicine Facility has physicians, physician assistants, nurses, and related personnel who assess the condition of patients, provide necessary emergency care, and determine appropriate supplemental treatment. In the event of mass casualties, a Laboratory triage team from Occupational Medicine can be sent to the accident if indicated. If required, a temporary first aid station would be established upwind of the accident scene. All Laboratory medical documentation resides in files located at the Occupational Medicine Facility at TA-3-409.

All Occupational Medicine full-time registered nurses, physician assistants, and physicians have received radiation training at the DOE Radiation Emergency Assistance Center/Training Site. This training has also been provided to personnel at the Los Alamos Medical Center and St. Vincent Hospital.

8.3 Equipment

Employees with radiological or chemical contamination may undergo initial decontamination at the emergency scene from the Hazardous Materials Response Team using the team's equipment and procedures. Should the severity of the injury require immediate medical evacuation, treatment shall not be delayed to decontaminate the patient(s). They shall be wrapped to contain contamination and transported to a medical facility. Decontamination rooms with appropriate equipment and monitors are available at the Occupational Medicine Facility and the Los Alamos Medical Center.

Each medical decontamination and treatment center shall include:

- A designated contaminated patient entrance and procedures to restrict spread of contamination; and
- An area equipped for removing and disposing of readily transferable contamination.

Chemical contamination monitoring and monitoring for internal or external radiological contamination is conducted by trained ES&H Division personnel. Decisions regarding further decontamination or removal of radionuclides or chemicals from a patient shall be made by a physician or physician assistant after consultation with ES&H Division personnel. Follow-up biological sampling may be arranged by ES&H personnel.

If possible, Material Safety Data Sheets and other helpful information concerning the emergency shall be attached to the victim(s) or sent in the ambulance at the time of transport. The Incident Commander shall ensure that a Health Physics and/or Industrial Hygiene representative is dispatched to the receiving medical facility to survey the contaminated victim(s) and advise the facility on decontamination. The group or affected building personnel shall also send a

knowledgeable representative to the medical facility decontamination area. A medical representative from the Laboratory Occupational Medicine Group may make contact with or go to the offsite medical facility to assist as needed. In accordance with the Radiological Assistance Program (RAP), the Radiological Emergency Medical Team can be activated to assist at the receiving medical facility.

Onsite analysis of bioassay samples and whole body counting is available. These will be requested by the Occupational Medicine staff.

In the event of a plume shift, either the Occupational Medical Facility or the Los Alamos Medical Center would become the primary treatment facility for the emergency.

8.4 Transportation and Evacuation

Arrangements for transportation of injured personnel to offsite medical facilities will be provided by the Los Alamos County Fire Department, which maintains ambulances on a 24-hour basis. Air ambulance service is available from Albuquerque. Evacuation or removal of victims or patients is the responsibility of the Los Alamos Fire Department unless directed otherwise by the Incident Commander.

Private automobiles or government vehicles may be used for non-emergency transportation to medical facilities. Private autos are not to be used to transport contaminated or potentially contaminated patients.

8.5 Agreements

The Los Alamos Medical Center, St. Vincent Hospital, and Española Valley Hospital have agreed in Memorandums of Understanding to accept injured personnel, including those from radiological accidents and hazardous materials accidents, for emergency medical and/or surgical treatment and for observation. Copies of these Memorandums of Understanding are on file in the DOE Los Alamos Area Office and Occupational Medicine.

The DOE's Radiation Emergency Assistance Center/Training Site provides 24-hour direct or consultative assistance regarding medical and health physics problems associated with radiation accidents. The team has expertise in, and is equipped to conduct, medical and radiological triage; decontamination procedures and therapies for external contamination and internally deposited radionuclides; diagnostic and prognostic assessments of radiation induced injuries; and radiation dose estimates by methods that include cytogenetic analysis, bioassay, and in vivo counting.

8.6 Communications

The Los Alamos County Fire Department ambulances are equipped with radios for communication with the Los Alamos Medical Center, Occupational Medicine, and the ambulances, hospitals, Occupational Medicine, and the EM&R Office all have radios on the state medical frequency.

During an emergency, either the Incident Commander or the Occupational Medicine personnel may request notification. The Emergency Operations Center may be tasked with the notifications or they may be done by the Incident Command staff or the Occupational Medicine staff. There is also a direct line from the Emergency Operations Center to Occupational Medicine.

9.0 EMERGENCY TERMINATION AND RECOVERY

Termination and recovery are two separate but related activities, each with its own purpose and implementation concerns.

- ***Termination***—Termination is the conclusion of an Operational Emergency and includes a determination of when it is appropriate to cease emergency response activities and make associated notifications. The termination process begins when personnel in charge of the response effort determine that conditions are sufficiently stabilized to enable a comparison of them to pre-established decisional criteria. The termination decision and subsequent notification that an event no longer constitutes an Operational Emergency marks the beginning of recovery.

- ***Recovery***—Recovery is defined as those actions taken after a facility has been brought to a stable or shutdown condition to return the facility to normal operation. The recovery period begins when the emergency response to an Operational Emergency is declared terminated. The recovery phase continues until the facility and any affected areas meet predetermined criteria for the resumption of normal operation or use. The types of activities that could be conducted during the recovery phase include, but are not limited to, damage assessment, environmental consequence assessment, long-term protective action determinations, facility and/or environmental restoration, and dissemination of information. Some activities required to implement recovery are similar to those performed during reentry in that they may involve entering a facility or affected area in which hazardous materials have been released. (Reentry activities are discussed in Section 7.5.)

9.1 Emergency Termination

Terminating an emergency requires the approval of the Incident Commander and concurrence of the Emergency Director (if the Emergency Operations Center is activated). Notifications of termination shall be made to Laboratory management and DOE management. The following criteria must be met before terminating an emergency and initiating recovery operations:

- The facility/site and DOE management, in consultation with appropriate offsite agencies, do not identify a valid reason to continue operating in the emergency response mode.
- Radiation or hazardous material exposure levels within the affected facility or area(s) are stable or decreasing with time.
- The affected facility or site is in a stable condition and there is a high probability that it can be maintained in that condition.
- Fire, flood, earthquake, or similar emergency conditions no longer constitute a hazard to critical systems/equipment or to personnel.
- Releases of hazardous material to the environment have ceased or are controlled within permissible regulatory limits and the potential for an uncontrolled release is low.

- Existing conditions no longer meet the established emergency categorization or classification criteria, and it appears unlikely that conditions will deteriorate.
- No surveillance relative to protective actions is needed, except for ingestion pathway concerns and contamination and/or environmental assessment activities.
- The needs of all contaminated/injured personnel have been fulfilled.
- All initial emergency notifications have been completed.
- Access to affected areas necessary for conducting recovery operations has been assessed.
- The incident scene can be preserved until cognizant investigative authority concurs that recovery operations may begin.
- Initial recovery activities have been clearly identified and prioritized.
- The recovery staffing plan has been developed and approved, and can be implemented.

9.2 Recovery

Recovery includes those actions necessary to return an incident and the surrounding environment to pre-emergency conditions. Exposure levels are established for estimating dosage and for protecting workers and the general public from hazardous exposure during recovery activities. The Incident Commander, with concurrence of the Emergency Director (if the Emergency Operations Center is activated) is responsible for determining when an emergency situation is sufficiently stable to enter the recovery phase. The Emergency Operations Center Notification Specialist disseminates information regarding the relaxation of public protective actions. The Emergency Director (if the Emergency Operations Center is operational) or the Incident Commander (if the Emergency Operations Center is not operational) is responsible for coordinating recovery activities by appointing a Recovery Manager who is responsible for putting together a recovery organization. The recovery organization develops and coordinates plans and schedules for recovery operations.

The Emergency Director/Incident Commander, with site and Facility Manager concurrence, shall ensure that the following items are addressed prior to initiating the recovery plan:

- Recovery strategy;
- Recovery tasks and assignments;
- Notifications;
- Logistical support needs;
- Offsite logistical support needs; and
- Appointment of a Recovery Manager.

9.3 Recovery Organization

Prior to termination of the emergency, the Recovery Manager is appointed, a recovery organization is established, and the resources needed to begin recovery operations are determined. The Recovery Manager shall report to the Emergency Director (or other designated person) until completion of the recovery plan. The Recovery Manager will coordinate the

implementation of the recovery plan and authorize recovery actions using the necessary management, security, organizations, or other pertinent groups. The Recovery Manager's division or office will be responsible for providing administrative, logistical, communications, and personnel support for the recovery effort.

A partial list of personnel reporting to the Recovery Manager and a description of their tasking follows.

- The appropriate Security and Safeguards (S) Division representative is responsible for ensuring that repairs and/or modifications will optimize post-recovery Laboratory operational effectiveness and safety. Additionally, the integrity and structural soundness of buildings and systems will be ensured.
- The appropriate Environment, Safety and Health (ES&H) Division Representative is responsible for ensuring that recovery operations are in compliance with environmental regulations; that proper environmental reporting is made to local, tribal, state, and federal environmental authorities; that proper sampling is initiated; and that environmental restoration is accomplished.
- The appropriate ES&H Division representative is responsible for recovery activities related to potential personnel exposure or release of hazardous materials.
- The appropriate S Division representative is responsible for managing Laboratory security activities in support of recovery efforts.
- The Public Affairs Office Leader or designee is responsible for ensuring that appropriate information concerning recovery activities is prepared and disseminated to the news media and Laboratory employees.
- An employee counselor from the Occupational Medicine Facility is responsible for providing counseling for employees affected mentally and/or physically by the emergency.
- Occurrence reporting personnel are responsible for the investigation and for assisting the Facility Manager in filing the proper DOE O 232.1 reports.

9.4 Recovery Operations

Recovery operations can be categorized into three general areas—detailed accident assessment and investigation, recovery planning and scheduling, and facility/site/environmental repair and restoration—followed by the resumption of normal operations. Recovery actions may include the following activities appropriate to the type of emergency and post-emergency situation:

- Development of special procedures and training to meet requirements of recovery operations;
- Monitoring for hazardous materials contamination before, during, and after cleanup;
- Control and decontamination of Laboratory buildings, equipment, and/or the environment;

- Media releases through the Public Affairs Office including dissemination of information on hazardous material releases; and
- Meeting all reporting requirements (e.g., DOE, Laboratory, EPA, state).

9.4.1 Accident Assessment and Investigation

The following types of activities are included in accident assessment and investigation.

- The facility/site management, in coordination with DOE management, and ESH-7 should establish an Investigation Board to determine the root cause of the event and prepare a formal accident report.
- All documentation generated during the emergency response that is useful to accident investigation should be collected and organized.
- Engineering/Maintenance/Operations personnel should assess the condition of the affected facility including structural integrity, equipment status, hazardous material containment/confinement barriers, and safety systems.
- A comprehensive assessment of the contamination of all affected areas should be performed. As soon as sufficient information is available, consideration should be given to modification or termination of facility/site protective actions instituted during emergency response. Monitoring and laboratory analysis results should be used as the basis for determining long-term (e.g., ingestion pathway) protective actions for affected areas. (More information on long-term protective actions is contained in EPA's *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.*) Information should be provided to local and state governments concerning recommendations for long-term protective actions and the modification or termination of existing protective actions.

9.4.2 Recovery Planning and Scheduling

The following types of activities should be planned and scheduled:

- Notification to persons and agencies involved in the emergency response of the establishment of the recovery organization and the name of the person in charge.
- Evaluation of emergency plans to determine whether adequate emergency preparedness status can be maintained during degraded facility conditions (e.g., inaccessibility of assembly areas, inoperative emergency/safety instrumentation and equipment).
- Establishment of specific criteria to be met prior to the resumption of normal operations or facility use.
- Preparation of plans for the establishment of safe long-term conditions when the assessment indicates that a facility or affected area cannot be safely returned to normal operation or use.
- Identification of required repair and restoration work based on the assessment results.

- Preparation of a plan for the proper handling and disposal of all hazardous waste generated during recovery activities.
- Establishment of a Tracking Group to monitor all assigned tasks, including developing work packages, scheduling activities, and estimating costs.
- Formation of a Procedures Review Group to determine whether specialized procedures are required and should be developed, and to review and approve all special procedures.
- Continued evaluation of site or facility hazards and contamination levels as well as estimation of exposures to workers.

9.4.3 Repair and Restoration

The following items should be considered during repair and restoration.

- Ensure that occupational exposure limits are followed as indicated in 10CFR835.202 and 10CFR835.204.
- Ensure that any discharges from recovery activity are controlled within regulatory and environmental compliance limits. If discharges are necessary beyond these limits, ensure that all necessary documentation is prepared, approvals obtained, and notifications made.
- Conduct recovery activities through normal work organizations, practices, limitations, and procedures to the extent practical.
- Replenish, repair, or replace any emergency equipment or consumable materials used during emergency response.
- Train applicable personnel on changes that occurred as a result of repair, restoration, and accident investigation.

9.4.4 Resumption of Normal Operations

A final briefing to personnel including, but not limited to, recovery organization personnel, the Emergency Director, and the DOE Los Alamos Area Office Manager shall be held to discuss resumption of normal operations and requirements for final reports.

