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Routine Environmental Audit of the Sandia National Laboratories, California Livermore, California

**U.S. Department of Energy
Office of Environmental Audit
Washington, DC 28205**

March 1994

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PREFACE

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Preface

U.S. Department of Energy Routine Environmental Audit Conducted at Sandia National Laboratories Livermore, California

The Secretary of Energy's July 20, 1993, Environment, Safety, and Health Policy establishes daily excellence in protection of the worker, the public, and the environment as the hallmark and highest priority of all DOE activities. That policy also calls for a proactive program of continuous improvement to move the Department beyond minimal compliance with laws and regulations. To further that policy, the Office of Environment, Safety, and Health (EH) has established, as part of the internal oversight responsibilities within DOE, a program within the Office of Environmental Audit (EH-24) to conduct environmental assessments of DOE programs and operating facilities. The ultimate goal of this program is enhancement of environmental protection and minimization of risk to public health and the environment through systematic and periodic evaluations of the Department's environmental programs within line organizations.

Through its environmental evaluation program, which results in measurable goals with milestones, EH-24 is committed to helping establish DOE as a model of responsible environmental stewardship. In addition, this program will reinforce the Secretary's goal of building on the ongoing efforts to attain and maintain compliance in cooperation with regulatory authorities and other stakeholders.

This document contains the findings identified during the Routine Environmental Audit of the Sandia National Laboratories, Livermore, California (SNL/CA), conducted from February 22 through March 4, 1994. The objective of the audit was to advise the Secretary of Energy, through the Assistant Secretary for Environment, Safety, and Health, of the adequacy of management systems at SNL/CA; to ensure their compliance with Federal, state, local, and DOE environmental requirements; and to evaluate application of proactive management practices. The audit was comprehensive in scope, and it addressed all areas of environmental management and included indepth reviews of the NEPA and inactive waste sites programs.

March 1994
Washington, D.C.

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

This report documents the results of the Routine Environmental Audit of the Sandia National Laboratories, Livermore, California (SNL/CA). During this audit the activities the Audit Team conducted included reviews of internal documents and reports from previous audits and assessments; interviews with U.S. Department of Energy (DOE), State of California regulators, and contractor personnel; and inspections and observations of selected facilities and operations. The onsite portion of the audit was conducted from February 22 through March 4, 1994, by the DOE Office of Environmental Audit (EH-24), located within the Office of Environment, Safety, and Health (EH).

(DOE 5482.1B, "Environment, Safety, and Health Appraisal Program," establishes the mission of EH-24: to provide comprehensive, independent oversight of Department-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is enhancement of environmental protection and minimization of risk to public health and the environment. EH-24 accomplishes its mission by conducting systematic and periodic evaluations of the Department's environmental programs within line organizations and by using supplemental activities that strengthen self-assessment and oversight functions within program, field, and contractor organizations.)

The audit evaluated the status of programs to ensure compliance with Federal, state, and local environmental laws and regulations; compliance with DOE Orders, guidance, and directives; and conformance with accepted industry practices and standards of performance. The audit also evaluated the status and adequacy of the management systems developed to address environmental requirements.

The audit's functional scope was comprehensive and included all areas of environmental management and a programmatic evaluation of NEPA and inactive waste sites. Although the audit was designed to be thorough and to consider a representative sample of SNL/CA environmental activities and programs, it was not intended to be exhaustive in scope. Instead, it was meant to provide DOE organizations, including the Secretary, with an indication of the status of SNL/CA management's effectiveness in achieving its mission in an environmentally responsible manner.

The Audit Team identified nine findings; eight were in the environmental management systems area and one was in a specific technical discipline. In general, the Audit Team found that environmental programs and management systems at SNL/CA are well understood, managed, and implemented. Top management, their direct reports, and professional and technical staff all exhibit a sincere, dedicated, and personal commitment to environmental protection. This commitment and ownership of environmental protection, however, relies heavily on informal relationships. This lack of formality is a common thread in seven of the nine findings and resulted in the identification of one "key finding":

There is a need for SNL/CA to strengthen the formality of some of its environmental management systems to ensure effective management and continued improvement in environmental performance.

Specific formality concerns include the following:

- Some lack of documentation of certain elements of formal programs;
- Poor integration between various SNL and SNL/CA management and environmental planning systems;
- Areas where guidance to line managers is insufficient to support their environmental responsibilities; and
- Overreliance on informal relationships to ensure that DOE provides adequate oversight.

Although some elements of formality are lacking, they do not present any short-term risk to the public health or the environment; they do, however, create the risk that the quality of current environmental protection efforts at SNL/CA may not be sustained and enhanced in the future, should personnel turnover occur.

The Audit Team identified the following strengths in the SNL/CA environmental management programs:

- Environmental Commitment. KAO and SNL/CA exhibit a commitment to environmental protection demonstrated by formal statements, top management support, and line management accountability. With regard to KAO and SNL, as well as SNL/CA, the following specific examples of commitment to environmental protection were observed:
 - Senior managers of KAO, SNL, and SNL/CA include environmental issues in routine meetings;
 - KAO, SNL, and SNL/CA have established both broad environmental goals and specific expectations, and they track progress toward both;
 - SNL/CA is very open to employee input, and SNL/CA and KAO routinely accept public input;
 - The EP Department and the ES&H Coordinators form a strong system for communicating guidance to line managers with environmental responsibility; and
 - KAO and SNL/CA are very cooperative with oversight groups.
- Communication. Environmental communications, both between SNL/CA and SNL/NM and with external stakeholders, are well managed, proactive, and effective. Internal communications within SNL/CA and between SNL/NM and SNL/CA were found to be generally very good. A strength of this system is the co-location of the line ES&H Coordinators in the Management Assurance Department. Another strength is the Observant Observer Award program,

which encourages employees to use various reports and telephone numbers to identify ES&H concerns to Occurrence Management. External communication with state regulatory agencies and the local community is also a strength at SNL/CA. The Educational Outreach program is an example of both good citizenship and proactive external communication activity.

- Line Responsibility. SNL/CA has aggressively pushed environmental responsibility to line personnel. The SNL/CA self-assessment program strives to create a culture of accountability and continuous improvement at the grassroots level. Environmental awareness levels among the site staff are high and the Incident Reporting database captures many everyday environmental occurrences that are then addressed and closed by the line individual(s) who "own" the problem.

Overall, the Audit Team found that very good progress in strengthening the SNL/CA environmental program had been made since the 1990 Tiger Team Assessment. SNL/CA has forwarded completed corrective action packages for the 17 outstanding environmentally related Tiger Team findings to KAO, where they are awaiting verification for eventual closure.

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SECTION 1.0

INTRODUCTION

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1.0

INTRODUCTION

This report documents the results of the Routine Environmental Audit of the Sandia National Laboratories (SNL/CA), located approximately 40 miles east of San Francisco, California, and approximately 3 miles east of Livermore, California. The onsite portion of the audit was conducted from February 22 through March 4, 1994, by the DOE Office of Environmental Audit (EH-24).

DOE 5482.1B, "Environment, Safety, and Health Appraisal Program," establishes the mission of EH-24: to provide comprehensive, independent oversight of DOE complex-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is to enhance environmental protection and minimize risk to public health and the environment. EH-24 accomplishes its mission by conducting systematic and periodic evaluations of the Department's environmental programs within line organizations, and by using supplemental activities that strengthen self-assessment and oversight functions within program, field, and contractor organizations.

These evaluations function as a vehicle to apprise the Secretary and Program Managers of the current status and vulnerabilities of Departmental environmental activities and environmental management systems. Several types of evaluations are conducted, including

- Comprehensive Baseline Environmental Audits;
- Routine Environmental Audits;
- Environmental Management Assessments; and
- Special Issue Reviews.

The purpose, scope, and approach of the Routine Environmental Audit of SNL/CA are described below.

1.1

PURPOSE

The purpose of the audit of SNL/CA was to provide the Secretary of Energy, through the Assistant Secretary for Environment, Safety, and Health, with concise information pertaining to the following areas:

- The adequacy of environmental management programs and organizations;
- DOE vulnerabilities and liabilities associated with environmental management practices;
- Compliance with environmental laws and regulations, DOE Orders, and DOE environmental policies (as identified in Appendix F), that address environmental management programs;
- Adherence to best management (and accepted industry) practices pertaining to environmental management programs;

- Progress and effectiveness of environmental corrective actions resulting from the 1990 Tiger Team Assessment; and
- Noteworthy environmental management practices.

The information gathered during this audit and embodied in this report will assist DOE in determining patterns and trends in environmental deficiencies and strengths. The Office of Defense Programs (DP); the DOE Albuquerque Operations Office (AL); the Kirtland Area Office (KAO); and Sandia National Laboratories, Livermore, California (SNL/CA), are expected to use fully this information to develop corrective actions; to identify root causes; to make appropriate modifications to specific programs to prevent recurrence; and to implement lessons-learned programs to ensure broad applications to other operations, programs, and facilities.

1.2 SCOPE

The scope of the Routine Environmental Audit was comprehensive, addressing all areas of environmental management and including a programmatic assessment of the National Environmental Policy Act (NEPA) and inactive waste sites programs. Additional consideration was given to reporting and oversight relationships with DP, AL, and KAO.

1.3 APPROACH

The Routine Environmental Audit was conducted in accordance with the DOE Environmental Audit Program Guidance (DOE/EH-0232, December 1992), and Protocols for Conducting Environmental Management Assessments of DOE Organizations (DOE/EH-0326, June 1993). Accepted assessment techniques were followed.

The audit was conducted by a team of professionals managed by a DOE Headquarters Team Leader and Deputy Team Leader from EH-24 and staffed by technical and administrative support contractor personnel. The names, areas of responsibility, affiliations, and biographical sketches of the team members are provided in Appendix A. The audit included three phases: planning, conducting onsite activities, and reporting.

As part of the planning phase, a memorandum was sent to SNL/CA announcing the audit and requesting information about the management systems and selected environmental programs. A pre-audit site visit was conducted January 25–27, 1994. The site's response to the information requested, combined with the pre-audit site visit information, formed the basis for the "Plan for the DOE Routine Environmental Audit of SNL/CA" (see Appendix B), which included a preliminary agenda for onsite activities. The Audit Team modified the preliminary agenda during the onsite activities as more information was obtained and additional areas of interest were identified. The final daily activity schedule is contained in Appendix C.

Onsite audit activities included interviews with SNL/CA, AL, and KAO personnel, and state regulators; document reviews (including previous audit and self-assessment reports); and observations of actual environmental management activities or operations. The Audit Team conducted daily debriefs that SNL/CA and KAO personnel attended. Using information from site observations, document reviews, and interviews, the Audit Team developed findings as discussed in Sections 2.0 and 3.0 of this report. Lists of site documents reviewed and interviews performed are provided in Appendices D and E respectively.

Deficiencies the Audit Team identified were categorized as findings. Findings are conditions that, in the judgment of the team, may not satisfy environmental regulations, DOE Orders, Consent Agreements with regulatory agencies, environmental permit conditions, DOE or contractor environmental policies and procedures, regulatory agency guidance, accepted industry practices or technical standards, DOE guidance, or professional judgment.

Overviews and findings are detailed in Section 3.0 and organized into the following eight categories: organizational structure; environmental commitment; environmental protection programs; formality of environmental programs; internal and external communication; staff resources, training, and development; program evaluation, reporting, and corrective action; and environmental planning and risk management. In addition, two technical disciplines—National Environmental Policy Act and inactive waste sites—are discussed in detail. Each finding is organized into three sections: the performance objective, the finding statement, and a discussion of the facts and observations supporting the finding. The particular standards against which the finding is being evaluated are specified as performance objectives. The findings are not arranged in order of relative significance.

1.4 BACKGROUND AND PROJECT DESCRIPTION

SNL/CA is located on approximately 413 acres about 40 miles east of San Francisco, California, at the southeastern end of the Livermore Valley in southern Alameda County. Figure 1-1 shows the regional setting of SNL/CA. The City of Livermore, California, is about 3 miles to the west. DOE's Lawrence Livermore National Laboratories is immediately north of East Avenue, which bisects the two laboratories. Figure 1-2 is the SNL/CA site map.

Land to the north is zoned industrial. To the west, land is rapidly becoming a high-density urban setting. To the south and east, land is zoned agricultural and is currently used for pasture and vineyards.

SNL/CA overlies an area of low relief that slopes gently downward to the northwest. The southernmost part of the site is the highest point, 850 feet above mean sea level. Three water-storage tanks, which provide potable water for the site, are located onsite on the hill to the south.

Before World War II the land SNL/CA now occupies was used for light agriculture and cattle grazing. In March 1942 the Navy purchased the property as a site for a training base, subsequently known as the Livermore Naval Air Station. Part of the area SNL/CA now occupies contains an inactive landfill, known as the Navy Landfill, that was part of the Naval Air Station.

SNL/CA is one of four sites operated for DOE by the Sandia Corporation (SC), a wholly-owned subsidiary of the Martin Marietta Corporation. The operating contract between DOE and SC took effect in October 1993 and covers operations at Sandia National Laboratory, New Mexico (SNL/NM); SNL/CA; the Tonopah Test Site; and the Kauai Test Range.

The principal mission of SNL/CA is to implement national nuclear weapons policy through research, development, and testing of nuclear ordinance; arms control verification; and weapons surety. In addition, SNL/CA is actively using its core research and engineering competencies to produce and transfer technologies that contribute to the National Energy Strategy and to environmental protection and integrity. In this context, SNL/CA is working

SOURCE: Devlin, 1986

Figure 1-1. Regional Setting of SNL/CA

Figure 1-2. SNL/CA Site Map

cooperatively with the academic and industrial communities to develop technological infrastructures that will enhance national economic security.

The fiscal year (FY) 1994 budget for SNL is \$1.37 billion. Of this, 11 percent, or \$153 million, is allocated to SNL/CA. As shown in Figure 1-3, approximately 60 percent of this SNL/CA total is funded by the Department of Energy's Office of Defense Programs (DP), roughly 15 percent comes from Energy and Environment activities, 15 percent from Core Competency programs, and approximately 10 percent from Work for Others.

SNL/CA's work for the Department of Energy embodies four key areas or "strategic thrusts":

- **Defense Systems:** The three principal objectives of this work area are to meet the needs of the enduring nuclear stockpile, to maintain a secure and assured weapons development and production capability, and to respond to new national defense and weapons-related challenges as dictated by national security needs. A key focus of this strategic thrust is to promote "dual use" applications—civilian or industrial use in addition to national security needs—of defense technology.
- **Integrated Manufacturing Technology:** The primary objective of this work is application of SNL/CA's systems and technology expertise—developed through nuclear weapons activities—to projects that will enhance the nation's economic competitiveness. This activity builds upon the inherent synergies between a revamped, smaller, and more efficient weapons complex and industry's need for rapid prototyping and low-cost manufacturing technologies.
- **Energy and Environment:** Centered in the Combustion Research Facility, this work area is dedicated to building upon SNL/CA's existing expertise in combustion technology to address issues of both efficient energy consumption and reduced environmental impacts from fossil-fuel sources. In addition, this work area is investigating better methods for thermal destruction of solid and hazardous wastes.
- **California-Leveraged Initiatives:** Building upon the relationships and assets inherent in its location, SNL/CA's final key work area is focussed on two major objectives. First is developing active transportation programs designed to maximize transportation efficiency while minimizing environmental impacts. The second priority area is building effective outreach and liaison programs with both industry and government in the Bay Area to enhance and effectuate the transfer of technology from the Federal Government to the private sector.

SNL/CA directly employs approximately 1,040 people; in addition, 300 contractors work at the site. Of these personnel, approximately half work directly on research and development programs, with the balance providing technical and administrative support. Energy and Environment work taking place within the Combustion Research Facility (CRF) consists of both DOE-sponsored experiments and a significant amount of work for non-governmental organizations. In this latter area, the CRF frequently hosts scientists and researchers from industry and academia. In addition, some field testing of CRF-based research takes place off the SNL/CA site.

SNL/CA TOTAL BUDGET
Fiscal Year 1994
(\$153 Million)

Figure 1-3. Fiscal Year 1994 SNL/CA Budget by Area

1.5 ENVIRONMENTAL MANAGEMENT PROGRAMS AND ORGANIZATION

SNL Corporate Management Structure

SNL's basic corporate management structure consists of a President and Laboratory Director; an Executive Vice President and Deputy Director; and 10 Vice Presidents, each of whom has responsibility for major research, administrative, and/or support activities. This organization is depicted in Figure 1-4.

The management of SNL is committed to the philosophy that SNL is "one company with many sites." This philosophy has led SNL to standardize management and operating practices across the four sites for which it is responsible. In recognition of this philosophy, the Audit Team looked at both SNL/CA and SNL and how well their management systems are integrated.

SNL Corporate Environmental Management Structure

Responsibility for Environmental Management programs at SNL is exercised by researchers and experimenters, referred to as line personnel throughout this report, and by environmental staff with direct technical expertise. In addition, senior management involvement is ensured by all Vice Presidents' membership on the Sandia ES&H Council (SEC).

SNL Line Environmental Management Structure. Each Vice President has on staff an Environment, Safety, and Health (ES&H) Coordinator. This individual is directly responsible for working with the staff environmental professionals to understand and implement the relevant environmental protection and compliance programs within their line organization. In addition, because the ES&H Coordinator reports directly to his or her line Vice President, environmental programs have significant visibility and support from senior management.

ES&H coordinators work closely both with each other and with the technical support staff from the Laboratories Services Division. The Line Implementation Working Group (LIWG), consisting of all of the ES&H Coordinators, meets weekly to ensure that adequate communication and knowledge sharing takes place between the ES&H Coordinators regarding issues of common interest and impact. Both through the LIWG and individually, the ES&H Coordinators also develop Division-specific procedures and practices to ensure that specific environmental protection requirements are met.

SNL Staff Environmental Management Structure. The primary technical support for line management of environmental programs at SNL Corporate comes from the Laboratories Services Division. Included in this Division is the Environmental Operations Department, which provides technical and professional guidance to the ES&H Coordinators and other divisional and operational managers regarding environmental protection requirements and management systems.

SNL/CA Management Structure

The SNL philosophy of "one company with many sites" is reflected in SNL/CA's overall management structure. Eleven Center Directors report to the Vice President for California Programs. As with the corporate-level divisions, the Centers consist of both operating

SANDIA NATIONAL LABORATORIES

Figure 1-4. SNL Corporate Management Structure

organizations and staff and administrative functions. The SNL/CA overall management structure is shown in Figure 1-5.

SNL/CA Environmental Management Structure

SNL/CA has aggressively and consistently pushed environmental responsibility to the line organizations. This emphasis on line responsibility and accountability has been implemented over the past four years and is now embedded in the SNL/CA operating culture. Line management responsibilities are supported by technical personnel in both the SNL/CA Center for ES&H and Facilities Management and the Laboratories Services Division in Albuquerque. Senior management remains involved and informed through a series of planned (but unscheduled) environmental surveillances of areas under their purview and through their membership on the Sandia-CA ES&H Council (SCEC).

SNL/CA Line Environmental Management Structure. As with SNL, each SNL/CA Center Director has an ES&H Coordinator reporting to him or her. These individuals are responsible for ensuring that the specific environmental protection requirements in each Center are understood and implemented. The Coordinators are assisted by a variety of SNL/CA committees and working groups and by the Center for ES&H and Facilities Management (shown in Figure 1-6). These working groups include the Safety, Health, and Environment Appraisal Committee (SHEAC); the Laboratory Assessment Program (LAP); the Incident Examination Committee (IEC); and the Management Assurance Department (MAD). In addition to the above working groups, there are also a number of standing safety and environmental steering committees. Those with an environmental focus include the Hazardous Waste Line Action Team and the Pollution Prevention Leadership Team.

SNL/CA Staff Environmental Management Structure. Staff technical support to line management is provided through the Center for ES&H and Facilities Management's Environmental Protection Division (EPD). Primarily a service organization supporting line management's environmental protection and implementation efforts, EPD also holds lead responsibility for environmental monitoring efforts, for environmental restoration efforts, and for operation of the site's permitted hazardous waste storage facility.

EPD is divided into six programmatic areas and two support functions, as shown in Figure 1-7. The support EPD provides is enhanced by regular communication, both formal and informal, between the EPD manager and the MAD manager and between the ES&H Coordinators and the technical specialists within EPD.

SANDIA NATIONAL LABORATORIES, CALIFORNIA

Figure 1-5. SNL/CA Management Structure

SNL/CA ES&H ORGANIZATION

Figure 1-6. SNL/CA Center for ES&H and Facilities Management Organization Chart

SNL/CA ENVIRONMENTAL PROTECTION DEPARTMENT

Figure 1-7. SNL/CA Environmental Protection Department Organization Chart

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SECTION 2.0

**SUMMARY OF
ROUTINE ENVIRONMENTAL
AUDIT RESULTS**

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SUMMARY OF ROUTINE ENVIRONMENTAL AUDIT RESULTS

This report documents the results of the Routine Environmental Audit performed at SNL/CA. During this audit, activities and records were reviewed and interviews were conducted with DOE personnel, State of California regulators, and contractor employees.

The following summarizes the results and conclusions of the Routine Environmental Audit of Sandia National Laboratories, Livermore, California, (SNL/CA) conducted from February 22 through March 4, 1994.

DOE 5482.1B, "Environment, Safety, and Health Appraisal Program," establishes the mission of EH-24: to provide comprehensive, independent oversight of DOE complex-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is to enhance environmental protection and minimize risk to public health and the environment. EH-24 accomplishes its mission by conducting systematic and periodic evaluations of the Department's environmental programs within line organizations and by using supplemental activities that strengthen self-assessment and oversight functions within program, field, and contractor organizations.

The Routine Environmental Audit of SNL/CA was designed to evaluate SNL/CA's environmental programs, supported by management systems that ensure effectiveness of development and implementation of such programs.

During the audit, nine findings were identified; eight were in environmental management systems and one was in a specific technical discipline. The finding numbers and titles are presented in Table 2-1.

Status of May 1990 Tiger Team Assessment Corrective Actions

A Tiger Team Assessment of SNL/CA was conducted from April 30 through May 18, 1990. The Environmental Subteam identified 38 findings. In 1991 a Tiger Team Assessment was conducted at Sandia National Laboratory-Albuquerque (SNL/NM). Originally, separate corrective action plans were developed for each site. In October, 1992, however, a consolidated corrective action plan was prepared that merged the corrective action plans of both sites. Since many of the findings at the two sites were very similar, it was concluded that merging the corrective action plans was the most effective course of action. The Office of Defense Programs (DP) endorsed this consolidation. The 17 environmentally related corrective actions that are specific to SNL/CA operations and that currently require verification by KAO were not consolidated with SNL/NM's corrective action.

During the pre-audit site visit briefings, the EH-24 Audit Team indicated it would review the 17 environmentally related corrective actions to ensure and address progress made on Tiger Team findings since the 1990 assessment and eliminate the possibility of finding duplication during this audit. As a result of this review, the Audit Team was able to verify and recommend for closure one corrective action (Tiger Team Finding NEPA/CF-4). Additional corrective actions could not be verified because the focus of this audit was on management systems and not compliance with applicable Federal, state, and local requirements per se.

TABLE 2-1**ROUTINE ENVIRONMENTAL AUDIT TEAM FINDINGS**

Finding Number	Title of Finding	Page No.
Organizational Structure (OS)		
	No findings identified	
Environmental Management (EM)		
	No findings identified	
Environmental Protection Programs (EPP)		
EP-1	SNL/CA Environmental Protection Programs	3-20
FP-1	Formality of SNL/CA Environmental Programs	3-27
FP-2	Inactive Waste Site Programs and Management Systems	3-29
	No findings identified	
SR-1	Environmental Staffing	3-37
SR-2	Environmental Training Program	3-39
Environmental Compliance (EC)		
PE-1	DOE Environmental Compliance Oversight	3-44
Environmental Planning and Management (EPM)		
RM-1	Environmental Planning and Budgeting	3-50
RM-2	Radiological Characterization of the Tritium Research Laboratory	3-52
NEPA-1	NEPA Guidance	3-57
	No findings identified	

Nevertheless, SNL/CA has completed packages for all of the remaining 16 corrective actions and has forwarded them to KAO for verification.

The Audit Team identified the following strengths in SNL/CA's environmental management programs:

- **Environmental Commitment.** KAO and SNL/CA exhibit a commitment to environmental protection demonstrated by formal statements, top management support, and line management accountability. With regard to KAO and SNL, as well as SNL/CA, the following specific examples of commitment to environmental protection were observed:
 - Senior managers of KAO, SNL, and SNL/CA include environmental issues in routine meetings;
 - KAO, SNL, and SNL/CA have established both broad environmental goals and specific expectations and track progress toward both;
 - SNL/CA is very open to employee input, and SNL/CA and KAO routinely accept public input;
 - The EP Department and the ES&H Coordinators form a strong system for communicating guidance to line managers with environmental responsibility; and
 - KAO and SNL/CA are very cooperative with oversight groups.
- **Communication.** Environmental communications, both between SNL/CA and SNL/NM and with external stakeholders, are well managed, proactive, and effective. Internal communications within SNL/CA and between the two SNLs were found to be generally very good. A strength of this system is the co-location of the line ES&H Coordinators in the Management Assurance Department. Another strength is the Observant Observer Award program, which encourages employees to use various reports and telephone numbers to identify ES&H concerns to Occurrence Management. External communications with state regulatory agencies and the local community is also a strength at SNL/CA. The Educational Outreach program is an example of both good citizenship and proactive external communication activity.
- **Line Responsibility.** SNL/CA has aggressively pushed environmental responsibility to line personnel. Environmental awareness levels among the site staff are high and the Incident Reporting database captures many everyday environmental occurrences that are then addressed and closed by the line individual(s) who "own" the problem.

2.1 FINDINGS SUMMARY

The following paragraphs briefly describe the observations and findings in each of the disciplines included in the SNL/CA Routine Environmental Audit.

Organizational Structure (OS). No findings were identified in the organizational structure portion of the audit. The DOE and SNL environmental management structures were generally found to have clear lines of authority, although SNL and SNL/CA must resolve the proposed programmatic reporting relationship between their environmental support professionals. Independence of management assurance at SNL/CA is maintained; however, this is accomplished through informal means. Line responsibility for environmental performance is reinforced through individual performance reviews and through financial recognition. DOE and SNL/CA employees best informed about site environmental conditions have adequate access to top management. However, SNL/CA's best-informed environmental professional, its EP Department Manager, will soon be transferred and the functions of that position will be divided between two replacements. SNL/CA will then be challenged to maintain the existing close relationship this person has with top management.

Environmental Commitment (EC). No findings were identified in the environmental commitment portion of the audit. The Audit Team found that top management of KAO, SNL, and SNL/CA regularly discuss key environmental issues during meetings, and they have established goals and expectations for environmental performance. Although resource allocation to site environmental protection is considered adequate, staffing resources are insufficient in some areas. SNL/CA line managers do not have a strong grasp of environmental requirements, but this deficiency is offset by the system of guidance communication developed by the EP Department and the ES&H Coordinators. The Audit Team also found that personnel throughout the SNL/CA organization demonstrate a sense of ownership of environmental protection.

Environmental Protection Programs (EP). One finding was identified in this portion of the audit. This finding concerned the omission of certain program elements in the Waste Minimization Pollution Prevention Awareness Plan and the lack of data verification and trending of environmental monitoring data. Overall, however, the Audit Team found that environmental protection programs at SNL/CA are well managed and implemented, and appropriate, given the inherent risks at the site. Of particular note was the strength of the radioactive, mixed, and hazardous waste programs.

Formality of Environmental Programs (FP). Two findings were identified in this portion of the audit, pertaining to formality of Inactive Waste Site Program management and the formality of environmental protection programs. The first finding identified several elements of SNL/CA's environmental programs lacking formality. Key areas lacking formality include tracking, reviewing, interpreting, and distributing relevant regulatory requirements; developing specific guidance procedures and SOPs for certain ES&H-related activities; and conducting routine environmental inspections. The second finding relates to the fact that SNL/CA has not developed and documented an integrated program and management system to plan and implement actions required to identify and address remedial actions for inactive waste site activities and track them to closure.

Internal and External Communication (IC). No findings were identified in this portion of the audit. Internal communication within SNL/CA and between SNL/CA and SNL/NM is generally very good. Using both formal and informal methods, SNL/CA maintains awareness and ensures that environmental issues are identified and properly addressed. Communication within the DOE chain, however, continues to be a problem, as noted in a 1993 DOE Environmental Office of Environmental Restoration and Waste Management Southwest Programs Office (EM-45) audit. Although external communications with regulatory agencies

and the local community is a strength at SNL/CA, the site was found to be lacking formality in the active solicitation of inputs to the decision-making process for remedial actions, as required by DOE 5400.4.

Staff Resources, Training, and Development (SR). Two findings were identified in this portion of the audit. The first finding noted that although environmental staff are knowledgeable and dedicated, SNL/CA does not have a formal and timely process to ensure that environmental staff resources are sufficient. The second finding identified several gaps in SNL/CA's environmental training programs. Although SNL/CA has developed an ES&H training program that emphasizes environmental awareness training for all its employees, there are still weaknesses in several areas, including support for line responsibility, the process for assessing training needs, and recordkeeping.

Program Evaluation, Reporting, and Corrective Action (PE). One finding was identified in this portion of the audit. The finding relates to the lack of some formality, frequency, and completeness in certain areas of DOE oversight. The KAO Site Manager currently provides oversight of SNL/CA. Were his duties to become more demanding or were he to be replaced, however, the overall effectiveness of DOE oversight would be affected. Travel budget restrictions affect the formal oversight of SNL/CA and its frequency. Additionally, AL has not provided SNL/CA with DOE Headquarters guidance on survey procedures appropriate for consideration before releasing radioactively contaminated laboratories for reuse or unrestricted use; AL and KAO do not systematically review SNL/CA's NEPA procedures; NEPA guidance from AL is inconsistent with DOE Headquarters guidance; and KAO does not verify and close 1990 Tiger Team Assessment corrective actions in a timely fashion. The Audit Team also found that SNL/CA has effectively established line responsibility for environmental programs.

Environmental Planning and Risk Management (RM). Two findings were identified in this portion of the audit. Although SNL/CA and SNL have many elements of an effective environmental planning process, the first finding noted that there are several areas where there is little integration between this process and other planning, budgeting, and operational processes. The second finding noted the Tritium Research Laboratory's lack of a radiological characterization that addresses both the ultimate reuse of the facility and DOE's potential liability.

Inactive Waste Site Programs (IWS). The environmental restoration program is effectively dealing with the known inactive waste sites at SNL/CA. The site has developed a good relationship with state and local regulators and the public, and has made significant progress in identifying, controlling, and remediating risks from past releases. There were no findings in the inactive waste site programs discipline, but Finding FP-2 discusses a lack of overall formality in the management of inactive waste sites.

National Environmental Policy Act Programs (NEPA). One finding was identified in this portion of the audit. KAO guidance to SNL/CA is inconsistent with a review process for proposed activities that ensures appropriate NEPA review. Actions outside the scope defined by the Final Environmental Impact Statement, or addressed by categorical exclusions, require a NEPA determination by the AL Operations Office Manager. Some guidance provided by KAO to SNL/CA is deficient when evaluated against this requirement because of interpretations by AL and KAO that are inconsistent with DOE 5440.1E and DOE Headquarters NEPA guidance. Overall, however, the Audit Team found SNL/CA NEPA programs to be visible and effective and found that they adequately capture and evaluate potential NEPA concerns at the site.

2.2

KEY FINDING

In general, the Audit Team found that environmental programs and management systems at SNL/CA are well understood, managed, and implemented. Top management, their direct reports, and professional and technical staff all exhibit a sincere, dedicated, and personal commitment to environmental protection. This commitment and ownership of environmental protection, however, relies heavily on informal and personal relationships. This lack of formality is a common thread in seven of the nine findings and resulted in one key finding developed from the findings documented in this report. A key finding is a single finding, or group of findings, related to the same issue, that in the judgement of the audit team are essential to understanding the nature and scope of the environmental management deficiencies at SNL/CA. The key finding the Audit Team identified follows:

There is a need for SNL/CA to strengthen the formality of some of its environmental management systems to ensure effective management and continued improvement in environmental performance.

Specific formality concerns include the following:

- Some lack of documentation of certain elements of formal programs;
- Poor integration between various SNL and SNL/CA management and environmental planning systems;
- Areas where guidance to line managers is insufficient to support their environmental responsibilities; and
- Overreliance on informal relationships to ensure that DOE provides adequate oversight.

Although some elements of formality are lacking, they do not present any short-term risk to the public health or the environment; they do, however, create the risk that the quality of current environmental protection efforts at SNL/CA may not be sustained and enhanced in the future, should personnel turnover occur.

SECTION 3.0

**ROUTINE ENVIRONMENTAL AUDIT
OVERVIEWS AND FINDINGS**

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3.0

ENVIRONMENTAL OVERVIEWS AND AUDIT FINDINGS

The audit findings are presented in the following pages and are not necessarily in order of importance. They are grouped by area of investigation, as listed in the Protocols for Conducting Environmental Management Assessments (DOE/EH-0326). This set of protocols is one of the primary tools the Office of Environmental Audit (EH-24) Team used to conduct this audit. In addition to these protocols, the technical specialists used the DOE Environmental Audit Program Guidance (DOE/EH-0232) and Performance Objectives and Criteria for Conducting DOE Environmental Audits (DOE/EH-0229) to conduct the audit. Each area of investigation is introduced by an overview that describes (1) the approach taken by the management or technical specialist in conducting that portion of the audit; (2) Sandia National Laboratories, Livermore, California (SNL/CA), programs and activities related to the area of investigation; (3) characterization of the strengths and weaknesses on SNL/CA activities; and (4) a brief summary of the findings. Each finding is organized into three sections: the performance objectives, the finding statement, and a discussion of the details of the finding. The performance objectives section specifies the particular practices or standards against which the finding is being evaluated. In many cases, where the phrase "best management practices" appears in the performance objective, there are no specific regulatory or DOE references cited. Where this occurs, the best management practices are often based upon the protocols described above. The finding statement provides a concise description of an issue requiring resolution. The discussion section details the facts and observations supporting the finding.

Within each finding, references to other findings, interviews, and documents are presented parenthetically. An example of a referenced finding is "(see Finding OS-1)," in which "OS" represents "Organizational Structure," and "1" is the finding number. The abbreviations used to identify findings are as follows:

OS	Organizational Structure
EC	Environmental Commitment
EP	Environmental Protection Programs
FP	Formality of Environmental Programs
IC	Internal and External Communications
SR	Staff Resources, Training, and Development
PE	Program Evaluation, Reporting, and Corrective Action
RM	Environmental Planning and Risk Management
NEPA	National Environmental Policy Act

These abbreviations are used rather than the more conventional annotation for environmental management findings (i.e., EM-1) so that the reader can more easily determine the specific areas of investigation from which the finding was derived. The one inactive waste site

programs finding has been placed in the formality of environmental programs area and the one National Environmental Policy Act finding will be found under the abbreviation NEPA.