At a minimum, compliance should be required with technical specifications, operational safety requirements, health and safety regulations, and environmental regulations. Federal, state, and local organizations should be consulted prior to terminating recovery operations if required by regulation or Memorandum of Understanding. Otherwise, notifications to these organizations should be made prior to the resumption of normal operations. As required, all documentation of recovery operations should be collected and processed for permanent storage.

10.0 PUBLIC INFORMATION

This Emergency Management Plan provides guidance in the development of the Public Affairs Emergency Plan. The Public Affairs Emergency Plan provides a framework for the coordinated, accurate, and timely release of information to Laboratory employees and media. The coordination of the Public Affairs response with the Emergency Response Organization prevents the release of confusing, conflicting, damaging, and potentially erroneous information. Procedures are in place for the release of accurate information to the news media and to other state and local organizations, and for the coordination of this information with the DOE and the Emergency Operations Center Notification Specialist.

As required by DOE O 151.1, the Public Affairs Emergency Plan and its implementing procedures establish an ongoing Laboratory employee and news media information program. The Community Involvement and Outreach Office is responsible for providing information to tribal and local government. The Laboratory drills and exercise program (see Chapter 12) provides opportunities for Public Affairs Office and Community Involvement and Outreach Office involvement.

10.1 Public Information Organizations

The Laboratory organizations responsible for disseminating information to the public include the Public Affairs Office (PAO), the Community Involvement and Outreach Office (CIO), and the Government Relations Office (GRO).

- **Public Affairs Office.** Public Affairs is responsible for releasing emergency information (evacuation routes, sheltering recommendations, and other protective actions) for employees, managing employee inquiries, and disseminating information to the news media.

  The PAO designates a Public Affairs Officer as the spokesperson for the Laboratory. The level of public and news media interest may vary greatly, requiring significant public affairs activity. If an event occurs at the Laboratory categorized as an Operational Emergency, the duty Emergency Manager will notify the Laboratory Public Affairs Officer of a public or media concern. The duty Emergency Manager will notify the Laboratory of all incidents in accordance with the Emergency Management and Response (EM&R) Notification Checklists.

  The EM&R staff or the duty Emergency Manager will notify the PAO of activation of the Emergency Operations Center. The Public Affairs Officer or alternate will occupy a position in the Emergency Management Team area at the Emergency Operations Center. The Public Affairs Officer or alternate will go to the Emergency Operations Center and determine what level of public affairs response is required, including possible activation of the Emergency Media Center. Additional Public Affairs Officers may be sent to the scene at the request of the Incident Commander, the Emergency Director, or the Public Affairs Officer. Media releases will be approved by the Emergency Director and the DOE

Los Alamos Area Office. If a DOE Los Alamos Area Office representative is not available, the media release shall be issued with only the Emergency Director's approval. PAO officers on the scene also are authorized, as part of the Incident Command structure, to release information.

Notifications will be coordinated with the Notification Specialist, and CIO will be informed. The Public Affairs Officer or designated alternate will be accessible 24 hours a day by telephone or pager to receive any notifications from the duty Emergency Manager of significant events. (Appendix 2 of the PAO's Public Affairs Emergency Plan provides a phone tree for alerting people.)

- **Community Involvement and Outreach Office.** The CIO is responsible for the accurate and timely release of information to appropriate representatives of local organizations and tribal governments. The director of CIO will appoint a CIO principal who will in turn serve as the spokesperson to local organizations and tribal governments. The Laboratory Public Affairs Officer and the CIO principal will assess reporting requirements and public information needs resulting from the event.
- **Government Relations Office.** GRO is responsible for notifying the appropriate state and federal organizations.

10.2 Emergency Media Center

Upon activation of the Emergency Operations Center, the PAO may activate the Emergency Media Center located in the large conference room at Technical Area 3, Building 100. Any scheduled activities in the large conference room will be canceled when the Emergency Media Center is activated. If the primary location is inaccessible, the Study Center (TA-3-207) is the designated backup primary location. An alternate backup site is located at the DOE Los Alamos Area Office. In a secondary room, located directly behind the primary room, other Public Affairs staff act in a support role, making outside telephone calls, ordering resources, and coordinating activities with the Notification Specialist.

The PAO is responsible for staffing and equipping the Emergency Media Center as discussed in the Public Affairs Emergency Plan. As a predesignated assembly area for members of the news media, the purpose of the Emergency Media Center is to provide the following:

- A place where media may work, contact their offices, and file stories.
- A centralized location where the Laboratory can present information to the media and respond to their questions.
- A place to coordinate all of the media in a single location.

In addition to the usual office equipment, the PAO has video equipment, still photography, and graphics capability. Use of this equipment will be coordinated with the Emergency Management and Response Group. In support of its mission, the PAO supplies limited equipment to the Emergency Operations Center.

The Emergency Media Center team coordinates and releases field and Emergency Operations Center information as discussed in Section 10.1. Information classified for national security purposes or otherwise legally prohibited will not be released.

10.3 Public Education

The CIO is responsible for public emergency preparedness education and community relations. Public emergency education awareness consists of the following:

- Laboratory and offsite awareness, warning methods, procedures, and information delivery, especially for populations located within the Emergency Planning Zones;
- Public notification systems;
- Procedures to follow for protective actions, including indoor protective measures (sheltering in place) and evacuations. (The CIO is responsible for providing this information to offsite and the general public; the PAO is responsible for providing this information to Laboratory employees);
- Publication and distribution of emergency preparedness education materials;
- Participation in community-based events and exhibits in support of public emergency preparedness awareness;
- Development of information designed to prepare the populace for emergency response actions within the Emergency Planning Zone; and
- Citizen involvement in emergency preparedness and emergency response training.

The CIO must coordinate these public emergency preparedness actions with the Laboratory EM&R Office. The CIO has the responsibility to coordinate community and public information on the Laboratory emergency management practices, procedures, and capabilities. Meetings shall be held to review public affairs planning requirements for Laboratory emergencies, Laboratory offsite response, and expectations of attendees. State, tribal, and local emergency planning agencies, and local personnel will be invited to attend these meetings.

10.4 Inquiries

10.4.1 Public Inquiries

The CIO is responsible for establishing and managing the rumor control line for the public in the event of an emergency. The public can call this number (1-800-508-4400) for additional help or information. CIO staff will answer questions with approved information or research an answer as needed. The personnel operating the rumor control line shall be in contact with the CIO principal to ensure that any information released is accurate and approved by the Emergency Director.

The Community Alert Network, radio link with KRSN, and the ability to capture the local cable television network enable the Laboratory to notify Los Alamos County residents in a timely manner. These functions will be coordinated with the EM&R Group.

10.4.2 Employee and Media Inquiries

Personnel in the PAO area are responsible for establishing, managing, and operating the UPDATE rumor control line for employees and media only. The number of this line is 667-6622. If those calling need more detailed information, they can then call 667-7000. During an emergency, the personnel operating UPDATE shall be in contact with the Public Affairs representative in the Emergency Operations Center and ensure that any information released is accurate and approved by the Emergency Director. PAO will enter information, including the rumor control number, into the Laboratory online, and put the information in the daily Newsbulletin and on UPDATE for onsite personnel.

10.5 Security

Provisions are in place to ensure that information is reviewed by Classification personnel and approved by the Emergency Director before it is released.

10.6 Department of Energy Field and Headquarters Coordination

The Laboratory Public Affairs Officer must draft media releases and have them approved by the Emergency Director and the DOE Los Alamos Area Office Manager or designee and issued in accordance with the PAO's Public Affairs Emergency Plan. If a DOE Los Alamos Area Office representative is not available, the media release shall be issued with only the Emergency Director approval. The PAO provides copies of approved information to the DOE Los Alamos Area Office and the DOE Albuquerque Office concurrent with releasing the materials to the media.

11.0 EMERGENCY FACILITIES AND EQUIPMENT

Adequate and readily available emergency facilities, equipment, and materials provide the support necessary to successfully respond to and mitigate an emergency. Emergency resources are prearranged with offsite organizations to compliment onsite resources. Laboratory offsite response to offsite events is documented in Memorandums of Understanding.

Emergency response personnel will have security clearances adequate to respond to all areas of the Laboratory. The cost of acquiring and updating the badges will be the responsibility of the individuals' assigned groups.

11.1 Emergency Facilities

The Laboratory has extensive, dedicated onsite emergency facilities, equipment, and materials. The Laboratory Emergency Operations Center and the alternate Emergency Operations Center are dedicated areas for conducting, evaluating, coordinating, and managing the Emergency Response Organization. The Emergency Technical Support Center, Emergency Media Center, Central Alarm Facility, decontamination facilities, and medical facilities provide specific response activities.

Memorandums of Understanding with Los Alamos County and New Mexico State provide the Laboratory with additional offsite resources. These resources may be requested by the Incident Commander or Emergency Director.

11.1.1 Emergency Response Facilities

Emergency response facilities include the Emergency Operations Center and Alternate Emergency Operations Centers. No additional emergency response facilities currently are provided at the Laboratory.

11.1.1.1 Emergency Operations Center. The Laboratory's primary Emergency Operations Center is located at TA-59-1 in the northeast secured basement area. The Emergency Operations Center provides designated space and equipment for the Emergency Management Team, administrative support personnel, the Emergency Technical Support Team, and the Emergency Operations Center Library.

The library contains documents such as the following: current shipping manifests, EMPIPs, limited personnel information, structure location maps, limited DOE documents, Facility Manager and Building Manager listings, and current Laboratory Memorandums of Understanding. The library contents are numbered and an index is provided.

Sustained activation of the Emergency Operations Center may require water and food for the Emergency Response Organization. Local restaurants, two local food stores, and the Laboratory cafeteria may provide food and drinks to the emergency area and the Emergency Operations Center.

The Emergency Operations Center is equipped with the following:

- A ring-down telephone system for notification of up to 10 responders of the Emergency Response Organization;
- A dedicated telephone line for the DOE Albuquerque Office and one for the Incident Commander;
- Multiple roll-over type telephone lines;
- Microwave telephone lines;
- A system for recording telephone calls/radio transmissions;
- An internal communications systems;
- Televisions for monitoring commercial channels;
- Amateur radio and radio console;
- Implementing procedures, checklists, and supplies for each position and piece of equipment (operating procedures);
- Secure and nonsecure facsimile machines;
- The ARC View System, a computer software package with the capability of providing maps of Laboratory Technical Areas (with buildings given in detail), information on Laboratory facilities (e.g., hazards, equipment locations), plume display, and chemical locations depending on user information provided to the Emergency Management and Response Office;
- Computers used for a variety of purposes (e.g., status monitors, weather, ARC View, data manipulation and presentation);
- Usual office type equipment supplies;
- Still video equipment;
- Video equipment;
- AM/FM radio;
- Limited repair parts; and
- Closed circuit television to monitor building entrance.

Equipment associated with the Emergency Operations Center and the Emergency Management Office will be tested monthly. Documentation noting testing and repairs will be kept on each piece of equipment.

11.1.1.2 Alternate Emergency Operations Centers. The dedicated alternate Emergency Operations Center is located at TA-49-113 which is 10 miles, normally upwind, from the main Laboratory area. The facility is within a fenced area. The building is separated from other buildings, may be further secured, and is well ventilated. The alternate Emergency Operations Center is well equipped and, with few exceptions, as operational as the primary location. The alternate contains numerous multiple-line telephones, mobile and fixed radios with common frequencies, status boards (manned by administrative personnel for display of information), positions for the Emergency Management Team and administrative support personnel, and secure and open facsimile machines. If the nature of an emergency dictates, the alternate Emergency Operations Center may be secured commensurate with DOE policy and the Laboratory's Security Plan for classified operations.

If the two locations (TA-59-1 and TA-49-113) become disabled or unusable, the area at TA-43-39, Room 129 (the DOE Los Alamos Area Operations Building) will become the Emergency Operations Center. This facility is not well equipped but would be functional on a limited scale.

11.1.2 Emergency Technical Support Center

The Emergency Technical Support Center is located in the Emergency Operations Center. The Emergency Technical Support Center would be used in the event of a hazardous material release. The Emergency Technical Support Center will perform dispersion calculations using real-time meteorological data and documented Hazard Assessments for the specific facility involved.

11.1.3 Emergency Media Center

The Emergency Media Center is located at TA-3-100 and is the area from which information regarding the emergency is disseminated to the public via the news media by designated Laboratory Public Affairs personnel (see Chapter 10 of this plan). This center provides the following:

- Coordination of information with federal, state, tribal, and local organizations;
- Press releases and briefings to the news media;
- Work space for Laboratory Public Affairs personnel, interfacing organization personnel, and representatives of the news media;
- Communications, including telephone and facsimile service;
- Public address system;
- Audiovisual equipment;
- Copying machines; and
- Administrative supplies.

11.1.4 Offsite Communications Center

No offsite communication center exists for the Laboratory. The alternate Emergency Operations Center is located in a remote section of the Laboratory (see Section 11.1.1.2) but is still onsite.

11.1.5 Decontamination and Medical Facilities

Refer to Chapter 8, Emergency Medical Support, for a discussion of decontamination and medical facilities.