Several of the specialists on the Audit Team covered more than one of the areas listed above. As such, interviews and document reviews quite often were completed with multiple areas of responsibility in mind. In order to reduce unnecessary duplication when referencing interviews and documents, they are identified as follows. An example of a referenced interview is (I-A-1) where "I" denotes an interview, "A" denotes an individual Audit Team member, and "1" is the assigned sequential interview number. Documents referenced for this audit are designated first by the letter "D" for document, followed by a letter designation for each specialist as described below, followed by a sequential number (e.g., D-A-1). The lists of documents reviewed and interviews conducted are presented in Appendices D and E respectively.

Designator Letter	Specialist
A	Mark Pine
B	Mike Bercilla
C	Joe Lischinsky
D	Jim Rice
E	Henry Rej
F	Lisa Baci
G	Deborah McCartney
H	Bill Schramm
I	Andrea Heintzelman
J	Lee Banicki
K	Ralph Earle

3.1 ORGANIZATIONAL STRUCTURE

3.1.1 Overview

The purpose of the organizational structure portion of the SNL/CA Routine Environmental Audit was to evaluate whether SNL's and DOE's organizations are structured to promote environmental management that is effective and consistent with environmental regulations and DOE policy. Specifically, the objectives of this portion of the audit were to determine whether

- The AL, KAO, SNL, and SNL/CA organizational structures have clear lines of authority and responsibility;
- Environmental roles, responsibilities, and reporting relationships are well defined, clearly communicated, understood, and effectively integrated into the overall organizational structure;
- Roles, responsibilities, and accountabilities are supported by appropriate management systems;
- Environmental staff and line management are accountable for environmental performance; and
- A group independent of line management is responsible for policy and standards development, oversight, and technical support.

The audit included a review of documents provided by SNL, SNL/CA, and DOE, and pre-site and onsite interviews with key personnel. Documents reviewed included organizational charts; mission statements and other statements of environmental responsibilities, expectations and priorities; policy manuals; job descriptions; performance plans; and other relevant documents that describe the organizational structure, environmental management function, and environmental roles and responsibilities at AL, KAO, SNL, and SNL/CA. Interviews were conducted with DOE managers and staff of AL and KAO, and with SNL and SNL/CA managers and staff. This portion of the audit relied on input from all members of the Audit Team.

Environmental Management Structure

Environmental management for SNL/CA is performed by several organizations, including AL, KAO, SNL, and SNL/CA.

AL and KAO: The AL Manager, who reports to DOE Headquarters Office of Field Management (FM), has line responsibility for DOE programs and contract oversight at dozens of facilities, including all four SNL facilities, i.e., SNL/NM, Tonapah, Kauai Test Range, and SNL/CA. He delegates responsibility for SNL's programs to KAO. KAO's mission, according to its Strategic Plan, "is to manage the implementation of DOE's programmatic, regulatory, and administrative requirements," for the sites under its authority. The environmental portion of these requirements is overseen by KAO's Environmental, Safety, Health, and Compliance (ESH&C) Branch, which includes seven professionals with environmental responsibilities. In addition, KAO has assigned a Site Manager to SNL/CA. His responsibilities include environmental oversight and guidance responsibilities designed to provide a day-to-day,

site-specific supplement to the ESH&C Branch's tasks. Further support is obtained from AL's environmental staff. Compliance support is provided by AL's Environmental Protection Division, environmental restoration support by its Environmental Restoration Project Office, and waste management support by its Waste Management Division. Although AL has delegated contract and environmental oversight to KAO, AL retains budget authority and oversight for the SNL sites.

SNL: Within the contractor organization, ultimate responsibility for environmental compliance rests with SNL's President. He delegates responsibility for environmental programs to both line and staff organizations. The Vice Presidents of each of the divisions and their personnel are responsible for ES&H compliance. They are supported by staff functions under the Legal Office, the Corporate Requirements Management Office, and the Laboratories Services Division (until recently, the Environment, Safety and Facilities Management Division). Involvement of all of SNL's senior managers, both line and staff, in environmental activities is further ensured by their participation in the SNL President's monthly Sandia Quality Leadership Council (SQLC) meetings. These meetings serve as a forum for senior management discussion and resolution of major corporate issues, and ES&H issues are always on the agenda (I-A-8 and I-A-9).

Support for line management of SNL's environmental programs can be summarized as follows. The Legal Office identifies environmental laws for consideration by line organizations; it is up to the line to determine whether the laws apply to their activities. Similarly, the Corporate Requirements Management Office works together with staff members of the Laboratories Services Division's Environment, Safety, and Health Program Management Center to match DOE Directives with the SNL organizations that will own responsibility for compliance. Technical and professional guidance about how to achieve compliance with environmental laws, regulations, and DOE directives is available to the line organizations from SNL's Environmental Operations Center, which is also part of the Laboratories Services Division. To facilitate best use of the available support, each Vice President has an ES&H Coordinator on staff. The Coordinator interfaces between the division and the above-mentioned support groups to help division personnel identify, understand, and implement ES&H requirements and corporate goals. This organizational structure is reflected at both SNL and SNL/CA.

SNL/CA: Because Livermore is so distant from Albuquerque, SNL/CA has developed a complex environmental management structure complete with its own support organizations. In keeping with SNL's "one company with many sites" management philosophy, however, SNL/CA's environmental management structure mirrors that of SNL, and SNL/CA's environmental support groups have matrix reporting relationships to their corporate counterparts (see later discussion on the clarity of these relationships).

The Vice President of SNL/CA delegates his responsibility for the site's environmental compliance and its implementation of corporate policies to line and staff organizations. As at the corporate level, SNL/CA's line organizations (the line Centers) are responsible for achieving strategic and ES&H goals and implementing policies, while the support organizations provide technical guidance and direction. In addition to meeting their day-to-day requirements, Center Directors participate in environmental management activities by personally conducting several management surveillances per year and by attending quarterly meetings of the SNL/CA ES&H Council (the SCEC). Other members of the SCEC are the Vice President for SNL/CA, the Vice President's ES&H Coordinator, and the ES&H

Coordinators of the Center Directors. The Council serves as a forum for ES&H issues, where members coordinate compliance efforts, develop and monitor ES&H goals, and establish and communicate the position of ES&H in SNL/CA's priorities.

Under SNL/CA's ESH & Facilities Center, the Environmental Protection Department (EPD) works with line representatives to determine how it can implement the environmental policies established by the Laboratories Services Division at SNL. Again, the primary facilitators in this communication between line and staff are ES&H Coordinators. In addition, some of the Centers' ES&H Coordinators have taken on certain sitewide tasks, including participation in the development and review of corporate standard operating procedures (SOPs) and corporate ES&H training. Although these coordinators are assigned to the line Centers, they report to the SNL/CA Vice President's own ES&H Coordinator. He also serves as Manager of the Management Assurance Department, where he provides oversight of ES&H activities at the site, reports assurance information to the Vice President, and tracks internal and external audit and appraisal findings to closure.

Effectiveness of the Environmental Management Structure

In general, the organizational structures of AL, KAO, SNL, and SNL/CA are characterized by clear lines of authority and responsibility. Regarding DOE, interviews revealed a consistent perception of DOE's management structure for the site, and this perception matched the organization charts, strategic plans, and other formal organizational descriptions obtained—i.e., KAO carries contract oversight responsibility for the site and carries out this responsibility through the daily activities of the Site Manager and the support activities of the ESH&C Branch. Although oversight responsibilities are clear and consistent, Finding PE-1 in this report describes areas where the conduct of oversight is deficient.

KAO receives assistance in its environmental oversight from AL's environmental support groups, including the Environmental Protection Division, the Environmental Restoration Project Office, and the Waste Management Division. All interviewees acknowledged the policy that any communication between AL and the site is to be coordinated through KAO. This communication path, however, is not always followed (see the internal and external communications part of this audit).

As for SNL, no discrepancies were found between interviews and the information in the organization charts and related documents. The Laboratories Services Division develops corporate environmental policy, and the SNL/CA Vice President is responsible for implementing it. The line Centers carry out this implementation, EPD and the Centers' ES&H Coordinators support the effort, and the Management Assurance Department assures the Vice President that it is completed. One exception to the general clarity of SNL's environmental management organizational structure relates to the reporting relationship between certain site and corporate environmental support personnel. In order to ensure consistency, the Laboratories Services Division is seeking to establish "programmatic" reporting between the Director of SNL's Environmental Operations Center and the Manager of SNL/CA's Environmental Protection Department. The nature of this relationship and the responsibilities each of the two employees will carry is being negotiated, and interviewees were very uncertain what the result would be. During the audit, SNL and SNL/CA resolved the nature of a similar programmatic reporting relationship between SNL/CA's Deputy Project Manager for Environmental Restoration and SNL's Project Manager for Environmental Restoration (D-A-30).

In addition, the Audit Team concluded that the independence of the Management Assurance (MA) Department's activities are maintained through informal means. The Department's Manager reports administratively to the Director of the ESH & Facilities Center, whose ES&H support performance he must ensure. Adequate independence is maintained because the MA Department Manager has an informal "dotted-line" functional reporting relationship with the Vice President because of the MA Department Manager's additional duties as the Vice President's ES&H Coordinator. Although the MA Department Manager, ESH & Facilities Center Director, and the Vice President all report that this informal mechanism maintains independence of assurance, they and SNL acknowledge that if any of the three individuals were to be replaced, independence would have to be achieved through more formal means.

SNL/CA line responsibility for environmental compliance and implementation of corporate policies was found to be reinforced by individual performance reviews and related compensation schemes. Performance reviews for line personnel commonly include consideration of environmental performance. Furthermore, each line Center is allocated funds for "non-base compensation." A portion of these funds is used to reward good ES&H performance, and interviews with line managers indicate that issues such as completion of required training, job performance, and exceptional service are considered in these awards.

Both the ESH & Facilities Center (ESH&F) Director and the EP Department Manager who reports to him were found to have very wide spans of control. To the extent that environmental support responsibilities have been successfully implemented at the site, it can be attributed to the effective delegation of duties. The ESH&F Director, with nine direct reports, delegates essentially all environmental management responsibilities to the EP Manager. Meanwhile the EP Manager, who has eight program managers reporting to him, further delegates much of the day-to-day responsibilities to these managers. The EP Manager will be leaving his position soon. SNL/CA plans to acknowledge the difficulty of managing a department with eight direct reports by splitting the EP Manager's duties in half and creating two positions. None of the current members of the department has extensive personnel management experience, so this decision will permit SNL/CA to identify replacements who have either strong experience in the department or strong experience managing a large department, but not both. The breadth and depth of responsibility for KAO's and AL's environmental managers was not reviewed in this audit.

The KAO Site Manager is the DOE employee best informed about the site's environmental conditions. Because he reports directly to the SNL Contracting Officer—the KAO Manager—he was found to have adequate access to management support (see Finding PE-1, however, for concerns related to travel). SNL/CA's existing EP Department Manager is the employee best informed about SNL/CA's environmental conditions. He also was found to have adequate authority and access to top management support because he is only two reporting levels removed from the most senior employee on site, the Vice President, and because the Vice President offers a number of formal and informal methods for communication (see the internal and external communication portion of this report). One of the challenges for SNL/CA in splitting the EP Department Manager's functions will be to maintain this close contact between site's best-informed environmental professionals and its most senior manager.

In summary, the DOE and SNL environmental management structures were generally found to have clear lines of authority, although SNL and SNL/CA must resolve the proposed matrix reporting relationship between the SNL/CA EP Department Manager and the SNL

Environmental Operations Center Director. Independence of management assurance at SNL/CA is maintained, though, through informal means. Line responsibility for environmental performance is reinforced through individuals' performance reviews and through financial recognition. Span of control is being appropriately reduced for the SNL/CA EP Department Manager's replacements and is appropriate for the responsibilities and management styles of the other key environmental managers onsite. Finally, DOE's and SNL/CA's employees best informed about site environmental conditions have adequate access to top management, but SNL/CA will be challenged to maintain this close contact when the EP Department Manager's functions are divided between two replacements.

Based on the above observations, no findings were identified in the organizational structure portion of the audit.

3.2 ENVIRONMENTAL COMMITMENT

3.2.1 Overview

The purpose of the environmental commitment portion of the SNL/CA Routine Environmental Audit was to evaluate the overall awareness of relevant environmental issues and the commitment to environmental excellence at SNL/CA, SNL, and KAO. More specifically, the review included an audit of senior management's support of and involvement in environmental issues and environmental policies, the distribution and understanding of these policies, and the extent to which all employees take personal responsibility for the potential environmental impact of their activities and decisions.

This portion of the audit included a review of documents provided by DOE, SNL, and SNL/CA, and interviews with key personnel. Documents reviewed included mission statements, strategic plans, policy statements and other statements of environmental commitment; statements of environmental objectives, goals, responsibilities, and priorities; job descriptions; minutes of the SNL/CA ES&H Council; and ES&H status reports to senior managers. Interviews were conducted with DOE staff of AL and KAO, and with SNL and SNL/CA staff in the ES&H and line groups. This portion of the audit relied on input from all members of the Audit Team.

DOE, SNL, and SNL/CA have communicated their commitment to environmental protection at the SNL-Livermore site through the issuance of numerous formal statements, including the following:

- KAO's description of its own responsibilities, which include a responsibility to "ensure all activities and facilities [including SNL/CA] are operated safely and efficiently in an environmentally acceptable manner";
- DOE's management and operating contract with Martin Marietta, which states, "The Contractor shall take all reasonable precautions . . . to protect the environment";
- The mission statement in SNL's Strategic Plan, which says, "Achieving our mission depends on . . . an enduring commitment to the protection of the environment";
- SNL's ES&H Policy ("SLP 2001"), which states, "Sandia National Laboratories considers the protection and preservation of the environment . . . to be critical to its success. . . . Concern and conduct in matters pertaining to the environment . . . are the responsibility of all Sandia employees, contractors, and visitors";
- The mission statement of SNL/CA's Environmental Protection Department, which states the department is "committed to lead in the protection and preservation of the environment"; and
- The ES&H "Green Cards," which state, "No job is more important than . . . the protection of our environment. . . . Sandia employees, visitors and contractors have the right and obligation to refrain from participating in any operations that

they believe to be unsafe to people or to the environment; the responsibility to report unsafe conditions; the authority to halt inappropriate operations." These cards are issued to all SNL employees, contractors, and visitors, along with their security badges.

To determine whether KAO, SNL, and SNL/CA actually manifested the above-stated commitments, the Audit Team looked particularly for the following characteristics: top managers' routine discussion of environmental issues, establishment of clear expectations and goals for environmental performance, allocation of sufficient resources to environmental programs, top managers' openness to employee and public input on environmental issues, line managers' understanding of relevant environmental requirements, line managers' sense of personal responsibility for environmental performance, and cooperation with oversight groups. The balance of this overview will discuss KAO's, SNL's, and SNL/CA's activities in these seven areas.

Top Management Discussion of Issues: KAO management holds monthly meetings between the KAO Manager, the KAO ESH & Compliance Branch Manager, the SNL Vice President of Laboratories Services Division, the SNL Director of the Environmental Operations Center, and members of their staffs. At these meetings SNL reports to KAO on the progress SNL has made in addressing KAO's "Top Ten Issues," four of which are directly and two of which are indirectly environmental in nature (I-A-8 and I-A-12).

SNL's board of directors requires the SNL Vice President of Laboratories Services Division to make an annual presentation of ES&H audit results (I-A-8). Furthermore, SNL holds monthly meetings of the Sandia Quality Leadership Council (SQLC), which is made up of SNL's President, Executive Vice President, and Vice Presidents. Discussion subjects include SNL/CA's "ES&H Quarterly Report" and the status of environmental protection efforts at SNL/CA (I-A-8 and I-A-9).

SNL/CA's top managers hold quarterly meetings dedicated to ES&H program status and related issues. The SNL/CA ES&H Council (SCEC) members include SNL/CA's Vice President, its Center Directors, its Management Assurance Department Manager, and the Center Directors' ES&H Coordinators. SCEC is chartered to do the following:

- To serve as a forum for discussion of major site and corporate ES&H issues;
- To coordinate efforts toward compliance and continuous ES&H improvement;
- To ensure top management involvement in developing and monitoring ES&H goals; and
- To establish and communicate a culture that recognizes ES&H as top priority.

A review of SCEC minutes for 1992 and 1993 reveals that environmental issues receive adequate management attention. The focus of these meetings, however, is principally safety and health issues (D-A-16).

Establishment of Expectations and Goals: KAO's broad environmental expectations for SNL are compliance with environmental laws and regulations; implementation of DOE Orders, and adequate project/program management of construction, maintenance, and environmental

restoration and waste management programs (D-A-17). More specific goals are set forth in KAO's previously mentioned "Top Ten Issues" for SNL. Even greater detail can be found in the performance objectives of the DOE/SNL Appraisal System, which was jointly developed by AL and SNL (D-A-18).

Similarly, SNL has broad environmental expectations and specific goals. The broad ES&H program expectations, found in the Institutional Plan, are to "make Sandia a[n] environmentally sensitive workplace; comply with applicable laws, orders and regulations; and demonstrate this capability to the DOE and to the public." Seven specific goals are also found in the Institutional Plan, as are performance measures used to gauge attainment of most of these goals (D-A-19).

Environmental performance measurement at SNL/CA is in its infancy. SNL/CA's attempt to identify, track, and attain measurable environmental goals is laudable and sets the organization apart from most DOE contractors. Furthermore, the goals themselves frequently go beyond compliance requirements. As SNL/CA has tracked and measured progress, however, it has found that some goals are incomplete or may need updating (D-A-14).

An example of an incomplete goal is the desire to reduce Occupational Safety and Health Act (OSHA)-recordable accidents 50 percent by FY 1997. This goal was established to track progress toward the objective of a safe and healthful workplace. As SNL/CA has begun measuring achievement of this goal, however, it has found that a better measure might also incorporate the number of accidents and incidents in SNL/CA's incident database. The SNL/CA Incident Examination Committee (IEC) has already examined this database (which includes a broader range of incidents than those required to be reported to OSHA) and has found that two root causes account for 80 percent of the accidents/incidents. By tracking entries in the incident database, SNL/CA will have a better indication of the IEC's accuracy—and should have a better indication of the safety and health conditions of its workplace—than by strictly tracking OSHA-recordable accidents.

Another incomplete goal is the intent to achieve full compliance with requirements and full completion of Tiger Team Action Plan milestones. Although these are important components of an environmental program that "achieves excellence and meets customer expectations," it should be recognized that customer expectations, as specified in KAO's "Top Ten Issues" list and the DOE/SNL Appraisal System Performance Objectives, extend beyond these measures and that environmental excellence extends further still.

An example of a goal that may need updating is the plan to reduce hazardous waste 50 percent by FY 1997. SNL/CA met that goal in FY 1993 and is now evaluating whether to establish a new goal for the next four years.

These examples show that, although environmental performance measurement at SNL/CA is being aggressively pursued, more fine tuning is necessary to realize full and accurate performance tracking against the organization's objectives.

Allocation of Resources: Financial resources for environmental activities at the site come from direct and indirect DOE sources. Direct funding for SNL/CA's environmental restoration and waste management from EM amounts to \$7.8 million in FY 1994, and indirect funding apportioned by SNL to SNL/CA's EP Department this year is \$1.8 million (D-F-20).

SNL has a formal scheme for prioritizing its resources. ES&H issues are given high priority in the indirect budgeting process (see the environmental planning and risk management portion of this audit). In general, the resources devoted to environmental programs at the site are adequate. Finding SR-1 in this report, however, highlights environmental protection areas where staff resources are insufficient.

Openness to Input: The Audit Team did not examine KAO's efforts to encourage employee input about environmental issues. KAO's attempts to obtain public input regarding the SNL/CA site can be found in both its interaction with regulatory agencies and its public meetings about the site. Relations with regulators were found to be incomplete in some cases but strong in all others (see Finding PE-1). Public meetings are primarily limited to the annual public review of the Annual Site Environmental Report (ASER). Again, all participants identified were very complimentary of the communication efforts. KAO has determined, however, that attendance could be higher. It is considering a less formal, "open house" approach to attract more neighbors (see the internal and external communication portion of this audit).

SNL/CA management solicits employee input through a variety of means. The most general are an ES&H Hotline and a Question/Complaint Form, both of which can be used anonymously. In addition, two weekly meetings of ES&H Coordinators provide forums where information can be shared across line organizations and up from there to top management. One of these, held in Albuquerque, is the Line Implementation Working Group (LIWG) meetings for all corporate Vice Presidents' ES&H Coordinators. The other, held in Livermore, is the meeting of all of the SNL/CA Center Directors' ES&H Coordinators.

With respect to public input, besides participating in the ASER meetings, SNL/CA top managers hold several breakfast meetings a year with community officials. Officials interviewed by the Audit Team were very complimentary of the site's openness and willingness to share information and accept input (I-B-18, I-D-14, I-E-1, and I-E-2).

Managers' Understanding of Requirements: SNL/CA line managers receive little environmental training and depend on the Environmental Protection (EP) Department and their Centers' ES&H Coordinators to keep them informed of environmental requirements (D-F-32; I-A-16 and I-F-10). The Audit Team did not find this to be a concern, because the EP Department and the Coordinators together form a strong system for communicating compliance guidance. The Audit Team noted some concern, however, with respect to regulatory tracking and interpretation (see Finding FP-1).

Personal Responsibility for Environmental Performance: SNL/CA has been successful in pushing responsibility for compliance down to the line organizations. All line managers interviewed demonstrated a sense of ownership of environmental protection responsibility. In fact, the Audit Team observed a strong, pervasive commitment to environmental protection from top management down to the worker level. Room for improvement exists, however, as both line and environmental support personnel acknowledge occasions when they struggle for balance between programmatic and environmental priorities. Even so, relations between line personnel and the EP professionals and ES&H Coordinators who support their environmental activities were found to be professional in every case (I-A-3, 4, 7, 11 and 16, I-B-10, I-B-25, I-E-10, I-E-13, and I-E-21).

Cooperation with Oversight Groups: SNL/CA received effusive praise from all external parties—i.e., AIP personnel, state and local regulators, and community officials— interviewed about the site's openness and cooperation. This Audit Team found the praise to be well founded.

In summary, the Audit Team found that the top managements of KAO, SNL and SNL/CA include discussions of key environmental issues in routine meetings. KAO, SNL, and SNL/CA have established both broad goals and specific expectations for environmental performance. SNL and SNL/CA are augmenting this by aggressively pursuing performance measures, but these performance measures need fine tuning. Allocation of resources to site environmental protection is generally adequate, but staffing resources are less than sufficient in some environmental protection areas (see Finding SR-1). SNL/CA is very open to employee input and both KAO and SNL/CA are very open to public input on environmental issues. SNL/CA line managers do not have a strong understanding of environmental requirements, but this lack of understanding is offset by the system of guidance communication formed by the EP Department and the ES&H Coordinators. Personnel up and down the SNL/CA organization demonstrate a sense of ownership of environmental protection. Finally, KAO and SNL/CA are very cooperative with oversight groups.

Based on the above observations, no findings were identified in the environmental commitment portion of the audit.

3.3 ENVIRONMENTAL PROTECTION PROGRAMS

3.3.1 Overview

The purpose of the environmental protection programs portion of the Routine Environmental Audit was to evaluate the extent to which SNL/CA has developed and implemented specific environmental protection programs and plans as embodied in DOE Orders and best management practices. Because of the nature of this audit, environmental programs were reviewed from a programmatic perspective to determine the quality of programs, to determine whether specific program elements exist, and to determine the effectiveness of those programs. Specific environmental protection programs evaluated during this audit include the following:

- Air emissions source identification, control, and monitoring;
- Surface water protection, including source identification, spill prevention control, and reporting;
- Potable water supply protection, including backflow prevention systems;
- Groundwater protection programs, including monitoring;
- Management and control of toxic and chemical materials;
- Management of solid, hazardous, and radioactive waste, including source identification, characterization, training, minimization, contingency planning, recordkeeping, and treatment, storage, and disposal practices;
- Environmental As Low As Reasonably Achievable (ALARA), including radiological environmental surveillance, evaluation of unplanned releases, and evaluation of radiation exposure to the public; and,
- Underground storage tank management systems.

Formal environmental protection programs and/or plans required by DOE Order or regulatory statute that were evaluated include the following:

- Environmental Protection Implementation Plan;
- Long Range Environmental Protection Plan;
- Groundwater Protection Management Program;
- Waste Minimization and Pollution Prevention Awareness Program;
- Environmental Monitoring and Surveillance Plan;
- Emergency Preparedness Program;
- Quality Assurance Program; and

- Preventative Maintenance Program for ES&H-related equipment.

Specific program elements considered in this review included identification of applicable regulatory requirements, assignment of program responsibilities, identification and monitoring of systems for emission sources, training requirements, notification and reporting to regulatory agencies, and program evaluation and oversight. This portion of the audit relied on input from all members of the Audit Team.

This portion of the audit included a review of DOE Orders and regulatory requirements and of background documents that SNL/CA provided before the onsite portion of the audit. Onsite activities focused on interviewing key personnel within SNL, SNL/NM, and KAO, and interviewing SNL/CA staff from the Centers for ES&H and Facilities, Electronic and Mechanical Engineering, Combustion & Materials Science & Technology, Human Resources & Business Operations, Materials & Applied Mechanics, Engineering Services, and California Weapons Development and Exploratory Systems & Program Development. In addition, interviews were conducted with regulatory staff from state and local agencies. This portion of the audit relied on input from all members of the Audit Team. Additionally, specific facilities, operations, and effluent monitoring equipment were inspected, including the Hazardous Waste Storage Facility, the Liquid Effluent Collection System (LECS), and the Tritium Research Laboratory (TRL).

Environmental Protection Implementation Plan (EPIP)

SNL/CA has developed and circulated for approval an EPIP effective November 9, 1993, and extending through October 9, 1994. This plan is required to ensure that the environmental program objectives of DOE 5400.1 are achieved at SNL/CA. The EPIP includes descriptions of all activities that are used to meet the objectives of DOE 5400.1. The EPIP has been approved internally by SNL/CA as of October 1993 and is awaiting formal DOE approval (D-B-10).

Environmental ALARA

SNL/CA's Environmental ALARA activities were the subject of a 1990 Tiger Team Assessment finding (D-B-34). In conjunction with SNL/NM, a series of activities, scheduled milestones for implementation of an ALARA program, and the establishment of a Corporate ALARA Committee were undertaken. Currently, the site is on schedule with meeting its milestones; the Committee, however, has not yet met.

Long Range Environmental Protection Plan

Although referenced in the EPIP as synonymous with SNL/CA's Environmental Restoration and Waste Management Five Year Plan, there is an ES&H Five Year Plan developed and maintained by SNL/NM that SNL considers as the Long Range Environmental Protection Plan. SNL/CA was not aware of this plan. This issue is discussed further in the environmental planning and risk management portion of this report as an environmental planning and budget concern (see Finding RM-1).

Environmental Monitoring and Surveillance Program

The SNL/CA Environmental Monitoring Program (D-B-7) monitors a comprehensive set of parameters to detect and quantify any present or future environmental impacts. Parameters measured include ambient radiation levels, atmospheric conditions, air and water quality, soil properties, and the status of the local biological community. A significant amount of monitoring data is collected and provided to SNL/CA by its DOE neighbor, Lawrence Livermore National Laboratory (LLNL). SNL/CA incorporates the data into its Annual Site Environmental Report (I-B-5).

Specific discussions regarding programs reviewed as part of the environmental protection programs portion of the audit follow.

Air Program

The SNL/CA site operates under a series of air permits issued by the Bay Area Air Quality Management District (BAAQMD). These permits cover regulated sources ranging from boilers, vapor degreasers, a paint spray booth, and various abatement devices. A total of 34 sources are considered Permitted Sources, and 37 sources have been granted exemptions from specific permit conditions. The Air Quality Program, which resides in the Environmental Protection Department, is responsible for ensuring that SNL/CA complies with applicable air emissions regulations. Major components of the program include the identification and evaluation of potential sources of air pollutants, determination and documentation of compliance requirements, and adherence to operational requirements (I-B-14 and I-B-15). Two Notices of Violation BAAQMD issued in 1992 dealt with incomplete inventories and the use of non-complying paint (D-B-35).

The asbestos management program was comprehensive in addressing 40 CFR part 61 and corresponding state regulations, given the level of risk. Operations and maintenance activities that result in the disturbance or removal of asbestos-containing materials, however, are managed by Facilities Engineering, and any resulting waste material is managed via the Hazardous Waste Storage Facility. These are non-routine events resulting from building-renovation (I-B-3).

Surface Water Program

Industrial wastewater programs appear to be well developed at the SNL/CA site. Wastewater discharges from the site consist of neutralized industrial and domestic wastewater that ultimately discharges to the City of Livermore sewer system. SNL/CA maintains one Wastewater Discharge Permit issued by the City of Livermore. SNL/CA operates two metal finishing categorical processes subject to the Metal Finishing Categorical Pretreatment Standards for point sources (40 CFR Parts 403 and 433). Before offsite discharge, the liquid effluent is contained in holding tanks that constitute the Liquid Effluent Control Systems (LECS). SNL/CA conducts analyses on the wastewater stream before its release to the City of Livermore; interviews with the City of Livermore indicate no exceedances have occurred for the past two years. In addition, SNL/CA maintains two permits from the Department of Toxic Substances Control of the California Environmental Protection Agency (Cal/EPA), under the Tiered Permit (Permit by Rule) program. Under these permits, in-process pre-treatment of effluent streams is performed before discharge to the LECS. Wastewater monitoring of these discharges showed 100 percent compliance with all discharge requirements at the site sewer outfall (D-B-7 and D-B-21; I-B-18).

SNL/CA has developed and implemented a Storm Water Pollution Prevention Plan (January 1994) administered by the Environmental Monitoring program (Department 8642) to manage its stormwater discharges (D-B-31). Currently the SNL/CA site is permitted under the Statewide General Industrial Activities Storm Water Discharge Permit (General Permit). Under this permit, SNL/CA is allowed to discharge stormwater runoff in the drainage system that feeds the Arroyo Seco, the only receiving water of the United States on the SNL/CA site.

Drinking Water Program

Drinking water is provided to the site directly from the Hetch Hetchy Aqueduct, which is supplemented occasionally by water from the Zone 7 Flood Control and Water Conservation District. Three large water cisterns are located on the south perimeter of the SNL/CA site serving both SNL/CA and LLNL. A backflow-prevention and cross-connection control program has also been established to protect the water supply system from potential contamination by non-potable water sources, including the fire suppression system at SNL/CA (D-B-36; I-C-21).

Spill Prevention Planning and Underground Storage Tanks

SNL/CA has implemented a Spill Prevention Control and Countermeasure (SPCC) Plan, which establishes procedures for controlling and, where necessary, remediating spills from petroleum tanks at the site. SNL/CA currently has one underground storage tank (UST) for diesel fuel adjacent to Bldg. 964. The tank is permitted by the County of Alameda, which is the local implementing agency for state and Federal Regulations.

One additional sub-grade tank is located onsite, but KAO and the County of Alameda are negotiating the applicability of the underground storage tank requirements to this tank (I-B-22).

Groundwater Protection Program

SNL/CA issued a Groundwater Protection Management Program Plan (GWPMPP) in September 1990 in accordance with DOE 5400.1 and to ensure compliance with applicable Federal, state, and local environmental protection laws, Executive Orders, and Departmental policies. LLNL has developed and implemented a Groundwater Monitoring Plan that includes sampling and evaluating LLNL wells on the SNL/CA site. In addition, data from the quarterly groundwater monitoring program at SNL/CA, required by the Regional Water Quality Control Board, are provided to LLNL for inclusion in their Annual Site Environmental Report. SNL/CA independently reports the results of its quarterly monitoring program to RWQCB.

The limited use of data to identify trends in groundwater quality due to SNL/CA activities at the site was expressed as a concern by Agreement in Principle (AIP) State of California regulatory staff (I-R-3) and is discussed in Finding EP-1.

Toxic and Chemical Materials Program

In general, SNL/CA appears to have good control of the procurement, use, tracking, and storage of toxic and chemical materials. The procurement of toxic and chemical materials is controlled through the chemical use approval process, and chemical use is tracked in the computerized Chemical Information System (CIS) (D-B-32; I-B-3 and I-B-9). The Environmental Protection Department maintains dedicated staff at the Shipping/Receiving department to intercept and evaluate compliance with the purchase-requisition process.

Before the materials are delivered to the end user, the container is tagged with a bar-code sticker uniquely identifying its contents, owner, and destination. Reconciliation of these container inventories is conducted by EPD staff. When the contents of the container is spent, the container is logged out of the CIS system, either by the Waste Management staff if it is destined for hazardous waste disposal or by Environmental Technology staff if it is destined for sanitary waste disposal. The CIS is used to track chemical containers and volumes and to develop Tier II reports and Toxic Chemical Release Inventory Reports (I-B-9). Based on the use of container volume versus actual contents volume by the CIS to prepare reports, SNL/CA risks overstating the actual volumes of regulated chemicals at the site.

Waste Management Program

Overall, management of hazardous and mixed waste at SNL/CA is very good. Training of workers handling hazardous materials and waste is very strong and well documented. The physical facilities are well maintained and controlled (I-B-10). Guidance to line operations is well understood and strong cooperation is evident (I-B-25).

SNL/CA generates solid, liquid, and gaseous chemical wastes as a result of weapons and energy-related research and development activities. The bulk of the wastes are generated in the electroplating, printed circuits, and organics developments laboratories. SNL/CA generates hazardous, mixed, and low-level waste and stores waste before final disposition at offsite treatment, storage, and disposal facilities (TSDF).

The Hazardous Waste Storage Facility is currently permitted by the Department of Toxic Substances Control of Cal/EPA to receive and store a variety of wastes until final disposition offsite. These wastes are listed in the Permitted Hazardous Waste Operation Plan (D-B-33). Storage is confined within the fenced security exclusion area that contains Bldg. 9622 (I-B-10, I-B-11, and I-B-12).

SNL/CA has taken some steps to minimize waste by implementing the occasional substitution of solvents and other chemicals and actively developing Process Waste Assessments, now called Pollution Prevention Opportunity Assessments (I-I-5). SNL/CA has a comprehensive recycling program in place that reduced hazardous waste costs 64 percent in 1993, well ahead of its 1997 target. SNL/CA has identified waste management as a critical opportunity for excellence, as demonstrated by the quality of the facilities, equipment, and staff.

Waste Minimization and Pollution Prevention Awareness Plan

SNL/CA has realized significant success in implementing its waste minimization efforts. In comparison to a 1991 baseline, SNL/CA reduced hazardous waste volume by 64 percent in 1993, surpassing its 1997 goal 4 years early. SNL/CA acknowledges that further reductions will continue to pose challenges (I-B-23). SNL/CA's Waste Minimization and Pollution Prevention Awareness Plan (WMPPAP) was updated on December 31, 1992, and is designed to address activities at the SNL sites in California and New Mexico (D-B-23). The waste minimization program is managed through the Pollution Prevention Department at SNL/NM and the Environmental Protection Department (EPD) at SNL/CA. This plan was originally initiated to respond to Tiger Team finding WM/CF-1, which identified the lack of a Waste Minimization Plan at SNL/CA. In order to maintain continuity between the SNL/CA and SNL/NM sites, SNL developed a plan that addresses both sites. Selected site-specific information, such as implementation activities and schedules, budgets, goals, and plan status,

was added to supplement the SNL WMPPAP. The current Pollution Prevention (P2) team, which provides overall guidance for the implementation of the WMPPAP for both SNL sites, includes representation from SNL/CA.

In the area of waste minimization and pollution prevention, the Audit Team identified some informality of several areas, including quality assurance, reporting, milestone development, and tracking; these areas are inconsistent with SNL's long-term objectives as stated in the current WMPPAP (see Finding EP-1).

Environmental Radiation Program

Environmental radiation protection programs at SNL/CA focus primarily on monitoring air and liquid tritium effluents. Stack air effluents being emitted from the Tritium Research Laboratory (TRL) are continuously monitored for tritium content. The TRL, however, has not conducted any tritium experiments since 1992. Tritium-contaminated liquid effluent entering the sanitary sewer system is monitored and is below regulatory guidelines. Stormwater runoff from building roofs and parking lots ultimately enters the Arroyo Seco and is monitored as part of the Environmental Monitoring Program. Further, certain groundwater monitoring wells indicate measurable tritium; these levels, however, are indistinguishable from background.

Environmental transport and exposure pathway computer models are used to calculate offsite doses using effluent monitoring data from both SNL/CA and LLNL. In addition, stack effluent data from TRL is modeled for offsite doses. Verification and analyses of trends of these data are not currently done in a contemporaneous manner, resulting in sub-optimal use of data before it appears in the Annual Site Environmental Report (ASER) (see Finding EP-1).

Emergency Preparedness

The emergency preparedness (EP) organization at SNL/CA appears to have a comprehensive program that addresses the requirements of DOE 5500.3A. SNL/CA is in the process of conducting sitewide hazard analysis. The EP organization has prepared a SNL/CA-specific emergency plan and implementing procedures; it conducts required drills and exercises, and it maintains an effective Emergency Operations Center (EOC) (I-C-16).

Preventive Maintenance Program

Preventive maintenance programs at SNL/CA are tracked in the facilities' computer-based preventive maintenance (PM) system (I-C-21). This system is initiated either by specific requests from line organizations or by the automated preventive maintenance system. The basis of response to such requests, however, is dependent on individual knowledge of the criticality of the particular request rather than an established and formal process that takes into account a risk-based hierarchy of needs (see Finding FP-1).

Summary

The community views SNL/CA as a responsible and responsive operator of the DOE site in Livermore, California. Ongoing and active efforts by SNL/CA and KAO site management to develop strong working relationships with key stakeholders in the community and local government have contributed to this view (I-E-2 and I-K-2). The desire to protect this reputation is well documented, visible, and uniformly communicated to all Sandians and DOE (I-B-23).

Overall, the Audit Team found that the environmental programs at SNL/CA were generally well developed and implemented. Significant progress has occurred since the 1990 Tiger Team Assessment, resulting in a level of environmental risk management consistent with the level of risk associated with the activities at SNL/CA. Several deficiencies were identified in the 1990 Tiger Team Assessment, including significant program findings in air emission source control, surface and drinking water protection, toxic and chemical material, and waste management. In general, SNL/CA has implemented formal and well-documented systems to address the majority of the findings previously identified. All of the programs and implementation plans required by DOE 5400.1 have been developed. Formality in some of these programs, however, has not been optimized.

Based on the above observations, one finding was identified in environmental protection programs, regarding the omission of certain program elements in the Waste Minimization and Pollution Prevention Awareness Plan and the lack of data verification and trending of environmental monitoring data.

3.3.2 Finding

EP-1: SNL/CA Environmental Protection Programs

Performance Objective: DOE 5400.1, "General Environmental Protection Program," provides guidance for establishing various environmental programs and, in Chapter IV-9, requires that groundwater monitoring programs include mechanisms to obtain data to determine baseline conditions of groundwater quality and quantity, as well as data review to permit the early detection of groundwater contamination. DOE 5400.1 also states in Chapter III, Section 4.b, that a waste minimization program will "contain goals for minimizing the . . . wastes that are generated," and "methods of treatment, storage and disposal" and that status of progress "shall be reported as appropriate."

DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities," requires that "the conduct of operations at DOE facilities be managed with a consistent and auditable set of requirements, standards, and responsibilities. . . ."

Finding: Some elements of the required environmental protection programs at SNL/CA are missing, inadequate, or not conducted in an ongoing and timely manner.

Discussion: Environmental protection programs at SNL/CA are described in the SNL/CA Environmental Protection Implementation Plan (EPIP) (D-C-1). This document discusses SNL/CA's Environmental Protection Programs, including the Groundwater Protection Management Program, Waste Minimization and Pollution Prevention Awareness Programs, Environmental Monitoring Programs, and the Long Range Environmental Plan. These plans discuss many of the required environmental protection programs and include many elements and site-specific requirements for each program. Specific deficiencies, however, were noted during the audit and are discussed in more detail below.

Environmental Monitoring Data

The effectiveness of SNL/CA environmental protection programs is highly dependent on the quality of environmental monitoring data and how well they are used by the site to identify emerging environmental trends before their development into full-fledged "problems." SNL/CA management of environmental monitoring data, however, contains the following deficiencies:

- Ambient radiological and non-radiological air monitoring data provided monthly to SNL/CA by LLNL are not reviewed and verified by SNL/CA on a timely basis. These data, although received monthly from LLNL, are reviewed and verified just before their inclusion in SNL/CA's Annual Site Environmental Report (ASER).
- Environmental monitoring data that SNL/CA generates, or LLNL data that SNL/CA uses, are not being reviewed to identify trends and to permit early detection of potential impacts on- or offsite. For example:
 - Neither the SNL/CA nor the LLNL groundwater data have been evaluated by SNL/CA for long-term trends, although some short-term trending (evaluation of anomalous data from the previous round of sampling) is performed (I-D-5). Groundwater

data relative to SNL/CA operations are generated from two sources. Quarterly groundwater monitoring is performed as a requirement of the Regional Water Quality Control Board (RWQCB) Order 89-184 for SNL/CA wells installed as part of the Environmental Assessment and Restoration Program (D-D-4). In addition, selected wells at SNL/CA are monitored quarterly by LLNL as part of its groundwater investigation project. SNL/CA is in the process of developing historical trending of groundwater data dating from 1990.

- Ambient radiological and non-radiological air monitoring data SNL/CA and LLNL generate are not used to identify sub-regulatory threshold shifts in air quality and trends that may permit early detection of potential impacts by SNL/CA emission sources (I-C-6).

Waste Minimization and Pollution Prevention

The pace of change in waste minimization and pollution prevention has created challenges for SNL/CA on several fronts, particularly in the area of guidance from DOE to SNL (I-B-16 and I-B-19). The recent publication of the 1993 Waste Minimization/Pollution Prevention Crosscut Plan by DOE was designed to provide better direction to DOE site operators. The challenges associated with this pace of change, however, resulted in specific deficiencies in the design and implementation of waste minimization and pollution prevention activities at SNL/CA. For example:

- The Waste Minimization Quality Assurance Plan is required by the WMPPAP; however, it has not been prepared (I-B-16). Although development of the Waste Minimization Quality Assurance Plan has been in progress since the original issuance of the WMPPAP, in 1991, SNL/CA does not have a schedule for its issuance (D-B-23).
- The schedule and status of implementation activities, such as procedures and practices, program evaluation, technology transfer, and training, required in the site-specific supplements for the WMPPAP in SNL/CA, have not been updated since 1991 (D-B-30; I-B-16 and I-B-19).
- Current internal management reporting of program progress in the WMPPAP is not conducted in a formal and auditable manner (I-B-16 and I-B-19). Although not specifically prescribed in DOE 5400.1, best management practices suggest that a formal mechanism be in place to outline the frequency and format of reporting and recordkeeping and to ensure management oversight of the program activities.
- Cross cutting activities between the WMPPAP Coordinator, Waste Management, Materials Management programs, and line operations are not clearly identified and defined in the SNL/CA site-specific supplement to the WMPPAP (D-B-23 and D-B-30; I-B-16 and I-B-19).

- Incentives for process chemical and batch chemical source reduction, and disincentives for excess source generation by line organizations, have not been developed or implemented (D-B-23 and D-B-30; I-B-16 and I-I-5).

3.4 FORMALITY OF ENVIRONMENTAL PROGRAMS

3.4.1 Overview

The purpose of the formality of environmental programs portion of the Routine Environmental Audit was to determine whether formal systems and procedures are in place to manage day-to-day environmental compliance. The audit focused on systems and processes within the DOE Kirtland Area Office (KAO), and Sandia National Laboratory at Livermore, California (SNL/CA), to ensure ongoing environmental compliance, and achievement of environmental performance goals. The audit was designed to evaluate whether environmental protection activities are conducted in accordance with formal programs supported by controlled documentation. An important aspect of the audit was to assess adherence to best management practices as embodied in DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities," and DOE 5700.6C, "Quality Assurance." Specifically, the audit focused on the following areas:

- **Regulatory Tracking and Translation**—the integration of systems to transmit, track, and interpret Federal, state, and local environmental regulations and DOE Orders and incorporate them into policies, standards, and procedures;
- **Procedures**—the mechanisms by which environmental programs and procedures are developed and effectively implemented throughout the SNL/CA site;
- **Routine Facility Inspections**—the systems for conducting routine inspections to ensure facility compliance with applicable environmental requirements and identifying and correcting potential problems; and
- **Recordkeeping and Reporting**—the systems for maintaining and retaining records and ensuring timely completion of environmental regulatory and management reporting requirements.

This audit included a review of DOE Orders, environmental regulatory requirements, and background documents provided by KAO, SNL, and SNL/CA before the onsite portion of the audit. Onsite activities included additional document review and interviews with management and staff within KAO; both SNL and SNL/NM Environment Safety and Health (ES&H) oversight organizations; SNL/CA ES&H Operational Center Managers, Engineering, and Quality Assurance; and SNL/NM Legal and Environmental Operations Centers. This portion of the audit relied on input from all members of the Audit Team.

Since the 1990 Tiger Team Assessment, SNL/CA has made significant progress in their development of Environmental Programs and in the level of formality applied to these program elements. The Audit Team was generally impressed with the overall level of formality and, in particular, found the hazardous, radioactive, and mixed waste management program to be effective and well documented. Some program elements, however, have not been formalized to ensure continued compliance and consistent and measurable performance.

Regulatory Tracking and Translation

The regulatory tracking and translation system at the KAO Site Office consists primarily of transmitting SNL/CA-specific requirements received from KAO and/or AL to the contractor for review, comment, or implementation. In addition, KAO provides the opportunity for both SNL/CA and SNL/NM to conduct reviews of proposed or newly issued regulations to identify opportunities for comment or to assess the implications for SNL/CA. The roles and responsibilities for commenting on regulations that may affect SNL/CA, as well as the mechanism for DOE to provide SNL/CA with implementation instructions, appear to be well established and of appropriate formality.

SNL/NM is responsible for tracking and determining the applicability of specific provisions contained within DOE Orders and contract requirements that apply to SNL/CA. The SNL/NM Legal Department provides support by reviewing various legal periodicals that update it on new and impending requirements. The legal department uses a computerized tracking system and has developed a formal system for their role in these activities. The tracking of new and impending State of California regulations is conducted by both SNL/NM and SNL/CA, and the review process is considered to be "owned" by the SNL/CA Environmental Protection Department (EPD). This process, however, has never been formally assigned (I-A-18). State, and local environmental regulations are tracked by the conduct of reviews of newsletter subscriptions (including BNA Reporter and "California Environmental Insider") as well as the codes and regulations themselves. SNL/CA also tracks emerging regulatory issues by regularly reviewing the Federal Register and several newsletters that provide notice of changes to Federal and state regulations.

The SNL/NM Environmental Operations Center has been recently formed with the responsibility to translate regulations and provide implementation guidance. This guidance would then be used to effect any necessary modifications to the ES&H Manual and SNL/CA-specific procedures. The specific section within this organization tasked with these responsibilities is the SNL/NM Environmental Compliance and Quality Assurance section. Although the functions of this group have been assigned, they have not yet been formalized because of the group's recent establishment.

The SNL/NM Requirements Management Office is sufficiently formalized to support SNL/CA ES&H and technical experts as required from other line organizations in the development of implementation instructions, the management of the preparation of these documents, and the development and maintenance of the SNL document hierarchy.

The integration of the regulatory review process among SNL, SNL/NM, and SNL/CA has not been formalized and therefore may result in new requirements' not being systematically and routinely incorporated into SNL/CA policies and procedures in a timely manner. The implementation of any changes in regulation or ES&H requirements as reflected in the SNL ES&H Manual at SNL/CA is maintained as a line organization management responsibility.

Procedures

Procedures relating to ES&H matters are issued by the SNL/CA ES&H Project and Administration group. This group is in the process of converting all EPD procedures to an on-line system where current versions of ES&H procedures can be accessed either via network or through the SNL/CA Drawing Control Organization. The Audit Team found that

SNL/CA has prepared comprehensive procedures for the majority of environmental activities. Areas where specific Standard Operating Procedures (SOPs) have not formally been developed are for groundwater monitoring, initiating the NEPA review process, and for site-specific Waste Minimization Pollution Prevention Plan implementation.

Procedures SNL/CA organizations develop are reviewed and tracked by the Drawing Specifications organization, which is responsible for ensuring official control of distribution and consistency among all procedures. The Project and Administration group coordinates review of ES&H procedures. All procedures, however, are routed to the Environmental Protection Division for ES&H review and approval. SNL/CA has implemented a comprehensive procedure control system through drawing control to ensure that only the most current procedure is used for work activities.

Routine Facility Inspections

KAO conducts routine oversight via informal walk-around/surveillance activities. AL also has an audit program designed to perform more indepth program evaluations, and the AL Environmental Protection Division (EPD) conducted three environmental appraisals in FY 1993 (Waste Management and Effluent Environmental Monitoring in December 1992 and Air Programs in May 1993). KAO is also provided with compliance-related information from audits by a variety of external organizations, including AL and other DOE oversight organizations.

SNL/CA line organizations are responsible for implementation of ES&H policy and practices in accordance with direction provided in the ES&H Manual. Several mechanisms exist at SNL/CA that provide useful information regarding compliance status; these include surveillance conducted by line management, the Laboratory Assessment Program, and outside audits. Typically, these activities are initiated by SNL/CA staff from outside the specific line organization being assessed. These activities, although useful and valuable as periodic self-assessment tools, are not appropriate as the primary mechanism for ensuring day-to-day compliance by line managers. Full acceptance of ES&H responsibility is not uniformly integrated into the daily management routine in a formal and auditable manner (see Finding FP-1).

Correction of inspection findings and routine preventative maintenance are coordinated through several organizations. For instance, the Incident Examination Committee tracks and trends any findings that are the result of SNL/CA ES&H and line management reporting. Audits conducted by outside organizations and their associated findings are tracked by SNL/CA's Management Assurance organization. Plant Maintenance requests may be generated by any SNL/CA line manager or employee who notices a deficiency, or by the automated preventative maintenance system. For the latter, a work request is routed to the Maintenance Engineering Department, where a priority is assigned based on a variety of factors, including the nature of the request (e.g., painting versus critical equipment failure) (I-C-21). The lack of a formal system for classification of equipment could result in a delay in a critical equipment or system repair (see Finding FP-1).

Recordkeeping and Reporting

Documents requiring approval and review by KAO are tracked by individual KAO staff. The Audit Team found that environmental documents required by law or permit prepared by

SNL/CA are reviewed, approved, and submitted to regulatory agencies by KAO in a timely manner because of the environmental commitment and diligence of KAO.

Recordkeeping and reporting of environmental protection information within SNL/CA is formalized via general guidance contained in the ES&H Manual, which is disseminated to all SNL/CA staff. In addition, specific guidance is provided in each functional area's program and implementation plan. The Audit Team reviewed the principal repository for environmentally related records and concluded that the quality assurance records management system had been implemented and is effective.

Environmental hazards identified by the Preliminary Hazard Assessment (PHA) are associated with environmental restoration activities, generated wastes, discharged effluent, and hazardous materials disposal (D-G-7). Absent from the PHA are environmental concerns relating to air emissions, material storage, clearing or excavation of land, wildlife, and wetlands, cultural resources, noise, pesticides and herbicides, traffic, etc. AL's Environmental Checklist/Action Description Memorandum (ECL/ADM), developed to assist the implementation of the NEPA program at SNL/CA, comprehensively covers all environmental hazards. The need to prepare an ECL/ADM and the ES&H review process for the ECL/ADM, however, have not been formalized (see Finding FP-1).

Based on the above observations, two findings were identified in formality of environmental programs, pertaining to the formality of Inactive Waste Site Program management and the formality of environmental protection programs.

3.4.2 Findings

FP-1: Formality of SNL/CA Environmental Programs

Performance Objective: Best management practices suggest that formal systems and procedures should be in place to manage day-to-day environmental compliance. This includes systems for tracking and understanding regulatory requirements, procedures for implementing policies and programs, routine inspections, and systems for recordkeeping and reporting.

DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities" states that it is DOE policy that facilities be managed with a consistent and auditable set of requirements.

Finding: Several elements of SNL/CA's environmental programs lack formality.

Discussion: Although many environmental programs have been developed and are being administered throughout the various SNL/CA organizations, several elements within these programs are not formalized. Key areas lacking formality include the tracking, review, interpretation, and distribution of relevant regulatory requirements; the development of specific guidance procedures and SOPs for certain ES&H-related activities; and the conduct of routine environmental inspections. For those programs reviewed during the audit, elements found to be lacking formality include the following:

- The review process for tracking new and impending California regulations is conducted by both SNL/NM and SNL/CA and is considered to be "owned" by the SNL/CA EP Department. This ownership, however, has never been formally assigned (I-A-18, I-C-1, and I-C-7).
- The recently formed SNL/NM Environmental Compliance and Quality Assurance group has no formal process or procedures (1) to interpret emerging regulations relevant to SNL/CA or (2) to ensure that new requirements are systematically and routinely incorporated into existing SNL/CA programs, policies, and procedures in a timely manner (I-C-8). The lack of formal regulatory tracking and interpretation processes may result in new requirements' not being systematically and routinely incorporated into SNL/CA policies and procedures in a timely manner.
- Although useful and valuable as periodic self-assessment tools, audits conducted by the Laboratory Assessment Program (LAP) and the Safety, Health, and Environment Appraisal Committee (SHEAC), management walk-throughs, and outside assessments do not completely ensure day-to-day compliance.
- SNL/CA's reporting, tracking, and follow-up system is not adequately formal to collect the full range of "incidents" of similar magnitude and severity and to ensure that, where performance discrepancies occur, they go through similar investigation, corrective action, and trending. Although much of this does exist for more structured programs, such as the LAP, the current approach does not necessarily capture the more day-to-day, routine environmental occurrences

(e.g., those arising from informal daily walk-throughs), which should be monitored and used as a proactive management tool.

- A formal system is not in place at SNL/CA for the classification and prioritization of maintenance activities for ES&H-related equipment. Plant Maintenance requests for repair of ES&H-related equipment are routed to the Maintenance Engineering Department, where a priority is assigned based on a variety of factors, including the nature of the request (e.g., painting versus critical equipment failure) and personal knowledge (I-C-21).
- SNL/CA lacks a formal, integrated and comprehensive sitewide environmental hazard identification program. The formal hazard identification systems, i.e., Preliminary Hazard Assessment (PHA), does not cover air or water pollution issues. The use of AL's Environmental Checklist/Action Description Memorandum (ECL/ADM), which is comprehensive in environmental scope, has not been formally integrated into project reviews sitewide.
- Formality is not consistent throughout SNL/CA's NEPA program. Portions of the NEPA program have been formalized (e.g., NEPA Program Document (D-G-27); ES&H Manual, Section 10-I, NEPA Procedures (D-G-6); Mitigation Action Plan (MAP) follow-up process (D-G-17); and some sectoral and departmental operating procedures (D-G-28, D-G-29, and D-G-30)). However, some SNL/CA Sectors (e.g., DP; Energy/Environment) and Centers (e.g., Combustion, Materials Science and Technology; Materials and Applied Mechanics) (I-G-7 and I-G-8) have not formalized NEPA procedures as required by the SNL NEPA Program Document (D-G-27). Additionally, the Environmental Protection Department (I-G-21) has not formalized its NEPA procedures (see NEPA Overview).

FP-2: Inactive Waste Site Programs and Management Systems

Performance Objective: DOE 5400.4, "Comprehensive Environmental Response, Compensation and Liability Act Requirements," states that response to releases at DOE facilities will be in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the National Contingency Plan (NCP, 40 CFR 300), regardless of whether the site is listed on the National Priorities List. In cases where corrective actions are carried out under other regulatory authorities, corrective actions must not be inconsistent with CERCLA.

DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities," states, "It is DOE policy to conduct its operations with a consistent and auditable set of requirements, standards, and responsibilities." Chapter 1 states, "Effective implementation and control of operating activities are primarily achieved by established written standards in operations."

DOE 4320.1B, "Site Development and Planning," requires that a Technical Site Information Document be developed to document the site planning process. The document is required to include information and maps describing contaminated areas and their potential impacts on siting facilities.

Best management practices suggest that a program management system be in place to facilitate planning and effectively implementing all remedial actions, including identifying inactive waste sites, assessing the need for further actions, tracking remedial actions to completion, and developing time frames for responses to remedial actions.

Finding: SNL/CA has not developed and documented an integrated program and management system to plan, implement, and document necessary actions required to identify and address remedial actions for inactive waste site activities, and track them to closure.

Discussion: Ongoing Environmental Assessment and Restoration Program (EARP) activities at SNL/CA are regulated by the California Regional Water Quality Control Board (RWQCB) under Order 89-184 (issued December 13, 1989) and include two sites at which remedial actions are underway. The Fuel Oil Spill (FOS) site has been characterized and is undergoing pilot testing to document the effectiveness of the proposed bioremediation system. The Navy Landfill characterization report has been submitted to RWQCB, and SNL/CA is awaiting comments. No significant further action at the Navy Landfill is expected. In addition to the two ongoing actions, several potential inactive waste sites identified during the 1987 DOE (EH-24) Environmental Survey were characterized and documented (D-D-20); they are currently awaiting decision of future actions by RWQCB, and one site (the former Trudell service station) has been remediated to the satisfaction of the RWQCB. No new sites have been identified since Order 89-184 was issued.

SNL/CA has not developed management systems for handling the EARP activities to ensure that existing and newly identified inactive waste site activities are carried out in a consistent manner. Examples of areas where more formality is needed are described below.

- SNL/CA has not developed a program plan that describes the procedures for identifying, assessing the need for further action on, prioritizing, and tracking existing and newly identified inactive waste sites. Although the site performed an inventory of potential inactive waste sites in 1987 (D-D-20) and is well along

in the remedial action process for the FOS and Navy Landfill, new suspected inactive waste sites could potentially be identified. One example of this potential is the presence of an unused concrete sump outside Bldg. 913. The sump was formerly used as a holding tank for liquid waste effluent from beryllium and uranium processes. The sump was disconnected when the Liquid Effluent Control (LEC) system was installed in the early 1980s. A subsequent survey of the sump revealed levels of contamination above standards for unrestricted release and disposal of the sump. No surveys of the soil adjacent to the sump have been performed, and there are no plans for future use, closure, or removal of the sump. Should removal or disposal of this sump be required in conjunction with any proposed site conversion or infrastructure construction activities as described in the Institutional Plan (D-D-1), soil conditions adjacent to the tank would need to be evaluated. Although the EPD is aware of the sump, its status is not being formally tracked in any of SNL/CA's environmental protection systems; the Environmental Protection Department is aware of the sump, however, and has taken responsibility for it.

- SNL/CA has prepared a Site Development Plan; this plan, however, neither includes a map or description of areas of known or suspected contamination or hazardous releases nor discusses the potential impact of contaminated areas on future site development (D-D-19). Both of these elements are required by DOE 4320.1B.
- There are presently no SNL/CA standard operating procedures for common field activities such as groundwater monitoring, well construction, maintenance and inspection, well abandonment, management of investigation-derived waste, equipment decontamination, and soil sampling. As an example of the need for site-specific procedures, SNL/CA personnel rely on groundwater monitoring procedures written by and for the sampling subcontractor. Although the technical content of the procedure is appropriate and the procedure has been reviewed and approved by SNL/CA and DOE, the procedure describes responsibilities specific to the subcontractor's organization. Since several subcontractors have performed field investigations and the potential exists for multiple subcontractors to be working at the site concurrently (e.g., for quarterly sampling and Fuel Oil Spill studies), there is a need for SNL/CA-specific standardization of field procedures to ensure consistency in data collection and quality.
- There is presently no SNL/CA-specific guidance for development of a Community Relations Plan (CRP). Guidance applicable to the site from DOE Headquarters, AL, and RWQCB are inconsistent in their approach to CRP requirements. The existing Public Participation Plan, which follows a Hazardous and Solid Waste Amendments approach, provides only for community response to proposed action (D-D-2). This differs from the CERCLA approach (required under DOE 5400.4), which actively solicits public input as part of the decision-making process.

The lack of formality in the Environmental Assessment and Restoration Program is related to the overall planning issue finding (see Finding RM-1). SNL is in the process of developing a

Project Management Plan for the Environmental Assessment and Restoration Program that is consistent with DOE 4700.1, "Project Management," and is being developed in response to a finding from the DOE Headquarters Southwest Programs Office assessment conducted in September 1992 (D-D-5 and D-D-6). In addition, as of February 28, 1994, the SNL/CA Environmental Assessment and Restoration Program was merged with the SNL/NM Environmental Assessment and Restoration Program.

3.5

INTERNAL AND EXTERNAL COMMUNICATION

3.5.1

Overview

The purpose of the internal and external communication portion of the Routine Environmental Audit was to determine whether formal and informal channels of communication are effectively used (1) to emphasize management commitment to environmental protection; (2) to promote awareness and support of environmental policies and programs throughout the organization; (3) to share information with external organizations, such as regulatory agencies, environmental groups, and the community; and (4) to assess the level of internal and external recognition of the SNL/CA's environmental commitment. The regulations, requirements, and guidelines used during this audit are provided in Appendix F.

The audit included interviews with AL, KAO, SNL/NM, and SNL/CA personnel responsible for communication of environmental policies and programs, as well as interviews with affected personnel. Interviews were conducted with the California Agreement in Principle (AIP) Program, California State Water Resources Control Board, the California Department of Health Services, the California Regional Water Quality Control Board and the City of Livermore, California, to develop an understanding of SNL/CA's working relationship with these external organizations. In addition, the audit included a review of documentation supporting internal and external communication programs.

Internal Communication

Internal communication within SNL/CA and between SNL/CA and SNL/NM was found to be generally very good. Through both formal and informal methods, SNL/CA maintains awareness and ensures that environmental issues are identified and properly addressed. Several methods SNL/CA uses to maintain internal environmental communications include the wide distribution of Safety, Health, and Environment Appraisal Committee (SHEAC) meeting minutes, Center and SNL/CA ES&H Council meeting minutes, Occurrence Reports, Incident Reports, and Laboratory Assessment Program (LAP) reports (D-E-15, 17, 18, 20, 22, and 35). The ES&H Hotline and Question/Complaint Form are means for employees to communicate their ES&H concerns, anonymously if preferred, to management; all their comments are captured in a database containing over 800 records (D-E-25). Weekly ES&H Coordinator Meetings serve as a critical, "real-time," information medium for exchanging ideas, problems, and corrective actions between all Center directorates and the site's Management Assurance Department (I-E-3, 5, 10 and 14). In addition, the ES&H Coordinators, who represent their respective Centers, are co-located in the Management Assurance Department to facilitate their timely interaction (I-E-10 and I-E-17). Since the Management Assurance Department reports functionally to the site Vice President, important ES&H information is easily accessible to the site's top management (I-E-10 and I-E-13).

The ES&H Operating Experience (OE) Program is a vehicle for disseminating "Lessons Learned" from occurrences internal to SNL and across the DOE Complex (D-E-23; I-E-8). The Line Implementation Working Group (LIWG) meetings, held weekly in New Mexico, are attended by SNL/CA monthly so that ES&H ideas and problems that surface in New Mexico are shared and discussed with personnel from California in a timely fashion (I-E-10, I-E-13, and I-E-14). One ES&H Coordinator, with Centers in both New Mexico and California, spends approximately 25 percent of his time (one week a month) in New Mexico, attends LIWG meetings, and often cross-pollinates ideas and concerns between the two sites (I-E-14). LAP

reports from SNL/CA are also formally transmitted monthly to SNL/NM to keep them abreast of findings that may be of interest to the New Mexico site (I-E-10 and I-E-15). Although SNL Vice President of Laboratories Services Division acknowledged that there is "some work to do" in the area of inter-site communications (SNL/CA and SNL/NM) as SNL moves towards the policy of "one lab with many sites" (I-E-24), there was no evidence linking shortcomings in communications directly to serious environmental problems at SNL/CA.

The Public Information Office was recently renamed the Public Affairs and Employee Communications Office to include in its charter the responsibility for centralizing and improving internal employee communication (I-E-20). The "Newsphone" and "Sitewide Audix" are voice mail systems the office manages as tools for keeping employees informed on a variety of issues. The Public Affairs and Employee Communications Office also publishes two weekly newsletters, the "Sandia Weekly Bulletin" and the "SNL/CA News Notes," and contributes one page of California-specific news to the weekly SNL paper, "Lab News" (D-E-29; I-E-20).

Internal communication through the DOE chain to SNL/CA continues to be fragmented and inconsistently channeled; the same problem was earlier identified by EM-45 in a 1993 audit (D-E-14; I-A-18, I-A-20, I-A-22, and I-E-4). This problem often leads to significant frustration and duplication of response efforts on the part of SNL/CA staff (I-A-18). Multiple DOE requesters also make it difficult for SNL/CA to prioritize the requests (I-E-7). AL and KAO recognize these problems and are working to communicate the policy that all environmental information must be communicated through KAO to SNL/CA. All interviewees acknowledged that the problems have been reduced over the last year or two (I-A-18, I-A-20, I-A-22, and I-E-4).

External Communication

External communication between SNL/CA, the surrounding community, and state and local agencies appears to be very good. The site received particularly high marks from state regulatory agencies, such as the AIP-California State Water Resources Control Board (I-E-1), the AIP-California Department of Health Services (I-E-2), the AIP-California Program Manager (I-K-2), the AIP-California Health Physicist (I-K-4), the Regional Water Quality Control Board (I-D-14), and the City of Livermore, California (I-B-8), for their accessibility and responsiveness relative to other sites.

Formal external communication with the public and surrounding communities is handled by the Public Affairs and Employee Communications Office. News releases and media advisories are issued to approximately twelve newspapers in a four-county area surrounding SNL/CA and to local radio and television stations (D-E-27 and D-E-28; I-E-20). News Releases may be issued to announce public meetings, tours, and the release of important environmental planning documents. Media Advisories are used to announce the availability of new documents for public review, such as the SNL/CA Annual Environmental Report, and to solicit media interviews relative to that document. Media interviews are conducted with environmental specialists in coordination with the Public Affairs and Employee Communications Office (I-E-8 and I-E-20). One weakness in the area of formal external communication is addressed in the formality of environmental programs portion of this audit (see Finding FP-3). The finding indicates that although SNL/CA is keeping the public informed according to their understanding of the requirements, they are not actively soliciting input into the decision-making process for remedial actions as required by DOE 5400.4.

Through the Public Affairs and Employee Communications Office, SNL/CA is organizing a "town meeting" in March 1994 that will serve as a "State of SNL/CA Address" by the SNL/CA Vice President to the local community (I-E-20). Following the example set by the SNL/NM Lab President, the meeting will be announced to the public in newspapers, and approximately 100 invitations will go out to community leaders (D-E-26 and D-E-29). Also in March, the SNL/CA Vice President will meet with representatives from the City of Livermore, California; the Livermore Chamber of Commerce; the Friends of the Vineyards; the Tri-Valley Citizens Against a Radioactive Environment; and the Valley Study Group to discuss the possibility of forming a Site Specific Advisory Board (I-E-20). Martin Marietta will also give a presentation to the Valley Study Group in April 1994 as the site's new management and operating contractor. They will discuss Martin Marietta's future plans for SNL/CA (I-E-20).

SNL/CA proactively fosters good community relations and external communications, and demonstrates good citizenship through its extensive educational outreach programs, as outlined in the SNL/CA Educational Outreach Annual Report (D-E-24). The report includes a number of programs such as "School Links" (an employee volunteer program to tutor school children), SUPER (Science Understanding Promotes Environmental Responsibility), and PETE (Western Partnership for Environmental Technology Education). These and other programs focusing on education are a constructive and proactive component of SNL/CA's external communication program.

Based on the above observations, no findings were identified in the internal and external communication portion of this audit.

3.6

STAFF RESOURCES, TRAINING, AND DEVELOPMENT

3.6.1

Overview

The purpose of the staff resources, training, and development portion of the SNL/CA Routine Environmental Audit was to determine whether staff resources and training are sufficient to develop and implement environmental protection programs at SNL/CA effectively. The audit focused on the quantity and quality of staff resources, the process for ensuring that all personnel receive environmental training appropriate to their job responsibilities, and the environmental staff's development and career-advancement opportunities.

This portion of the audit included reviewing background documents SNL/CA and DOE provided and conducting interviews with key personnel. The documents reviewed included organizational charts, job and position descriptions, training program materials, and training records. Interviews were conducted with KAO staff; SNL/NM staff in the Laboratories Services Division; and SNL/CA Staff in the ES&H and Facilities Center, the Human Resources and Business Operations Center, and line management organizations. This portion of the audit relied on input from all members of the Audit Team.