11.1.6 Security Control Centers

Security control is located at and operates from the Central Alarm Facility at TA-64, Building 1. The security and fire alarms and Laboratory 911 calls come into the Central Alarm Facility and the operators notify the appropriate responders.

11.1.7 Power Dispatch and Utility Control Center

Although they are not specifically emergency facilities, the Power Dispatch and Johnson Controls Northern New Mexico (JCNNM) Utility Control Center (UCC) receive all the alarms from the Laboratory's utility systems. These include chlorine alarms and call-in reports on water, natural gas, steam or condensate, and wastewater leaks. Power or line problems are monitored at Power Dispatch. Power Dispatch and UCC initiate the appropriate emergency response and notify EM&R.

11.2 Emergency Equipment

Adequate emergency response equipment and supplies are available, properly stored and labeled, calibrated, and operable for emergency response personnel to carry out their respective duties and responsibilities. This includes radiological and toxic monitoring equipment, protective clothing, fire extinguishing equipment, sampling equipment, damage control material, dedicated radios, telephones, vehicles, and administrative supplies. The type, quantity, and location of the equipment and supplies shall be identified by each emergency response group. Provisions and documentation are in place for the following:

- Monthly inspection, inventory, calibration, and for operationally checking equipment and supplies that may be used for emergency response;
- Replenishment and replacement of equipment in need of repair or calibration; and
- Monthly testing of communications equipment such as telephones, radios, and facsimile.

Operating procedures for Emergency Operations Center equipment are in the Equipment Operation Manual in the Emergency Operations Center.

11.2.1 Communications Equipment

Extensive primary and backup communications are available in the Emergency Operations Center and in many of the Laboratory emergency response vehicles. With a variety of communications systems available, the required notifications of emergency events and all necessary exchanges of information is ensured. This capability is available 24 hours a day. Encrypted communications are available (see Section 5.3.1 for a discussion of secure communications).

Multiple telephone lines (both open and secured), four microwave telephone lines to Santa Fe, and cellular telephones provide the source of telephone communications.

In an emergency, most field communication is by radio. In the Emergency Operations Center and the Duty Emergency Manager vehicle, the radio communications cover the local emergency response frequencies and state and other non-emergency local frequencies. The Laboratory radio shop may be called for radio repairs.

Amateur radios are available in the Emergency Operations Center and may be operated by licensed amateur radio operators. These radios are capable of reaching Albuquerque and surrounding areas. Additionally, high-frequency radio capability is available through local amateur radio operators providing an alternate communications medium to areas of the United States and remote parts of the world.

The Hazardous Materials Response Team Group Supervisor, Emergency Manager, and Hazardous Device vehicles are equipped with the same radio frequencies as the Emergency Operations Center, as well as cellular telephones. Members of the Incident Commander's Staff at the scene will be issued a portable radio programmed with common frequencies for communications with the Command Post. Each Emergency Manager is issued a personal portable radio with the common frequencies, a cellular telephone, and a pager and a VHF hand-held radio with associated local frequencies.

Facsimile machines (open and secure) are available in the Emergency Operations Center. An open portable facsimile machine, still video and video camera and recording (camcorder) are available for field use.

Communication checks are conducted quarterly and any deficiencies are noted and corrected. Drills will be conducted to test communication effectiveness.

11.2.2 Heavy Construction Equipment

Johnson Controls Northern New Mexico (JCNNM), the support services contractor, has an assortment of equipment available for emergency response. This may be obtained by calling the JCNNM management on-call person as published on the duty roster.

11.2.3 Decontamination Equipment

Decontamination equipment is supplied by the Hazardous Materials Response Team. The equipment available is listed in detail in the EMPIPs for the Team. Response is obtained by calling the on-call person as published on the duty roster.

11.2.4 Alarm Equipment

Computerized emergency alarm systems are installed throughout the Laboratory to provide for effective response and protective actions that may be required in emergencies. The security and fire alarms terminate at the Central Alarm Facility. The operators at the facility notify the appropriate emergency response unit(s).

The UCC monitors numerous monitoring points for the water, sewer, electrical, and additional miscellaneous functions of the Laboratory's utility system. This includes the monitoring of chlorine alarms for the chlorination stations.

11.2.5 Rescue Team Equipment

The Los Alamos Fire Department provides extrication and high-angle rescue equipment. This equipment may be obtained by calling the Central Alarm Facility.

11.2.6 Sanitation and Survival Equipment

Portable toilets may be obtained from the support services contractor through the JCNNM management representative.

11.2.7 Transportation Equipment

Dedicated emergency response vehicles are assigned to the Emergency Management and Response Office for use by the Emergency Managers and the Hazardous Device Team. These response vehicles are equipped with radios, telephones, reference and procedure books, maps, first aid equipment, white boards, emergency lights, and sirens. Periodic vehicle maintenance is performed through the Government Services Administration (GSA).

The Emergency Manager's vehicle (small 4x4) can carry a portable generator, four 12-volt spotlights, spill equipment, portable green revolving light (designation for Incident Command Post location), scope, binoculars, and portable battery-powered megahorns.

The Hazardous Device Team's vehicle (large step van) is equipped with equipment necessary for the team's particular response. A trailer is equipped with a containment vessel for transportation of hazardous items.

The Hazardous Materials Response Team has several vehicles and trailers equipped with personal protective equipment, assorted devices, and materials to mitigate hazardous materials situations. In addition, the Hazardous Materials Response Group Supervisor has a vehicle containing communications equipment, books, a portable weather station, and other related emergency response items necessary for initial incident assessment.

Emergency vehicles shall be appropriately marked with lights, sirens, and organization labeling to indicate an emergency response vehicle. Response personnel shall have training on the use of these emergency vehicles and related equipment before operating them. Monthly equipment checks shall be made and documented. Periodic vehicle maintenance is performed by GSA.

11.2.8 Personal Protection Equipment

The Los Alamos County Fire Department personnel are responsible for their own personal protective equipment. The Hazardous Materials Response Team, Hazardous Device Team, and other emergency response groups are responsible for their own personal protective equipment and its upkeep. Emergency responders needing personal protective equipment at the scene will

make the request through the Incident Command System (Incident Commander/Operations/ Logistics).

11.2.9 Gas and Liquid Monitoring Equipment

The necessary natural gas monitoring and repair equipment is supplied by support services personnel when contacted by the JCNNM management representative or UCC.

The ES&H Division provides analysis of environmental samples, including liquid samples. Request for analysis is made by the Incident Commander or other responders. Dispersion modeling and projecting meteorological conditions in the vicinity of the event is the responsibility of the Emergency Technical Support Center.

11.2.10 Damage Containment Equipment

The Hazardous Materials Response Team has overpack containers for packaging hazardous material, as well as spill pads and equipment to contain a spill.

The Hazardous Device Team has a trailer equipped with a containment vessel for explosive-type material, as well as remote manipulation equipment.

11.2.11 Fire Fighting Equipment

The Los Alamos Fire Department supplies the equipment necessary to mitigate fires at the Laboratory.

11.2.12 Emergency Power Equipment

In the event of a power failure, the Emergency Operations Center and equipment may be automatically powered by the 90-kW generator system. At the alternate Emergency Operations Center, a portable generator may be supplied by the support services contractor. Critical equipment in the Emergency Operations Center is powered by UPS (uninterruptible power supply).

11.2.13 Logistic Support Equipment

Logistic support is provided by various organizations. It is the responsibility of the Incident Commander to request this support (through the Logistic position, if one is appointed).

12.0 TRAINING AND DRILLS

Management and Administration. Overall responsibility for the Laboratory's Emergency Management training program is delegated to the Emergency Management and Response (EM&R) Group Leader by the Director of the Laboratory.

Line management shall provide and document initial and refresher training and periodic drills to all workers who are required to take protective actions (e.g., assembly, evacuation, shelter) in the event of an operational emergency.

Program Objectives and Guidelines. At the Laboratory, the graded approach is used for operational emergency management training and related drills and exercises based on job responsibilities. The training is delivered to prepare personnel to respond to, manage, mitigate, and recover from emergencies associated with operations. The training program stresses coordinated response capabilities for all personnel and organizations that expect to respond as part of the Emergency Response Organization to both off and onsite emergencies. Both initial and annual refresher training is provided. The training effectively integrates emergency planning, preparedness, and response for a comprehensive, all-emergency management concept to promote more efficient use of resources.

12.1 Courses

Emergency preparedness and response courses are provided on an on-going basis for specialized teams and offered to both onsite and offsite personnel by the EM&R Group. These courses may be accessed on the EM&R home page Web site under training and also on the Laboratory's Virtual Training Center Web site. Other appropriate courses are provided as needed by consultants or by in-house subject matter experts.

12.2 Training Requirements

A coordinated program of training and drills "commensurate with the hazards" identified in the Hazards Assessment must be in place to develop and maintain the required emergency response capabilities for all personnel and specialized teams expected to respond to an emergency. Training topics should reflect the functional position and responsibilities as well as general team-building skills. Both initial and annual refresher training are required for qualification of all personnel (primary and alternate) as well as specialized teams in the Emergency Response Organization. In order to meet job requirements, all primary, alternate, and specialized team personnel should participate in at least one drill annually. Drills should address response scenarios that are realistic for the facilities involved.

All workers who may be required to take protective actions (e.g., assembly, evacuation, shelter) are to be provided with initial training and periodic drills. Emergency-related information should be provided to include emergency awareness, warnings and alarms, evacuation, accountability, and first aid. Training should be provided at the time of employment, when expected response actions change, or when the emergency plan changes.

Initial and annual refresher training should be provided to certified operators and supervisors, workers who are likely to witness emergency conditions, those required to notify proper authorities, and workers required to attain "First responder awareness level" as described in 29CFR1910.120. Training required should be provided for individuals based on their job responsibilities. Personnel assigned to emergency response teams with onsite responsibilities shall receive additional training.

Annual refresher training may be shorter for persons who have filled the response role for a number of years. Requalification may be limited in these cases to a discussion of changes in requirements or procedures, lessons learned from actual and exercise events, and participation in an annual drill or exercise.

The proficiency developed through the training program should be tested by a separate exercise component of the emergency preparedness program.

Emergency related information and orientation training on site/facility specific conditions, hazards, and procedures should be offered annually to offsite state, tribal, and local emergency response organizations who may be requested to respond to an emergency at the Laboratory.

Specific EM&R training courses and training activities identified for members of the Emergency Response Organization, based on a preliminary job task analysis, is given in Table 12-1. This table does not include courses that are useful but taught by other organizations in the Laboratory Note that Modules 2 and 4 have been combined and are being offered as site-specific training. A matrix of emergency response personnel and required training is presented in Table 12-2.

12.3 Examination

Metrics for evaluating emergency response training include exercises as well as actual incident responses. Question and answer periods are the primary venue used to evaluate emergency response classroom training.

Table 12-1. Emergency Management Training Courses

Module 1 - Management of Emergencies at LANL

- Goals and Objectives
- The Problem
- The Solution
- Emergency Management vs Day to Day Management
- Planning
  - Emergency Plans
  - Emergency Procedures
  - Personnel and Resources
- Preparedness
  - Training
  - Resource Acquisition & Readiness
  - Drills/Exercises
- Response
  - Deployment of Resources
  - On-Scene Operations
  - Classification & Notification
  - Mitigation
  - Recovery
- Emergency Operations Center
  - Activation
  - Staffing
  - Roles
  - Logistics
  - Incident Control Group vs Emergency Operations Center Responsibilities
  - Equipment and Layout (to be developed)
  - Alternate Emergency Operations Center Operations (to be developed)

Module 2 - Emergency Management Update/Refresher

- Site Profile
- Hazard Assessment
- Consequence Assessment
- Protective Actions
- Emergency Resources
- Changes that have occurred in:
  - Plans and Procedures
  - Equipment and Facilities
  - Training Requirements
  - Mutual Aid Agreements
- Review of Potential Operational and Safeguards and Security Emergencies
- Audit Findings
- Deficiencies Noted in Exercises/Real Incidents
- Review of Incidents at Other DOE Sites

Module 3 - Emergency Technical Support Center (ETSC)

- ETSC Staffing
  - ETSC Coordinators
  - Technical Staff
- Logistics
  - ETSC Facility
  - Computer Programs
  - Communications Flow
  - Resources Available
- Response Team
  - Incident Command Staff
  - EOC Primary and Secondary
- Consequence Assessment
- Emergency Action Level (EAL)
- Protective Actions
- Media Interaction

Module 4 - Incident Command (Combined with Module 1)

Table 12-1. Emergency Management Training Courses (cont.)