SNL has made a strategic decision to limit the number of full-time employees (FTEs) at SNL/CA and SNL/NM in order to provide a stable workforce in the face of budget uncertainties. This SNL policy, which has enabled SNL/CA to avoid layoffs since the 1970s, is implemented through the use of an annual cap on the number of SNL/CA FTEs. For the past several years the SNL/CA ceiling of approximately 1030–1040 FTEs has maintained a stable level of employment. New environmental employees are added only through internal transfers or by using one of the few new "slots" created through the attrition of existing employees. To supplement these limited slots, SNL/CA has relied extensively on contractor support to provide the staff resources needed to achieve its environmental protection and programmatic goals (I-F-4, 6, 7, 8, 11, and 22). This policy is a key factor that shapes the environmental staffing process at both SNL/CA and SNL/NM and has resulted in difficulty in obtaining staff resources (see Finding SR-1).

Overall, the Audit Team was impressed with the quality of environmental staff resources at SNL/CA, where the staff with environmental responsibilities are knowledgeable of environmental issues and diligent in ensuring that SNL/CA achieves its environmental goals. SNL has also developed several incentive and reward programs to recognize excellent ES&H performance (see organizational structure overview). SNL's policy of encouraging internal transfers has provided opportunities for environmental support staff to move into line organizations and line staff to move into full-time ES&H positions. In 1991 SNL/CA prepared a detailed ES&H staffing plan (in response to a 1990 Tiger Team Assessment finding) that assesses staff needs for individual environmental programs and provides a timetable for acquiring these resources. This plan is a solid foundation for SNL/CA's staff planning efforts.

There are, however, several weaknesses in the environmental staffing process at SNL/CA. The ES&H staffing plan has not been updated since 1992. Some program areas (e.g., environmental monitoring) are understaffed. The overall SNL policy of limiting FTEs requires SNL/CA to rely on contractor staff to perform jobs that, in SNL/CA's judgment, would be better filled with SNL/CA employees. In some cases there are no up-to-date descriptions of the qualifications and training required to perform certain environmental activities, in part because

SNL has established a policy of not requiring job descriptions for professional and technical staff (I-F-4 and I-F-19).

One of SNL's Strategic ES&H objectives is to "ensure that every Sandian has necessary and sufficient training, and [to] require that visitors and contractors comply with our ES&H requirements" (D-F-23). To implement these training objectives, SNL/CA requires all employees, contractors under the direct supervision of an SNL manager, and certain visitors to complete a set of six required ES&H courses. Line managers are responsible for identifying additional environmental training needs for the employees and contractors they supervise (D-F-1 and I-F-17).

SNL/CA's ES&H training program is largely managed by SNL/NM staff who design, develop, and manage delivery of ES&H training, who produce a catalog of approved ES&H training courses, and who maintain TIDBITS, SNL's centralized database for ES&H training records. Although the ES&H Manual discusses some of the differences between training activities at SNL/NM and other SNL locations, no document clearly describes how the ES&H training program operates at SNL/CA. SNL/CA, for example, has chosen to have its ES&H training coordinator maintain its training records (and periodically update and reconcile this information with TIDBITS) in order to provide better quality control of training records and produce reports that enable managers to track whether all employees are receiving the six required ES&H courses (I-F-10, 13, 23, 24, and 25). Some SNL/CA training courses, such as required hazardous waste generator training that emphasizes the unique requirements in California, are not tracked in either TIDBITS or the centralized SNL/CA database because it has not yet received an official course number (I-F-24).

Although SNL/CA has implemented many aspects of a comprehensive environmental training program, there are several areas where the training program needs to be strengthened, including providing additional support for line managers to carry out their training responsibilities effectively, formalizing the process for assessing training needs, and ensuring that environmental training records are complete and up-to date.

Based on the above observations, two findings were identified in the staff resources, training, and development portion of the audit. These were related to the lack of a formal and timely process for ensuring adequate staff resources and to weaknesses in the implementation of the environmental training program.

3.6.2 Findings

SR-1: Environmental Staffing

Performance Objective: Best management practices suggest that environmental staff resources should be sufficient to achieve environmental performance goals. A system should be in place to identify both short-term and long-term environmental staffing requirements, and staffing for environmental protection activities should be provided in a timely manner.

Finding: SNL/CA environmental staffing processes are not sufficiently formal or timely to ensure that adequate environmental staff resources are available to achieve SNL/CA environmental protection goals.

Discussion: SNL has made a strategic decision to limit the number of full-time employees (FTEs) at SNL/CA and SNL/NM in order to provide a stable workforce in the face of budget uncertainties. This SNL policy, which has enabled SNL/CA to avoid layoffs since the 1970s, is implemented through the use of an annual cap on the number of SNL/CA FTEs. For the past several years the SNL/CA ceiling of approximately 1030-1040 FTEs has maintained a stable level of employment. New environmental employees are added only through internal transfers or by using one of the few new "slots" created through the attrition of existing employees. To supplement these limited slots, SNL/CA has relied extensively on contractor support to provide the staff resources needed to achieve its environmental goals (I-F-4, 6, 7, 8, 11, and 22). This decision to limit the number of SNL employees is a key factor that shapes the environmental staffing process at both SNL/CA and SNL/NM.

In January 1991 SNL/CA prepared a staffing plan for its ES&H activities. This comprehensive staffing plan outlined the number of SNL/CA FTEs and contractor FTEs required to support specific ES&H programs, including environmental monitoring, environmental restoration, waste management, and NEPA, and provided a timeline for acquiring additional environmental staff resources between FY 1991 and FY 1995 (D-F-39). In February 1991 this plan was consolidated with the ES&H staffing plan for New Mexico. Although the consolidated plan assumed greater reliance on contractor support for ES&H activities than the original SNL/CA plan, it did not specify which environmental functions would be performed by contractors rather than Sandia employees (D-F-40 and D-F-41).

The 1991 plan provides an excellent foundation for ensuring that SNL/CA has adequate resources to achieve its environmental protection goals. There are, however, several weaknesses in the environmental staffing process:

- SNL has not formally updated the ES&H staffing plan since 1992 (D-F-23; I-F-11, 18, 20, and 21). The SNL/CA plan is out-of-date in several key areas: it may not reflect environmental requirements established or revised since the plan was prepared (e.g., new stormwater management regulations or increased activity under the Agreement in Principle Program with the State of California); and it does not reflect the new organizational structure and division of responsibilities between SNL/CA and SNL/NM (D-F-39 and D-F-40; I-F-11 and I-F-16).
- SNL's "strategic decision" to limit the number of SNL FTEs has made it difficult to hire environmental staff in a timely manner and has resulted in SNL/CA's

relying on contractor staff to perform jobs it had judged to be more appropriately filled with SNL/CA employees (I-F-6, 7, 8, 11, 16, and 22). For instance, employee backup for some SNL/CA environmental programs is lacking, resulting in a work overload for some employees and "one-person deep" programs (I-F-7, I-F-8, and I-F-11). In addition, the use of contractors has led to a lack of continuity and institutional memory in environmental programs (I-F-10 and I-F-16) and increased the need for management oversight and training (I-F-8 and I-F-16). Although SNL has affirmed its intention to continue limiting the number of SNL/CA FTEs under the new contract, senior management is examining alternative ways of structuring the staff allocation process to provide greater coordination with the budget process (I-F-6 and I-F-22) (see Finding RM-1).

The Audit Team observed several examples where these weaknesses appear to be at least partially responsible for hindering SNL/CA's ability to achieve its environmental objectives completely. These include the following:

- Staff resources in environmental monitoring are not adequate to perform those activities in a timely manner (see Finding EP-1). Both the 1991 ES&H staff plan (D-F-39) and the more recent informal plans prepared by SNL/CA EPD management (D-F-24 and D-F-25) indicated that at least four additional Sandia employees were needed in this area, but it took almost three years to receive approval to add two employees through internal transfer and one through the allocation of a new slot (I-F-16). One position remains unfilled.
- Although EPD identified the need for a groundwater program manager in 1991, a hydrogeologist was not hired to fill the position until September 1993 because of other priorities within EPD for filling the limited FTE slots available (I-D-11, I-D-20, and I-D-21).

The 1991 staffing plans, including the detailed plan for SNL/CA, were submitted to KAO in 1992 to support completion of the corrective action for 1990 Tiger Team Assessment Finding M8, which dealt with the lack of comprehensive resource plans at SNL/CA. Although KAO verified and accepted this objective evidence as part of a related finding (Tiger Team Key Finding MK-4), it still has not closed out Tiger Team Finding M8.

SR-2: Environmental Training Program

Performance Objective: Best management practices suggest that a complete and comprehensive environmental training program be in place that identifies the environmental training needs for all personnel; provides appropriate environmental training for all levels of personnel, including senior managers; provides a formal, documented process to evaluate periodically the effectiveness of training programs; and uses a recordkeeping system that is accessible, complete, and current to ensure that all staff members have the necessary knowledge and skills to perform their environmental responsibilities effectively.

Finding: SNL/CA has not fully implemented a comprehensive environmental training program as suggested by best management practices.

Discussion: All SNL/CA employees, and certain contractors and visitors (i.e., those who will be onsite for more than a few days), are required to take six ES&H courses each year, including ES&H Rights, SNL Emergency Response Awareness, Occurrence Reporting Procedures, General Employee Radiological Training, and two safety courses. There is also an employee/contractor ES&H orientation course that covers hazardous waste management and NEPA awareness in addition to the six required areas. Line managers are responsible for identifying any training needs beyond the six required courses, and ensuring and documenting that employees have received the required training (D-F-1, D-F-2, and D-F-3). Although these training initiatives have promoted a high level of ES&H awareness across the facility, the existing program is incomplete in several key areas:

- There appears to be little formal support to assist line managers in effectively carrying out their responsibility to assess staff needs for additional environmental training beyond the six required courses. Managers are provided copies of the ES&H Manual and training catalog, but these documents do not always contain accurate or complete information on the training programs and requirements for SNL/CA, nor do they provide a simple, concise summary of common SNL/CA training requirements (D-F-1 and D-F-8; I-F-13 and I-F-24). To cope with this problem, several managers have developed informal checklists (unrelated to TIDBITS) on training requirements for their staff, but there is no mechanism to ensure that these checklists are accurate and complete (D-F-33 and D-F-34; I-F-17 and I-F-18). As a result of the lack of formal guidance and support, some managers may not be able to identify all required training and ensure that this information is provided to the ES&H training coordinator (D-F-5; I-F-7, 16, 17, and 19).
- There is no formal SNL/CA process to ensure that all visitors receive needed environmental training, although Centers that host visitors have developed informal processes (I-F-17).
- SNL/CA's training database does not capture all relevant and required environmental training information. The process for assessing training needs is informal and therefore does not ensure that line managers are able to provide the ES&H training coordinator with information on any required environmental training beyond the six "all-employee" courses. SNL/CA does not have a formal process to ensure that outside environmental training courses are entered into the centralized training records (I-F-13, 16, 19, 23, and 24). There

have also been problems updating SNL/CA training records to show that certain employees and visitors are no longer at SNL/CA and therefore do not require additional training (I-F-10 and I-F-17).

- Managers can access the SNL/NM training database (TIDBITS) to verify what training employees have taken, but no training has been provided on how to use this system beyond supplying managers with a copy of the TIDBITS User's Manual (I-F-13). Most managers indicate that they prefer to rely on the ES&H training coordinator to supply training documentation, and several indicated that they feel they cannot rely on the TIDBITS data because it frequently does not include all courses employees have taken (I-F-17, I-F-22, and I-F-24).
- There is no formal process for periodic evaluation of the effectiveness of environmental training programs (I-F-10, I-F-13, and I-F-24).

3.7 PROGRAM EVALUATION, REPORTING, AND CORRECTIVE ACTION

3.7.1 Overview

The purpose of the program evaluation, reporting, and corrective action portion of the Routine Environmental Audit was to assess whether SNL/CA, SNL/NM, AL, and KAO have effective self-assessment and oversight programs in place. More specifically, the audit evaluated the types of self-assessment and oversight programs that are in place, the reporting of identified concerns to appropriate managers, and the tracking and implementation of corrective actions that address root causes. The regulations, requirements, and guidelines used in this audit are provided in Appendix F.

This audit included reviewing documents, conducting telephone interviews, and reviewing video-taped presentations given during the pre-audit visit as an initial introduction to the site and its programs. Onsite activities included reviewing additional documentation and conducting interviews with managers and staff at AL, KAO, SNL/NM, SNL/CA, and California regulatory agencies. Key documents reviewed before and during the audit included self-assessment procedures; self-assessment incident tracking databases and reports; memoranda and meeting minutes pertaining to self-assessment and appraisal activities; published self-assessment reports, including both internal self-assessments and independent technical and management appraisals; and corrective action status reports.

DOE's ES&H Self-Assessment Guidance document (December 1992) provides guidance on establishing effective ES&H self-assessment functions. The major objective of self-assessment programs is to establish accountability and excellence at the grassroots level, thereby involving people most familiar with the operations and their management. Self-assessment should establish a culture of accountability and continuous improvement and foster excellence in all program activities.

In general, the self-assessment programs in place at SNL/CA adequately address the objective outlined above. The Laboratory Assessment Program (LAP); Safety, Health, and Environment Appraisal Committee (SHEAC); and ES&H Coordinators are all primarily staffed by line individuals trained to assess ES&H concerns. Environmental awareness levels among the site staff appear high, and the Incident Reporting database captures many everyday environmental occurrences that are then addressed and closed by the individual(s) who "own" the problem (D-E-35; I-E-13 and I-E-21). The program strives to create a culture of accountability and continuous improvement. It must also continue to recognize and evaluate, however, the adequacy of environmental-specific training in order to ensure that those empowered have sufficient knowledge to contribute optimally to the continuous improvement process. Furthermore, SNL/CA's reporting, tracking, and trending of routine inspections was found to be too informal to collect the full range of "incidents" of similar magnitude and severity. Where performance discrepancies occur at this level, the system does not ensure the "incidents" receive similar investigation, corrective action, and trending, thereby limiting the information's usefulness as a proactive management tool (see Finding FP-1). In addition, as SNL implements its policy of "one lab with many sites," the overall SNL self-assessment program will be improved when it becomes "one program with many sites." Currently, the separate programs in California and New Mexico are not fully and formally integrated and do not allow for optimal assessment tracking and trending across the SNL complex.

DOE oversight of SNL/CA's environmental programs is provided by AL, KAO, and the KAO Site Manager. AL conducts more formal environmental compliance audits of SNL/CA (D-E-37), and KAO performs more frequent, less formal environmental appraisals (I-E-12). Both AL and KAO are based in New Mexico with day-to-day surveillance and oversight provided by the KAO Site Manager. In general, the DOE oversight at SNL/CA was found to be lacking some formality, frequency, and completeness in certain areas (see Finding PE-1).

The self-assessment program at SNL/CA is built upon the policy of ownership and responsibility, down to the lowest levels of the organization. At this level, awareness, training, and the ES&H Manual serve as the primary sources of guidance for individuals to assess for environmental concerns in their work areas (D-E-38). Environmental questions and incidents can be raised to the employee's immediate supervisor or the Center's ES&H Coordinator. Employees can also direct environmental questions or concerns to various site telephone numbers carried on cards worn around the neck (I-E-5, 13, 14, 17, and 18). These numbers include the 911 emergency number and the ES&H Hotline. Employees may also call Occurrence Management directly, where the incident data from all calls are collected. Occurrence Management also collects incident data via Environmental Protection Emergency Response Reports, Industrial Hygiene Service Reports, and Injury Illness Reports (I-E-21).

Occurrence Management investigates all reported incidents that are potentially reportable under DOE 5000.3B (I-E-13 and I-E-21). Otherwise, the incidents are entered into the Incident Reporting database, assigned a responsible individual, and distributed informally every week to the appropriate Center Director, the person involved in the incident, and the person who will help correct the problem (I-E-13 and I-E-21). Each month the incidents are transmitted formally to the Incident Evaluation Committee (IEC) for categorization and trending (I-E-9, I-E-13, and I-E-21). Center Directors and the site Vice President see these trends and address concerns through the appropriate Center Safety Committee, Center ES&H Council, or the Sandia California ES&H Council (SCEC). These data were first collected in 1991 (D-E-36).

Incidents in the Incident Reporting database are tracked informally by Occurrence Management until closure (I-E-21). An explanation of the resolution is entered into the database, but no formal verification is done unless the incident was assigned to Category 4. Category 4 incidents are not serious enough to be reportable under DOE 5000.3B but are considered important enough by those involved and Occurrence Management to require formal corrective action and tracking until closure. Formal corrective action means that a California Root Cause Evaluation (CARE) committee is formed that follows the same formal procedures (DOE 5000.3B) for selecting a qualified evaluation team and then conducts formal root cause analysis. The Category 4 designation is new for 1994, and to date four items have been identified and are being tracked in this category (D-E-35; I-E-21).

In the area of formal Occurrence Reporting, SNL/CA Occurrence Management recently received the first "excellent" rating (from AL) to be given in the past fifteen months in the DOE complex. Specific commendations were given for the Incident Reporting database and the Observant Observer Award Program (D-E-30).

Center Safety Committees are the first line of self-assessment after individual employees. Center Safety Committees are typically staffed by line personnel who have received LAP training and by the Center's ES&H Coordinator. The frequency and formality associated with Center Safety Committee walk-throughs are at the discretion of the Center Directors and are

encouraged to reflect the inherent risks associated with operations in the particular Center (I-E-13).

Management assessments are required walk-throughs by Center Directors and their respective ES&H Coordinators. Records of these walk-throughs are typically maintained in the Director's Management Assessment Notebooks (MANs). These walk-throughs are required six times annually but may be held with varying degrees of frequency once the minimum requirements have been met (I-E-13).

Another component of SNL/CA's self-assessment program is LAP, a formal assessment program, chartered by SHEAC, where line personnel are trained and assigned to teams that then conduct walk-throughs of specified zones of the SNL/CA site. The purpose of the walk-throughs is to identify ES&H concerns that are then categorized according to risk and type and tracked until closure (D-E-21 and D-E-22; I-E-13 and I-E-15). Approximately 10 LAP assessments are conducted annually, covering 10 geographic zones. Findings, whether corrected during the walk-through or carried for future resolution, are categorized and tracked in the LAP database (D-E-22; I-E-15). The LAP Program Manager is a member of the IEC, and data from LAP is included in the IEC trending and analysis (D-E-16 and D-E-36; I-E-9, I-E-13, and I-E-15).

SHEAC also charters an annual review of all the Centers. This assessment is organizationally focused and conducted in the form of a questionnaire. Once the data are collected, the trends and information are summarized and provided to Center Directors in SHEAC monthly meeting minutes (D-E-17; I-E-13).

SHEAC will soon charter a third form of assessment, which will focus on specific programs discussed in the ES&H Manual, such as "Hoisting and Rigging" and "Laser Safety." The purpose of these assessments will be to evaluate how line organizations are supporting these programmatic activities. It will constitute the third leg of the SHEAC assessment program, LAP (geographic), Annual Review (organizational), and Program Review (programmatic) (I-E-13).

It is the responsibility of the Incident and Evaluation Committee to collect and categorize the data from the Incident Reporting database, LAP, and the SHEAC Annual Review; analyze the root causes and trends; and recommend actions that can be taken to prevent recurrence of similar incidents (D-E-36). Since the data were first collected, in 1991, analysis of the information found that 80 percent of the incidents were due to two root causes: (1) lack of ownership and regular maintenance; and (2) failure to follow ES&H policies and procedures (D-E-36). The analysis also showed that of the 583 nontrivial incidents, approximately 2 percent had a high potential for environmental impact (D-E-16). To address these issues, management has formed teams to identify categories of protective equipment—e.g., machine guarding—and has agreed to establish an ownership and maintenance log for applicable equipment. Furthermore, site-specific posters are being placed in key locations around the site to heighten employee awareness of potential injury or hazard-causing situations. In addition, the trending and analysis by the IEC continues to monitor the site's progress (D-E-36; I-E-13).

Based on the above observations, one finding was identified in the program evaluation, reporting, and corrective action portion of the audit, pertaining to the lack of some formality, frequency, and completeness in certain areas of DOE oversight.

3.7.2

Finding

PE-1: DOE Environmental Compliance Oversight

Performance Objective: DOE 5400.1 "General Environmental Protection Program," states that the Heads of Field Organizations shall "develop and implement programs that direct contractors to execute environmental protection compliance programs and policies, and provide for oversight, confirmation, and independent verification of those contractor programs."

DOE 5482.1B, "Environment, Safety and Health Appraisal Program," states that it is DOE policy to "assure the protection of the environment," and that this assurance is "provided, in part, by the ES&H appraisal program consisting of internal appraisals by the operating level, functional and management appraisals by a second line organization level. . . ." Further, this Order states that among the ES&H appraisal program's objectives are to "evaluate the effectiveness of ES&H policies, requirements, and standards and their implementation" and "provide management with objective, timely, and reliable information on ES&H performance, including significant achievements and deficiencies."

The Strategic Plan of KAO establishes KAO ESH & Compliance Branch's "broad responsibilities." Among these are to "ensure that all ES&H program activities at KAO sites are . . . managed in a professional and technically excellent manner[,] ensure M&O Contractor and DOE compliance with all environmental, safety and health laws and regulations[, and] interface with regulatory agencies to interpret regulations affecting KAO M&O [Management and Operating] Contractor operations and to obtain required permits."

Finding: DOE environmental compliance oversight and guidance efforts lack formality and frequency in certain areas and completeness in other areas.

Discussion: DOE oversight of SNL/CA's environmental compliance programs includes activities by the AL Environmental Protection (EP) Division, the KAO ESH & Compliance (ESH&C) Branch, and the KAO Site Manager. The EP Division conducts formal environmental compliance audits of SNL/CA environmental programs; these occur approximately twice a year and are included in an AL Master Appraisal Schedule provided to KAO and SNL/CA (I-A-4, I-A-5, and I-A-24). The ESH&C Branch is responsible for performing more frequent, less formal environmental appraisals of SNL/CA, and for providing day-to-day environmental compliance guidance to the site (D-A-20; I-A-4 and I-A-5). Both the EP Division and the ESH&C Branch are based in Albuquerque, New Mexico. Onsite, day-to-day surveillance and oversight of environmental programs and site compliance are among the responsibilities of the KAO Site Manager (D-A-21; I-A-4, I-A-6, and I-A-12).

Interviews with AL, KAO, SNL, and SNL/CA managers, as well as state, regional, and city regulators, indicate that strong working relationships have been developed between KAO and SNL, both in New Mexico and California, and between SNL/CA and state and local regulatory agencies. These interviews reveal a common belief that environmental risks at SNL/CA are being managed adequately and are low. These interviewees also agree that the introduction of the KAO Site Manager has resolved many of the past problems with DOE oversight, some of which were identified by the 1990 Tiger Team Assessment in its Finding M-12 (I-A-4, 6, 9, 10, 12, and 18; I-B-18; I-D-14; I-E-1 and I-E-2).

Formality and Frequency of Oversight

Despite the above-mentioned improvements, KAO oversight of SNL/CA lacks frequency and some formality (I-A-12, I-A-18, and I-A-20). The ESH&C Branch relies heavily on the KAO Site Manager's environmental surveillance experience to supplement its oversight and guidance responsibilities. This reliance is relatively effective because the KAO Site Manager, having once worked in the ESH&C Branch, is familiar with both the site's environmental issues and ESH&C Branch personnel. Reliance on the Site Manager by ESH&C Branch may be inappropriate. Were the Site Manager's other duties to become more demanding or were he or the environmental specialists in the ESH&C Branch to be replaced, the effectiveness of DOE oversight would be jeopardized (I-A-12 and I-A-20).

KAO's travel budget restricts DOE's ability to provide more frequent and formal oversight of SNL/CA. Generally, key environmental professionals of the ESH&C Branch are unable to visit the site more than twice a year (D-A-22). The FY 1994 travel budget for KAO as a whole is nearly committed, with 7 months remaining in the fiscal year (I-A-20 and I-A-21). These restrictions have led the ESH&C Branch to fund travel out of its training budget and have led the Branch Manager to restrict his own travel to SNL/CA (and other sites) in order to preserve travel funds (I-A-20). The KAO Manager and the AL Branch Chief for Administration, however, are both very confident that the ESH&C Branch's request for a substantial increase in its FY 1994 travel budget (i.e., from approximately \$50,000 to approximately \$80,000) will be approved by AL (I-A-22 and I-A-25). Travel-based oversight limitations may therefore be eliminated for the remainder of this fiscal year. Still, it is uncertain whether such increases will be sustained in future years (I-A-22 and I-A-25).

SNL/CA personnel believe that more frequent ESH&C Branch visits would facilitate increased KAO participation in external environmental appraisals and stronger relations between the environmental professionals of KAO and SNL/CA (I-A-22 and I-A-23).

Completeness of Oversight

In addition, some specific deficiencies in DOE oversight and guidance were noted:

- AL has not provided SNL/CA with the DOE Office of Environmental Guidance's guidance on survey procedures that are appropriate for consideration before releasing radioactively contaminated laboratories for reuse or unrestricted use (see Finding RM-2);
- AL and KAO do not systematically review SNL/CA's NEPA procedures (see the National Environmental Policy Act programs portion of this audit);
- AL's NEPA guidance is inconsistent with DOE Headquarters guidance (see Finding NEPA-1); and
- KAO has not verified and closed completed 1990 Tiger Team Assessment corrective actions in a timely manner. For example, one corrective action addresses the lack of a sitewide Environmental Impact Statement (EIS). The EIS was completed and the final submitted to KAO on January 6, 1993. At the time of this audit, the corrective action had not been verified and closed by KAO (D-A-23).

The Audit Team also found that KAO does not always perform the external interface responsibilities described in the KAO Strategic Plan. For example, although all of the state and local regulators interviewed by the team are very familiar with SNL/CA environmental professionals, some are not familiar with KAO representatives (I-B-18 and I-D-14) (see also the internal and external communications portion of this audit).

3.8 ENVIRONMENTAL PLANNING AND RISK MANAGEMENT

3.8.1 Overview

The purpose of the environmental planning and risk management portion of the SNL/CA Routine Environmental Audit was to evaluate the extent to which environmental planning is conducted and integrated into the overall planning process at SNL/CA. The adequacy of DOE and SNL/CA's approach to identify, evaluate, and manage environmental risks was also addressed.

This portion of the audit involved reviewing documents DOE and SNL/CA provided and conducting interviews with key personnel. Documents reviewed included the KAO's Strategic Plan and SNL's ES&H Five Year Plan, Environmental Restoration and Waste Management Five Year Plan FY 95–99, Institutional Plan, and Site Development Plan. Interviews were conducted with personnel from KAO; SNL/NM's Laboratories Services Division; and SNL/CA's ES&H and Facilities Center, Human Resources and Business Operations Center, and line management organizations. This portion of the audit relied on input from all members of the Audit Team.

In 1990 SNL prepared a strategic plan to provide overall direction for all programs and activities at SNL (I-F-6). A variety of documents flow from this strategic plan and describe SNL's ES&H strategies and SNL/CA's plans for implementing SNL's strategic vision, including the following:

- Vision, Objectives, and Strategies for ES&H at Sandia National Laboratories (April 1991), which contains SNL's ES&H Vision and outlines seven ES&H objectives and strategies—quality, leadership, communication, teaming, ownership, culture, and training—that provide the overall framework and direction for SNL's environmental programs (D-F-21);
- The Sandia National Laboratory Institutional Plan, FY94–99 (October 1993), which establishes overall strategic and programmatic goals for SNL and includes a separate chapter on ES&H issues (D-F-42);
- The Sandia Site Development Plan (April 1993), which describes site conditions and discusses planned changes in physical facilities and infrastructure at each of SNL's locations, including SNL/CA (D-F-43);
- The 1993 Strategic Implementation Plan (March 1993) for SNL/CA, which outlines the strategic direction for SNL/CA's programs (D-F-22);
- The Environmental Protection Implementation Plan (January 1994), which describes environmental protection activities at SNL/CA (D-F-37);
- The ES&H Five Year Plan (March 1993), which describes planned ES&H activities that will be indirectly funded through the Defense Programs (DP) budget (D-F-17);

- The ER&WM Five Year Plan FY 1995–1999 (April 1993), which describes planned activities that will be directly funded through the EM budget (D-F-18 and D-F-19); and
- Specific environmental program plans, such as the Waste Minimization Plan.

With the advent of the new contract in October 1993, SNL is reevaluating its mission, values, strategic objectives, and planning assumptions and is now in the process of updating its strategic plan. The plan is expected to include specific corporate strategies for environmental protection (I-F-6). In addition, SNL intends to prepare more detailed "operational plans" for the major ES&H functional areas, such as environmental protection programs. The operational plan for SNL/CA is expected to include a discussion of its ES&H activities that will be consistent with the strategies contained in the ES&H operational plans prepared by SNL/NM staff (I-F-6).

SNL uses an overhead assessment on all projects to fund all of its technical and administrative support, including ES&H projects and activities not funded through the DOE Office of Environmental Restoration and Waste Management or directly supported by project activities. Indirect overhead funds are allocated through the Administrative Management Council (AMCO). To determine the amount of these indirect funds that go to ES&H projects, SNL uses a prioritization process whereby all ES&H projects are ranked against one another. This ranking is accomplished through an adaptation of the Laboratory Integration and Prioritization System. After the projects are ranked, the funds required are then compared to an initial budget allocation. The AMCO then examines those projects at or near the funding cutoff line and re-assesses the initial budget allocation against its judgment of the priority associated with the unfunded projects. AMCO then uses managerial judgment to make final decisions on which projects will go unfunded and how much of the indirect budget will go to ES&H projects (I-F-3).

During the FY 1994 budget cycle, initial ES&H requests for funds amounted to more than \$70 million, compared with an initial budget allocation of \$42 million. This created an initial ES&H funding gap for SNL of approximately \$30 million. After ranking the projects and applying its collective judgment, AMCO increased the indirect budget allocation for ES&H to \$53 million. In addition, the ES&H Program Management office identified an additional \$10.5 million of ES&H costs that were deemed to be direct-charge activities (i.e., paid for by line organizations receiving the support). Thus, after having been through the entire process, ES&H projects received more than 80 percent of their requested funds and, because of the prioritization process AMCO used, had its budget increased by more than 25 percent of the initial allocation (I-F-3). With few exceptions, the Audit Team found this process to be effective in funding ES&H activities adequately at SNL/CA.

Although SNL/CA has many elements of an effective environmental planning process, there are several areas where there appears to be little integration between the SNL/CA environmental planning process and other SNL and SNL/CA planning, budgeting, and operational processes (see Finding RM-1). SNL recognizes the need for greater integration among its various planning, budgeting, and operational processes and is developing an Integrated Services Management System (ISMS) that will be piloted by the Laboratories Services Division in New Mexico and includes the SNL groups responsible for environmental operations. The FY 1995 ISMS process will build on the risk-based prioritization system developed to allocate indirect ES&H funds during the FY 1994 budget cycle. It will include a

broader range of activities, however, including facilities planning, and will also explicitly identify and track the various regulatory requirements and other commitments (such as corrective action plans) that drive the need for various environmental projects and activities (I-F-6 and I-F-20).

In the risk management area, SNL/CA has a formal system for the identification of some ES&H hazards: the Preliminary Hazard Assessment (PHA). The environmental hazards identified by PHA are associated with environmental restoration activities, generated wastes, discharged effluent, and hazardous materials disposal (D-G-7). The PHA does not address environmental concerns relating to air emissions, material storage, clearing or excavation of land, wildlife and wetlands, cultural resources, noise, pesticides and herbicides, traffic, etc. (see Finding FP-1).

A comprehensive environmental review of actions is facilitated through the use of AL's Environmental Checklist/Action Description Memorandum (ECL/ADM) form (D-G-15), which covers a comprehensive list of potential environmental concerns, including all the items described in the previous paragraph. The ECL/ADM was developed to assist the implementation of the NEPA program at SNL/CA. At the initiation of a project, an ECL/ADM is filled out and provided to the NEPA program leader. The NEPA program leader distributes the completed checklist to each of the Environmental Protection Department (EPD) program leaders and schedules a question-and-answer session with the project proponent. At this meeting, all ES&H disciplines have the opportunity to address questions specific to their discipline. This approach, which is not yet formalized but is expected to be, supports the comprehensive environmental review of proposed activities early in project planning.

Although the EPD staff review all ECL/ADMs (I-G-5), the initiation of a project at SNL/CA does not necessarily lead to the preparation of an ECL/ADM. A number of organizations at SNL/CA have not incorporated the preparation of ECL/ADMs as part of their project initiation procedures. In these instances, EPD review appears to occur primarily because of the NEPA program leader's informal membership on various site planning committees (e.g., facilities planning and space planning), the activities of the ES&H Coordinators assigned to each Center, and the high level of NEPA awareness among SNL/CA staff. Given the relatively small size of SNL/CA, this approach appears to be effective. The lack of formality, however, leaves gaps in the process—gaps that concern the EPD and SNL/CA upper management (I-H-1, I-H-11, and I-H-13) (see Finding FP-1). SNL/CA is currently evaluating means to "fill in" the gaps. This effort, however, is at an early stage of development.

SNL/CA has developed a Chemical Information System (CIS) to track chemical use throughout the facility. This system is effective and is described in the environmental protection program portion of this audit.

Overall, SNL/CA has many of the elements needed to conduct effective environmental planning and risk management. There is, however, a lack of integration between some SNL/CA environmental planning activities and other SNL and SNL/CA planning, budgeting, and operating processes. There is also a need to strengthen and formalize the existing process for reviewing new projects.

Based on the above observations, two findings were identified in the area of environmental planning and risk management, pertaining to the lack of an integrated environmental planning and budgeting process and the lack of radiological characterization of the Tritium Research

Laboratory that addresses the ultimate reuse, or release for unrestricted use, of the facility, and DOE's potential liability.

3.8.2

Findings

RM-1: Environmental Planning and Budgeting

Performance Objective: Best management practices suggest that an organization should have a planning and budgeting process that ensures environmental resource needs are adequately identified and addressed so that the organization's environmental performance goals can be met. The environmental planning process should include both short- and long-term planning and be integrated with other, overall planning, budgeting, and operational processes.

Finding: SNL/CA's environmental planning process is not fully integrated with SNL and SNL/CA's other planning, budgeting, and operational processes.

Discussion: SNL is in the process of updating its 1990 strategic plan, which provides overall direction for all programs and activities at the laboratories under its management (I-F-6). There are a variety of environmental planning documents that flow from the existing strategic plan and describe SNL's ES&H strategies and SNL/CA's plans for implementing SNL's strategic vision. In addition, SNL uses an annual ES&H budgeting process that applies a risk-based prioritization scheme to determine the amount of indirect funds that go to ES&H projects throughout SNL.

Although SNL/CA has many elements of an effective environmental planning process, there are several areas where there appears to be little integration between the environmental planning process and other SNL and SNL/CA planning, budgeting, and operational processes. Specific examples of this lack of integration include the following:

- Funding projections in last year's ES&H five-year plan, which covers environmental activities indirectly funded through the Defense Programs budget, were developed by SNL staff based largely on FY 1993 budget allocations and are not specifically integrated with SNL/CA environmental operational or staff planning activities (D-F-17; I-F-15, I-F-18, and I-F-20).
- Currently, there is no integration of long-range planning for environmental activities funded through the indirect budget and environmental restoration and waste management activities funded directly from the Environmental Restoration and Waste Management budget. SNL believes that the new organizational structure and planning processes it is now putting in place will provide greater integration among these activities (I-F-6, 8, 15, and 20).
- There is a lack of integration between the two major processes for allocating Sandia environmental staff resources: the budget process that allocates "programmatic Sandia FTEs" (full-time employees) as well as funding (including funding for contractor assistance), and the separate process for allocating Sandia employee "slots" as part of the overall policy of limiting the number of employees at the laboratory. It is possible to receive approval for a new Sandia FTE through the budget process but then to be unable to fill this position because there is no full-time Sandia "slot" allocated for this purpose (I-F-4, 11, 16, 20, and 22). The lack of integration between these two processes has

made it difficult for SNL/CA to acquire some environmental staff resources in a timely fashion (see Finding SR-1).

- There is a lack of integration between SNL's Site Development Plan and environmental restoration planning at SNL/CA. The Site Development Plan neither includes a map or description of areas of known or suspected contamination or hazardous releases at SNL/CA nor discusses the potential impact of contamination on future site development (see Finding FP-3).

SNL recognizes the need for greater integration among its various planning, budgeting, and operational processes and is developing an Integrated Services Management System (ISMS) that will be piloted by the Laboratories Services Division in New Mexico and will include the groups responsible for environmental operations. The FY 1995 ISMS process will build on the risk-based prioritization system developed to allocate indirect ES&H funds during the FY 1994 budget cycle, but it will include a broader range of activities, including facilities planning. It will also explicitly identify and track the various regulatory requirements and other commitments, such as corrective action plans, that drive the need for various environmental projects and activities (I-F-6 and I-F-20).

The 1990 Tiger Team Assessment did not have a finding that specifically addressed environmental planning. SNL's consolidated corrective action plan, however, links the Tiger Team Finding M7, which addresses the development of ES&H goals and objectives, with the corrective action plan for Tiger Team Key Finding KF-M-03, which addresses strategic and implementation planning for all of SNL's ES&H activities. This corrective action is behind schedule.

RM-2: Radiological Characterization of the Tritium Research Laboratory

Performance Objective: DOE 5400.1, "General Environmental Protection Program," Section 5, states that "DOE is committed to good environmental management of all its programs and at all its facilities to correct existing environmental problems, to minimize risk to the environment or public health, and to anticipate and address potential environmental problems. . . ."

U.S. DOE Radiological Control Manual (DOE/EH-0256T, June 1992), Chapter 2, "Radiological Standards," Part 2, Contamination Control and Control Levels, Table 2-2, provides a summary of contamination values that includes limits for both Removable and Total (Fixed and Removable) "Tritium organic compounds, surfaces contaminated by HT, HTO, and metal tritide aerosols."

DOE 5400.5, "Radiation Protection of the Public and the Environment," Chapter IV, Residual Radioactive Material, Section 5, Figure IV-1, provides surface contamination limits for beta gamma emitters that includes "Allowable Total Residual Surface Contamination" values for "Average, Maximum and Removable" contamination.

The DOE Office of Environmental Guidance draft Environmental Implementation Guide for Radiological Survey Procedures (November 30, 1992) contains a set of guidelines for DOE and DOE contractors to use in planning, conducting, and/or evaluating a radiological survey.

DOE 5820.2A, "Radioactive Waste Management," Chapter V, Section 3.a.(2), requires that "Operational records (e.g., facility design drawings and modifications, characterization data on contamination levels, prior decontamination activities, incident reports required by DOE Orders) for all contaminated facilities shall be maintained by the cognizant field organization for use in preparing decommissioning plans."

Finding: SNL/CA has not formally planned or conducted radiological characterization that fully addresses potential DOE liability with regard to decontamination activities and building modifications at the Tritium Research Laboratory (TRL).

Discussion: From 1977 through 1992, TRL, Bldg. 968 at SNL/CA, was used to support research into the interaction of tritium with various materials of interest. Increased costs associated with operating a non-reactor nuclear facility and a decreasing level of tritium research led SNL to conclude that it was no longer cost-effective or environmentally prudent to conduct tritium operations in the TRL (D-C-13). In addition, SNL has stated that it considers the TRL project as its "part in removing tritium from the populous Livermore Valley" (D-C-13). SNL/CA has successively downgraded the TRL Hazard Category for non-reactor nuclear facilities and reduced its tritium inventory. SNL/CA's intent is to reclassify the facility as a "normal industrial hazard," non-nuclear facility and "use the available laboratory space to support growing efforts involving the handling of difficult materials" (D-C-13). Ultimately, SNL/CA wants to decontaminate the TRL and release it for other SNL/CA research-related activities that are potentially unrestricted from a radiological standpoint.

Given the significant quantities of tritium handled at the TRL throughout its operational mission, the number of potentially contaminated systems and surfaces in this facility (and the fact that ongoing activities at the TRL have included such actions as reconstruction and/or renovation of laboratory spaces), the lack of a formal decontamination and radiological

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characterization plan could have an impact on DOE liability as it relates to the potential for release for unrestricted use, or reuse and occupancy of previously contaminated areas of the TRL.

Interviews with TRL project management staff indicate that they plan to develop formal characterization plans in the future (I-C-23 and I-C-24). Discussions conducted with professional staff members at SNL/CA EPD (I-C-11) and KAO Health Physics Department (I-C-22) indicated that the conduct of a comprehensive radiological characterization would be a reasonable approach to the transition of this facility. Furthermore, the KAO Health Physics Department is in agreement that, given the existence of technology currently available for the conduct of fixed tritium monitoring, the application of this monitoring to the transition-related activities would be a prudent approach (I-C-22). SNL/CA, however, has not yet developed formal policy, plans, and procedures for radiological characterization and systems management of facilities being prepared for transition to potential unrestricted uses.

SNL/CA formally requested, and received, concurrence from Office of Defense Programs (DP)-20 in July 1993 on plans and actions to cease tritium operations at the TRL and plans for future use of the facility (D-C-13). The discussion in the formal request to DP addressing SNL/CA's approach to conversion of the TRL to other uses outlines the strategy for not turning the facility over to the Office of Environmental Restoration and Waste Management for formal decontamination and decommissioning (D&D) as defined in DOE 5820.2A.

Although the TRL has not entered into, and is not planning to enter into, the DOE D&D process, the intent to transition this facility to potential unrestricted uses triggers the need to conduct appropriate radiological characterization. Given ongoing activities at the TRL, the surveys taken to date and those currently underway are not in accordance with a formal characterization plan. Such a characterization plan has not yet been developed. The TRL Inventory Reduction Management Plan and Schedule, Appendix I, references allowable total residual surface contamination values for Average, Maximum, and Removable measurements (D-C-15). Surveys for fixed contamination, however, have not been conducted, as is required by U.S. DOE Radiological Control Manual, and the surface contamination guidelines for release of material in DOE 5400.5, "Radiation Protection of the Public and the Environment." In addition, surveys conducted for removable contamination did not follow a formal plan, are not in keeping with the guidelines presented in the Environmental Implementation Guide for Radiological Survey Procedures, and are not documented in a report. The data, however, are available from the SNL/CA Health Protection staff (I-C-14).

The methodology by which the TRL will undergo its transition is discussed in several documents, including an Inventory Reduction Management Plan and Schedule (D-C-15). Although this document references the TRL ES&H SOPs, Health Protection, and Waste Handling Procedures, it does not address topics such as radiological characterization and the level of formality that should be applied to planning, conducting, and documenting these surveys.

3.9

NATIONAL ENVIRONMENTAL POLICY ACT PROGRAMS

3.9.1

Overview

The purpose of the National Environmental Policy Act (NEPA) portion of the Sandia National Laboratories, California (SNL/CA), Routine Environmental Audit was to evaluate (1) the establishment of a formal management framework for SNL/CA's NEPA program; (2) the operational implementation of the NEPA program, which includes gaining an understanding of screening criteria and processes for recommending appropriate levels of NEPA review, the integration of NEPA into site and budget planning processes, communications and recordkeeping, and the depth of understanding of DOE and SNL/CA staff regarding the NEPA process; and (3) the implementation of actions to address needs uncovered in previous audits and reviews of the NEPA program at SNL/CA.

The audit addressed areas where DOE has established specific management system requirements; however, detailed evaluation of compliance with specific requirements of Council on Environmental Quality (CEQ) and DOE NEPA Regulations (40 CFR 1508 and 10 CFR 1021 respectively) and the DOE NEPA Order (DOE 5440.1E) was outside the scope of this audit.

The NEPA audit included interviews and document reviews. Interviews were conducted with SNL/CA and SNL/NM staff responsible for the NEPA program, finance, facilities, program management, and project leadership. DOE Kirtland Area Office (KAO), Albuquerque Operations Office (AL), and DOE Headquarters Office of NEPA Oversight (EH-25) staff were also interviewed. Policies and procedures were reviewed for consistency with DOE NEPA Regulations, DOE 5440.1E, and related DOE Orders, memoranda, and guidance. The NEPA portion of the audit relied on input from other members of the Audit Team.

SNL/CA NEPA documents and NEPA-related documentation provided to the Audit Team included, but were not limited to, the sitewide 1992 Final Environmental Impact Statement (FEIS) for Continued Operations for Lawrence Livermore National Laboratory (LLNL) and Sandia National Laboratories, Livermore; the Record of Decision (ROD) for the FEIS; and examples of approved categorical exclusions (CXs).

DOE NEPA Regulations apply to any DOE action affecting the quality of the environment of the United States, its territories or possessions. Responsibility for NEPA compliance lies with the DOE program offices and line management.

At SNL/CA, NEPA activities are coordinated by a NEPA program leader within SNL/CA's Environmental Protection Department (EPD). NEPA oversight is provided by the KAO Environmental, Safety, Health & Compliance Branch (ESH&C).

Since the 1990 Tiger Team Assessment, SNL/CA has made substantial improvements to its NEPA compliance program. The Tiger Team Action Plan developed by SNL/CA proposed two principal actions in response to the six Tiger Team NEPA findings (four Compliance Findings and two Best Management Practice Findings) (D-G-32). These were Action No. 2 (EK-2) and Action No. 55 (NEPA/CF-4). Response EK-2 committed SNL/CA to the development of a formal, documented NEPA program consisting of five elements: assigning responsibility for the in-house NEPA program, completing a NEPA program plan, implementing the NEPA program, implementing centralized computer tracking systems for NEPA documents, and

establishing NEPA training for staff. Response NEPA/CF-4 involved the development of a new sitewide NEPA document.

Actions in accordance with Response EK-2 at SNL/CA have included the development and staffing of a position that centralizes NEPA program leadership responsibilities; the development of the NEPA program document and upper-level SNL NEPA procedures (Section 10-I of the ES&H Manual) (D-G-6 and D-G-27); the implementation of a comprehensive recordkeeping system; and the provision of "NEPA Awareness" training to all staff, including contractors (D-G-5). The NEPA compliance program also includes project planning documents that incorporate NEPA milestones and a network of mechanisms to ensure that actions receive NEPA review. SNL/CA certified completion of these items in August 1993 (D-G-26). Verification of Response EK-2 by KAO is pending.

Although it appears that few of the programs initiated at SNL/CA escape NEPA review, some parts of the NEPA program are informal; NEPA is not addressed in some activities, such as the hazard assessment portion of the purchase-requisition process (D-G-30 and D-G-36); and the NEPA program leader is not involved in the review of all the operating procedures that affect the NEPA review process at SNL/CA (I-G-21). Additionally, SNL/CA does not have a process to evaluate whether the effect of incremental changes on an ongoing action produce sufficient change in the action to require a NEPA review (I-H-11 and I-H-13). Senior management at SNL/CA is aware of this issue and the site is evaluating potential solutions.

In accordance with the commitment made in the response to NEPA/CF-4, a sitewide FEIS for SNL/CA was issued in August 1992 (D-G-1), the Record of Decision was issued in January 1993, and the Mitigation Action Plan (MAP) was approved in September 1993 (D-G-13). SNL/CA certified completion of NEPA/CF-4 and submitted the completed package to KAO for official verification and closeout in January 1993 (D-G-26). As of this audit, KAO has not verified completion of NEPA/CF-4. The Audit Team, however, has verified completion and recommended closure.

Formality is not consistent throughout SNL/CA's NEPA program. Portions of the NEPA program have been formalized (e.g., NEPA Program Document (D-G-27); ES&H Manual, Section 10-I, NEPA Procedures (D-G-6); MAP follow-up process (D-G-17); and some sectoral and departmental operating procedures (D-G-21 and D-G-28). Informality exists, however, both within the Environmental Protection Department (EPD) that coordinates the NEPA process and within line organizations. SNL/CA sectors such as Defense Programs (DP) and Energy/Environment, and Centers such as Combustion/Materials Science/Technology and Materials and Applied Mechanics, have not formalized NEPA procedures as directed by the SNL NEPA Program Document (D-G-27; I-G-7 and I-G-8). Additionally, the EPD procedures for coordination of the NEPA process have not been formalized (I-G-21) (see Finding FP-1).

NEPA review of actions is facilitated through the use of AL's Environmental Checklist/Action Description Memorandum (ECL/ADM) form (D-G-15). Although all ECL/ADMs are reviewed by the SNL/CA NEPA staff (I-G-5), the initiation of a project at SNL/CA does not necessarily lead to the preparation of an ECL/ADM. A number of organizations at SNL/CA have not incorporated the preparation of ECL/ADMs as part of their project initiation procedures. In these instances, NEPA review appears to occur primarily because of the NEPA program leader's informal membership on various site planning committees (e.g., facilities planning and space planning), the activities of the ES&H Coordinators assigned to each Center, and the high level of NEPA awareness among SNL/CA staff. Given the relatively small size of

SNL/CA, this approach appears to be effective. The lack of formality in certain management systems, however, leaves gaps in the NEPA program that concern both the NEPA program leader and SNL/CA upper management (I-H-1, I-H-11, and I-H-13). SNL/CA is currently evaluating means to "fill in" gaps in the NEPA program. This effort, however, is at an early stage of development.

In an informal but effective program using the ECL/ADM, the NEPA program leader distributes the completed ECL/ADM to each of the EPD program leaders and schedules a question-and-answer session with the project proponent. At this meeting, all ES&H disciplines have the opportunity to address questions specific to their discipline. This approach, which SNL/CA is working to formalize, supports the comprehensive environmental review of proposed activities early in project planning.

NEPA review and documentation practices and processes at SNL/CA are generally consistent with DOE Headquarters and AL NEPA guidance documents. At the time of this Routine Environmental Audit, all staff interviewed were aware of the requirement that any DOE action affecting the quality of the environment requires a NEPA review and determination.

It is a KAO responsibility to ensure that all SNL/CA operations comply with NEPA through periodic surveillance. KAO has neither reviewed SNL/CA's NEPA recordkeeping system nor requested that SNL/CA periodically submit a printout from their recordkeeping system (I-G-5). Additionally, KAO is not part of the normal review process for SNL/CA NEPA procedures or program documents (I-H-16). In response to discussions with AL NEPA staff (I-G-23), KAO provided SNL/CA with guidance inconsistent with DOE 5440.1E and DOE Headquarters guidance (see NEPA/F-1).

Documentation of SNL/CA's compliance with mitigation conditions set forth in the Record of Decision for the FEIS is contained in the facility's Mitigation Action Plan (MAP) (D-G-13). The MAP is monitored and annually updated by SNL/CA EPD (D-G-17; I-G-5). The MAP annual update will track the progress of the mitigation conditions as described in DOE 5440.1E, Section 6.a.(22) and (23).

Although the SNL/CA NEPA program is effective overall and substantial progress has been made since the Tiger Team, there are opportunities for improvement. The NEPA portion of the audit resulted in one finding concerning NEPA guidance from KAO that is inconsistent with DOE Headquarters guidance.

3.9.2 Finding

NEPA-1: NEPA Guidance

Performance Objective: DOE 5440.1E, "National Environmental Policy Act Compliance Program," Sections 6.a.(10) and (11) and 6.b.(1), states that the authority to make decisions regarding the appropriate level of NEPA review for those categories of actions specifically listed in the DOE NEPA Regulations (10 CFR 1021), Subpart D, lies with Secretarial Officers unless specifically delegated to Operations Office Managers. It further states that this authority may not be redelegated.

10 CFR 1021, Subpart D, Appendix B, "Categorical Exclusions Applicable to Specific Agency Actions," lists classes of actions for which neither an Environmental Assessment (EA) nor an Environmental Impact Statement (EIS) is normally required.

EH-25 Memorandum (June 7, 1993), "Environmental Audit Performance Objectives and Criteria (POCs)," NEPA.1, "NEPA Program Structure and Elements," Criteria F., states that a formal system should be in place to ensure that "DOE determination of the level of NEPA review of a proposed action is appropriate."

Finding: KAO guidance to SNL/CA is inconsistent with a review process for proposed site activities that ensures appropriate NEPA review.

Discussion: For actions not covered by an existing NEPA document, the authority to make decisions concerning the appropriate level of NEPA review lies with Secretarial Officers unless specifically delegated to Operations Office Managers. This authority, which extends only to those categories of actions specifically listed in the DOE NEPA Regulations (10 CFR 1021), Subpart D, Appendices A–D, has been delegated to the AL Manager and may not be redelegated.

The principal NEPA document for SNL/CA is the FEIS (D-G-1). Actions outside the scope defined by the FEIS or covered by categorical exclusions (CXs) approved for application at SNL/CA require a NEPA determination by the AL Manager. Two pieces of KAO guidance provided to SNL/CA in response to discussions with AL NEPA staff, are deficient when evaluated against this requirement (I-G-23). This deficiency is the result of interpretations by AL and KAO that are inconsistent with DOE 5440.1E and DOE Headquarters NEPA guidance.

Guidance KAO provided to SNL/CA on April 14, 1993, (D-G-24) indicates that the SNL/CA FEIS will cover "all Appendix A and B categorical exclusions." The statement that the SNL/CA FEIS covers all Subpart D, Appendix B, CXs within the DOE NEPA Regulations (10 CFR 1021), however, is inaccurate. Although it does not appear that SNL/CA has, to date, applied this guidance in the screening of actions for NEPA, the application of the April 14, 1993, guidance could raise the possibility that actions that require a NEPA determination from the AL Manager would not receive that determination.

The April 14, 1993, KAO guidance statement is inaccurate because the FEIS and Appendix B differ in scope. For individual CXs, the scope of Appendix B may be broader than the scope of the SNL/CA FEIS, because Appendix B, unlike the SNL/CA FEIS, is intended to apply to the entire DOE complex. This necessitates a case-by-case evaluation of proposed actions in

comparison with the SNL/CA FEIS, rather than assuming that all activities consistent with Appendix B are consistent with the SNL/CA FEIS.

A review process based on KAO guidance could result in the action's being screened from further NEPA review, even though it is outside the scope of the SNL/CA FEIS or CXs approved for application at SNL/CA. For instance, SNL/CA could undertake a small-scale research project that, while within the scope of CX B3.10 ("small scale research and development/small scale pilot projects, at an existing facility, preceding demonstration"), is outside the scope of the SNL/CA FEIS. This may occur as a result of a future change in mission.

Additional KAO guidance provided to SNL/CA on November 29, 1993, states in part that "If a proposed action is not clearly identified in an existing NEPA document, the Line Management Official can decide whether the consequences of the proposed action are clearly bounded by the consequences analyzed in an existing NEPA documentation" (D-G-16). This portion of the November 29, 1993, guidance incorrectly focuses on "consequences," rather than on the actions that are the stimulus for NEPA review.

An appropriate NEPA process requires that existing NEPA documents be reviewed and an evaluation made of whether the proposed site activity is specifically addressed in those documents. If the proposed activity is not included in the scope of existing NEPA documents and is not covered by a CX that has been approved for application at the site, then, at a minimum, a NEPA determination by the AL Manager is required. Subpart D of the DOE NEPA Regulations becomes relevant only when an action is not covered by an existing NEPA document or approved CX.

3.10 INACTIVE WASTE SITE PROGRAMS

3.10.1 Overview

The purpose of the inactive waste site programs portion of the SNL/CA Routine Environmental Audit was to evaluate the management of the inactive waste sites program. For the purpose of this audit, all references to the environmental restoration program refer to the inactive waste sites program as defined in Performance Objectives and Criteria for Conducting DOE Environmental Audits (January 1994). Specifically, the audit focused on (1) programs to identify, evaluate, and remediate environmental restoration sites; (2) consistency with Federal, state, and local requirements dealing with inactive waste sites, such as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), 40 CFR 300 et seq., the Resource Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Amendments (HSWA), the California Regional Water Quality Board (RWQCB) Orders, and DOE Orders; (3) and adherence to best management practices. The specific regulations, requirements, and guidelines used during the audit are summarized in Appendix F. The scope of the inactive waste site programs portion of the audit was programmatic, focusing on the management approach.

This portion of the audit included interviews with SNL/CA, KAO, Agreement in Principle (AIP), state, and regional regulatory personnel; and a review of plans, sampling results, procedures, correspondence, and funding requests.

The Environmental Assessment and Restoration Program (EARP) at SNL/CA is under the overall management of the Environmental Protection Department. EARP is supported by four SNL/CA staff, including the EARP manager, a hydrogeologist, and two technicians. In addition to the SNL/CA staff, EARP has contracted one staff member from Los Alamos National Laboratory (LANL) for project management of the Fuel Oil Spill (FOS) site. Much of the field investigation, laboratory studies, work plan, and report writing is performed by subcontractors under the direction of EARP. Program responsibilities include identifying/discovering new inactive waste sites, assessing potentially contaminated soil and groundwater, remediating known contaminated areas, tracking the progress of inactive waste site activities, conducting groundwater monitoring, interfacing with regulators, planning and tracking budget, and procuring and overseeing contractors. As of February 28, 1994, the SNL/CA Environmental Assessment and Restoration Program was merged with the SNL/NM Environmental Assessment and Restoration Program.

Environmental restoration activities at SNL/CA include four projects in various stages of remedial action, including the Trudell site, Navy Landfill, FOS, and Miscellaneous Sites. All the sites are regulated by the California Regional Water Quality Control Board under a series of Orders, the most recent of which is Cleanup Order 89-184 (D-D-4). The Trudell site is a former service station on land DOE purchased in 1986 as part of maintaining a 500-foot buffer zone outside the site. A cleanup was performed to remediate contaminated soils. RWQCB approved the site closure on November 16, 1990. No further action, other than quarterly monitoring of one groundwater well, is required at the Trudell site.

RWQCB also regulates the assessment of the Navy Landfill, a former disposal area used from 1946 to 1956. Concrete and metal scrap have been detected at the landfill, which is located at the south end of the site. Studies to date have revealed no significant soil contamination;

elevated levels of nitrate and chromium, however, have been detected in the groundwater. SNL/CA has performed an assessment of the site in accordance with state guidance, and has submitted the report to RWQCB for review (D-D-18).

Most of the ongoing environmental restoration activity is focused on the FOS. The contamination at this site is the result of a 1975 release from an oil supply line from an aboveground fuel storage tank. The remedial investigation and feasibility study have been completed and bioremediation has been selected as the remedial action. The site is in the process of performing pilot testing of the bioremediation process. If successful, the remediation is expected to be complete by 1998.

In response to the 1987 DOE (EH-24) Environmental Survey, the site identified and evaluated several potential inactive waste sites (collectively referred to as the Miscellaneous Sites). As required in Cleanup Order 89-184, SNL/CA has submitted an assessment of the Miscellaneous Sites to RWQCB. None of the sites was found to present a risk to the environment, and no further actions are expected.

EARP performs quarterly groundwater monitoring at all wells onsite in accordance with RWQCB Order 89-184. There are presently 28 SNL/CA wells onsite monitored for different groups of parameters, including volatile organics, total petroleum hydrocarbons, metals, general chemistry, radiochemistry, and water level. Often, low groundwater conditions reduce the number of wells from which samples can be taken. Lawrence Livermore National Laboratory (LLNL) also has several wells on the SNL/CA site to monitor groundwater conditions related to remedial actions at LLNL, and although SNL/CA does not use these wells for monitoring, the data from these wells are provided to SNL/CA under a Memorandum of Agreement (D-D-13).

All remedial actions at SNL/CA are well along in the process. Several site surveys have been performed to identify potential inactive waste sites, and all of the identified potential inactive waste sites have been characterized, pending RWQCB approval. The sites requiring further remedial actions present little to no risk to human health or the environment. RWQCB is generally pleased with site responsiveness, but feels that there are opportunities for more timely communications (I-D-14). RWQCB is considering the issuance of a new Order that better reflects the current activities on the site. All schedules in the existing Order have been met.

The Environmental Assessment and Restoration Program (EARP) at SNL/CA is effective and responsive in its remedial actions. Considerable progress has been made since the 1990 Tiger Team Assessment, especially in the areas of timeliness of deliverables to the regulators, establishment of the Administrative Record, and development of procedures for data quality validation and verification. The staff are well trained and committed to continuous improvement of the EARP and individual projects. The program, however, does lack some formality in certain areas. These areas include overall environmental restoration program management documentation and procedures, some operating procedures for field activities, and procedures for integrating the EARP into related activities, such as site planning. One finding related to this lack of formality is identified and presented in formality of environmental programs (see Finding FP-3).

An audit of the EARP by the DOE Headquarters Southwest Programs Office (EM-45) in September 1992 identified similar deficiencies in formality of the programs. Corrective actions

proposed in response to that audit include preparation of a Program Management Plan for the EARP and preparation of SOPs specific to ERP.

APPENDIX A

BIOGRAPHICAL SKETCHES OF THE AUDIT TEAM

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NAME: Andrea J. Heintzelman

AREA OF RESP: Team Leader

ASSOCIATION: U.S. Department of Energy, Office of Environmental Audit

EXPERIENCE: 20 Years

- U.S. Department of Energy
 - Team Leader and Environmental Protection Specialist in the Office of Environmental Audit. Team Leader on Environmental Management Assessments, Routine Environmental Audits, and Environmental Baseline Audits.
 - Environmental Subteam Leader for Tiger Team Assessments at two major DOE non-defense facilities and Environmental Deputy Subteam Leader at six major DOE defense facilities. Team Member on ES&H Progress Assessments conducted at the Mound Plant and the Rocky Flats Plant.
 - DOE HQ team member responsible for input to development of an overall 1993–1994 Agency Mission Statement and Strategic Plan.
 - Assistant Program Manager for Prioritization of Environmental Survey findings for DOE-wide, major defense and non-defense production facilities.
- U.S. Federal Energy Regulatory Commission
 - Project Coordinator and Environmental Compliance Specialist assessing cumulative environmental impacts on proposed and existing hydroelectric dams, and assessment of noncompliances on operating hydroelectric projects nationwide.
- Deleuw, Cather/Parsons
 - Project Site Director and Site Resources Manager reviewing engineering construction design impacts and assessing environmental impacts on the upgrading of the Northeast Corridor (Amtrak corridor between Washington, D.C., and Boston).
- James F. MacLaren, Ltd.
 - Project Coordinator and Site Resources Manager assessing environmental impacts (e.g., flora, fauna, fisheries, surface water, geology, and archaeology) from the proposed construction of hexafluoride, thermal, coal-fired, and hydrogenerating nuclear facilities located throughout five provinces of Canada.

EDUCATION: M.A., Applied Anthropology, American University
B.A., Anthropology, Kansas State University

NAME: Leroy H. Banicki

AREA OF RESP: Deputy Team Leader

ASSOCIATION: U.S. Department of Energy

EXPERIENCE: 18 Years

- U.S. Department of Energy, Office of Environmental Audit
 - Environmental Protection Specialist responsible for providing guidance, direction, and assistance to a multidisciplinary group of professionals performing Management Assessments and Environmental Audits at DOE facilities nationwide.
- Headquarters, Air National Guard
 - Project Officer for Installation Restoration Program activities at Air Guard bases nationwide.
- White Sands Missile Range
 - Deputy Director, Environmental and Natural Resources Office, with responsibility for hazardous waste management, asbestos abatement, spill control and countermeasure, and environmental training programs.
- U.S. Department of the Army, Fort Carson
 - Environmentalist, responsible for hazardous waste management, asbestos abatement, and cultural and natural resources programs.
- U.S. Army Corps of Engineers
 - Biological Scientist, responsible for Environmental Assessment/Environmental Impact Statement preparation and Endangered Species programs.
- U.S. Department of Agriculture, Soil Conservation Service
 - Soil Conservationist.
- Menominee Indian Nation
 - Forest Inventory Specialist.
- University of Texas at El Paso and El Paso Community College
 - Biology Instructor

EDUCATION: Postgraduate Studies, Forest Pathology, Louisiana State University
M.S., Biology, University of Texas at El Paso
B.S., Wildlife Management, McNeese State University

NAME: Lisa Baci

AREA OF RESP: Staff Resources, Training, and Development
Environmental Planning and Risk Management;

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 14 Years

- Arthur D. Little, Inc.
 - Environmental Management Specialist for the Environmental Management Assessments of the Continuous Electron Beam Accelerator Facility and the Stanford Liner Accelerator Center covering the areas of organizational structure, internal and external communication, staff resources, training and development, and environmental planning and risk management.
 - Served as Waste Management Specialist for the Tiger Team Assessments of the Stanford Linear Accelerator Center and the Strategic Petroleum Reserves.
 - Helped a major diversified international manufacturing and service company assess its existing environmental, health, and safety organization and identify changes to better align the EHS organization with the company's new global business structure.
 - Assessed environmental management systems at the corporate, division, and plant levels for many companies, including major chemical manufacturers, leading consumer and industrial products manufacturers, and a natural gas pipeline operation. Areas examined in these studies included policies and procedures, organizational structure and resources, internal and external communication, planning and risk management, and audit/self-assessment mechanisms.
 - Managed a project for a large state environmental agency to identify state and local permitting requirements that affect hazardous waste cleanup and to assess options to streamline and better coordinate the permitting process.
 - Analyzed the potential economic benefits to various parties at a Federal Superfund site from past waste disposal practices at the site.
 - Temple, Barker, and Sloane, Inc.
 - Analyzed the economic and financial impacts of several major environmental regulations for the U.S. Environmental Protection Agency. These analyses included a study of the impacts on municipalities of proposed new regulations on solid waste landfills and a study of the impacts on generators, transporters, and recyclers of proposed regulation on facilities that handle used oil.
- EDUCATION:** M.C.R.P. (Master of City and Regional Planning), Harvard University
B.S., Urban and Environmental Planning, Worcester Polytechnic Institute
A.B., Economics, College of the Holy Cross

NAME: Margarito (Mike) T. Bercilla, Jr., MPH, CIH

AREA OF RESP: Environmental Protection Programs;
Formality of Environmental Programs

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 17 Years

- Arthur D. Little, Inc.
 - Performed a detailed evaluation of EHS risk management processes for an American transportation and petrochemical storage company. Reviewed characteristics and elements used to identify, mitigate, and manage EHS risk, including interviews with the CEO and other officers of the organization and a site visit of operations.
 - Coordinated and performed an evaluation of the environmental, health, and safety risk management processes at a major Canadian utility holding company's electric and hydro utilities, and the occupational health and safety processes at their natural gas utilities. To fully assess both the organizational and process effectiveness of EHS management activities, conducted interviews with members of the board of directors, top management, senior operating management and line employees to augment site visits at more than 40 locations throughout Canada.
 - Instructor for the course "Mastering EHS Auditing Skills and Techniques" offered by Arthur D. Little's Center for Environmental Assurance and frequent speaker on topics including EHS auditing and EHS management systems evaluations.
- Stewart Todd Associates
 - Developed protocols and conducted environmental health and safety audits for a large aerospace manufacturer at 14 locations throughout the United States. Primary focus of these audits involved facility compliance with existing RCRA, CERCLA, OSHA and internal corporate standards.
 - Developed a regulatory analysis and review process and a compliance implementation strategy for a major electrical utility to address a local agency hazardous waste material management regulation.

EDUCATION: M.P.H., Public Health, University of California at Berkeley
B.S., Public Health, University of California at Berkeley

PROFESSIONAL AFFILIATIONS: Certified in Comprehensive Practice by the American Board of Industrial Hygiene, Diplomate of the American Academy of Industrial Hygiene, and a Registered Environmental Assessor and a Registered Environmental Health Specialist by the State of California. Accredited by the EPA as an AHERA Management Planner, Inspector, Designer, and Worker Supervisor.

NAME: Lee Carpenter

AREA OF RESP: Technical Editor

ASSOCIATION: Development Technologies, Inc.

EXPERIENCE: 9 Years

- Development Technologies, Inc.
 - Technical Editor providing support to the Department of Energy, Office of Environmental Audit, in conducting environmental assessments of DOE sites.
- The Library of Congress
 - Editor-in-Chief of *In Focus*, a divisional organ of the Library of Congress Photoduplication Service. Delegated article assignments, copy-edited submissions, pasted up layout, and supervised the printing.
 - System Administrator of a monitoring database. Assisted in writing the application in Paradox 3.5, meeting regularly with division section-heads and Library management to ensure suitability of the completed system and to report on production progress. Trained staff to use the system and performed regular system maintenance.
 - Senior administrative clerk. Providing information on Library services to Congressional offices, university libraries, and the public.
- Freelance Author and Editor
 - Contributing editor of *The Ace Occasionally*, a contemporary arts magazine.
 - Author of "Today's Music," a weekly column on the music of the Church of the Ascension and St. Agnes in Washington, D.C.
 - Assisted colleagues at the Library of Congress with style considerations in the production of reports, memorandums, résumés, and the like.
 - Style consultant to the Washington Conservatory of Music.
 - Style consultant to Tax Analysts for their daily publication *Tax Notes*.

EDUCATION: Gallaudet University
St. John's College; Annapolis, Maryland

NAME: Ralph Earle
AREA OF RESP: Team Coordinator
ASSOCIATION: Arthur D. Little, Inc.
EXPERIENCE: 14 Years

- **Arthur D. Little, Inc.**

- Deputy Project Manager for Technical Support Contract with the Department of Energy's Office of Environmental Audit (EH-24).
- Served as environmental team coordinator on the Tiger Team Assessment of the National Renewable Energy Laboratory (formerly Solar Energy Research Institute), and on the environmental audit of the Fossil Energy Sites in Wyoming (Laramie).
- Served as the Waste Management Technical Specialist on the environmental audit of the Weldon Spring Remedial Action Project.
- Performed a review and trend assessment of the management and organization findings of Tiger Teams 17 to 35.
- Currently leading a task with DOE to re-examine the use of causal factor analysis within the context of environmental assessments.
- Member of management team of a business unit with more than 20 staff members and annual revenues of more than \$4 million.
- Served as a waste management specialist on environmental assessments of a number of organizations and operations.
- Evaluated the regulatory structure, current and prospective, for medical waste handling and disposal and developed projections on the future of that market.