Module 5 - Administrative Support Training • Electronic Status Board Operations • Overview • Equipment/Software – Moving Menus – Retrieving and Saving Display Files
Module 6 - Emergency Operations Center (EOC) Notification Training • Purpose • Responsibilities • Procedures

Table 12-2. Training Matrix

Position	Module 1 Management of Emergencies at LANL	Module 2 Emergency Management Update/ Refresher	Module 3 ETSC	Module 4 Incident Command	Module 5 Administrative Support Training	Module 6 EOC Notification Training
Emergency Manager/ Incident Commander	X	X		X		
ETSC Staff	X	X	X			
Crisis Negotiation Team						
Hazardous Devices Team						
Emergency Management Team:						
Emergency Director	X	X				
Deputy Emergency Director	X	X				
ES&H Representative	X	X				
Public Affairs Officer	X	X				
S Representative	X	X				
DOE/Los Alamos Area Office	X	X				
EOC Facilitator	X	X		X	X	
EOC Administrative Support Staff					X	
EOC Notification Specialist	X	X				X

12.4 Record Keeping

Documentation for Laboratory emergency preparedness and response training consists of both administrative and individual training records. Training record keeping should be a consistent, auditable method of maintaining records. It should provide written proof that personnel are

trained in appropriate program elements and are prepared to respond. The administrative records may include administrative guides, evaluations, and instructional staff qualifications. At a minimum, administrative records shall consist of lesson plans, attendance sheets, and evaluations to show how the training program has been developed, reviewed, analyzed, evaluated, and maintained. Individual training records describe what training occurred, who provided it, who received it, and related individual information necessary to document the training and qualification.

Emergency management training should be input into the Employee Development System (EDS) by the sponsoring organization. For example, emergency management training incorporated into General Employee Training (GET) should be documented through that program. Separate documentation should be maintained by line management for any additional training or retraining (e.g., building evacuation drills) not included in GET.

12.5 Offsite Personnel

Offsite emergency response personnel are individuals or organizations that may have to respond to an incident at the Laboratory. They include, but are not limited to, federal, state, tribal, or local response individuals or organizations.

Visitors, contractors, and vendors will receive appropriate training for their work areas. Training will be the responsibility of the group visited, the contracting group, or the group responsible for vendors to ensure personnel are trained for their specific work area. Training shall be the same as for general Laboratory employees (i.e., GET).

12.6 Offsite Training Support

Emergency management and response training resources available offsite can be substituted for, or complement, existing in-house training courses once the courses have been reviewed, evaluated, and approved by subject matter experts. Examples include, but are not limited to, college and university courses; courses sponsored by the Federal Emergency Management Agency (FEMA) and the New Mexico Department of Public Safety; the DOE-sponsored Central Training Academy; other DOE courses; and local county training such as fire and police emergency management and response.

12.7 Offsite Personnel Training

Training is coordinated with offsite emergency response organizations through the Laboratory's Emergency Management and Response (EM&R) Group to minimize coordination challenges and to ensure a high state of emergency preparedness and response capabilities. Training is delivered so that team response is possible. Offsite personnel are offered annual Laboratory-sponsored EM&R training as well as vendor training. They are offered the opportunity to participate in annual drills and exercises to evaluate their level of response as a result of the training offered. Information is provided to the media through the Laboratory Public Affairs Office, and to the public through the Community Involvement Office.

12.8 Instructor Training and Qualification

An instructional training and qualification program description for instructors or trainers, including part-time consultants and offsite training support, should follow the Laboratory Training Staff Qualification Program requirements. Training staff personnel must maintain their technical and instructional competence through a continuing training program.

12.9 Drills

Drills are defined as supervised hands-on instruction and application sessions for individuals or teams. The goal of drills is to develop, maintain, and demonstrate skills, expertise, and emergency response capability. In support of that goal, drills may

- Reveal planning weaknesses;
- Reveal resource gaps;
- Improve coordination;
- Clarify roles and responsibilities;
- Improve individual performance and experience;
- Improve operations;
- Improve emergency decision-making and planning skills;
- Improve effectiveness and skills of the Emergency Response Organization; and
- Validate adequacy of facilities, equipment, plans, and procedures

A drill is a scheduled and planned emergency preparedness training activity, either announced or unannounced, which tests limited portions of the EMP, EMPIP, and building emergency plans. A drill limits play to specific emergency response units/teams. Drills require participants to make appropriate responses to realistically simulated emergency conditions. Messages used to control the drill shall be delivered using the same method and form as would be expected during a real emergency. Simulated damage, injuries, spills, and the use of smoke generators or other similar devices will be used to create realism.

At a minimum, buildings meeting the Building Emergency Planning Program criteria (Section 1.4.3) are required to have local emergency plans and are required to train annually using this EMP and the *Laboratory Drill and Exercise Manual* (LA-12355-M) for guidance. This manual may be used as a tool for any drill. It is the responsibility of the building owner or designee to ensure that yearly drills are conducted for their building(s) as a part of the Building Emergency Planning Program. These drills shall be coordinated with the EM&R Office, which may also assist in the planning stages.

12.9.1 Types of Drills

- **Table-Top Drills.** Table-top drills provide a walk-though of a simulated emergency situation without the pressures and time restraints that would be present during an actual emergency or other type of drill. The purpose of a table-top drill is to evaluate plans and procedures, develop problem-solving and coordination skills, evaluate the effects of hazards, aid in training, evaluate the EMP, EMPIPs, and building emergency plans.

A table-top drill involves the use of simulated events in narrative form. Participants discuss possible solutions and responses to events using implementing procedures, if developed. A degree of realism many be created by introducing simulated emergency events to participants through a series of messages or problems. These messages or problems may be distributed at intervals to simulate real messages or events that might occur in an actual situation. Participation in a table-top drill does not fulfill the requirement for annual exercise participation.

- **Field or Emergency Operations Center Response Drills.** A response drill validates training on portions of the EMP and its associated EMPIP. This validation develops or maintains skills in an emergency response procedure, such as a fire drill, communication drill, hazardous materials response, security, etc. Building drills are a specialized variant of response drills.

  A response drill may involve actual field response, activation of emergency communications networks, and equipment that would be used in a real emergency. Two specific examples follow.

  - The Emergency Manager drill is conducted to train and evaluate Emergency Manager performance, communications flow, and command and control from the Emergency Operations Center. An Emergency Manager drill is usually conducted using the EM&R Office staff and a control group. The drill focuses on the relationship between the Incident Commander and the Emergency Operations Center. Some field play may be used.
  - The integrated emergency drill is a field operation that provides the opportunity to train the entire Emergency Response Organization as a team using all of the emergency plans and procedures that are in place. An integrated emergency drill usually includes all of the elements of an Emergency Manager drill along with a field operation that allows for simulations where practicable. This type of drill requires coordination and cooperation between the players and controllers.

12.9.2 Corrective Actions

- **Evacuation Drills.** The building owner shall be responsible for the conduct and evaluation of this drill. The building owner shall prepare and submit a report of Completion of the Drill and any findings, including lessons learned, to EM&R within 30 days of the completion of the drill.
- **Crisis Negotiation Team (CNT), Hazardous Devices Team (HDT) Drills.** EM&R is responsible for the control and evaluation of these drills. EM&R will complete the evaluation of the drill based on the drill objectives and will develop any lessons learned, which will be incorporated into the team training.
- **General.** Information from all actual events/drills are gathered, collated, and fed into the EM&R training, checklists, procedures, notification lists, etc.

13.0 EXERCISES

Exercises are evaluated demonstrations of the integrated capabilities of emergency response resources. The Laboratory uses exercises to test and demonstrate its ability and capability to respond to and mitigate emergency situations. The response of the Emergency Response Organizations (individuals, units, and teams) tests the adequacy of training, equipment, and procedures. Participants shall respond to simulated emergency conditions as if the emergency was real and follow safety and security requirements, public laws, regulations, and ordinances.

Exercises vary in the manner and degree in which they realistically simulate the real world. To maximize benefits from exercises, it is necessary to ensure as much realism as possible. The simulated environment shall evoke responses and actions as close to those resulting from real situations. Personnel being exercised shall react as they would in real emergency situations. Exercise benefits are directly related to the willingness of participants to act and react as though the simulated event were a reality.

13.1 Full-Scale Exercises

Full-scale exercises are intended to demonstrate and evaluate the entire Emergency Response Organization, especially those areas involving coordination of Laboratory activities with governmental, community, and mutual aid organizations. Full-scale exercises place more stress on exercise participants and are longer in duration than other exercises or drills.

One full-scale Laboratory exercise shall be conducted annually. This exercise is designed to test and demonstrate the Laboratory's ability to deal with major emergencies and the adequacy of the EMP, EMPIP, Building Emergency Plans, and any other related plans or procedures. The exercise shall activate the Emergency Operations Center, the Incident Command Post, various emergency response units, and offsite groups. For full-scale Laboratory exercises, an exercise committee is assigned the task of preparing the full-exercise package, and an individual from the Emergency Management and Response (EM&R) Office is assigned the position of Exercise Director. The Exercise Director will appoint an Exercise Coordinator to coordinate all aspects of planning the exercise, conducting the exercise, and follow-up of exercise evaluation and critique.

Possible operational emergency scenarios might include:

- Spill or release of hazardous materials;
- Accident or malfunction of weapon(s);
- Explosion or fire in building(s);
- Security violation, hostage situation, suspicious package, or bomb threat; or
- Nuclear release or criticality.

These exercises shall encourage participation of the DOE Los Alamos Area Office, DOE Albuquerque Operations, DOE Headquarters, federal, state, tribal, and local emergency agencies.

13.2 Evaluation and Corrective Action

The Exercise Coordinator will assign and provide training for controllers and evaluators for each exercise. Controllers regulate the sequence of drill and exercise events, maintain the scenario time line, and ensure that events occur which address the objectives of the drill or exercise. Evaluators appraise the performance of participants and the adequacy of emergency response units/teams and equipment, based upon specific objectives of the exercise and the positions/responses being evaluated. The lead controller conducts player briefings to discuss the scope and objectives of the drill or exercise, precautions, and simulation permitted. A separate briefing by the lead controller will also be given to controllers and evaluators to discuss assignment of scenario messages.

13.2.1 Critique of Corrective Actions

The Exercise Coordinator conducts a critique after the exercise to provide impressions of accomplishments and shortcomings. The critique process involves the immediate verbal critique followed by a formal written critique. Immediately after the exercise, involved personnel gather for the verbal critique. Notes are taken on comments and constructive criticism. This critique clarifies and examines the actions and decisions of the players and teams during the exercise. Additionally, each player, team, evaluator, controller, and safety officer is asked to submit a more detailed written critique. A compilation of the comments and the written critique becomes a part of the exercise record. From the critiques and deficiencies, areas requiring improvement shall be identified. Assignments for corrective actions, including dates for closeout, shall be made within 30 days. A report summarizing findings shall be prepared and issued to the Laboratory Audits and Assessments Office for tracking and closeout of corrective actions. A copy of the report will also be sent to the EM&R Office. Corrective actions shall include deadlines for completion and responsibilities.

13.2.2 Evaluation Report

The final evaluation report, written by the Exercise Coordinator, is a summary of the entire exercise. The report becomes a planning tool for future exercises. A copy of the final report shall be sent to the EM&R Office. For full-scale exercises, the EM&R Group Leader shall ensure that corrective actions are implemented and documented by the appropriate personnel.

13.3 Offsite Coordination

Exercises are coordinated with offsite elements by the use of the Laboratory's Emergency Exercise Committee. The committee consists of members of the Emergency Response Organization and offsite agencies that will be involved with the special exercise (e.g., tribal, local, state, federal agencies). The DOE Los Alamos Area Office represents DOE in planning, coordination, conduct, and evaluation of the exercise. The exercise package is submitted to DOE Headquarters in accordance with DOE O 151.1. Numerous meetings/tours/coordination contacts (telephone, e-mail, fax, letters) ensure that all aspects of the exercise are communicated to the offsite organizations. Offsite organizations are encouraged to provide players, controllers, and evaluators for the exercise.

14.0 EMERGENCY MANAGEMENT PROGRAM ADMINISTRATION

The administration of the Laboratory emergency management program is accomplished on a continuing basis and in accordance with DOE orders. This chapter summarizes the responsibilities of the administration of the Laboratory emergency management program.

14.1 Emergency Management Program Administrator

The Laboratory Director has designated the Laboratory Emergency Management and Response (EM&R) Group Leader as the individual to administer the Laboratory emergency management program. This individual's responsibilities include:

- Ensuring an adequate emergency management program is developed and maintained;
- Writing, maintaining, updating, and issuing the EMP, EMPIPs, and the Emergency Readiness Assurance Plan (ERAP);
- Ensuring the EMP and associated EMPIPs are reviewed by an authorized derivative classifier for classified and Unclassified Controlled Nuclear Information, and the reviews are documented;
- Administering the Building Emergency Planning Program;
- Ensuring emergency response coordination to Operational Emergencies;
- Maintaining the Emergency Operations Center in a ready condition;
- Developing, directing, and reviewing emergency response training and exercises for the Laboratory;
- Developing a system to track and verify correction of findings or lessons learned from training, drills, exercises, and actual responses.
- Maintaining all emergency records, including operator logs and documentation produced by the emergency response organization during an emergency as per 36CFR1236;
- Ensuring adequate emergency management resources and their coordination; and
- Coordinating assessment activities and related documentation.

The names and associated telephone numbers and other locating information for the EM&R Group personnel will be provided upon request, under separate cover.

14.2 Document Control

The Laboratory EMP is a Laboratory Implementing Requirement (LIR-403-00-01.0) available on the World Wide Web at http://iosun.lanl.gov:180/hdir/labreq.html. Paper copies of the EMP and EMPIPs shall be distributed by the EM&R Group to Laboratory personnel with assigned emergency response tasks. Each paper copy of the EMP and EMPIPs shall be issued to a specific person or office. A list of persons holding copies shall be maintained by the EM&R Office. The EM&R group shall be responsible for providing updated material for each document, but the inclusion of new and revised material in the documents is the responsibility of the holder.