- **Commonwealth of Massachusetts**

- As Assistant Secretary of Environmental Affairs, conceived, developed, and managed the issuance of a 10-year Solid Waste Master Plan, including provisions for recycling, incineration, landfilling, and regulatory reform.
- Participated in siting decisions for solid and hazardous waste treatment and disposal facilities.
- Coordinated interstate efforts in the areas of market development, solid waste incineration policy, source reduction, and recycling program development.

EDUCATION: M.S., Public and Private Management, Yale School of Management, Yale University
B.A., *cum laude*, American History, Harvard College

NAME: Gregory T. Haugan, Jr.

AREA OF RESP: Technical Editor

ASSOCIATION: META, Inc.

EXPERIENCE: 9 Years

- META, Inc., Arlington, VA
 - Technical Editor. Provided technical editing support to DOE during the National Institute for Petroleum and Energy Research Tiger Team Assessment, the Y-12 Plant ES&H Progress Assessment, the Morgantown Energy Technology Center ES&H Progress Assessment, the Waste Isolation Pilot Plant Environmental Management Assessment, and National Renewable Energy Laboratory Environmental Management Assessment.
 - Technical Editor. Provided technical editing support to DOE in conducting its Programmatic Environmental Impact Statement.
 - Information Management Specialist. Participated in 16 Tiger Team Assessments managing a team responsible for onsite administrative support, report production, and technical editing. Team member on seven ES&H Progress Assessments providing administrative support, onsite report production, and technical editing.
- UDI Contractors, Inc.
 - Project Manager and Administrator. Supervised field operations and managed office administration for a construction management firm. Initiated the corporate safety program and monitored OSHA compliance.
- GLH, Inc.
 - Program Analyst. Specialized in research, report writing, and project management software for an information resources management consulting firm.

EDUCATION: Graduate Studies, General Administration, University of Maryland
B.A., General Studies, University of Maryland

NAME: Joseph Lischinsky

AREA OF RESP: Environmental Protection Programs; Formality of Environmental Programs

ASSOCIATION: Applied Consultants, Inc.

EXPERIENCE: 13 Years

- **Applied Consultants, Inc.**

- Serves as President and supports a variety of projects in the areas of radiation protection, materials licensing, emergency planning, decommissioning, waste management, and training.
- Participated in the environmental management assessment of the Department of Energy's Waste Isolation Pilot Plant. Specific responsibilities included review of environmental protection programs, formality of environmental programs, and environmental planning and risk management issues.
- Participated in the DOE Tiger Team Assessment of the Oak Ridge K-25 Site. Served as an Environmental Health Physicist to the assessment team.
- Participated in the DOE Tiger Team Assessment of the Los Alamos National Laboratory. Served as emergency preparedness expert to the Technical Safety Appraisal Team.
- Participated in the DOE Tiger Team Assessment of the Idaho National Engineering Laboratory. Served as an environmental health physicist to the assessment team.
- Served as consultant health physicist to various environmental issues. These assignments have included the provision of expertise in radiological site assessment, health and radiation safety, site remediation, decommissioning, and expert witness testimony.
- Performed numerous radiological health and safety reviews and emergency preparedness audits at both production and utilization facilities. These activities have included commercial nuclear power production as well as radioactive materials manufacturing facilities licensed by both the U.S. Nuclear Regulatory Commission and the Agreement States Program.

EDUCATION: M.Sc., Applied Management, Lesley College
B.S., Biology, Suffolk University

NAME: Deborah McCartney

AREA OF RESP: National Environmental Policy Act Programs

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 10 Years

- Arthur D. Little, Inc.

- Participated in the Environmental Management Assessment of the Waste Isolation Pilot Plant as a management specialist covering the National Environmental Policy Act (NEPA).
- Conducted reviews for an interstate natural gas pipeline company related to compliance with Certificates of Public Need and Necessity issued by the Federal Energy Regulatory Commission (FERC) under NEPA and acquired environmental permits for construction of natural gas pipelines.
- Participated in the development and implementation of a company-specific environmental inspector training course for natural gas pipeline construction in compliance with the environmental-permit conditions imposed by FERC under NEPA, as well as other Federal, state, or local jurisdictional agencies or boards.
- Represented a client in negotiations with representatives of local or state authorities for the development of mitigation plans to protect rare or endangered species and/or significant ecological resources.

- Other Industry Experience

- Five years' experience in private sector project permitting and compliance with Federal, state, and local wetland statutes. Duties included wetland identification and mapping, wetland mitigation designs, presentation for permitting boards and regulatory authorities, and postconstruction compliance reviews and assessments.
- Three years graduate-level academic experience in evaluating the development of plant communities. Designed, conducted, and analyzed an independent research project pertaining to effects of man-induced impacts on plant communities.

EDUCATION: M.S., Botany (concentration in plant ecology), University of Massachusetts at Amherst
B.S., Natural Resource Studies, and B.S., Botany, University of Massachusetts at Amherst

NAME: Mark Pine

AREA OF RESP: Organizational Structure; Environmental Commitment

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 10 Years

- Arthur D. Little, Inc.

- Served as Environmental Management Specialist for the Environmental Management Assessments of the Bonneville Power Administration, covering the areas of staffing/resources and staff development/training; the Southwestern Power Administration, covering the areas of formality of programs and internal and external communications; the Fernald Environmental Management Project, covering the areas of organizational structure and internal and external communication; and the Stanford Linear Accelerator Center, covering the areas of program evaluation and environmental commitment.
- Oversaw the revision of the Department of Energy's Performance Objectives and Criteria for Conducting DOE Environmental Audits. Led a 20-person team in revising and updating this document, which serves as DOE's guidelines for environmental audit team members.
- Managed day-to-day conduct of the assessment of environmental liabilities at a major chemical company's manufacturing facilities. Coordinated onsite assessments by a team of 10 professionals, led document review at corporate headquarters, and managed delivery of the final report.
- Served as Environmental Specialist for Alyeska Pipeline Service Corporation's operational assessment of the Trans-Alaska Pipeline System. Covered the areas of air pollution control and spill prevention and response.

- Decision Resources, Inc.

- Directed an information service related to environmental regulations, technologies, and markets. Supervised production of monthly reports analyzing the impacts of environmental legislation and regulation on manufacturing industry and waste management industry.

EDUCATION: M.P.A., Environmental Economics and Policy, Harvard University
B.A., English, Williams College

NAME: Henry F. Rej

AREA OF RESP: Program Evaluation, Reporting, and Corrective Action;
Internal and External Communication

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 11 Years

• **Arthur D. Little, Inc.**

- Evaluated the impact of existing budgeting and accounting procedures on the implementation of pollution prevention management programs at the Oak Ridge K-25 Site and Savannah River Site, as part of a Special Issue Review by DOE's Office of Environmental Audit (EH-24).
- Assessed the environmental planning and risk management practices at Argonne National Laboratory—West as part of the EH-24 Routine Environmental Management System Assessment of that DOE facility.
- Assessed the staff resources, training and development practices at the Waste Isolation Pilot Plant for an EH-24 Environmental Management Assessment.
- Conducted an environmental management system assessment for a major hazardous waste facility to determine the effectiveness of the facility's ability to balance corporate objectives for production and environmental compliance.
- Conducted an organizational study of a major hazardous waste facility to analyze the cause-and-effect relationship between environmental compliance problems and the existing design of the facility's organizational structure.
- Responsible for the financial analysis, control and information management of the \$8.5 million contract with DOE for Tiger Team Assessments throughout the United States. Created an integrated proposal and budget model to project completion and level of effort.
- Projected the financial prospects for a contract environmental laboratory to be affiliated with a major ocean research institution. Developed an integrated engineering estimate, pro forma analysis, and capital budget spreadsheet model for projecting likelihood of investment success.
- Prepared financial acquisition scenario assumptions for a large gas utility company located in the United States. Assisted in the development of a financial model to simulate various business assumption.
- Conducted a market study of hazardous waste generators for a hazardous waste incineration company to determine the demand for incineration services under various contracting arrangements.

EDUCATION: M.B.A., Babson Graduate School of Business
B.S., *cum laude*, Business Administration, Bryant College
Certificate in Hazardous Waste Management (in progress), Northeastern University

NAME: James E. Rice
AREA OF RESP: Inactive Waste Site Programs
ASSOCIATION: Arthur D. Little, Inc.
EXPERIENCE: 12 Years

- Arthur D. Little, Inc.
 - Participated in the Tiger Team Assessments of the National Institute for Petroleum Energy Research, Stanford Linear Accelerator Center, Idaho National Engineering Laboratory, Morgantown Energy Technology Center, and the Environmental Audits of the Weldon Spring Site Action Project and the Argonne National Laboratory-West Routine Environmental Audit as the inactive waste site and/or groundwater specialist.
 - Presently managing a remedial investigation/risk assessment at U.S. Army Corps of Engineers Research facility.
 - Managed environmental due diligence of 80-acre parcel in Michigan for U.S. EPA Facilities Management Branch.
- Previous Consulting Experience
 - Managed Environmental Site Assessment Group, where Standard Operating Procedures for conducting site investigation and a corporate training manual to ensure consistency in evaluations conducted were developed.
 - Conducted more than 50 environmental site assessments and hydrogeological investigations.
 - Designed and implemented a leading-edge geology laboratory to assist graduate students in a well-logging course.
 - Performed water, soil, and sediment sampling for inorganic and radioactive materials as a field technician at Los Alamos National Laboratories.

EDUCATION: M.S., Geology, New Mexico Institute of Mining and Technology
B.S., Geology, New Mexico Institute of Mining and Technology

NAME: Vee Richardson

AREA OF RESP: Administrator

ASSOCIATION: Development Technologies, Inc.

EXPERIENCE: 28 Years

- Development Technologies, Inc.
 - Team Coordinator and Administrator, providing support to the Department of Energy, Office of Environmental Audit, in conducting environmental assessments of DOE sites.
 - Provided administrative and technical support to an interdepartmental, 27-agency task force and five of its Working Groups, to update the National Response Plan. The Plan defines the Federal government's response to natural and manmade disasters.
- Consultant
 - Coordinated Inaugural Prayer Service honoring President-elect Bill Clinton, and was responsible for logistical arrangements; coordination with Presidential Inaugural Committee, Secret Service, and religious leaders; recruiting and briefing volunteers; and supervising onsite activities.
 - Wrote information materials for national convocation attended by more than 2,000 people.
 - Served as Deputy to the Managing Director of Administration for the Desert Storm National Victory Celebration; coordinated and supervised set-up of headquarters operation, making facilities for more than 125 staff and volunteers fully operational within one week; designed and managed computer system; scheduled transportation; and supervised staff.
- The Ability Group
 - Owned and managed business services bureau; managed projects, hired and trained support staff and contractors, marketed and maintained working relationships with clients.
- Other Experience
 - 15 years in administrative management with law firms, staff assistant at Department of State, member of trial team during *U.S. v. AT&T*, and high-level secretarial positions.

EDUCATION: Oklahoma Baptist University

NAME: William E. Schramm

AREA OF RESP: National Environmental Policy Act Programs

ASSOCIATION: Oak Ridge National Laboratory

EXPERIENCE: 13 Years

- Oak Ridge National Laboratory, Environmental Sciences Division
 - Research Associate. Integrated Resource Management, Environmental Assessment, Ecological Economics. Provides technical assistance on National Environmental Policy Act (NEPA)-related issues to the U.S. Department of Energy and other Federal agencies. Participated in Tiger Team Assessments and Environmental Management Assessments of the Solar Energy Research Institute, Los Alamos National Laboratory, Stanford Linear Accelerator Center, Naval Petroleum Reserve in California, Ames Laboratory, the National Institute of Petroleum Energy Research, Fermilab, Waste Isolation Pilot Plant, and National Renewable Energy Laboratory.
- Martin Marietta Energy Systems, Hazardous Waste Remedial Actions Program
 - Project Manager. Environmental evaluation and restoration. Directed remedial actions and environmental studies under CERCLA, RCRA, and CWA. Investigations included assessments of contamination levels and types, and the feasibility of alternative remediation approaches at 16 Department of Defense facilities in 14 states.
- University of Texas at Austin, Texas Bureau of Economic Geology
 - Research Associate. Investigated geologic and economic feasibility of alternative methods of enhanced oil and gas recovery. Developed estimates of the state's remaining gas reserves.
- Ocean Drilling and Exploration Company
 - Senior Staff Geologist. Supervised exploration and development team activities for several company oil and gas properties.
- Union Oil Company of California
 - Geologist. Oversight of field development activities on 10 company oil and gas fields.

EDUCATION: Ph.D. Program, Ecology, University of Tennessee
M.B.A., Natural Resource Management, University of Texas-Austin
M.S., Geology, Louisiana State University
B.S., Geology, Rensselaer Polytechnic Institute

APPENDIX B

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**Plan for the
DOE
Routine Environmental Audit
of the
Sandia National Laboratories, California
Livermore, California**

**U.S. Department of Energy
Office of Environmental Audit
February 1994**

**PLAN FOR THE DOE ROUTINE ENVIRONMENTAL AUDIT
OF THE SANDIA NATIONAL LABORATORIES, CALIFORNIA (SNL/CA)**

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**PLAN FOR THE DOE
ROUTINE ENVIRONMENTAL AUDIT OF THE
SANDIA NATIONAL LABORATORIES, CALIFORNIA (SNL/CA)
LIVERMORE, CALIFORNIA
FEBRUARY 1994**

1.0 INTRODUCTION

The DOE Environmental Audit Program is carried out by the Office of Environmental Audit (EH-24) within the Office of Environment, Safety and Health (EH). The program was created in 1985 with a goal to provide a continuing program of internal, independent oversight of line management's environmental performance, in support of DOE's broader goal of achieving full compliance and excellence in the environmental area. The objectives of the program in achieving this goal include:

- Providing continued follow-on to the environmental component of Tiger Team Assessments;
- Conducting comprehensive baseline environmental audits of sites that were not addressed in an Environmental Survey and did not receive a Tiger Team Assessment;
- Conducting environmental management assessments within line programs, including adequacy of self-assessment programs;
- Conducting a continuing program of field/technical re-audits of major and other DOE facilities;
- Conducting special issue assessments to evaluate high priority issues at a particular site, or which cut across site and program lines; and
- Supporting line management self-assessment programs through continuing updates of audit/assessment protocols, training, and other mechanisms of transferring the special auditing expertise of EH-24 to the field.

The audit of the Sandia National Laboratory, Livermore (SNL/CA) during the period of February 22–March 7, 1994, will be a Routine Environmental Audit. It will evaluate the effectiveness of environmental management programs established by DOE line organizations and their support contractors. The audits are conducted in accordance with the DOE Environmental Audit Program Guidance (January 1992) and protocols developed for conducting Environmental Management Assessments (May 1993).

From an organizational perspective, the scope of the audit will include evaluation of environmental management systems at the Albuquerque Operations Office (AL), Kirtland Area Office (KAO), and at the site level the Sandia National Laboratories (SNL) and Sandia National Laboratories, California (SNL/CA). The Audit Team will focus on the performance of line management and support organizations in developing and implementing environmental programs, consistent with DOE expectations for environmental excellence.

From a functional perspective, the scope of the SNL/CA audit is comprehensive in that it covers a full range of relevant environmental management systems, including:

- Organizational Structure;
- Environmental Commitment;
- Environmental Protection Programs;
- Formality of Environmental Programs;
- Internal and External Communication;
- Staff Resources, Training, and Development;
- Program Evaluation, Reporting, and Corrective Action;
- Environmental Planning and Risk Management;
- National Environmental Policy Act Programs; and
- Inactive Waste Site Programs.

This Routine Environmental Audit Plan is based on information received by the Audit Team as of February 8, 1994.

2.0**ENVIRONMENTAL AUDIT IMPLEMENTATION**

The SNL/CA Routine Environmental Audit will be conducted by a team consisting of a Team Leader and Deputy Team Leader from the Office of Environmental Audit (EH-24), a Team Coordinator and seven Environmental Management Specialists from Arthur D. Little, Inc., an Environmental Management Specialist from Oak Ridge National Laboratory, and two Administrators and a Technical Editor from Development Technologies, Inc. (DevTech) and Maria Elena Toraño Associates (META). The names and responsibilities of the team members are listed below:

Andrea Heintzelman	DOE	Team Leader
Lee Banicki	DOE	Deputy Team Leader
Ralph Earle	Arthur D. Little, Inc.	Team Coordinator
Mark Pine	Arthur D. Little, Inc.	Organizational Structure; Environmental Commitment
Mike Bercilla	Arthur D. Little, Inc.	Environmental Protection Programs (Non-rad); Formality of Environmental Programs
Joe Lischinsky	Applied Consultants, Inc.	Environmental Protection Programs (Rad); Formality of Environmental Programs
Jim Rice	Arthur D. Little, Inc.	Inactive Waste Site Programs
Henry Rej	Arthur D. Little, Inc.	Internal and External Communication; Program Evaluation, Reporting, and Corrective Action
Lisa Baci	Arthur D. Little, Inc.	Staff Resources, Training, and Development; Environmental Planning and Risk Management
Debra McCartney	Arthur D. Little, Inc.	National Environmental Policy Act Programs
Bill Schramm	Oak Ridge National Laboratory	National Environmental Policy Act Programs
Vee Richardson	DevTech	Administrator
Lee Carpenter	DevTech	Technical Editor
Gregory Haugan	META	Technical Editor

2.1**PRE-AUDIT ACTIVITIES**

Pre-audit activities for the SNL/CA Routine Environmental Audit included the issuance of an introduction and information request memorandum, a site visit, and initial review of documentation that was sent to the Audit Team by SNL/CA as a result of the information request memorandum.

Six team members conducted a pre-audit site visit January 25 - 27, 1994, including the Team Leader and Deputy Team Leader from DOE and team members from Arthur D. Little, DevTech, and META. The purpose of the visit was to brief site personnel on the purpose and scope of the Routine Environmental Audit; to become familiar with SNL/CA and its operations; to interview key personnel and identify additional personnel to be interviewed; to review information being supplied by SNL/CA and request additional information; and to coordinate activities for the upcoming audit. The visit included presentations by the KAO site manager, senior managers of Sandia National Laboratories, and environmental managers from both SNL and SNL/CA. Also attending the pre-audit site visit were representatives from the State of California and the City of Livermore, California.

2.2 ONSITE ACTIVITIES AND REPORTS

The onsite activities for the Routine Environmental Audit will begin February 22 and continue through March 7, 1994. These activities will include interviews with SNL and SNL/CA management and staff, reviews of documents and records, and observations of field activities. Selected interviews will be conducted with AL and KAO personnel primarily to clarify what guidance these organizations are providing, as well as their expectations of environmental performance at SNL/CA.

A general schedule for the audit is shown in Table 1 [this table is not included in this appendix]. The team has made an attempt to identify relevant personnel to be interviewed (see Table 2) [this table is not included in this appendix], and this information has been provided to a SNL/CA representative to develop an interview schedule. Based on past experience, these schedules will change as additional information is gathered by the Audit Team members. Modifications to this initial interview schedule, or other elements of the agenda, will be coordinated with the designated SNL/CA contacts.

To ensure the quality of this audit, the Audit Team will conduct daily debriefs with SNL/CA management to review progress and concerns to date. In addition, a factual accuracy review of all findings will be conducted during the second week of the audit. A closeout briefing will be conducted at the conclusion of the onsite portion of the audit, during which a summary of the results of the audit, including key findings, will be presented by the Audit Team Leader. Also at the closeout, a draft audit report will be provided to SNL/CA for review and comment.

2.3 POST-AUDIT ACTIVITIES

Following the onsite activities, SNL/CA and other organizations will have the opportunity to submit final comments on the draft audit report. After reviewing these comments, EH-24 will issue a final report. SNL/CA will be responsible for preparing a corrective action plan that will be reviewed by EH-24. Following is a tentative schedule for completion of these post-audit activities.

March 21	Site comments on draft report due to EH-24
May 9	Final audit report issued by EH-24
April 11	Draft action plan due to EH-24
April 25	Comments on draft action plan by EH-24
May 23	Final action plan due to EH-24

3.0 ORGANIZATIONAL STRUCTURE

3.1 ISSUE IDENTIFICATION

The Routine Environmental Audit activities for Performance Objectives and Criteria (POC) EM.1, Organizational Structure, will assess whether the organizational structures of AL, KAO, SNL, and SNL/CA ensure environmental protection, compliance, and excellence. In particular, the audit will be designed to consider whether environmental management is characterized by clear lines of authority, well-defined roles and responsibilities, and sufficient organizational structure. Incorporated in the review will be an evaluation of how the SNL and SNL/CA organizations interrelate with the offices of Defense Programs (DP) and Environmental Restoration and Waste Management (EM).

The general approach to the audit will include a review of documentation regarding organizational structure and interviews with AL, KAO, SNL, and SNL/CA management and staff. Areas of particular interest will include:

- How clearly SNL organizational structure is communicated to SNL/CA staff and to DOE.
- The degree to which actual lines of environmental authority and accountability within AL, KAO, SNL and SNL/CA match those in organization charts.
- Any potential for organizational conflicts resulting from SNL/CA's different funding sources (i.e., DP, EM, Department of Defense (DOD), and private).
- The role of Albuquerque personnel (AL, KAO, and SNL) in defining SNL/CA's environmental standards and evaluating its performance.
- How the EP Department and the line research centers understand the distinctions in their environmental responsibilities.
- Whether environmental accountability at SNL/CA, SNL, and KAO is reinforced in individual job descriptions and performance standards.

3.2 RECORDS REQUIRED

In addition to those documents reviewed prior to the audit, the following records will be examined at SNL/CA:

- Latest organization charts for each organization (AL, KAO, SNL, and SNL/CA);
- Charts showing relationships among these organizations;
- The contract between DOE and SNL;
- Job descriptions and performance criteria for key management and operating personnel;
- Environment, Safety and Health (ES&H) Manual and program plans; and
- Environmental Protection Implementation Plan (EPIP).

3.3

CROSS-CUTTING ISSUES

Coordination with other Audit Team members will be routine and extensive. All team members will be asked to assess interviewees' understanding of environmental roles and responsibilities. In addition, special attention will be paid to coordination with team members responsible for evaluation of Internal and External Communication regarding the communication of environmental conditions between top management, the Environmental Protection Department, and the line ES&H coordinators; Staff Resources, Training, and Development regarding reinforcement of environmental responsibilities through job descriptions and performance appraisals; Environmental Planning and Risk Management regarding roles and responsibilities; and Program Evaluation, Reporting, and Corrective Action regarding the periodic review and assessment of the SNL/CA organizational structure.

4.0 ENVIRONMENTAL COMMITMENT

4.1 ISSUE IDENTIFICATION

The Routine Environmental Audit activities for Performance Objectives Criteria (POC) EM.2, Environmental Commitment, will review and evaluate the commitment of AL, KAO, SNL, and SNL/CA to environmental excellence. Some key indications of environmental commitment that will be evaluated include the following:

- Comparison of stated priority given to environmental protection in formal SNL, SNL/CA, and KAO policies with actual practices;
- Demonstrations of top SNL, SNL/CA, and KAO management's commitment to the environment in its daily and long-term research and programmatic priorities;
- Distribution and understanding of environmental policy within SNL/CA lab personnel; and
- Individuals' recognition of the direct and indirect environmental aspects of their jobs, and their understanding of the relevant environmental requirements.

The general approach to the audit will include a review of documentation related to environmental management and interviews with AL, KAO, SNL, and SNL/CA management and line operation staff. Areas of particular interest will include:

- The existence of a formal statement of policy that places priority on environmental protection, and that delineates environmental goals for the site, and how they are to be met;
- Top management's allocation of resources to environmental programs;
- Inclusion of environmental issues in routine senior management meetings;
- Top management's receptiveness to employee input on environmental issues;
- Line management's understanding of the environmental requirements relevant to their responsibilities;
- Formal statements of commitment to environmental excellence by SNL/CA managers at all levels;
- Communication of environmental commitment to management and staff, visiting researchers, and/or subcontractors; and
- Evidence that individuals throughout SNL/CA recognize the environmental aspects of their jobs, and take personal responsibility for environmental protection.

4.2 RECORDS REQUIRED

The following documents will be reviewed prior to and during the audit at SNL/CA:

- Organizational mission statements and formal statements of environmental policy;
- Additional, issue-specific policies addressing more focused environmental concerns;
- Senior management statements of support for environmental management efforts in annual reports, speeches, letters, memos, internal newsletters, and other documents;
- Formal statements of commitment to environmental excellence by managers at any level;
- Agendas and minutes of routine senior management meetings;
- Examples of environmental reports requested of environmental support staff by senior management and line management;
- Descriptions of environmental programs/projects;
- Contracts regarding discussions of acceptable environmental performance;
- Other communication with subcontractors regarding SNL/CA's environmental performance expectations;
- Accounts of employee or organization involvement in, or work with, environmental task forces, environmental professional associations, or local community organizations; and
- Other records as determined onsite.

4.3 CROSS-CUTTING ISSUES

Coordination with other audit team members will be routine and extensive. All team members will be asked to consider whether SNL/CA personnel take personal responsibility for environmental protection. In addition, special attention will be paid to coordination with team members responsible for evaluation of Internal and External Communication regarding communication of environmental goals and commitment; Staff Resources, Training and Development regarding resource allocation; and Formality of Environmental Programs regarding management's understanding of environmental requirements.

5.0 ENVIRONMENTAL PROTECTION PROGRAMS

5.1 ISSUE IDENTIFICATION

The Routine Environmental Audit activities for POC EM.3, Environmental Protection Programs, will evaluate whether SNL/CA has environmental programs in place to ensure compliance with Federal, state, and local environmental laws and regulations. Further, the audit will determine if the site provides for timely and correct implementation of those DOE Orders designed to protect the environment and public health. The emphasis of the review will be on determining whether effective and comprehensive programs are in place and whether each required environmental protection program features formal policies and plans, systems to identify and characterize sources, an understanding of applicable regulatory requirements, clearly defined roles and responsibilities, implementing procedures, recordkeeping and reporting systems, training, and systems for program evaluation and oversight. The key issues involve conformance of SNL/CA environmental protection programs with the performance objectives and prescriptive requirements of applicable DOE Orders and other environmental requirements and/or statutes, as well as a review of the status of corrective actions implemented as a result of the 1990 Tiger Team Assessment of SNL/CA. In addition, the SNL/CA environmental protection programs will be evaluated for their adequacy in light of all permits and agreements entered into with Federal, state and local governments and associations.

Specific environmental protection programs that will be evaluated for adequacy of their design, quality, and effectiveness during this audit include:

- Air emissions source identification, control, and monitoring, especially at the Combustion Research Facility (CRF) and the Tritium Research Laboratory (TRL);
- Ambient air monitoring and coordination with Lawrence Livermore National Laboratory (LLNL);
- Air permitting and/or exemptions management process;
- Surface water protection including source identification, spill prevention control, and reporting;
- Stormwater discharge permitting under California permit-by-rule;
- Potable water supply protection, including backflow prevention systems and cross-connection to cisterns;
- Groundwater protection programs, including monitoring, especially at the inactive waste sites;
- Management and control of radioactive, toxic, and chemical materials;
- Management of solid, hazardous, radioactive, and mixed waste including source identification; permitting, characterization; training; minimization; contingency planning; recordkeeping; and treatment, storage, and disposal practices;

- Spill prevention, control and countermeasures, especially at the Treatment Storage and Disposal Facility (TSDF);
- The Liquid Effluent Control Systems and their use;
- Operations and permit conditions at the TSDF;
- Waste generator status, and adequacy of waste characterization;
- Management of contaminated soils;
- Waste minimization activities under California requirements;
- Decontamination and Decommissioning (and/or decontamination and reuse) programs and plans, especially with regard to the TRL conversion;
- Environmental ALARA (As Low As Reasonably Achievable), including radiological environmental surveillance, evaluation of unplanned releases, disposition of radiologically contaminated water, and evaluation of radiation exposure to the public;
- Evaluation of sources and risks from releases of tritium and uranium to air, water, and land; and,
- Underground storage tank management systems.

Formal environmental protection programs and/or plans required by DOE Order or regulatory statute that will be evaluated include:

- Environmental Protection Implementation Plan;
- Long Range Environmental Protection Plan;
- Groundwater Protection Management Program;
- Waste Minimization Plan;
- Pollution Prevention Awareness Program;
- Stormwater Discharge Permitting;
- Environmental Monitoring and Surveillance Plan;
- Emergency Preparedness Program;
- Quality Assurance Program; and
- Preventive Maintenance Program for ES&H-related equipment.

The general approach to the audit will include interviews with DOE/KAO and SNL/CA personnel responsible for environmental program development and implementation. Prior to arriving onsite, and during the audit, reviews will be performed of documentation supporting those programs or demonstrating their proper implementation. Limited field investigations may also be conducted to verify implementation of environmental protection programs and procedures.

5.2 RECORDS REQUIRED

The following documents will be reviewed prior to and during the audit at SNL/CA:

- Environmental program plans required by DOE 5400.1;
- Environmental monitoring and surveillance plans;
- Source and emission inventories for air and water pollution control;
- National Emission Standard for Hazardous Air Pollutants (NESHAPs) agreement;
- Toxic and chemical materials management plan and information regarding the computer inventory system;
- Emergency response and remedial action plan;
- Environmental incident reporting procedures;
- Piping and instrumentation diagrams for the Liquid Effluent Control Systems (LECS);
- Preventive maintenance and inspection procedures;
- Reports to management or regulatory agencies;
- Environmental oversight and monitoring Memorandum of Agreement(s) (MOA(s)) with Operations Offices and LLNL respectively;
- Monitoring results from LECs and groundwater wells;
- Notice of Intent under stormwater discharge regulations;
- TSDF Hazardous Waste Operations Plan and Permit;
- Waste inventory and characterization results;
- Air permits and exemptions; and
- TRL conversion plans and documents.

5.3

CROSS-CUTTING ISSUES

Audit areas that will require both routine and extensive interdisciplinary coordination with other team members include: Formality of Environmental Programs pertaining to Environmental Protection Programs (EPP) implementation. The management specialists responsible for EPPs are also responsible for formality of environmental programs. The audit of National Energy Policy Act-related EPPs will be supported by coordination with the National Energy Policy Act management specialists. The audit of EPP training programs regarding qualifications and training of staff responsible for implementation of the programs requires coordination with the Staff Resources, Training, and Development management specialist. Additional coordination will occur with the Environmental Commitment specialist regarding the commitment to perform beyond minimum compliance; Internal and External Communication specialist regarding communication of environmental requirements (and/or changes in regulations) and performance reporting; Organizational Structure specialist regarding the relative stature and authority of the environmental support organizations; Environmental Planning and Risk Management specialist regarding the effectiveness of the incorporation of environmental issues into these areas; and the Inactive Waste Site Programs specialist regarding management of these programs and ground water monitoring and protection issues.

6.0 FORMALITY OF ENVIRONMENTAL PROGRAMS

6.1 ISSUE IDENTIFICATION

The Routine Environmental Audit activities for POC EM.4, Formality of Environmental Programs, are designed to determine whether environmental protection activities are conducted in accordance with formal programs supported by controlled documentation. Specifically, the audit is designed to evaluate:

- The existence and effectiveness of formal systems to track and interpret regulations and DOE Orders and incorporate them into policies, standards, and procedures specific to SNL/CA operations;
- The extent to which environmental programs and procedures are developed and effectively implemented throughout the organization;
- SNL/CA's system for conducting routine inspections to assure facility compliance and identify potential problems;
- Systems for maintaining and retaining records, and for ensuring timely completion of regulatory and management reporting requirements; and
- Status of corrective actions implemented as a result of the 1990 Tiger Team Assessment of SNL/CA.

The general approach to the audit will include interviews with SNL/CA personnel responsible for tracking new environmental requirements and incorporating them into policies and procedures, as well as staff and line managers, and other personnel responsible for implementing environmental programs. Areas of particular interest will include:

- The extent to which staff responsible for regulatory tracking is up-to-date on new, proposed, and emerging regulatory issues;
- The development of guidance documents for operational staff to assist them in assuring a high level of environmental compliance and protection;
- Systems to distribute regulatory information, procedures, and guidance to all relevant personnel and operational groups within DOE and contractor organizations;
- The process of creating and approving new procedures, and the existence of procedures for the implementation of environmental protection programs;
- The adequacy and formality of programs for radiological monitoring, effluent air monitoring, dose assessment, decontamination and decommissioning or related activities, and management of radioactive and mixed wastes;
- The extent to which SNL/CA procedures and standards are regularly reviewed and revised to address environmental considerations;

- Oversight procedures and systems, including programs for routine site inspections and compliance checks (e.g., the LAP program);
- Coordination of environmental activities between SNL/CA, SNL/NM and/or LLNL;
- Quality assurance and data validation systems for environmental-related parameters;
- Systems for recordkeeping and document control;
- Systems to prepare environmental reports for external oversight organizations and internal management; and
- Systems to identify, report, investigate, and track trends and to correct identified environmental problems.

6.2 RECORDS REQUIRED

The audit will include review of key documents supporting environmental programs prior to and during the site visit. Documents of particular interest include:

- Program specific and general ES&H policies, procedures, procedures development, and guidance manuals;
- Environmental protection plans and environmental management plans;
- Standard site operating procedures;
- Dose assessment methodologies;
- Decontamination and Decommissioning (and/or decontamination and reuse) goals, plans, and management structure;
- Regulatory tracking protocols and procedures, and related information on file;
- Inspection manual, checklists, logs, and procedures;
- Quality Assurance records management program;
- Reports of corrective action implementation;
- Incident and occurrence reports;
- Examples of other environmental records and reports; and
- Documentation and records of environmental performance.

Audit areas which will require both routine and extensive interdisciplinary coordination with other team members include: Environmental Protection Programs and the extent of their formalization. The management specialists responsible for Formality of Environmental Programs are also responsible for Environmental Protection Programs. The audit of the formality of National Environmental Policy Act and inactive waste sites-related activities will be supported by coordination with the National Environmental Policy Act Programs and Inactive Waste Site Programs management specialists respectively. The audit of the formality of inspections, recordkeeping, corrective action, and reporting-related activities requires coordination with the Program Evaluation, Reporting, and Corrective Action management specialist. Additional coordination will occur with the Environmental Commitment specialist regarding environmental performance reporting required by various levels of management; Internal and External Communication specialist regarding communication of new developments and guidance to SNL/CA organizations; Organizational Structure specialist regarding issuance of program implementation guidance, recordkeeping and reporting structures; and the Staff Resources, Training, and Development management specialist regarding the formality of programs designed to meet any environmental training requirements related to permits, regulations, and DOE Orders.

7.0

INTERNAL AND EXTERNAL COMMUNICATION

7.1

ISSUE IDENTIFICATION

The Routine Environmental Audit activities for POC EM.5, Internal and External Communication, will be designed to determine whether formal and informal channels of communication are effectively used to emphasize management's commitment to environmental protection; to promote awareness and support of environmental policies and programs throughout the organization; and to share information with external organizations, such as regulatory agencies, environmental groups, and the community. The review will focus on the modes of communication used and their effectiveness. Key issues that will be addressed include the following:

Internal Communication

- Extent, effectiveness, and timeliness of SNL and SNL/CA's communication of environmental policies, standards, guidance, and performance to employees;
- Lateral communication of environmental activities and best management practices across SNL/CA and between SNL/CA, SNL, KAO, and AL;
- Mechanisms for "bottom-up" communications of environmental concerns through traditional reporting channels and through informal and/or anonymous systems (e.g., "Green Card," security and environmental hotlines);
- Clarity and timeliness of directives and guidance that communicate environmental policies and guidelines to all personnel;
- Overall understanding of environmental policies and requirements throughout SNL/CA; and
- Employee awareness of personal environmental responsibilities and management systems to promote that awareness.

External Communications

- Working relationships with external oversight organizations;
- Frequent and timely formal communication of environmental risks and protection efforts to external organizations, particularly the state Assessment In Principal (AIP), Regional Water Quality Control Board (RWQCB), and the City of Livermore;
- Provision for external parties to be involved in key decisions related to environmental protection;
- Responsiveness to environmental concerns expressed by external parties; and
- Effectiveness of communication between SNL/CA and LLNL regarding environmental monitoring;

- External recognition of SNL/CA's commitment to environmental protection and use of that communication to secure funding and support.

The general approach to the audit will include interviews with SNL/CA personnel responsible for environmental policy and program communication, as well as affected management and staff personnel. As appropriate, interviews will also be conducted with DOE line organizations (KAO, OAO, AL, and EM-45) and selected external parties (California AIP program, City of Livermore, and the California RWQCB). The audit will also include a review of documentation supporting internal and external communication programs.

7.2 RECORDS REQUIRED

In addition to those reviewed prior to the audit, the following documents will be examined at SNL/CA:

- State of California AIP;
- Memorandum of Agreement between LLNL and SNL/CA regarding shared oversight and monitoring responsibility;
- Forms and guidelines for internal anonymous reporting of environmental issues;
- Guidance documents for interpretation and implementation of environmental regulations and policies;
- SNL/CA newsletter(s) that communicate and promote environmental awareness;
- Press releases and other documents relating to environmental activities and programs, including the forthcoming "town meeting" and the school exhibit program;
- Documentation of information and awareness programs for affected external parties such as the Draft Community Relations Plan; and
- Other records as determined onsite.

7.3 CROSS-CUTTING ISSUES

Coordination with other Audit Team members will be routine and extensive. The scope of internal communication programs is interpreted widely, and is viewed as including staff meetings, memoranda, management reports, task forces, training programs, newsletters, speeches, and other relevant forms of communication. Given the wide scope, interaction with the entire team is critical. Specific areas of coordination are:

- Program Evaluation, Reporting, and Corrective Action: Internal communication of self-appraisal findings and corrective actions to appropriate levels of management quickly and effectively;

- **Environmental Commitment: Effectiveness of communication mechanisms in establishing management's commitment to environmental protection;**
- **Organizational Structure and Environmental Protection Programs: Effectiveness of internal communications in ensuring common approaches to environmental protection between and across SNL, SNL/CA, KAO, AL, and with LLNL.**

8.0**STAFF RESOURCES, TRAINING, AND DEVELOPMENT****8.1****ISSUE IDENTIFICATION**

The Routine Environmental Audit for POC EM.6, Staff Resources, Training, and Development, will involve a review and analysis of SNL/CA operations to verify that staff resources are sufficient to develop and implement environmental protection programs; that all personnel have received environmental protection training commensurate with their job responsibilities; and that professional development opportunities for environmental staff are equal to those of their peers in non-environmental positions. Specifically, the audit will verify the following:

- Whether the quantity of staff is sufficient to ensure environmental goals are met:
 - The system for identifying SNL/CA's short-term and long-term environmental staffing requirements;
 - The process to ensure that current and planned staffing levels are adequate for achieving KAO and SNL/CA's environmental performance goals; and
 - The extent to which SNL/CA staff rely upon SNL and KAO staff in New Mexico for guidance and any difficulties caused by this reliance;
- Whether the qualifications of staff are sufficient to ensure environmental goals are met:
 - Appropriate job qualifications are established and maintained for environmental positions;
 - The education, training, and experience of the environmental support staff (including subcontractors) are adequate to effectively conduct their assigned duties; and
 - Environmental responsibilities are built into job descriptions of key line management and staff positions;
- Whether measurement of job performance for environmental positions is appropriate; environmental protection factors are included in performance evaluation standards; and superior work in the environmental field is rewarded and poor performance is disciplined;
- Whether training programs are in effect to ensure that all staff obtain the environmental training necessary for their positions:
 - The process to evaluate and establish environmental training needs and to ensure that training programs provide adequate coverage of DOE Orders, Federal and state regulations, and internal policies and procedures;

- SNL/CA and KAO's system to ensure that all employees, including new employees and contractors, receive appropriate environmental training;
- Records of environmental training are maintained in a satisfactory recordkeeping system; and
- The training program is evaluated for effectiveness periodically;
- Whether environmental staff are provided career opportunities and advancement, and are encouraged to develop supervisory and other professional skills.

The general approach to the audit will include interviews with KAO, SNL, and SNL/CA personnel regarding staff resources, training, and development, as well as a review of relevant and available documentation.

8.2 RECORDS REQUIRED

In addition to those reviewed prior to the audit, the following documents will be examined at SNL/CA:

- Documented requests for environmental staff;
- A sample of résumés or 171 forms for selected environmental staff and other staff with environmental responsibilities;
- Job descriptions and performance evaluation standards for both environmental and non-environmental personnel;
- Documentation of environmental training needs and programs.
- Training history and educational records for a sample of environmental staff and line staff with environmental responsibilities;
- Presentation materials for environmental protection training programs; and
- Other records as determined onsite.

8.3 CROSS-CUTTING ISSUES

Coordination with other Audit Team members will be routine and extensive. Special attention will be paid to coordination with other team members in the following areas:

- **Organizational Structure:** Recent and/or planned reorganization of environmental management at SNL/CA;
- **Organizational Structure and Environmental Planning and Risk Management:** Allocation of environmental responsibilities and resources between SNL/CA and SNL;

- **Environmental Protection Programs: Effectiveness of training programs in meeting specific regulatory and programmatic needs; and**
- **Organizational Structure and Formality of Environmental Programs: Use of job descriptions and performance evaluations to clarify responsibilities and ensure consistency with actual activities.**

9.0 PROGRAM EVALUATION, REPORTING, AND CORRECTIVE ACTION

9.1 ISSUE IDENTIFICATION

The Routine Environmental Audit activities for POC EM.7, Program Evaluation, Reporting, and Corrective Action, will assess whether the organization has self-assessment and oversight programs in place to effectively evaluate environmental protection activities, report environmental concerns, implement corrective actions, and progressively improve environmental management activities. The key elements of the review are the following:

- Design of self-assessment and appraisal programs, including their objectives, scope, frequency, training, and assignment of responsibilities;
- Program implementation;
- Follow-up from the assessments/appraisals, including reporting format and distribution; corrective action planning, tracking, and implementation; performance trending and analysis; and continuous improvement actions based on lessons learned; and
- Selection of qualified staff to conduct audits and appraisals.

The general approach to assessing this management area will include interviews with KAO, SNL and SNL/CA staff who are responsible for environmental oversight, and interviews with line management who are responsible for self-assessment. The Audit Team will also review other relevant documentation not previously provided in the pre-audit documents. Based on the review of pre-audit information, the following issues will be further evaluated during the audit:

- SNL/CA understanding of all required program evaluation mechanisms, including self-assessments, audits, and appraisals. This review will include both the LAP program and SNL programs;
- Scope and approach of self-assessments and appraisals;
- Adequacy of SNL/CA self-assessments in meeting the intent of DOE self-assessment policy and guidance;
- The type, frequency and coverage of oversight activities with potential environmental impacts and the depth and frequency of the reviews;
- Assignment of responsibilities for self-assessments/appraisals and qualifications/training of those conducting the assessments, especially those personnel participating in the LAP program;
- Documentation, reporting, and distribution of assessment findings and reports to appropriate managers at SNL/CA, SNL, and KAO;
- System for setting priorities for corrective actions and specific plans with respect to recurring causes (e.g., mechanical failure);

- Systems for tracking and ensuring completion of corrective actions;
- Existence of "lessons learned" initiatives or programs such as SNL's Operating Experience Evaluation Program;
- Assessment of late/incomplete corrective actions; and
- Identification of performance indicators.

9.2 RECORDS REQUIRED

In addition to those reviewed prior to the audit, the following documents will be examined at SNL/CA:

- Description of the programs, procedures, and responsibilities relating to environmental performance evaluation;
- Reports of audits and appraisals conducted by both internal and external organizations;
- Meeting minutes from the Safety, Health, and Environment Advisory Committee (SHEAC), ES&H Council, Line Implementation Working Group (LIWG) and bi-weekly vice presidents staff meetings;
- Corrective action plans;
- Documentation of the corrective action tracking system;
- List of environmental performance indicators and reports demonstrating evaluation against these indicators (e.g., quarterly ES&H status report);
- Methodology for selecting and reevaluating specific performance indicators;
- Trend analysis or lessons learned documentation;
- Documentation of the qualifications/training of staff responsible for conducting environmental oversight activities; and
- Memorandum of Agreement (MOA) between LLNL and SNL/CA regarding any sharing of oversight and/or site monitoring responsibilities.

9.3 CROSS-CUTTING ISSUES

Coordination with other Audit Team members will be routine and extensive. Special attention will be paid to coordination with other team members in the following areas:

- Organizational Structure and Formality of Environmental Programs: Subcontractor oversight;
- Formality of Environmental Programs: Routine facility walkthrough;

- **Internal Communications:** Quick and effective internal communication of self-appraisal findings and corrective actions to appropriate level of management;
- **Staff Resource Training and Development:** Training of audit and assessment personnel; and
- **Formality of Environmental Programs:** Formality of corrective action system.

10.0

ENVIRONMENTAL PLANNING AND RISK MANAGEMENT

10.1

ISSUE IDENTIFICATION

The Routine Environmental Audit activities for POC EM.8, "Environmental Planning and Risk Management," will include evaluating the effectiveness of environmental planning activities and SNL/CA. The planning portion of the audit will examine environmental planning activities and also assess the extent to which environmental considerations are integrated into standard business planning activities, such as budgeting, priority setting, and allocation of resources. Short and long-term planning will be addressed. In addition to planning, this portion of the audit will evaluate the adequacy of systems designed to identify environmental hazards and to minimize and control environmental risks.

The general approach to the audit will include interviews with the KAO, SNL, and SNL/CA personnel responsible for environmental planning, budgeting, and risk management, and a review of documentation supporting this area. Areas of particular interest will include the following:

Environmental Planning

- Technical and financial planning relating to environmental management and the extent to which such planning is conducted and integrated with overall organizational planning (including mechanisms for resource allocation and priority setting, and the extent to which actual resource allocation is consistent with environmental objectives) with specific attention to the integration of the SNL, SNL/CA, AL, and SNL ES&H strategic plans;
- The adequacy of funding for environmental protection activities and planning not associated with the EM 5-year plan;
- The relative priority that environmental issues are given with respect to production in the planning and budgeting process;
- The adequacy of the site's planning for its needs in the areas of pollution control technology and related equipment and services for supporting environmental protection activities at SNL/CA; and
- The integration of SNL/CA's computer-based chemical inventory with environmental planning and risk management decisions.

Risk Management

- Systems for formal review of programs and activities that have the potential to represent a risk to the environment; and
- Systems for assessing risks to the environment from existing and planned research operations, including the specific mechanisms for identifying hazards and associated risks, assessing the acceptability of identified risks, and risk mitigation actions.

10.2 RECORDS REQUIRED

In addition to those reviewed prior to the audit, the following documents will be examined at SNL/CA:

- Strategic plans, including those for AL, KAO, SNL, SNL/CA, and SNL ES&H activities;
- Budget documents;
- Capital expenditure documents, including EM 5-year plan;
- Minutes of planning meetings and environmental program strategy documents;
- SNL/CA Institutional Plan and Site Development Plan;
- Procedures for startup of site activities (maintenance, construction, excavation, experimentation, process changes, etc.);
- Office of Management and Budget (OMB) Circular A-106 report(s) for SNL/CA;
- Work control procedures;
- Descriptions of SNL and SNL/CA programs and reports with an emphasis on risk management; and
- Other records as determined onsite.

10.3 CROSS-CUTTING ISSUES

Coordination with other Audit Team members will be routine and extensive. For Environmental Planning, special attention will be paid to coordination with other team members on the following issues:

- Environmental Protection Programs and Formality of Environmental Programs: Program-specific environmental planning and risk management activities (e.g., storm water and air quality regulations, Tritium Research Laboratory conversion, inactive waste sites);
- National Environmental Policy Act Programs: Relationship of planning and risk management activities to the National Environmental Policy Act process and other program reviews;
- Organizational Structure: Roles and responsibilities for planning and risk management between SNL/CA and SNL; and
- Environmental Protection Programs: Relationship with LLNL regarding environmental monitoring.

11.0 NATIONAL ENVIRONMENTAL POLICY ACT PROGRAMS

11.1 ISSUE IDENTIFICATION

Routine Environmental Audit activities related to National Environmental Policy Act (NEPA) Programs will investigate the development and implementation of NEPA programs capable of ensuring compliance and supporting progress toward environmental excellence at SNL/CA.

The scope of the NEPA audit is programmatic. It is designed to gain a broad understanding and awareness of DOE and operating contractor systems for NEPA compliance in order to describe the range of issues and problems that may exist. A detailed evaluation of compliance with specific requirements of the Council on Environmental Quality (CEQ) and DOE NEPA Regulations and the DOE NEPA Order is outside the scope of the audit. However, the audit will address areas where DOE has established specific management system requirements and will include a review of the DOE and operating contractor activities for adherence to best management practices (BMPs). BMPs are discretionary procedures that enhance overall compliance when specific requirements do not exist, do not apply, or do not go far enough.

The audit approach involves the review of DOE and operating contractor NEPA procedures, documentation, and operations, and may include interviews, as appropriate, with DOE/HQ, AL, KAO, SNL, and SNL/CA staff responsible for NEPA procedures and the NEPA review process; SNL/CA project and program managers; the legal and public relations staff; the classification officer; and others as the need arises. Specifically, the audit will address:

- Issues related to the establishment of a formal management framework for the NEPA program. This will include the review of guidance, policy statements, program plans, and standard operating procedures for adequacy and for consistency with the DOE NEPA Regulations (10 CFR 1021), DOE 5440.1E and related DOE Headquarters orders, memoranda, and guidance;
- Issues related to the operational implementation of the NEPA program. This will include:
 - Interviews with DOE and operating contractor personnel to determine the depth of understanding of DOE NEPA procedures and compliance issues that relate specifically to their job responsibilities and authorities;
 - Document reviews and interviews to evaluate factors influencing NEPA program effectiveness (e.g., the integration of NEPA into SNL/CA site and budget planning processes, communications within and between DOE and operating contractor organizations, and recordkeeping);
 - The review of screening criteria and the process used to recommend and determine appropriate levels of NEPA documentation for every proposed action; and
- The implementation of actions to address needs uncovered in previous NEPA program reviews. This will include the review of previous NEPA audits and

corrective action plans (where applicable) to determine progress toward resolution of findings.

11.2 RECORDS REQUIRED

In addition to those reviewed prior to the audit, the following documents will be examined at SNL/CA:

- Site-specific AL, KAO, and SNL NEPA guidance or policies;
- Correspondence and/or guidance that refers to delegation of authority to make NEPA determinations;
- State or local "NEPA-type" statutes or regulations;
- Mitigation reports available for Findings of No Significant Impact (FONSIs) and Records of Decision (RODs);
- Printout from the database that tracks NEPA documentation; and
- Other relevant material identified during the course of the management assessment.

11.3 CROSS-CUTTING ISSUES

NEPA program activities are interrelated to a variety of environmental management issues and, consequently, coordination with other Audit Team members will be routine and extensive. While special attention will be paid to coordination with team members responsible for evaluation of Environmental Planning and Risk Management, the evaluation of NEPA program adequacy will also involve substantial coordination with the team members responsible for Environmental Commitment; Environmental Protection Programs; Formality of Environmental Programs; Internal and External Communication; and Staff Resources, Training, and Development.

12.0 INACTIVE WASTE SITE PROGRAMS

12.1 ISSUE IDENTIFICATION

The Routine Environmental Audit activities for Inactive Waste Site Programs (IWS) will include evaluating the policies, programs, and implemented actions for managing the inactive waste sites at SNL/CA. The scope of the audit will be guided by the Performance Objectives and Criteria for Conducting DOE Environmental Audits for Inactive Waste Sites, focusing on management systems.

The scope of the IWS audit is programmatic and is designed to gain a broad understanding of SNL/CA's operating and management approach to IWS and any issues and problems that may exist.

The general approach to the audit will include interviews with the KAO, SNL and SNL/CA personnel responsible for inactive waste site activities and a review of documentation supporting this area. Areas of particular interest will include the following:

- Update of the Tiger Team Findings including availability of the Administrative Record, procedures for independent data validation of investigation results, compliance with regulatory schedules, and development of a Community Relations Plan for IWS activities;
- Components of the IWS program including procedures for identifying, prioritizing, and tracking inactive waste sites;
- Status of the three ongoing remedial actions (Trudell Site closeout, Navy Landfill Assessment, and Fuel Oil Spill remediation), and closeout of the "miscellaneous sites" identified in the 1988 SNL/CA Site Assessment. In addition, the extent of soil and groundwater studies for tritium in the vicinity of the TRL will be reviewed;
- Policies and past practices for investigation of environmental risk in property transfers; and
- Evaluation of potential DOE liability from field experiments conducted offsite, if applicable, including the review process for identifying such risks, and the involvement of SNL/CA in oversight of LLNL TCE plume investigations on SNL/CA property.

12.2 RECORDS REQUIRED

In addition to those reviewed prior to the audit, the following documents will be examined at SNL/CA:

- Policy and program plans including Environmental Restoration Program Plan, ES&H Program Strategy, ES&H Manual, SOPs, and OPs for inactive waste site activities;

- Regulatory documents such as the Resource Conservation and Recovery Act (RCRA) Part B Permit, Regional Water Quality Control Board (RWQCB) Cleanup and Assessment Orders, and RWQCB Site Closure documentation;
- Technical documents including the Navy Landfill Assessment Work Plan and Report, Fuel Oil Spill Plans and Reports, miscellaneous site closeout reports, site groundwater and soil chemical data; and
- Budget documents.

12.3 CROSS-CUTTING ISSUES

Evaluation of the IWS program at SNL/CA will necessarily involve coordination with other Audit Team members. In particular, cross-cutting issues are recognized in the following areas:

- **Formality of Environmental Programs:** The adequacy of and adherence to the SNL/CA Environmental Restoration Program Plan, the documentation of inactive waste site closure to regulators and DOE, and the presence of SOPs for conducting technical work at inactive waste sites (sampling procedures, data validation, etc.);
- **Organizational Structure:** The definition of roles and responsibilities for reviewing work projects conducted offsite for DOE liability;
- **Staff Resources, Training, and Development:** The effect of reduced funding from DOE on environmental restoration activities, the effective use and oversight of DOE and outside contractors for environmental restoration activities, and the training program for environmental restoration activities (Occupational Safety and Health Administration (OSHA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), risk assessment);
- **Environmental Protection Programs:** The inclusion of inactive waste site activities into the required programs and plans (Environmental Protection Implementation Program Plan, Groundwater Protection Management Plan, Waste Minimization Plan, Quality Assurance Program); and
- **Environmental Planning and Risk Management:** The evaluation of offsite projects for DOE liability, the prioritization of inactive waste site activities, and the evaluation of risk associated with site closure.

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APPENDIX C

SCHEDULE OF ON-SITE ACTIVITIES

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SCHEDULE OF ONSITE ACTIVITIES

		Travel Site briefing, continue docu- ment review Internal Team Meeting	Continue interviews and document review Internal Team Meeting	Daily debriefing Continue interviews and document review Internal Team Meeting	Daily debriefing Continue interviews and document review Internal Team Meeting	Overviews and Findings development
Overview and findings definition	Daily debriefing Follow-up interviews Drafting report sections and overviews and findings	Draft portions of report to Site for Factual Accuracy Review Follow-up interviews	Factual Accuracy Reviews Additional portions of report to Site for Factual Accuracy Review	Factual Accuracy Reviews Report consoli- dation and editing Development of Executive Summary	Preparation of Closeout Presentation Closeout to Site	Travel

INTERVIEW SCHEDULES (continued)

INTERVIEW SCHEDULES

<ul style="list-style-type: none"> • Travel • Site briefing • Site tour and overview 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Organizational structure - Program evaluation - Environmental commitment - Internal/external communications 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Organizational structure - Environmental commitment 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Staff resources - Formality of programs - Organizational structure - Environmental commitment 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Program evaluation
<ul style="list-style-type: none"> • Travel • Site briefing • Site tour and overview 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Laboratory assessment program - Environmental protection - Waste management - Environmental monitoring - Day-to-day compliance 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Day-to-day compliance - Chemical management - TSDF operations - Day-to-day management - Air quality management - CIS System 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Waste minimization/pollution prevention - Formality of programs - Waste water discharge • Site/Electronic Prototype Laboratory 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Waste minimization/pollution prevention - Surface water protection - Underground storage tanks; spill prevention; countermeasures and control

INTERVIEW SCHEDULES (continued)

Topic	Day	Time	Interviewer
<ul style="list-style-type: none"> • Travel • Site briefing • Site tour and overview 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Environmental programs - Regulatory tracking - ES&H department activities - EPP functional areas - Oversight - Health physics support 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - TRL conversion - ES&H QA, EPIP - TRL surveys - Oversight 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Emergency preparedness - Mixed and radiation waste - ES&H related procedures - Backflow prevention and maintenance of ES&H-related equipment • Interviews: <ul style="list-style-type: none"> - Rad characterization - TRL
<ul style="list-style-type: none"> • Travel • Site briefing • Interview: <ul style="list-style-type: none"> - Document review process 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Records management - Review process - Fuel oil spill status - Groundwater monitoring - Roles and responsibilities re fuel oil spill - Community relations - Environmental restoration program coordination 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - KAO environmental restoration program oversight - Oversight roles and responsibilities 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Bioremediation project - Signoffs, GPMPP - Milestones - Groundwater monitoring - Communications with regulators - Document and review process • Interviews: <ul style="list-style-type: none"> - Project Management Plan for ERP - CRP - ERP planning guidance - Review process - 913 Tank

INTERVIEW SCHEDULES (continued)

PROJECT EVALUATION, REPORTING, AND CORRECTIVE ACTION				
<ul style="list-style-type: none"> • Travel • Site briefing • Site tour and overview 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Program evaluation self-assessment 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Program evaluation - self-assessment - Internal/external communications - Incident Evaluation Committee 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Program evaluation - Internal communications 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Project evaluation, reporting, and corrective action - Internal/external communications
LEA BATS-STAFF RESOURCES, TRAINING, AND DEVELOPMENT/ ENVIRONMENTAL PLANNING AND RISK MANAGEMENT				
<ul style="list-style-type: none"> • Travel • Site briefing • Site tour and overview 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Staff resources - Budgeting - Environmental planning - Training 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Environmental planning - Staff resources - Training 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Environmental planning - Staff resources - Training - Budgeting - Environmental planning and budgeting 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Staff resources and environmental planning

INTERVIEW SCHEDULES (continued)

Tue 2/28/04	Wed 3/2/04	Thur 3/4/04	Fri 3/5/04	Mon 3/8/04
DEBORAH MCCARTNEY—NATIONAL ENVIRONMENTAL POLICY ACT PROGRAMS				
<ul style="list-style-type: none"> • Travel • Site briefing • Site tour and overview 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - NEPA - NEPA/ER 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - NEPA/ER - NEPA processes - PHAs and SOPs 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - NEPA - CXs - SOPs and NEPA - Tiger Team Corrective Action 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - Corrective Action procedures - NEPA process
BILL SCHRAMM—NATIONAL ENVIRONMENTAL POLICY ACT PROGRAMS				
<ul style="list-style-type: none"> • Travel • Site briefing • Site tour and overview 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - NEPA program - NEPA in procurement - NEPA in tech transfer - NEPA in WFO 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - ES&H review of WFO/tech transfer - NEPA program - Use of PHA and NEPA review 	<ul style="list-style-type: none"> • Interviews: <ul style="list-style-type: none"> - NEPA program - SNL 	

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APPENDIX D

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM

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LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM

Document #	Title/Description	Author	Organization	Recipient	Document Date
MARK PINE - ORGANIZATIONAL STRUCTURE, ENVIRONMENTAL COMMITMENT					
D-A-1	Introduction to Kirtland Area Office (slides)	John Andrews	DOE/KAO	EH-24 Audit Team	1/25/94
D-A-2	Sandia National Labs: Our Strategic Challenges (slides)	John Crawford	SNL/CA	EH-24 Audit Team	1/25/94
D-A-3	SNL's ES&H Program (slides)	Lynn Jones	SNL	EH-24 Audit Team	1/25/94
D-A-4	Hierarchy of ES&H Documents (slides)	Richard Rohde	SNL	EH-24 Audit Team	1/25/94
D-A-5	Management Organization and Environmental Commitment (slides)	John Crawford	SNL/CA	EH-24 Audit Team	1/25/94
D-A-6	Overview of ES&H and Facilities Center (slides)	Al West	SNL/CA	EH-24 Audit Team	1/25/94
D-A-7	SNL ES&H Policy (SLP2001)	Undetermined	SNL	Various	6/10/93
D-A-8	Environmental Protection Implementation Plan (EPIP)	D. Brekke	SNL/CA	Various	1/94
D-A-9	Strategic Implementation Plan, 1993	Undetermined	SNL/CA	Various	3/93
D-A-10	Standard Operating Practice: Performing and Documenting Management Surveillance	L.R. Newby	SNL	Various	2/18/92
D-A-11	ES&H Quarterly Report	Don Putz	SNL/CA	John Crawford, et al.	10/93
D-A-12	Job Descriptions for Environment Protection Department personnel	Don Nissen	SNL/CA	Various	Not specified
D-A-13	Overview of Kirtland Area Office (slides)	John Andrews	DOE/KAO	EH-24 Audit Team	2/22/94
D-A-14	Overview of SNL/CA (slides)	John Crawford	SNL/CA	EH-24 Audit Team	2/22/94
D-A-15	Performance Plan for Vice President of Laboratories Services Division (draft)	Lynn Jones	SNL	Various	1/12/94

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-A-16	SNL/CA ES&H Council Minutes	Don Putz	SNL/CA	Various	Various
D-A-17	KAO Priorities for SNL Budget	K. Carlson	KAO	J. Tegnella, SNL	1/20/94
D-A-18	DOE/SNL Appraisal System	J. Lester and J. Chamberlin	KAO & SNL	Various	Unspecified
D-A-19	SNL Institutional Plan, 1994-99	J. Weiss	SNL	Various	10/93
D-A-20	KAO Strategic Plan	K. Carlson	KAO	Various	4/93
D-A-21	Position Description, KAO Site Representative	Unspecified	KAO	Various	Unspecified
D-A-22	List of Recent KAO Appraisals of SNL/CA	A. Herrbach	KAO	EH-24 Audit Team	3/1/94
D-A-23	Tiger Team Action Plan Milestone Status Report for Finding NEPA/CF-4	D. Putz	SNL/CA	Various	2/25/94
D-A-24	KAO Top Ten Issues for SNL	K. Carlson	KAO	Various	10/21/93
D-A-25	Organization Charts—SNL and SNL/CA	Various	SNL and SNL/CA	Various	Various
D-A-26	Organization Charts—AL and KAO	Various	AL and KAO	Various	Various
D-A-27	Organizational Structure Documents on SNL/CA's Management Assurance Department	D. Putz	SNL/CA	EH-24 Audit Team	2/23/94
D-A-28	Organization Chart for SNL's Environmental Operations Center	T. Blejwas	SNL	Various	Unspecified
D-A-29	SNL's Proposed Organization Structure for ER Activities	T. Blejwas	SNL	Various	Unspecified
D-A-30	Memorandum re: Integration of SNL/CA and SNL/NM ER projects	L. West and T. Blejwas	SNL/CA and SNL	K. Boardman, DOE/AL	2/28/94
MINE REVENUE ACT (MRA) REGULATIONS					
D-B-1	1992/1993 Annual Storm Water Monitoring Report	n/a	SNL/CA	n/a	6/30/93
D-B-2	Air Quality Management Plan	n/a	SNL/CA	n/a	1/28/91
D-B-3	Consent Agreement and Order, Docket HWCA 90/91 042 (DTSC)	n/a	DTSC	DOE/KAO	4/17/91

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Document Description	Author	Organization	Recipient	Document Date
D-B-4	Corrective Action Order and Complaint for Penalty, Health and Safety Code Sections 25187 and 25189.2, HWCA 90/91 042 (DOHS)	n/a	DTSC	DOE/KAO	4/91
D-B-5	DOE/AL Appraisal (Environmental Protection) 5/17/93-5/21/93	n/a	DOE/AL	SNL/CA	Unspecified
D-B-6	Environment, Safety, & Health Policy (SLP 2001)	n/a	SNL	n/a	6/10/93
D-B-7	Environmental Monitoring Plan (Sand 93-8011)	n/a	SNL/CA	n/a	7/93
D-B-8	Environmental Monitoring and Air Quality Assessment Report	n/a	SNL/CA	n/a	8/7/92
D-B-9	Environmental Monitoring Program Quality Assurance Project Plan (Sand 93-8010)	n/a	SNL/CA	n/a	6/93
D-B-10	Environmental Protection Implementation Plan (EPIP)	n/a	SNL/CA	n/a	1/94
D-B-11	External Audits FY 1992	n/a	SNL/CA	n/a	9/30/92
D-B-12	External Audits FY 1993	n/a	SNL/CA	n/a	10/5/93
D-B-13	Guidelines for Complying with Air Quality Regulations	n/a	SNL/CA	n/a	1/91
D-B-14	Guidelines for Hazardous Waste Generators and SNL/CA GN470075, Issue A (ES&H Manual)	n/a	SNL/CA	n/a	10/93
D-B-15	Joint Statement of Responsibilities for Environmental Monitoring at Livermore (Lawrence Livermore National Laboratory and Sandia National Laboratory, California)	n/a	SNL/CA	n/a	8/1/93
D-B-16	Map—Liquid Effluent Control Systems (LECS)	n/a	SNL/CA	n/a	Unspecified
D-B-17	Mission Statement (Department 8609)	n/a	SNL/CA	n/a	1/94
D-B-18	Site Chemical Summary by Location	n/a	SNL/CA	n/a	1/13/94
D-B-19	Annual Site Environmental Report for 1990	n/a	SNL/CA	n/a	1/91
D-B-20	Annual Site Environmental Report for 1991	n/a	SNL/CA	n/a	1/92
D-B-21	Annual Site Environmental Report for 1992	n/a	SNL/CA	n/a	1/93
D-B-22	Spill Prevention Control and Countermeasure Plan (SPCC)	n/a	SNL/CA	n/a	12/1/92

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-B-23	Waste Minimization & Pollution Prevention Awareness Plan	n/a	SNL	n/a	12/31/92
D-B-24	Environmental Restoration and Waste Management Five Year Plan Activity Data Sheets FY95-99	n/a	SNL/CA	n/a	4/9/93
D-B-25	Annual Document Log for PCB Waste Disposal	n/a	SNL/CA	n/a	12/31/93
D-B-26	PCB Spill 1992	n/a	SNL/CA	n/a	1992
D-B-27	cc: mail to Deanna Butler re: PCB	n/a	SNL/CA	n/a	1/8/94
D-B-28	Verification of completed item	Sue Umshier	DOE/KAO	SNL/CA	8/24/93
D-B-29	Process Waste Assessment Training Manual	n/a	DOE	SNL/CA	1991
D-B-30	Schedule for Waste Management Pollution Prevention and Awareness Plan	n/a	SNL/CA	n/a	1991
D-B-31	Storm Water Pollution Prevention Plan	D. Brekke	SNL/CA	n/a	1994
D-B-32	ES&H Manual MN470000 (Volumes 1 and 2)	Various	SNL	Various	12/6/93
D-B-33	Permitted Hazardous Waste Operations Plan	SNL/CA	n/a	n/a	n/a
D-B-34	Tiger Team Assessment Finding	DOE	DOE	Various	1990
D-B-35	Notice of Violations—19458, 19459	K. Carlson	KAO	N. Williams	3/9/92
D-B-36	Backflow Preventor/Cross Connection Program	n/a	SNL/CA	n/a	6/92
DOE LABORATORY ENVIRONMENTAL POLYMER GROUP					
D-C-1	SNL/CA 1993 Radioactive Effluent Inventory Report for NESHAPs Compliance	n/a	SNL/CA ES&H	EPA NESHAPs Program	7/6/92
D-C-2	Corporate Requirements Review Process	S. Hinton	SNL/NM Legal Dept.	M.R. Kestenbaum	7/28/93
D-C-3	Environmental Monitoring Plan (Sand 98-8011)	R.C. Holland	SNL/CA ES&H	DOE	7/93
D-C-4	Site Environmental Report for 1992	R. Brekke	SNL/CA ES&H	DOE	1993
D-C-5	Environmental Operations Center Mission & Vision Statements	T. Blejwas	SNL/NM Division 7500	SNL	1993