Other Laboratory personnel may obtain a copy of the EMP off the World Wide Web or request a paper copy from the EM&R Group. Further, the EMP may be distributed to federal, state, tribal, and local offices for use in coordinating emergency response. The EM&R Group reserves the right to refuse distribution.

The EMP and EMPIPs are to be approved by the appropriate level of authority in the Laboratory, with concurrence of the DOE Los Alamos Area Office and DOE Albuquerque Office, and approved by DOE Headquarters. Revisions to the EMP shall incorporate changes to correct deficiencies identified during audits, drills, exercises, training, or actual emergencies. Revised pages of the EMP and EMPIPs are to be dated to indicate latest revisions.

The EM&R Group maintains a database of approved Building Run Sheets (see Section 1.4.4 and Appendixes C and D). The approved sheets are shared with other members of the Emergency Response Organization on an as-requested basis. At a minimum, these documents are updated annually.

14.3 Self Assessment

Annual reviews of the emergency preparedness program as related to the Emergency Response Organization are conducted to verify compliance with DOE orders and to determine the readiness assurance of the Laboratory emergency preparedness program. The review includes the EMP and EMPIPs, emergency response training, emergency facilities, equipment, supplies, and interfaces with offsite state and local agencies (if applicable). Reviews are conducted of findings or lessons learned during training, drills, exercises, and actual responses.

The EM&R Group Leader is responsible for coordination of assessment activities. Assessment of the EM&R Group may be conducted by the University of California and Lawrence Livermore National Laboratory under the auspices of the Laboratory Audits and Assessments Office. This is a peer exchange audit. In addition, the DOE Albuquerque Office and the Laboratory Audits and Assessments Office conduct audits of the EM&R Group. Audit evaluation documentation, action plans, and close-out proceedings shall be filed at the Laboratory Audits and Assessments Office. If the findings of the audit indicate that corrections are required, it is the responsibility of the Laboratory Audits and Assessments Office to ensure that the corrections are made in a timely manner.

Appendix A
GLOSSARY

GLOSSARY

Accident - A deviation from normal operations or activities associated with a hazard that has the potential to result in an emergency.

Accident Response Group (ARG) - A group of technical and scientific experts composed of Department of Energy and Department of Energy contractor personnel assigned responsibility for providing Department of Energy assistance to peacetime accidents and significant incidents involving nuclear weapons anywhere in the world.

Activity - A Department of Energy supervised action within the Department of Energy mandate.

Administrative Support Staff - The Administrative support staff provide basic secretarial support including operation of word processing, copy machines, telefaxes, runners, and telephone support.

Advisory Group - The Advisory Group is the on-scene response organization, operating in accordance with the Incident Command System, responsible for the initial and ongoing response to and mitigation of an emergency.

Aerial Measuring System - An aerial detection system with the capability of measuring extremely low levels of gamma radiation and locating and tracking airborne radiation. The system also has aerial photography and multispectral sensing capabilities.

Agency - Any organization that acts in the place of a government and by its authority (e.g., the Federal Emergency Management Agency is an agency of the Federal Government).

Alert - One of the classes of hazardous material operational emergencies. An Alert represents events in progress or having occurred that involve an actual or potential reduction in the level of Laboratory safety and protection. In an Alert, any environmental release of hazardous materials can reasonably be expected to be limited to small fractions of the appropriate Protective Action Guide or Emergency Response Planning Guidelines exposure levels.

Appraise - The formal process by which external or oversight organizations evaluate the ability of an organization or facility to comply with Department of Energy and other applicable regulations, orders, plans, and procedures.

Assess - The internal process by which an organization evaluates its ability to comply with Department of Energy and other applicable regulations, orders, plans, and procedures, conducted within a single, cognizant Program Office.

Condition - Any as-found state, whether or not resulting from an event, that may have adverse safety, health, quality assurance, security, operational, or environmental implications.

Consequence - The result or effect of a release of hazardous materials to the environment. Specifically, the "consequences" of concern are human health effects.

Consequence Assessment - The evaluation and interpretation of all available information concerning an actual or potential release of hazardous materials for the purpose of estimating personnel exposure/dose. These estimates are then compared to human health and/or protective action criteria and are used as a basis for emergency management decision making.

Contractor - A non-Federal party to a Department of Energy contract who engages in activities or operations involving hazards that could potentially affect the health and safety of employees or the public or the quality of the environment. The Regents of the University of California is the contractor for the Laboratory.

Corrective Actions - Those measures taken to terminate or mitigate the consequences of an emergency at or near the source of the emergency.

Deputy Emergency Director - The individual who performs the duties of Chief of Staff and is responsible for the integrated planning and operations of the Emergency Management Team.

Department of Energy (DOE) Field Element - Department of Energy operations offices, and where applicable, Department of Energy area offices subordinate to an operations office. Department of Energy Albuquerque is the operation office and the Los Alamos Area Office is the area office for Los Alamos National Laboratory.

Drill - A supervised, hands-on instruction period intended to test, develop, and/or maintain a specific emergency response capability. A drill is often a component of an exercise.

Department of Energy Property - Property owned or leased by the Department of Energy.

Emergency - An emergency is the most serious event and consists of any unwanted operations, civil, natural phenomenon, or security occurrence that could endanger or adversely affect people, property, or the environment.

Emergency Action Level (EAL) - Specific, predetermined, observable criteria used to detect, recognize, and determine the emergency class of operational emergencies. An Emergency Action Level can be an instrument reading; an equipment status indictor; a measurable parameter for the Laboratory or offsite; a discrete, observable event; the results of analysis; or another observed phenomenon that indicates entry into a particular emergency class.

Emergency Class - A subset under operational emergency (Operational, Energy, Continuity Of Government). The class further differentiates a hazardous material operational emergency by the degree of severity, depending on the actual or potential consequence of the emergency situation. For the hazardous material operational emergency, the classes are Alert, Site Area Emergency, and General Emergency.

Emergency Director - The individual, Laboratory Director or designee, who directs the management of emergency response operations (and post-incident activities) necessary to protect life, property, and the environment. The Emergency Directory is assisted by the Deputy Emergency Directory.

Emergency Manager -The Emergency Manager provides on-call, 24-hour coverage, for emergency response. The Emergency Manager is a staff member of the Emergency Management and Response Office, and may respond as Incident Commander. Emergency Managers may also serve as Acting Emergency Director or Emergency Operations Center Facilitator.

Emergency Management - The development, coordination, and direction of planning, preparedness, and readiness assurance activities.

Emergency Management and Response (EM&R) Office - The Laboratory EM&R Office has the responsibility for the development, coordination, and direction of planning, preparedness, and readiness assurance activities for Los Alamos National Laboratory.

Emergency Management Plan (EMP) - A brief, clear and concise description of the overall Emergency Response Organization, designation of responsibilities, and procedures, including notifications, involved in coping with any or all aspects of a potential credible emergency.

Emergency Management Plan Implementing Procedure (EMPIP) - A set of procedures associated with the EMP that detail how to implement the emergency procedures detailed in the EMP.

Emergency Management Team - A team of functional managers and coordinators who staff the Emergency Operations Center, provide support for the Emergency Director, and are responsible for coordinating emergency actions and initiating long-range planning.

Emergency Media Center - A centralized facility where organizations responding to an emergency coordinate the release of accurate and timely information to the public and the media and provide a central source for all instructions. An Emergency Media Center is operated cooperatively by all responding levels of federal, state, tribal, and local governments and organizations and the involved facility.

Emergency Operations Center (EOC) - A central facility from which management and support personnel carry out coordinated emergency response activities. The EOC may be a dedicated facility or office, conference room, or other predesignated location having appropriate communications and informational materials to carry out the assigned emergency response mission. The EOC is located, when possible, in a secure and protected location.

EOC Operations Staff - The EOC operations staff is comprised of support personnel who ensure the EOC equipment is operational, or who operate EOC equipment.

Emergency Planning - The development and preparation of emergency plans and procedures and the identification of necessary personnel and resources to provide an effective response.

Emergency Planning Zone (EPZ) - A geographic area surrounding a specific Department of Energy facility (Los Alamos National Laboratory) for which special planning and preparedness efforts are carried out to ensure that prompt and effective protective actions can be taken to reduce or minimize the impact to Laboratory personnel, public health and safety, and the environment in the event of an operational emergency.

Emergency Preparedness - The training of personnel, acquisition and maintenance of resources, and exercising of the plans, procedures, personnel, and resources essential for emergency response.

Emergency Readiness Assurance Plan (ERAP) - A plan to ensure that emergency plans, implementing procedures, and resources are adequate and sufficiently exercised and evaluated.

Emergency Response - The implementation of planning and preparedness during an emergency. This response involves the effective decisions, actions, and application of resources that should be accomplished to mitigate consequences and recover from an emergency.

Emergency Response Organization - The designated group(s) of personnel responsible for coping with and minimizing or mitigating the effects of any emergency.

Emergency Response Planning Guidelines (ERPG) - A hazardous material personnel exposure level or range which, when exceeded by a short term or acute exposure, may cause irreversible or other serious health effects in humans. The Emergency Response Planning Guidelines are approved by a committee of the American Industrial Hygiene Association.

Emergency Technical Support Center (ETSC) - The Emergency Technical Support Center is located at or near the Emergency Operations Center and is the area used by the Health and Safety technical support personnel. The area allows for communication with meteorological towers and has computer capability for plume dispersion modeling.

Emergency Technical Support Center (ETSC) Staff - The ETSC staff is comprised of Health, Safety and Environmental Management support personnel who provide technical information to the Emergency Management Team, including meteorological data, dose projections, Protective Action Recommendations, Event Classification, and specific requests from the Emergency Management Team or Incident Command Advisory Group.

Energy Emergency Program - The Energy Emergency Program ensures that DOE is capable of providing analysis and recommendations on mitigating potential energy supply crises, economic impacts, widespread energy distribution interruptions, and/or energy infrastructure recovery advice.

ERPG-2 - The maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.

Event - Any real-time occurrence or significant deviation from planned or expected behavior that could endanger or adversely affect people, property, or the environment.

Exercise - A scheduled and planned large-scale activity that tests the integrated capability and most aspects of the emergency management program associated with a particular Department of Energy facility.

Facility - Any equipment, structure, system, process, or activity that fulfills a specific purpose. Examples include accelerators, storage areas, fusion research devices, nuclear reactors, production or processing plants, coal conversion plants, magneto hydrodynamics experiments, wind mills, radioactive waste disposal systems and burial grounds, testing laboratories, research laboratories, transportation activities, and accommodations for analytical examinations of irradiated and unirradiated components.

Facility Manager (FM) - That individual, or designee with direct responsibility for operation of a facility or group of related facilities, including authority to direct physical changes to the facility.

Facility Representative - Division Leader or designee of the affected building who reports to the Emergency Director to provide detailed information relating to operations.

Federal Radiological Emergency Response Plan - A comprehensive, coordinated plan broadly describing the entire Federal Government response to radiological emergencies in support of federal, state, tribal, and local government agencies.

Federal Radiological Monitoring and Assessment Center - A facility established by Department of Energy, usually at an airport near the scene of a radiological emergency, from which the Offsite Technical Director conducts the Federal Radiological Monitoring and Assessment Plan response.

Federal Radiological Monitoring and Assessment Plan - A plan contained in the Federal Radiological Emergency Response Plan for coordinating federal offsite radiological monitoring and assistance with that of the affected states.

Federal Radiological Preparedness Coordinating Committee - An interagency advisory group established by the Federal Radiological Emergency Response Plan.

Full Participation Exercise - An exercise that demonstrates the integrated response capability of the Laboratory Emergency Response Organization, the Department of Energy Program Office elements (both headquarters and field element) with responsibilities for emergency response, along with those regional federal, state, tribal and local government agencies and private support organizations that elect to participate.

General Emergency - One of the classes of hazardous material operational emergencies. A General Emergency represents events in progress or having occurred that involve an actual or imminent catastrophic failure of Laboratory safety systems with potential for loss of confinement integrity, catastrophic degradation of Laboratory protection systems, or catastrophic failure in safety or protection systems threatening the integrity of a weapon or test device that could lead to substantial offset impacts. Any environmental release of hazardous materials can reasonably be expected to exceed the appropriate Protective Action Guide or Emergency Response Planning Guidelines exposure levels offsite.

Hazard - As defined in DOE 5480.23, a hazard is a source of danger (e.g., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to an operation or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation).

Hazard Classification - A process, condition, or asset that has the potential to adversely impact the health and safety of personnel, the public, the environment, or national security. Hazards are divided into three classes:

> **Low** - Hazards that present minor impacts at the Laboratory and negligible impacts offsite to people, the environment, or national security.
>
> **Moderate** - Hazards that represent considerable potential impacts at the Laboratory but at the most only minor impacts offsite to people, the environment, or national security.
>
> **High** - Hazards with the potential for impacting a large number of people at the Laboratory and offsite or with the potential for major impacts to the environment or national security.

Hazardous Materials - Hazardous materials are defined as:

a. *DOE Office of Safeguards and Security Hazardous Material.* Any solid, liquid, or gaseous material that is chemically toxic, flammable, radioactive, or unstable upon prolonged storage, and that exists in quantities that could pose a threat to life, property, or the environment.

b. *Department of Transportation Hazardous Materials.* (See 49CFR171.8 and 49CFR172.101). A substance or material, including a hazardous substance, that has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated.

c. *Comprehensive Environmental Response, Compensation and Liability Act Hazardous Substances.* See 40CFR302.

d. *Occupational Safety and Health Administration (OSHA) Hazardous Chemical.* (See 29CFR1910.1000 and 29CFR1910.1200.) Any chemical that is a physical or a health hazard.

e. *Superfund Amendments and Reauthorization Act Title 3 Extremely Hazardous Substances.* See Appendixes A and B of 40CFR355.

Incident - Any deviation from normal operations or activities that has the potential to result in an emergency.

Incident Commander (IC) - The Incident Commander is the individual with authority and responsibility for command and control at the incident scene.

Incident Command System (ICS) - The Incident Command System is based on the on-scene management structure protocols of the Federal Emergency Management Agency's National Interagency Incident Management System. The Incident Command System provides organizational structure, common terminology, uniform and consistent procedures, and coordinated communications for the on-scene emergency response.

Joint Information Center (JIC) - A centralized facility where organizations responding to an emergency coordinate the release of accurate and timely information to the public and the media and provide a central source for all instructions. A JIC is operated cooperatively by all responding levels of federal, state, tribal, and local governments and organizations and the involved facility.

Joint Nuclear Accident Coordination Center - A joint Department of Energy and Department of Defense capability responsible for maintaining current information on the location of specialized Department of Energy and Department of Defense teams or organizations capable of providing nuclear weapons assistance. The Department of Energy and Department of Defense elements of the Joint Nuclear Accident Coordination Center are also responsible for initiating actions to deploy response teams in the event of a nuclear weapon accident or significant incident.

Lead Federal Agency - The Federal agency that owns, authorizes, regulates, or is otherwise deemed responsible for the emergency and that has the authority to take whatever action is necessary to stabilize the situation.

Material Safety Data Sheets (MSDS) - Written information provided by manufacturers and compounders (blenders) of chemicals, with minimum information about chemical composition, physical and chemical properties, health and safety hazards, emergency response, and waste disposal of the material.

Nuclear Emergency Search Team (NEST) - A group of experts, assisted by radiation detection systems and associated personnel, assigned responsibility to provide assistance in nuclear threat emergencies for the search and identification of any ionizing radiation-producing materials that may have been lost or stolen or may be associated with bomb threats or radiation dispersal threats.

Occupiable - A place within a building that has a room/work area/floor such that a person could perform their job within that place. This place would be the area where the person could be contacted most of the time.

Offsite - The area beyond the boundaries of Los Alamos National Laboratory.

Onsite - The Laboratory area that is owned or leased by Department of Energy and over which the Department of Energy has access, control, or authority.

Operation - A Department of Energy process aimed at a specific result or product within the Department of Energy mandate.

Operational Emergency - Operational emergencies are significant accidents, incidents, events, or natural phenomena that seriously degrade the safety or security of Department of Energy facilities. Operational emergencies apply to Department of Energy reactors and other Department of Energy facilities (nuclear and non-nuclear) involved with hazardous materials; Department of Energy controlled nuclear weapons, components, or test devices; Department of Energy safeguards and security events; and transportation accidents involving hazardous material.

Program Secretarial Officer - Secretarial Officers are the Secretary, Deputy Secretary, and Under Secretary, and the Assistant Secretaries and Staff Office Directors reporting to the Secretary either directly or through the Deputy Secretary or Under Secretary. The designations used to identify Secretarial Officers with specific responsibilities in various areas are Program Secretarial Officer and Cognizant Secretarial Officer. A Program Secretarial Officer is a Head of a Departmental Element who has responsibility for a specific program or facility(ies). These officers include (1) the Assistant Secretaries for Defense Programs, Energy Efficiency and Renewable Energy, Environmental Management, and Fossil Energy, and (2) the Directors of the Offices of Civilian Radioactive Waste Management, Energy Research; and Nuclear Energy. A Cognizant Secretarial Officer is a DOE official at the Assistant Secretary level who is responsible for the assignment of work and/or the institutional overview of any type of facility, and the management oversight of a laboratory.

Protective Action - Physical measures, such as evacuation or sheltering, taken to prevent potential health hazards resulting from a release of hazardous materials to the environment from adversely affecting employees or the offsite population.

Protective Action Guide - A radiation personnel exposure level or range beyond which protective action may be considered. Protective Action Guide values should reflect a balance of risks and costs to Laboratory personnel, public health and safety, and the environment weighed against the benefits obtained from protective actions.

Radiation Emergency Assistance Center/Training Site - A multipurpose medical facility, located in Oak Ridge, Tennessee, prepared to deal with all types of radiation exposure emergencies and prepared to provide medical and health physics advice and assistance in radiological emergencies.

Radiological Assistance Program (RAP) - A Department of Energy program that provides for radiological assistance to federal, state, tribal, and major Nuclear Regulatory Commission licensees in the event of an incident involving radioactive materials.

Radiological Assistance Team (RAT) - Experienced Department of Energy and/or Department of Energy contractor professionals who are adequately equipped to conduct offsite radiological emergency monitoring. Radiological Assistance Teams are at all Department of Energy offices, all national laboratories, and most area offices and associated contractors.

Recovery - Actions taken after a facility has been brought to a stable or shutdown condition to return the facility to normal operation.

Reportable Occurrence - Events or conditions to be reported in accordance with the criteria defined in Department of Energy Occurrence Reporting requirements documents.

Safety Analysis - A documented process to systematically identify the hazards of a Department of Energy operation; to describe and analyze the adequacy of the measures taken to eliminate, control, or mitigate identified hazards; and to analyze and evaluate potential accidents and their associated risks.

Site - The Laboratory area that is owned or leased by the Department of Energy and over which the Department of Energy has access, control, or authority.

Site Area Emergency - One of the classes of hazardous material operational emergencies. A Site Area Emergency represents events that are in progress or having occurred that involve actual or likely failure(s) of Laboratory safety or safeguards systems needed for the protection of Laboratory personnel, public health and safety, the environment, or national security. Any environmental releases of hazardous material are not expected to exceed the appropriate Protective Action Guide or Emergency Response Planning Guideline exposure levels offsite.

Source Term - The amount of material available for release.

Special Nuclear Material (SNM) - This material includes plutonium, uranium-233, uranium enriched in isotope 233 or 235; any material artificially enriched by any of these elements; or any other material that the Nuclear Regulatory commission, pursuant to the provisions of section 51 of the Atomic Energy Act, determines to be special nuclear material, not including source material.

Strategic Response - The process of evaluating strategies to mitigate or control an incident and avoid or reduce threats.

Tactical Response - The actual implementation and direction of the decided strategy.

Vapor Pressure - (1) A measure of the tendency of a liquid to form a gas (usually a function of temperature); (2) the pressure exerted when a solid or liquid is at equilibrium with it own vapor, normally reported in mm of mercury (mmHG). The higher the vapor pressure, the more volatile the chemical.

Appendix B

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REFERENCES

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OTHER PLANS AND PROCEDURES

1990: *Procedure Manual of the New Mexico Hazardous Materials Emergency Response Program.* Santa Fe, New Mexico.

1991: *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*, Office of Radiation Programs, Environmental Protection Agency.

1997: *1996 North American Emergency Response (NAERG) Guide Book.* Research and Special Programs Administration (RSPA), Department of Transportation.

1997: *Hazards Assessment for Emergency Planning Zones.* Los Alamos National Laboratory, Los Alamos, New Mexico.

Security/Safeguards Policies and Procedures. Los Alamos National Laboratory, Los Alamos, New Mexico.

1998: *The AIHA 1998 Emergency Response Planning Guidelines and Workplace Environmental Exposure Level Guides Handbook.* American Industrial Hygiene Association, Fairfax, Virginia.

Threshold Limit Values for Chemical Substances and Physical Agents, American Conference of Governmental Industrial Hygienists.

LA-12355-M, *Laboratory Drill and Exercises Manual,* Los Alamos National Laboratory, Los Alamos New Mexico.

EM&R Document Number 251, *Emergency Management and Response Notification Checklists*, Los Alamos National Laboratory, Los Alamos, New Mexico.

Appendix C

BUILDING RUN SHEET

BUILDING RUN SHEET

EM&R Form 303
Form Date 6/4/98
Print Date 6/4/98

Last Review Date

Preparer

Classification

TA BLDG

FMU FACILITY TITLE

CALL LIST		Div	Work	Home	Pager	Cellular
Facility Manager						
Backup FM						
Bldg Mgr						
Alt Bldg Mgr or Designee						
Area Coord.						
Backup A.C.						

Stand-Off Instructions:

Problems w/ Loss of Power:

Purpose: Other:
☐ Office ☐ Shop
☐ Laboratory(ies) ☐ Storage

Special Bldg Designations: ☐ Use or Store Classified Mat
☐ Nuclear Fac ☐ TSD Fac
☐ Rad Fac Other _____

Assembly Point (s): Primary

Alternate

Shelter in Place Possible? Occupancy Capacity
☐ Not Possible
☐ Possible in whole bldg _____
☐ Possible in parts (specify): _____

Routine Building Occupancy	8 am-5 pm	5 pm-8 am	Above 1st floor	Underground

Security & Access Controls Min. Clearance Level Req: _____
Security Area Type: _____

Emer Planning Zone	SWANS Designation	SWANS Zone

Notifications - Adjacent Bldgs.

Communications - In House	Phone #'s/Freq./Talk Groups	Coverage/No. of Radios
☐ None		
☐ Bldg Telephone Paging System		
☐ Area Wide Paging System		
☐ VHF Radios		
Trunked Radios ☐ Local Talk Groups		
Other _____		

Divisions Housed

☐ LANSCE ☐ DOE ☐ ESA ☐ JCNNM ☐ NMT ☐ T Other
☐ BUS ☐ DX ☐ ESH ☐ LS ☐ P ☐ TSA
☐ CIC ☐ EES ☐ FAC ☐ MST ☐ PTLA ☐ X
☐ CST ☐ EM ☐ HR ☐ NIS ☐ S&S

_____

BUILDING RUN SHEET

EM&R Form 303
Form Date 6/4/98
Print Date 6/4/98

Last Review Date

Preparer

Classification

TA BLDG

FMU FACILITY TITLE

Pg. 2

Alarm Systems	C	U	L	Threshold/Loc.	Non-Chem. Hazards	Type	Location
☐ None					☐ None		
☐ Fire	☐	☐	☐		☐ Conf. Space		
☐ Oxygen	☐	☐	☐		☐ Electrical		
☐ Chlorine	☐	☐	☐		☐ Electro Pulse		
☐ Tritium	☐	☐	☐		☐ Open Flame		
☐ Criticality	☐	☐	☐		☐ Laser		
☐ Continuous Air Monitor	☐	☐	☐		☐ Mechanical		
					☐ Process		
					☐ X-Ray		
Other	☐	☐	☐		Other		
.....					.....		
.....					.....		

Chemical Hazards	Worst Player	Usual/Max. Quan.	Location
☐ None			
Class1: Explosives			
☐ Div 1.1 Mass Expl. Hazard			
☐ Div 1.2 Projection Hazard			
☐ Div 1.3 Predom fire hazard			
☐ Div 1.4 No sig. blast hazard			
☐ Div 1.5 Very insens. blast. agents			
☐ Div 1.6 Extr. insens. detonat. subst.			
Class 2: Gases			
☐ Div 2.1 Flammable gases			
☐ Div 2.2 Non-flam/non-poison compres.			
☐ Div 2.3 Poison inhalation hazard			
☐ Class 3: Flammable/combust. liquid			
Class 4: Flamm. solid, Dang when wet, etc.			
☐ Div 4.1 Flammable solid			
☐ Div 4.2 Spontan. combus. material			
☐ Div 4.3 Dangerous when wet			
Class 5: Oxidizers/organic peroxides			
☐ Div 5.1 Oxidizer			
☐ Div 5.2 Organic peroxide			
Class 6: Poison./Infectious material			
☐ Div 6.1 Poisonous material			
☐ Div 6.2 Infectious material			
☐ Class 7: Radioactive material			
☐ Class 8: Corrosive material			
☐ Class 9: Misc. Haz Mat			
☐ Haz./Mixed Waste			
☐ Haz. waste storage area			
Other			
.....			

BUILDING RUN SHEET

EM&R Form 303
Form Date 6/4/98
Print Date 6/4/98

Last Review Date

Preparer

Classification

TA BLDG

FMU FACILITY TITLE

Pg. 3

Comments:

Emer. Equipment Location Location

- ☐ None
- ☐ MSDS _____
- ☐ First Aid Kits _____
- ☐ Respirators _____
- ☐ SCBAs _____
- ☐ Spill Kits/Equip. _____
- ☐ Decon. Cabinets _____
- ☐ Port Monitors _____
- ☐ ERT Carts _____
- Other: _____

Any occupants trained in the following to help in emergencies?

- ☐ None Identified
- ☐ CPR
- ☐ First Aid Basic
- ☐ First Aid Responder
- ☐ EMT Basic
- ☐ HAZWOPER 1 - Awareness
- ☐ HAZWOPER 2 - Operational
- ☐ HAZWOPER 3 - Technician
- ☐ HAZWOPER 4 - Specialist
- ☐ HAZWOPER 5 - Incident Cmdr.
- ☐ SCBA
- ☐ Rad Worker 1
- ☐ Rad Worker 2
- ☐ Fac. Specific Emer. Proc.
- ☐ Bloodborne Pathogens

Other _____

ERT Capabilities

- ☐ Not Applicable
- ☐ Medical
- ☐ HazMat
- ☐ Radiological
- ☐ Local Oper. Knowledge

Other _____

Backup Power

- ☐ None ☐ Emergency Light(s)
- ☐ UPS (Battery) To: _____
- ☐ Gen. Gas To: _____
- ☐ Gen. Diesel To: _____

Hours/Gal. of Fuel

Emergency Conditions

- ☐ Structure Fire
- ☐ Hazmat Releases
- ☐ Other Malevolent Acts
- ☐ Loss of Cat i or II SNM
- ☐ Transportation Accident
- ☐ Industrial/Process Accidents
- ☐ HazMat From Other Buildings
- ☐ Actual/Credible Improvised Explosive Device
- ☐ Major Utility Problem: ☐ Power ☐ Water
- ☐ Severe Weather

Other:

Status

Initial Prep Date _____ Checklist Submitted to Fac _____ Pre-Fire Plan Sent _____

Run Sheet Comp _____ Checklist Complete _____ Update _____

Appendix D

GUIDANCE FOR BUILDING RUN SHEET PREPARATION

GUIDANCE FOR BUILDING RUN SHEET PREPARATION

TA: _____ BLDG: _____ REVIEWER: _____ DATE: _____

- A blank copy of the Building Run Sheet is available in Appendix C.
- ALL sections of the Building Run Sheet must have a response, even if it is "none" or "N/A."
- For responses with "Other," be as specific as possible.
- Verify document classification. **NOTE:** The Building Run Sheets CANNOT contain any classified information. (UCNI is permissible with appropriate markings.)

The Building Run Sheet is a three-page form as shown in Appendix C. The following terms refer to specific sections of the Building Run Sheet. Definitions, as well as other instructions, have been provided in order to help in completing the document.

Page 1 of 3:

1. **Stand-Off Instructions:** A pre-established point or procedures that emergency response personnel do not go beyond or violate until explicit instructions are received from facility personnel and/or EM&R. Primarily for high explosives and radiation areas, these procedures must be coordinated between facility personnel, EM&R, and the fire department.

2. **Problems with Loss of Power:** Items to consider are ventilation hazards, forced evacuation, complications and/or additional hazards, and extreme fiscal demands for on-going experiments/projects.

3. **Special Building Designations:** Provides additional information as to the function and contents of the building. "Use or Store Classified Material" refers to documents, as well as any classified object, part, or material. "TSD" refers to Treatment, Storage, and Disposal facilities.

4. **Assembly Point(s):** A primary assembly area is mandatory for all occupied buildings. In all cases, a secondary area should be discussed with facility personnel and, where possible, should be established. Additional guidance for establishing assembly areas includes the following:

- Keep roadways clear for emergency traffic;
- Where possible, keep multiple exits available in several directions;
- Label assembly areas;
- Where possible, use covered areas or adjacent buildings in inclement weather;
- Set up alternate assembly areas, taking into consideration prevalent wind conditions, hazards, and operations from other buildings in the immediate vicinity.

5. **Shelter in Place:** An action to reduce the possibility of exposure to airborne hazards by moving indoors and staying there until the emergency has passed or until further instructions have been received from emergency personnel. Given as a directive from the Incident Commander, sheltering in place involves being able to close all exterior windows and doors and turning off all ventilation equipment that involves outside air. Depending on configuration and operations, sheltering in place may be possible in a single room/area, within multiple areas of a building, or not possible at all.

6. **Shelter in Place Occupancy Capacity:** The approximate number of people that can be "comfortably" sheltered in place for several hours, realizing that in an emergency the number might have to be exceeded.

7. **Minimum Clearance Level Required:** Select one of the following four choices to reflect the level of **unescorted** access to the majority of the building: Open (No badge required), Uncleared (Badged), L-cleared, Q-cleared.

NOTE: Include any special entry requirements or other related information in the "Comments" section on Page 3 of the Building Run Sheet.

8. **Security Area Type:** A designation describing the purpose of a physically defined place established to provide physical protection for security interests in the custody of the Laboratory. The entire Laboratory falls into one of the Security Area Types listed below. Select the appropriate type(s) that reflects the current level of security. If a building has multiple security area types, state each type and the area(s) it covers.

A. **Property Protection Area** - Protects against damage, destruction, or theft of Government-owned property. (All buildings are this security type, at a minimum.)

B. **Limited Area** - Protects classified matter and/or Category III quantities of Special Nuclear Material (SNM) where security guards, employees, and internal control measures can prevent unauthorized persons from accessing the classified matter and/or Category III SNM.

C. **Exclusion Area** - Protects security interests in which aural or visual classified access is afforded simply by an individual's presence in the area.

D. **Protected Area** - The outer protective perimeter for a Material Access Area or Vital Area, but also established to protect Category II quantities of SNM.

E. **Material Access Area** - Contains Category I & II (at LANL) quantities of SNM, specifically defined by physical barriers, and located within a Protected Area.

F. **Restricted Access Areas** - These areas include:

- Sensitive Compartmented Information Facilities (SCIFs) - These facilities are to be located within Exclusion Areas.

- Central Alarm Station - Used in protection of Category I and II quantities of SNM, this facility is to be located, as a minimum, within a Limited Area.
- Secondary Alarm Stations - Same as Central Alarm System.
- Secure Communications Centers and Automated Information System Centers - Located, as a minimum, within a Limited Area.

For further details regarding Security Area Types, refer to DOE Order 5632.1C, the Laboratory's *Security/Safeguards Policies and Procedures Manual,* Chapter 5, Section 8, and/or contact S-2, Program Integration.

9. **Emergency Planning Zone.** EM&R will fill in the SWANS Designation and SWANS Zone.

10. **Notifications of Adjacent Buildings:** Notifications to occupants in those buildings that are located in the immediate vicinity of the emergency situation who should be notified of the emergency conditions and/or be given emergency instructions prior to the arrival of emergency response personnel. Include building numbers and their associated phone numbers.

11. **Communications:** Facility-available resources used to communicate with building occupants. These include, but are not limited to, paging systems, telephones, and radios available for use in an emergency.

Page 2 of 3:

12. **Alarm Systems:** The locations where the alarms are heard. Annunciation locations include C=Central Alarm Station (PTLA), U=Utility Control Center (JCNNM), and L=Local (facility). Any combination of boxes can be checked.

13. **Alarm Threshold Location:** The specific values/levels at which alarms are set to annunciate. Threshold values DO NOT apply for fire alarms.

14. **Non-Chemical Hazards:** "Type" and "Location" should be as specific as possible. When the hazard is located in many different areas, "throughout" is an acceptable answer. For electrical hazards, state the voltage level (for anything greater than 220).

15. **Chemical Hazards:** The classes and divisions come from the Department of Transportation, 49CFR. "Worst Player" should be kept to a minimum. More than one "worst player" can be listed, but should be limited to six or less and can be identified by either most hazardous or by most quantity. "Usual/Maximum Quantity" should address the approximate quantities normally present, both inside and outside the building. Load limits are also acceptable when actual amounts are unavailable and/or classified. "Location" should be as specific as possible. When the hazard is located in many different areas, an appropriate answer is "throughout".

Page 3 of 3:

16. **Comments:** Include any information that may affect a response given on the form but that does not fit anywhere else.

17. **Emergency Response Team (ERT) Capabilities:** A facility-based, specially trained group of emergency responders. Capabilities can include, but are not limited to, medical, HAZMAT, radiological, and local operational knowledge.

18. **Backup Power:** Identify what systems, experiments, etc. are covered by which backup sources.

19. **Emergency Conditions:** Identify which condition(s) could occur.

20. **Status:** These fields are reserved for EM&R use only.

Appendix E

EMERGENCY PROCEDURES CHECKLIST AND REGULATORY REFERENCES FOR EMERGENCY PROCEDURES

BUILDING EMERGENCY PLANNING CHECKLIST FOR TA BLDG

FACILITY TITLE

Last Review Date

Preparer _____

EMERGENCY PROCEDURES CHECKLIST

Bldg Contact Sticker Date	Evac Routes Posters Date	Date of Last Drill or Evaluated Real Evac	Emer Drill/ Exer Coord

	Reference	Location	EM&R Review Date	In Place Date
Access Bypass Procedure				
✓✓ Accountability Procedure				
✓✓ Emergency Action Levels Defined				
Emer Response Team Proc.				
✓✓ Evac & Sweep Procedure				
Handicapped Empl Emer Proc				
Hazardous Events Procedures				
Hazardous Material Inventory				
✓✓ NOTIFICATIONS PROC.				
Problems w/ Loss of Power				
✓✓ Rtn to Normal Ops/ Reentry				
✓✓Shelter In Place Procedure				
Shut Down Procedure(s)				
Special Evac / Transport Req.				
SPILL & CONTAINMENT PROC.				
Stand-Off Instructions				

Procedures in CAPS & underlined are required for ALL buildings.
Procedures with checkmarks, ✓✓, require EM&R review.
For all other procedures listed, EM&R review is recommended.

Preparer **Date**

Division Director or Designee for Emergency Planning **Date**

EM&R Representative **Date**

EM&R Form 304 Form Date: 9/16/97 Print Date: 6/4/98

BUILDING EMERGENCY PLANNING CHECKLIST FOR TA BLDG
FACILITY TITLE

Last Review Date
Preparer _____

REGULATORY REFERENCES FOR EMERGENCY PROCEDURES

Bldg Contact Sticker Date	Evac Routes Posters Date	Date of Last Drill or Evaluated Real Evac	Emer Drill/ Exer Coord
#10	#2 (a.2.i, App. E), #3 (q.2.vi)	#8 (12.9)	

	Reference	Location	EM&R Review Date	In Place Date
Access Bypass Procedure	#1			
✓✓ Accountability Procedure	#2 (a.2.iii), #4, #8 (2.3, 7.4)			
✓✓ Emergency Action Levels Defined	#1, #3 (q.2.iii), #4, #6, #8 (4.2)			
Emer Response Team Proc.	#1, #3 (q.3.iii), #5			
✓✓ Evac & Sweep Procedure	#1, #2 (a.2.i, a.4, a.5.i), #3 (q.2.iv), #4, #5, #7 (b.2.vii), #8 (2.3, 5.0, 7.4)			
Handicapped Empl Emer Proc	#5			
Hazardous Events Procedures	#1,#2 (Appendix E), #5, #6 (i.1.ii, i.3.i-v), #7 (b.2.vii, b.3.i)			
Hazardous Material Inventory	#1, #9 (e.1.i)			
✓✓ NOTIFICATIONS PROC.	#1, #2 (a.2.v), #3 (q.2.ix), #4, #8 (2.3, 5.0)			
Problems w/ Loss of Power				
✓✓ Rtn to Normal Ops/ Reentry	#4, #8 (7.5)			
✓✓Shelter In Place Procedure	#1, #3 (q.2.iv), #4, #8 (2.3, 7.4)			
Shut Down Procedure(s)	#1, #2 (a.2.ii), #8 (7.9)			
Special Evac / Transport Req.	#1, #8 (7.4)			
SPILL & CONTAINMENT PROC.	#5, #7 (b.3.i)			
Stand-Off Instructions	#1, #3 (q.2.iv)			

REFERENCES KEY

1. OSHA Directive CPL-2-2.59A 4/24/98
2. 29 CFR 1910.38
3. 29 CFR 1910.120 (q)(2)
4. DOE Order 151.1 9/25/97
5. 29 CFR 1910.119 (13)
6. 10 CFR 30.32
7. 40 CRF 355.40
8. LANL Emergency Management Plan 1998
9. 29 CFR 1910.1200
10. LANL Sign Catalog

Appendix F

GUIDANCE FOR EMERGENCY PROCEDURES
CHECKLIST PREPARATION

GUIDANCE FOR EMERGENCY PROCEDURES CHECKLIST PREPARATION

TA: _____ BLDG: _____ REVIEWER: _____ DATE: _____

- A blank copy of the Emergency Procedures Checklist is available in Appendix E.
- The Regulatory References for Emergency Procedures is also available in Appendix E. Refer to this form when completing the Checklist.

The following terms refer to the listed procedures and terms found on the Emergency Procedures Checklist and the Regulatory References for Emergency Procedures form. Definitions, as well as other instructions, have been provided in order to help in completing the Checklist and in developing emergency procedures.

Emergency Procedures Checklist

1. **Location.** The location of the procedures listed should include the TA, Building number, and Room Number or other locating information.

Regulatory References for Emergency Procedures

2. **Bldg. Contact Sticker Date:** Lists key contacts and phone numbers for personnel in charge of the building. At a minimum, these stickers should be posted on all major exterior doors. The most current version of the Bldg. Contact "Sticker" is available from EM&R or through the Laboratory supply catalog (# LAES1013B) if more than a couple of stickers are needed.

3. **Evacuation Routes Posters Date:** Emphasis should be on accuracy, not format. (To date, there is no Laboratory-required format.) Posters can be developed in-house or out-of-house. Additional guidance for developing evacuation posters includes the following:

- Make sure the floor plan is accurate;
- Indicate the most direct exit route;
- Show (or state) the location of assembly area(s);

The following are some optional items to include on the posters:

- Emergency contacts and phone numbers
- Locations of emergency equipment (e.g., pull boxes, fire extinguishers, spill kits).

4. **Date of Last Drill or Evaluated Real Evacuation:** An annual drill is required by the Laboratory's Emergency Management Plan. (Refer to Chapter 12 of the EMP for further information.) Real incidents can be used to fulfill this requirement **if** a critique and lessons learned are completed.

5. **Emergency Drill/Exercise Coordinator:** Refers to the facility point of contact in charge of conducting drills/exercises.

Emergency Procedures Checklist/Regulatory References for Emergency Procedures

6. **Access/Bypass Procedure:** Needed if normal access controls or physical structures prevent easy passage of a stretcher, fire hose or other emergency response equipment. Procedures should present alternate access routes, methods, etc. Due to security constraints, if emergency personnel cannot access these alternate routes themselves, a facility point of contact must be included in these procedures. It is necessary to coordinate access/bypass procedures between facility personnel, EM&R, and the fire department. See Appendix G, Generic Emergency Procedures, for an example of an Access/Bypass procedure.

7. **Accountability Procedure:** The methods used to account for personnel during an emergency. ***All*** occupied buildings must have an accountability procedure. Methods to determine accountability include, but are not limited to, log/roster checks and head counts. Procedures must be in place to account for regular occupants, as well as craftspeople and visitors. In addition, procedures must be in place for the communication of accountability results to the Incident Commander. Personnel accountability should be performed in conjunction with sweep procedures. See Appendix G for an example of an Accountability procedure.

8. **Emergency Action Levels:** Emergency Action Levels are specific, predetermined, observable criteria used to detect, recognize, and determine the emergency class of Operational Emergencies. An Emergency Action Level can be an instrument reading; an equipment status indicator; a measurable parameter for the Laboratory or offsite; a discrete, observable event; the results of analysis; or other observed phenomenon that indicates entry into a particular emergency class. For building-specific guidance, contact the EM&R Office at 667-6211.

9. **Emergency Response Team Procedures:** The Emergency Response Team is a facility-based, specially trained group of emergency responders. Procedures should cover, but are not limited to the number of team members; team notification and activation; team and individual member responsibilities and capabilities; equipment available; and training requirements.

10. **Evacuation & Sweep Procedures:** Building-specific procedures used for safe and prompt evacuation of the facility. Part of these procedures must include sweep procedures. The purpose of a sweep is to determine, to the extent possible, that the building has been evacuated. Evacuation and sweep procedures should take into account building operations, configuration, and nature of emergency. Communication of the sweep results, the current situation, and any potential or additional hazards noticed upon evacuation should be communicated immediately to the Incident Commander.

All occupied buildings ***must*** have a sweep procedure. Sweeps should be performed along normal exit routes and only in safe conditions. They should also be conducted from top to bottom, back to front, and interior to exterior. Sweep results should be communicated immediately to the Incident Commander. Under ***NO*** circumstances should anyone reenter a hazardous area or the building to perform a sweep, make notifications, or for any other reason. Sweeps should then be

followed up with personnel accountability at the assembly area. See Appendix G for an example of an Evacuation and Sweep procedure.

11. **Handicapped Employee Emergency Procedures:** "Handicapped" in this context refers to a physical condition that could impede an individual's ability to promptly evacuate the building or notify others of an emergency situation. Procedures should ensure evacuation for those with temporary and permanent disabilities. See Appendix G for an example of a Handicapped Employee/Visitor Evacuation procedure.

12. **Hazardous Events Procedures:** These procedures should address the most credible and worst case scenarios that could take place based on the hazards present, along with the associated building-specific actions that would be taken in these circumstances.

13. **Hazardous Material Inventory:** A complete and current inventory of radiological and chemical materials in use and/or stored on the premises of the building must be available during an emergency. The source and format of the inventory are at the discretion of building management.

14. **Notifications Procedures:** Internal and external notifications should be addressed. Internal notifications include, but are not limited to, building/facility management and internal resources. External notifications include, but are not limited to, calls to 911, notification to EM&R, and notifications to adjacent buildings. See Appendix G for an example of a Notifications procedure.

15. **Problems with Loss of Power:** Emergency procedures should address any life sustaining systems (e.g., ventilation) and/or hazard-limiting systems (e.g., fume hood exhaust) as well as critical experiments/projects that can potentially cause a hazard or suffer major programmatic impacts due to loss of power. Associated emergency actions and needed resources should also be included. Any problems with loss of power should be reported to the Incident Commander immediately.

16. **Return to Normal Operations Reentry:** Procedures/precautions necessary for reoccupation and resumption of normal activities and operations. Procedures should address hazardous, security, nuclear safeguards, and administrative concerns. Under ***NO*** circumstances should reentry take place without the consensus of the senior facility representative and Incident Commander. See Appendix G for an example of a Return to Normal Operations/Reentry procedure.

17. **Shelter in Place Procedure:** "Shelter in place" involves being able to close all exterior windows and doors and turning off all ventilation equipment that involves intake of outside air. Depending on the building configuration and operations, sheltering in place can be possible in a single area or in multiple areas within a building. If sheltering in place is possible, it is a good idea to maintain a sheltering in place kit for every room that will be used to shelter in place. Suggested items for the kit are heavy plastic, scissors, and duct tape for sealing doors and windows; flashlight(s) with extra batteries; a battery-operated radio; towels for sealing the bottoms of doors; a first aid kit; cloths to use for placing over nose and mouth; and sealed drinking water. See Appendix G for an example of a Shelter in Place procedure.

18. **Shut Down Procedure(s):** Procedures necessary for immediate (emergency) shut down of specific equipment, operations, and/or experiments.

19. **Special Evacuation/Transportation Requirements:** Some buildings, due to operations and/or physical location, have special requirements when it comes to evacuation (e.g., mandatory monitoring procedures, the necessity for four-wheel drive vehicles in inclement weather). Be as specific as possible in addressing these unique situations.

20. **Spill & Containment Procedures:** These procedures should address, as a minimum, containment, clean-up, and notifications/reporting requirements. NOTE: Some facilities should be able to reference their Spill Prevention Control and Countermeasure Plan, if the plan is required by the EPA for the building. See Appendix G for an example of a Spill and Containment procedure.

21. **Stand-off Instructions:** A pre-established point or procedures that emergency response personnel do not go beyond or violate until explicit instructions are received from facility personnel and/or EM&R . Primarily for high explosives and radiation areas, these procedures must be coordinated between facility personnel, EM&R, and the fire department.

Appendix G

GENERIC EMERGENCY PROCEDURES

GENERIC EMERGENCY PROCEDURES

Several emergency procedures can be somewhat standardized and can be applied to an individual building, multiple buildings, and/or possibly even to an entire site or Technical Area. This appendix contains examples of the more generic or basic types of emergency procedures. It is possible that some of these procedures can be used verbatim, while others might need to be adjusted to meet specific needs of the building(s) for which they apply. These examples are provided for guidance only. There is no mandatory policy stating that emergency procedures must be in these formats.

1. **Access/Bypass Procedure:**

Inaccessible entry/area:_____

Alternate route:_____

Upon evacuation of the building, the assembly point leader will inform the Incident Commander of any inaccessible areas and the alternate route(s) to accommodate entry.

2. **Accountability Procedure:**

All building personnel should report to the designated assembly area upon evacuating the building. At the assembly area, the assembly point leader will take roll call of regular personnel, visitors, and craftspeople. Everyone will be questioned as to any known locations of people not reporting to the assembly area and as to any hazardous conditions noticed upon evacuation. The assembly point leader will then relay the accountability results and any other pertinent information to the facility representative at the Command Post. If a facility representative is not present at the Command Post, information should be relayed directly to the Incident Commander.

NOTES:

(1) Make sure the procedure states how the assembly point leader is designated. A predesignated position can be selected to fulfill this role (e.g., receptionist, group leader) but be aware that this position must always be filled. Another way to designate the assembly point leader is to state that this position is assumed by the first person who arrives at the assembly area.

(2) If logs and rosters are to be used in taking roll call, the procedure must state how the rosters will be brought to the assembly area.

3. **Evacuation & Sweep Procedures:**

Upon notice to evacuate the building (via audible or visual alarms or vocal announcement), all personnel shall immediately report to the designated assembly area.

The building is divided into sweep zones, designated by a sweep tag for each zone. Upon notice to evacuate the building, those persons (in-house residents only) closest to a sweep tag will take the tag, sweep the designated area, check for remaining personnel and/or obvious hazards/

problems, and proceed immediately to the assembly area. The sweep tags will be collected and accounted for at the assembly area. The assembly point leader will immediately report to the facility representative at the Command Post and relay the following information:

- which areas were swept;
- information gathered during the sweep; and
- which areas were unable to be swept.

If a facility representative is not present at the Command Post, information should be relayed directly to the Incident Commander.

4. **Handicapped Employee/Visitor Evacuation Procedure:**

Any employee having a permanent or temporary handicap that would hinder their timely evacuation must notify their supervisor accordingly. The supervisor will assign a co-worker(s) and an alternate to assist that employee during evacuation. If emergency responder assistance is required, the assigned assistant shall immediately notify the assembly point leader so that personnel and equipment can be immediately requested through the Incident Commander.

A handicapped visitor is the responsibility of his/her escort. When evacuation is required, the escort will assist the visitor out of the building to the assembly area.

5. **Notifications Procedure:**

Upon noticing any situation that is perceived to be capable of causing immediate harm to people, property, or the environment, anybody can and should:

- Pull the handle on a fire alarm pull box if immediate evacuation of the area seems necessary. **DO NOT USE PULL BOXES FOR SUSPICIOUS PACKAGES.**
- Call 911 if:
  - Emergency response personnel are needed (i.e., paramedics).
  - A pull box alarm was pulled. Tell the 911 operator why the alarm was pulled.
  - A building was evacuated due to an automatic alarm. Give the 911 operator any information gathered during the sweep and evacuation (e.g., broken water pipe, toaster set off smoke detector, workers cut a power line, no visible sign of why alarm went off).
  - A suspicious package has been found.
- Call line management. Line management will notify their designated Facility Manager.
- Notify any adjacent buildings that are imminently threatened.

NOTE: On any phone call to 911, 667-7080 (the Central Alarm Station), or pull of a pull box, the Central Alarm Station notifies EM&R. If none of these actions were taken, personnel should call EM&R directly at 667-6211.

6. **Return to Normal Operations/Reentry Procedures:**

Reentry is the first entry made after evacuation in order to perform mitigation or determine that the area is safe for personnel to return to the building. This must **ONLY** be done by emergency response personnel at the direction of the Incident Commander. This decision will be made in conjunction with the facility representative at the Command Post and with as much information available on building hazards, the incident, and safety considerations.

Return to normal operations is the point in an incident when the Incident Commander turns the facility back over to facility management. The facility representative must participate in a face-to-face briefing with the Incident Commander to determine any recovery tasks that may still need to be accomplished as a result of the incident. The responsible facility representative will then direct personnel when to return to the building.

7. **Shelter in Place Procedure:**

- Upon advisement to shelter in place, proceed to the designated shelter in place area.
- While enroute to the shelter in place area, place a handkerchief or cloth over your mouth and nose to prevent inhalation of contaminants.
- Close and lock all windows and doors. (Locking provides for a tighter seal.)
- Turn off all ventilation equipment requiring outside air. NOTE: Ensure that shutting off ventilation does not create additional hazards by shutting off fume hoods, stacks, etc.
- Move everyone into one room. Seal windows and doors with plastic and tape, if possible. Place a moistened towel up against the bottom of the door to help seal it.
- If you have been outside, wash your hands and face as a minimum precaution, especially before eating or handling food. If possible, take a shower with cold or lukewarm water and then change into non-contaminated clothes. Place contaminated clothing in bags, trash can receptacles, or whatever is available, making sure that it is covered and segregated from personnel.
- Cover all open food containers.
- Keep communication lines open for emergency use.
- Stay inside until you receive word from the Incident Commander or Facility Manager that it is safe to go out doors.
- It is a good idea to maintain a sheltering in place kit for every room that will be used to shelter in place. Suggested items for the kit are heavy plastic, scissors, and duct tape for sealing doors and windows; flashlight(s) with extra batteries; a battery-operated radio; towels for sealing the bottoms of doors; a first aid kit; cloths to use for placing over nose and mouth; and sealed drinking water.

8. **Spill & Containment Procedures:**

- Get away (uphill, upwind);
- Isolate the area;
- Identify the hazard;
- Call 911 or, if not life threatening, call EM&R (667-6211).