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LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Document Description	Author	Organization	Location	Date
D-C-6	Reports re: SNL/CA Audits during FY93	L.C. Schneider	SNL/CA	Distribution	10/5/93
D-C-7	EPD Program Appraisal SNL/CA 12/7-10/92	F.H. Sprague	DOE/AL	KAO/ES&H	2/26/93
D-C-8	ES&H QA Procedures	SNL/CA	SNL/CA-ES&H	ES&H	1991-1993
D-C-9	Environmental Monitoring Program QAPP (Sand 93-8010)	R.C. Holland	SNL/CA-ES&H	ES&H	6/93
D-C-10	OP-WM-9	D.A. Nissen	SNL/CA-EPD	SNL/CA	7/30/93
D-C-11	1993 Strategic Implementation Plan	J. Crawford	SNL/CA	SNL	3/93
D-C-12	OP-471091	L. Sanchez	SNL/CA	SNL	11/24/93
D-C-13	SNL/CA ES&H Quarterly Report	SNL/CA	SNL/CA-Management Assurance Department	Distribution	11/1/93
D-C-14	Inspection Conducted 11/23/93	M. Kammerer	City of Livermore	D. Brekke	11/29/93
D-C-15	TRL Inv. Reduction Management Plan	W.R. Wall	SNL/CA-Tritium Management Department	Distribution	4/20/93
D-C-16	RADM W.G. Ellis letter (TRL)	R.L. Hagengruber	SNL	W.G. Ellis	7/29/93
D-C-17	TRL response	W.G. Ellis	DOE/DP	R.L. Hagengruber	9/10/93
D-C-18	SAR Deferment TRL	B.G. Twining	DOE/AL	E.H. Becker	3/24/93
D-C-19	TRL SAR Deferment	N.S. Dienes	DOE/AL	K.A. Carlson	n/a
D-C-20	TRL Haz CATs Reclass	K.A. Carlson	DOE/KAO	DOE/KAO	3/1/93
D-C-21	Site Environmental Report for 1991	D. Brekke	SNL/CA-ES&H	DOE	1992
D-C-22	Environmental Protection Implementation Plan	D. Brekke	SNL/CA-ES&H	DOE	1/94
D-C-23	Joint Statement of Response	LLNL & SNL/CA	n/a	n/a	8/1/93
D-C-24	Final Environmental Impact Statement and Environmental Impact Report for Continued Operations of LLNL and SNL/CA (Executive Summary)	n/a	DOE	n/a	8/92
D-C-25	Areas of Environment Monitoring Program Undersupported	D. Brekke	SNL/CA-ES&H	EH-24 Audit Team	2/24/94

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Responsible	Document Date
D-C-26	Environmental Monitoring Staffing	D. Brekke	SNL/CA-ES&H	Don Nissen	9/13/83
D-C-27	Recruitment of Wastewater Control Engineer	D. Brekke	SNL/CA-ES&H	Don Nissen	12/9/83
D-C-28	Tiger Team Response No. 415	SNL/CA	SNL/CA-EPD	SNL/CA	10/1/82
D-C-29	Radiation ALARA Committee Charter	Bill Burnett	SNL/NM	Al West	11/15/83
D-C-30	SNL/CA ALARA Committee	D.A. Wright	SNL/CA-EPD	Distribution	1/18/84
D-C-31	ALARA Policy Statement	J.C. Crawford	SNL/CA	Distribution	7/30/82
D-C-32	Procedure re: Radioactive Waste Information OPWM-10	K. Sheppard	SNL/CA	Distribution	7/30/83
D-C-33	Procedure—Rad Waste Information System Database	K. Sheppard	SNL/CA	Distribution	7/30/83
D-C-34	Procedure—Emergency Dose Projections	D. Brekke	SNL/CA	Distribution	1/17/82
D-C-35	Meteorological Monitoring Program Plan	D. Brekke	SNL/CA	Distribution	5/18/83
D-C-36	Planning & Design Criteria for Monitoring H ₂ in Air	D. Brekke	SNL/CA	Distribution	10/1/83
D-C-37	NEPA document for Tritium Research Laboratory Building Transition Activity	S. Buck	SNL/CA	Distribution	6/14/83
D-C-38	SNL/CA 1983 Radioactive Effluent Inv. Report for NESHAPs	D. Brekke	SNL/CA	DOE	12/7/83
D-D-1	Institutional Plan FY 1984-89	n/a	SNL	n/a	10/83
D-D-2	Preliminary Public Participation Program Recommendations for the Environmental Protection Department, SNL/CA	n/a	Argonne National Laboratories	n/a	8/83
D-D-3	EIS/EIR Community Involvement Flyer	n/a	DOE/UC/LLNL/ SNL	n/a	12/81
D-D-4	California RWQCB Site Cleanup Order No. 89-184	Steven Ritchie	RWQCB	A. Chernoff/DOE	1/5/80
D-D-5	Assessment of Environmental Restoration Program conducted September 14-15, 1982	n/a	EM-45	n/a	11/82
D-D-6	Corrective Action Plan—EM-45 Program Assessment	n/a	SNL/CA	n/a	2/18/83

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document ID	Document Title	Author	Organization	Reviewer	Date
D-D-7	Tiger Team Assessment of the SNL, Livermore, CA	n/a	DOE	n/a	8/90
D-D-8	Draft Remedial Investigation Report, SNLL, Fuel Oil Spill	n/a	DOE/AL	n/a	4/89
D-D-9	SNLL Fuel Oil Spill, Feasibility Study Report	n/a	DOE/AL	n/a	9/90
D-D-10	LLNL Ground Water Project, Quarterly Progress Report, June 1993	n/a	DOE/SFO	n/a	6/93
D-D-11	Groundwater Investigation Quarterly Report—Volumes 1 and 2, Oct.—Dec. 1993	n/a	DOE/AL	n/a	1/14/94
D-D-12	Environmental Report for 1992	Brekke/Holland	SNL/CA	n/a	n/a
D-D-13	Joint Statement of Responsibilities for Environmental Monitoring at Livermore	n/a	LLNL/SNL/CA	n/a	8/1/93
D-D-14	Groundwater Protection Management Program Plan	Brown and Caldwell Engineers	SNL/CA	n/a	9/14/90
D-D-15	Draft Work Plan for the Fuel Oil Spill at Sandia National Laboratories, California	n/a	Argonne National Labs	n/a	8/93
D-D-16	Draft Report: Remedial Action Plan for the Fuel Oil Spill at Sandia National Laboratories, Livermore	n/a	Argonne National Labs	n/a	7/92
D-D-17	Miscellaneous Sites Reconnaissance Sampling Plan	n/a	DOE/AL	RWQCB	3/4/91
D-D-18	Sandia National Laboratories, Livermore, Navy Landfill Solid Waste Water Quarterly Assessment Test Report (SWAT)	n/a	DOE/AL	RWQCB	6/90
D-D-19	Site Development Plan	n/a	SNL/CA	n/a	1993
D-D-20	Environmental Survey Preliminary Report	n/a	DOE	n/a	1/88
Program Management and Compliance Documents					
D-E-1	ES&H Operating Experience Evaluation (PG470096, Issue B) (Lessons Learned)	S. Love	SNL ES&H Assessments	n/a	3/19/92
D-E-2	ES&H Performance Indicator Program (PG470095, Issue B)	D.A. Haycraft	SNL ES&H Assessments	n/a	2/4/92

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document ID	Document Title	Author	Category	Review Status	Review Date
D-E-3	ES&H Appraisal Program (PG470094, Issue B)	D.R. Johnson	SNL ES&H Assessments	n/a	11/27/91
D-E-4	ES&H Self-Assessment (PG470093, Issue B)	E.H. Forbes	SNL ES&H Assessments	n/a	3/26/91
D-E-5	Preparing ES&H Independent Internal Appraisal Reports and Action Plans (GN470055, Issue A)	C.F. Bailey	SNL ES&H Assessments	n/a	12/3/91
D-E-6	Planning ES&H Appraisals (GN470065, Issue A)	D.R. Johnson	SNL ES&H Assessments	n/a	12/3/91
D-E-7	Conducting ES&H Appraisals	D.R. Johnson	SNL ES&H Assessments	n/a	12/3/91
D-E-8	Maintaining ES&H Appraisal Records (GN470063, Issue A)	M.P. McDaniel	SNL ES&H Assessments	n/a	12/3/91
D-E-9	Implementing and Tracking Corrective Actions (GN470060, Issue A)	C.F. Bailey	SNL ES&H Assessments	n/a	12/3/91
D-E-10	Reviewing ES&H Operating Experience (GN470061, Issue A)	D.R. Johnson	SNL ES&H Assessments	n/a	11/19/91
D-E-11	Assessment Checklist SNL/CA	SAIC	SAIC	n/a	9/26/92
D-E-12	SNL Audit 93-01—Assessment Check	K.Fischer	SAIC	n/a	9/27/93
D-E-13	SNL Audit 93-01—Procedure Check	K. Fischer	SAIC	n/a	9/23/93
D-E-14	EM-45 Progress Assessment CAP	SNL/CA	SNL/CA	EM-45	2/18/93
D-E-15	Minutes of SNL/CA ES&H Council	D. Putz	SNL/CA	n/a	12/4/92
D-E-16	Incident Examination Committee Progress Report	J. Bartel	SNL/CA	n/a	9/9/92
D-E-17	SHEAC Meeting Minutes	R. Detry	SNL/CA	Distribution	10/9/93
D-E-18	ES&H Meeting Log/Centers 5300 & 8100	C.Schafer	SNL/CA	Center Managers	2/23/94
D-E-19	Draft Nonconformance Reporting Procedure	K. Hilbelink	SAIC	Nissen/Brekke	2/17/94
D-E-20	Occurrence Report	C. English	SNL/CA	DOE/KAO	8/13/93
D-E-21	Hazard Identification Codes for LAP data base	D. Abrahams	SNL/CA	n/c	1/4/94
D-E-22	Sample LAP deficiencies from data base	D. Abrahams	SNL/CA	n/a	2/94

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document ID	Document Title	Author	Organization	Category	Date
D-E-23	ES&H Operating Experience (Lessons Learned)	L. Byers	SNL/NM	n/a	Various 1993
D-E-24	SNL/CA Education Outreach Annual Report 1993	SNL/CA	SNL/CA	n/a	1993
D-E-25	SNL ES&H Question Complaint Form	SNL/CA	SNL/CA	n/a	Current
D-E-26	Invitation to community meeting 3/23/94	B. Schrader	SNL/CA	Distribution	2/94
D-E-27	News Release--Public meeting	B. Schrader	SNL/CA	Public	2/18/93
D-E-28	Media Advisory--SNL Environmental Report 1991	B. Schrader	SNL/CA	Public	1/22/93
D-E-29	Lab News	SNL/NM	SNL/NM	Employees	2/4/94
D-E-30	Emergency Management Appraisal Sheet	DOE/AL	n/a	SNL/CA	2/18/94
D-E-31	SNL/CA Environmental Protection Emergency Response Record	M. Mikołajczyk	SNL/CA	Occurrence Management	1/20/94
D-E-32	Industrial Hygiene Service Report	P. Huff	ASI	Occurrence Management	1/18/94
D-E-33	Blank Category and Incident Report	n/a	n/a	n/a	n/a
D-E-34	Sample Observant Observer Award	J. Garrett	Occurrence Management	Various	2/28/94
D-E-35	Sample Incident Reports (from database)	Various SNL/CA Staff	Occurrence Management	Various	Various
D-E-36	Management Organization and Environmental Commitment Presentation	SNL/CA	n/a	DOE Audit Team	1/25/94
D-E-37	SNL/Livermore Audits FY 93	SNL/CA	n/a	DOE Audit Team	Unspecified
D-E-38	Presentation on Hierarchy of ES&H Regulatory Documents	R. Rohde	SNL Regional Management	DOE Audit Team	1/25/94
D-E-39	SNL/CA ES&H Quarterly Report	SNL/CA Management Assurance Department	SNL/CA Management Assurance Department	Distribution	11/1/93

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Reviewed By	Review Date
D-F-1	ES&H Manual MN470000 (Volumes 1 & 2)	Various	SNL	Various	12/6/93
D-F-2	Training materials-ES&H orientation	n/a	SNL/CA	Various	2/94
D-F-3	Self-study texts-required ES&H courses	n/a	SNL/CA	Various	Various
D-F-4	Statistics for 6 Required ES&H Courses	n/a	SNL/CA	n/a	2/4/94
D-F-5	Training plans for Dept. 8642, Environmental Monitoring Technicians	D. Brekke	SNL/CA, EPD	n/a	undated
D-F-6	Training histories-EPD	n/a	SNL/CA, EPD	n/a	12/13/93
D-F-7	Selected training histories	S. Battles	SNL/CA, HR	n/a	2/24/94
D-F-8	ES&H Training Catalog, MN471010	n/a	SNL	Various	3/93
D-F-9	Prioritization Methodology for ES&H Programs Indirect Activities/Tasks	L. Buxton	SNL/NM, ES&H Program Management Office	n/a	4/93
D-F-10	Memorandum re: Environmental Protection WBS	J.W. Mead	SNL/NM	Various	4/8/93
D-F-11	Case Data Sheets for FY94 AMCO Budget Process	D. Nissen	SNL/CA, EPD	Not specified	4/1/93
D-F-12	Override Priority Sorted "1-line" Report	n/a	SNL/NM	Not specified	6/9/93
D-F-13	Memorandum regarding FY94 ES&H budget allocation information by case center	J. Baremore	SNL/NM	D. Schueler	6/23/93
D-F-14	Case data sheets for FY94 AMCO budget process	D. Nissen	SNL/CA, EPD	Not specified	8/6/93
D-F-15	FY94 Case/Project Authorization Form	D. Nissen	SNL/CA, EPD	J. Baremore	8/6/93
D-F-16	Memorandum re: ES&H Management Plan	J. Baremore	SNL/NM	Various	2/21/94
D-F-17	Draft ES&H Five Year Plan	J. Baremore	SNL/NM	K. Carlson	3/26/93
D-F-18	ER & WM Activity Data Sheets FY95-99	n/a	DOE/AL	Various	4/93
D-F-19	Waste Management Baseline, FY 1994-1999	K. Sheppard; C. Skinrood	SNL/CA, Center for ES&H and Facilities	Various	12/1/93
D-F-20	SNL/CA EPD Budget	D. Nissen; C. Skinrood	SNL/CA, EPD	Various	12/31/93

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-F-21	Visions, Objectives and Strategies	n/a	SNL	Various	4/91
D-F-22	Strategic Implementation Plan 1993	n/a	SNL/CA	Various	3/93
D-F-23	Memorandum re: ES&H Staffing Plan	R.K. Traeger	SNL/NM	G.T. Cheney	11/11/92
D-F-24	Dept. 8642 Staffing Plan FY93	D. Nissen	SNL/CA, EPD	Not specified	undated
D-F-25	Dept. 8642 Staffing Plan FY94	D. Nissen	SNL/CA, EPD	Various	undated
D-F-26	Memorandum re: Integrating ES&H contributions into annual performance/compensation review	R.C. Bonner	SNL	All SNL employees	2/22/91
D-F-27	Letter from SNL ES&H Council	A. Narath	SNL	All SNL employees	2/20/91
D-F-28	Memorandum re: recognition of notable ES&H achievement by non-supervisory employees	G.T. Cheney	SNL	All SNL supervisors	4/19/91
D-F-29	Memorandum re: ES&H and performance evaluation and compensation	R.C. Bonner	SNL	Non-represented employees	12/4/91
D-F-30	Memorandum re: approach to preparing this year's Sandia ES&H management plan	J. Baremore	SNL/NM	Various	2/94
D-F-31	Memorandum re: ER/WM budget submission	R.L. Shepardson	SNL/NM	J. Woodard	2/15/94
D-F-32	Selected training histories	S. Battles	SNL/CA, HR	n/a	2/25/94
D-F-33	Environmental Health Questionnaire	n/a	SNL/CA, Med Org.	Various	Undated
D-F-34	SNL, Livermore Training Program Requirements	n/a	SNL/CA, EPD	Not specified	Undated
D-F-35	Environmental Monitoring Program, Quality Assurance Project Plan (Sand 93-8010)	R.C. Holland	SNL	Various	6/93
D-F-36	Memorandum re: Staffing Resources for Environmental Monitoring Program	D. Brekke	SNL/CA, EPD	Don Nissen	7/9/93
D-F-37	Environmental Protection Implementation Plan	D.D. Brekke	SNL/CA, EPD	Various	1/94
D-F-38	Position descriptions, EPD	n/a	SNL/CA, EPD	Various	Undated
D-F-39	Memorandum re: Staffing Requirements for the ES&H Dept. 8540	R. Rohde	SNL/CA, ES&H Dept.	P.E. Brewer	1/21/91

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-F-40	Memorandum re: Plan for ES&H Professional Organization	G.T. Cheney	SNL/NM	A. Narath	2/12/91
D-F-41	Memorandum re: In Principle Agreement with the G.H. Chaney ES&H Staffing Plan	J.C. Crawford	SNL/CA	P.E. Jones	3/1/91
D-F-42	Sandia National Laboratories Institutional Plan FY 1994-1999	n/a	SNL	n/a	10/93
D-F-43	Sandia National Laboratories Site Development Plan	n/a	SNL	n/a	4/93
DEBORAH MCCARTNEY/BILL SCHRAMM - NATIONAL ENVIRONMENTAL POLICY ACT PROGRAMS					
D-G-1	Final Environmental Impact Statement and Environmental Impact Report for Continued Operations of LLNL and SNL/CA (Volumes I-V)	n/a	DOE and University of CA	n/a	8/92
D-G-2	Joint Statement of Responsibilities for Environmental Monitoring at Livermore (Lawrence Livermore National Laboratory and Sandia National Laboratory, California)	H. Galls/W. Isherwood/L. West/ D. Nissen	LLNL & SNL/CA	LLNL & SNL/CA	8/1/93
D-G-3	Agreement in Principle	n/a	DOE/CA DHS	DOE/CA DHS	9/6/90
D-G-4	Management Agreement for the Oversight of Sandia National Laboratories, Livermore, Activities between San Francisco (SF) Operations Office and Albuquerque (AL) Operations Office	B. Twining/D. Pearman	DOE	SF Operations Office; AL Operations Office	3/90
D-G-5	NEPA Awareness Env. 120 (training pamphlet)	n/a	SNL	SNL	unknown
D-G-6	ES&H Manual, Section 10-I "NEPA Compliance" (MN470000)	n/a	SNL	SNL	10/12/93
D-G-7	ES&H Generic SOPs/PHAs (ES&H Manual Supplement)	n/a	SNL	SNL	4/3/92
D-G-8	NEPA Compliance Guide, SNL, Volumes 1 and 2	n/a	SNL	SNL	3/93
D-G-9	ES&H Manual Supplement Developing and Implementing ES&H SOPs and SWPs	J.J. Baremore	SNL/CA	Unknown	4/23/93
D-G-10	ROD for the LLNL and SNL, Livermore Site-wide EIS	L.G. Stuntz	DOE	n/a	1/21/93
D-G-11	Conceptual Design Report for Site Infrastructure Modernization	GEZ Architects Engineers	n/a	SNL/CA	12/1/92

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-G-12	Final Environmental Impact Statement and Environmental Impact Report for the continued operation of LLNL and SNL, I Executive Summary	Unknown	DOE and University of CA	n/a	8/92
D-G-13	Approval of MAP for the ROD for continued operation of LLNL and SNL, I FEIS	V.H. Reis	DOE	SF Ops Office	9/93
D-G-14	NEPA Documentation printout	Unknown	SNL/CA	Unknown	Unknown
D-G-15	DOE/AL Environmental Checklist/Action Description memorandum and instructions	Unknown	SNL/CA	SNL/CA	8/93 (draft)
D-G-16	NEPA Guidance certifying the Responsibilities and Authorities of the LMO	G.K. Laskar	DOE/KAO	L.A. West	11/29/93
D-G-17	Mitigation Action Plan (MAP) Process	S. Buck	SNL/CA	Distribution	2/1/94
D-G-18	NEPA Environmental Checklist for the Backup Manufacturing Support for RF Reservoirs at SNL/CA	G.K. Laskar	DOE/KAO	C.L. Soden	10/6/93
D-G-19	SNL ES&H Checklist (JWS/CRADAS)	n/a	SNL	n/a	2/93
D-G-20	SNL ES&H Checklist (work proposal)	n/a	SNL	n/a	1/94
D-G-21	DOE Brochure, NEPA Compliance, April 1993 (WFO)	n/a	SNL	n/a	1/94
D-G-22	NEPA CX Determinations for January 1, 1993–February 5, 1993	J.O. Johnson	DOE/KAO	J.E. Stiegler/ L.A. West	2/18/93
D-G-23	FY 96 E&E Sector, Budget Submission Handbook (External)	n/a	DOE	n/a	not dated
D-G-24	NEPA CX Determinations for SNL/CA	G.K. Laskar	DOE/KAO	L.A. West	4/14/93
D-G-25	Discovery Plan, Curation and Native American Skeletal Remains Agreement	C.I. Busby and D.M. Garaventa	Basin Research Associates, Inc.	SNL/CA	12/90
D-G-26	Completion of Corrective Action EK-2, No. 006, SNL/CA 002	M.G. Delgado	SNL/CA	D.G. Pellegrino	8/14/93
D-G-27	ES&H Program Document—NEPA	T.A. Wolff	SNL	n/a	1/29/91
D-G-28	ES&H Review Procedures for Facilities Management Design	L.A. West	SNL/CA	n/a	5/15/92

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-G-29	NEPA Documentation for Tritium Research Laboratory Building Transition Activity	S. Buck	SNL/CA	Distribution	6/14/93
D-G-30	Procedures for Acquisitions Requiring Special Appeals and/or Notifications	Unknown	SNL	n/a	8/30/92
D-G-31	Excerpts from ES&H Training Catalog (ENV120, ENV121, ENV122, and ENV124)	A.O. Bendure	SNL	n/a	Unknown
D-G-32	Final Action Plan in Response to Tiger Team ES&H Assessment of SNL/CA (Excerpts)	Unknown	SNL/CA	DOE	2/91
D-G-33	Tiger Team Assessment of the SNL/CA	n/a	DOE	n/a	8/90
D-G-34	NEPA CX Determinations for Oct. 17-31, 1992	J.O. Johnsen	DOE KAO	J.E. Stiegler	11/12/92
D-G-35	NEPA Environmental Checklist for the Small-Scale Support Structures at SNL/CA	J.O. Johnsen	DOE KAO	C.L. Soden	2/12/93
D-G-36	Instructions for Preparing PR	n/a	SNL/CA	n/a	Undated
D-G-37	NEPA Program Leader Position Description	D. Nissen	SNL/CA	n/a	Undated
D-G-38	SHEAC Action Item from Dec. 20, 1993	S. Buck and M. Dyer	SNL/CA	R.J. Detry	2/16/94
D-G-39	PHA Approval (example)	W.E. Carter	SNL	n/a	10/21/93
D-G-40	NEPA Training Records (8 hr. and 24 hr.)	n/a	SNL	n/a	Various
D-G-41	Examples of DP Sector Case/Project Data Documents	E.T. Cuil; R.G. Miller	SNL/CA-DP	n/a	6/14/93; 6/22/93
D-G-42	Case Implementation Plan 4868 National Environmental Policy Act	Case Manager-T.A. Wolff	SNL/NM	n/a	Undated
D-G-43	Draft Style, Content and Format Guide for Preparing Environmental Assessments for the Department of Energy	L.H. Freeman and G.U. Pirtle	SNL/NM	DOE	2/94 (draft)
D-G-44	SNL NEPA Team Internal Procedure—Appendix V	Not Indicated	SNL/NM	n/a	10/28/92
D-G-45	Example of Engineering Work Order	Not Indicated	SNL/CA	n/a	2/18/94
D-G-46	Example of Engineering Work Package	Karl Neely	SNL/CA	n/a	8/26/93

LIST OF SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-G-47	Process and Procedures for Facilities Engineering Projects	Not Indicated	SNL/CA	n/a	10/22/92
D-G-48	Example of SOP and ES&H's SOP Review Form	Not Indicated	SNL/CA	n/a	2/15/94
D-G-49	Supplemental Directive AL 5440.1D	Not Indicated	DOE/AL	n/a	3/19/92

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APPENDIX E

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM

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LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM

Ref. #	Date	Auditor	Organization	Topic
MARK PINE - ORGANIZATIONAL STRUCTURE; ENVIRONMENTAL COMMITMENT				
I-A-1	2/3/94	M. Pine	SNL/CA-Center for ES&H and Facilities Management	Organizational structure
I-A-2	2/3/94	M. Pine	SNL/CA-Center for ES&H and Facilities Management	Organizational structure
I-A-3	2/9/94	M. Pine	DOE/KAO	Organizational structure; environmental commitment
I-A-4	2/17/94	M. Pine	DOE/AL-ES&H	Organizational structure
I-A-5	2/17/94	M. Pine	SNL/CA-Center for Engineering Services	Organizational structure; environmental commitment
I-A-6	2/18/94	M. Pine	DOE/KAO	Organizational structure; environmental commitment
I-A-7	2/23/94	M. Pine	SNL/CA-Center for ES&H and Facilities Management	Organizational structure; environmental commitment
I-A-8	2/23/94	M. Pine	SNL/NM-Laboratories Services Division	Organizational structure; environmental commitment; program evaluation
I-A-9	2/23/94	M. Pine	SNL/CA-California Laboratory	Organizational structure; environmental commitment
I-A-10	2/23/94	M. Pine	SNL/NM-Laboratories Services Division	Organizational structure; environmental commitment; internal/external communications; staff resources; program evaluation
I-A-11	2/23/94	M. Pine	SNL/CA-Center for ES&H and Facilities Management	Organizational structure; environmental commitment
I-A-12	2/23/94	M. Pine	DOE/KAO	Organizational structure; environmental commitment; internal/external communications
I-A-13	2/23/94	M. Pine	SNL/CA-Center for ES&H and Facilities Management	Organizational structure; environmental commitment
I-A-14	2/24/94	M. Pine	SNL/NM-Laboratories Services Division	Organizational structure; environmental commitment

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Interviewer	Organization	Topic
I-A-15	2/24/94	M. Pine	SNL/CA—Center for ES&H and Facilities Management	Organizational structure; environmental commitment
I-A-16	2/25/94	M. Pine	SNL/CA—Materials & Applied Mechanics Center	Organizational structure; environmental commitment; staff resources; formality of programs
I-A-17	2/25/94	M. Pine	SNL—Legal	Organizational structure; formality of programs
I-A-18	2/25/94	M. Pine	SNL/CA—Center for ES&H and Facilities Management	Organizational structure; environmental commitment; internal/external communications; staff resources; formality of programs
I-A-19	2/25/94	M. Pine	SNL/NM—Laboratories Services Division	Organizational structure; internal/external communications
I-A-20	2/25/94	M. Pine	DOE/KAO	Organizational structure; internal/external communications
I-A-21	2/25/94	M. Pine	DOE/KAO	Organizational structure; internal/external communications
I-A-22	2/25/94	M. Pine	DOE/KAO	Organizational structure; environmental commitment; internal/external communications; staff resources
I-A-23	2/28/94	M. Pine	SNL/CA—Center for ES&H and Facilities Management	Program evaluation
I-A-24	3/1/94	M. Pine	DOE/AL—ES&H	Program evaluation
I-A-25	3/1/94	M. Pine	DOE/AL—Administrative Branch	Travel budget
MRS. BERCLIA - ENVIRONMENTAL PROTECTION PROGRAMS; FORMALITY OF ENVIRONMENTAL PROGRAMS				
I-B-1	2/23/94	M. Berclia	SNL/CA—Center for ES&H and Facilities Management	Laboratory assessment program
I-B-2	2/23/94	M. Berclia	SNL/CA—Center for ES&H and Facilities Management	Environmental protection
I-B-3	2/23/94	M. Berclia	SNL/CA—Center for ES&H and Facilities Management	Waste management

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Auditor	Organization	Topic
I-B-4	2/23/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Environmental protection
I-B-5	2/23/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Environmental monitoring
I-B-6	2/23/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Day-to-day compliance
I-B-7	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Day-to-day compliance
I-B-8	2/24/94	M. Bercilla	SNL/CA—Center for Combustion/Materials Science/Tech	Day-to-day compliance
I-B-9	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Chemical management
I-B-10	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Treatment, Storage and Disposal Facilities (TSDF) operations
I-B-11	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	TSDF operations
I-B-12	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	TSDF operations
I-B-13	2/24/94	M. Bercilla	DOE/KAO	Day-to-day compliance
I-B-14	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Air quality management
I-B-15	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Air quality management
I-B-16	2/25/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Waste minimization/pollution prevention
I-B-17	2/25/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Formality of programs
I-B-18	2/25/94	M. Bercilla	City of Livermore	Wastewater discharge
I-B-19	2/28/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Waste minimization; pollution prevention

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Interviewer	Organization	Topic
I-B-20	2/28/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Surface waste protection
I-B-21	2/28/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Waste minimization; pollution prevention
I-B-22	2/28/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	Underground storage tanks; spill prevention; countermeasures and control
I-B-23	2/22/94	M. Bercilla	SNL/CA—California Laboratory	Opening presentation
I-B-24	2/24/94	M. Bercilla	SNL/CA—Center for ES&H and Facilities Management	CIS System
I-B-25	2/25/94	M. Bercilla	SNL/CA—Electronic & Mechanical Engineering Center	Site/lab tour
JDR LISCHINSKY - ENVIRONMENTAL PROTECTION PROGRAMS; FORMALITY OF ENVIRONMENTAL PROGRAMS				
I-C-1	2/16/94	J. Lischinsky	SNL/NM—Laboratories Services Division	Regulatory tracking
I-C-2	2/16/94	J. Lischinsky	SNL/CA—Center for Engineering Services	Tritium Research Lab decontamination and reuse
I-C-3	2/17/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Environmental monitoring overview
I-C-4	2/18/94	J. Lischinsky	SNL/NM—Legal	Regulatory tracking
I-C-5	2/22/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Site tour and overview
I-C-6	2/23/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Environmental programs
I-C-7	2/23/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	ES&H department activities
I-C-8	2/23/94	J. Lischinsky	SNL/NM—Environmental Operations Center	Regulatory tracking & trans.
I-C-9	2/23/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	EPP functional areas

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Auditor	Organization	Topic
I-C-10	2/23/94	J. Lischinsky	SNL/NM—Laboratories Services Division	Oversight and regulatory tracking
I-C-11	2/23/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Health physics support
I-C-12	2/24/94	J. Lischinsky	SNL/CA—Center for Engineering Services	Tritium Research Lab conversion
I-C-13	2/24/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	ES&H QA, EPIP
I-C-14	2/24/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	TRL surveys
I-C-15	2/24/94	J. Lischinsky	DOE/KAO	Oversight
I-C-16	2/25/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Emergency preparedness
I-C-17	2/25/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Mixed and radiation waste
I-C-18	2/25/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Mixed and radiation waste
I-C-19	2/25/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	ES&H-related procedures
I-C-20	2/25/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	ES&H-related procedures
I-C-21	2/25/94	J. Lischinsky	SNL/CA—Center for ES&H and Facilities Management	Backflow prevention and maintenance of ES&H-related equipment
I-C-22	2/28/94	J. Lischinsky	DOE/KAO	Rad characterization
I-C-23	2/28/94	J. Lischinsky	SNL/CA—Center for Engineering Services	TRL
I-C-24	3/1/94	J. Lischinsky	SNL/CA—Center for Engineering Services	TRL
JIM RICE - INACTIVE WASTE SITE PROGRAMS				
I-D-1	1/26/94	J. Rice	SNL/CA—Center for ES&H and Facilities Management	Program description

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LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Auditor	Organization	Topic
I-D-19	2/28/94	J. Rice	SNL/CA—Center for ES&H and Facilities Management	CRP; 913 Tank
I-D-20	3/2/94	J. Rice	SNL/CA Center for ES&H and Facilities	Groundwater staffing
I-D-21	3/2/94	J. Rice	SNL/CA Center for ES&H and Facilities	Groundwater staffing
HENRY REJ - INTERNAL AND EXTERNAL COMMUNICATION PROGRAM EVALUATION, REPORTING, AND CORRECTIVE ACTION				
I-E-1	2/04/94	H. Rej	AIP—CA State Water Resource Control Board	External communications
I-E-2	2/04/94	H. Rej	AIP—CA Department of Health Services	External communications
I-E-3	2/08/94	H. Rej	SNL/CA—Center for Engineering Services	External/internal communications; programs evaluation general
I-E-4	2/14/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation; workings of LAP program
I-E-5	2/23/94	H. Rej	SNL/CA—Center for Materials & Applied Mechanics	Program evaluation—self-assessment
I-E-6	2/23/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation—self-assessment
I-E-7	2/24/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation—self-assessment; internal/external communication
I-E-8	2/24/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation—self-assessment
I-E-9	2/24/94	H. Rej	SNL/CA—Center for Engineering Services	Incident Evaluation Committee; program evaluation—self-assessment
I-E-10	2/24/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation—self-assessment
I-E-11	2/24/94	H. Rej	SNL/NM	External communications
I-E-12	2/24/94	H. Rej	DOE/KAO	Program evaluation—self-assessment; oversight; communications
I-E-13	2/24/94	H. Rej	SNL/CA—Center for Engineering Services	Program evaluation—self-assessment; internal communications

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Address	Organization	Topic
I-E-14	2/25/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation; internal communications
I-E-15	2/25/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation; internal communications
I-E-16	2/25/94	H. Rej	SNL/CA—Center for Combustion/Materials Science/Tech	Program evaluation; internal communications
I-E-17	2/25/94	H. Rej	SNL/CA—Center for Combustion/Materials Science/Tech	Program evaluation; internal communications
I-E-18	2/25/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation; internal communications
I-E-19	2/25/94	H. Rej	DOE/KAO	Program evaluation; internal communications
I-E-20	2/28/94	H. Rej	SNL/CA—Human Resources & Business Operations Center	Internal/external communications
I-E-21	2/28/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation, reporting, and corrective action
I-E-22	2/28/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Program evaluation, reporting, and corrective action
I-E-23	2/28/94	H. Rej	SNL/CA—Center for ES&H and Facilities Management	Project evaluation, reporting, and corrective action
I-E-24	1/25/94	H. Rej	SNL/NM—Laboratories Services Division	Video-taped presentation on communications
LISA (ACI) STAFF RESOURCES TRAINING AND DEVELOPMENT; ENVIRONMENTAL PLANNING AND RISK MANAGEMENT				
I-F-1	2/3/94	L. BacI	DOE/KAO	Staff resources and training; environmental planning; risk management
I-F-2	2/3/94	L. BacI	SNL/CA—Center for ES&H and Facilities Management	Staff resources and training; environmental planning; risk management
I-F-3	2/15/94	L. BacI	SNL/NM—Laboratories Services Division	Budgeting
			SNL/NM—Laboratories Services Division	Budgeting

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Auditor	Organization	Topic
			SNL/NM-Laboratories Services Division	Budgeting
I-F-4	2/23/94	L. Baci	SNL/CA-Human Resources & Business Operations Center	Staff resources
I-F-5	2/23/94	L. Baci	SNL/CA-Center for ES&H and Facilities Management	Budgeting
I-F-6	2/23/94	L. Baci	SNL/NM-Laboratories Services Division	Environmental planning; staff resources
I-F-7	2/23/94	L. Baci	SNL/CA-Center for ES&H and Facilities Management	Environmental planning; risk management; staff resources and training
I-F-8	2/23/94	L. Baci	SNL/NM-Environmental Operations Center	Environmental planning; staff resources
I-F-9	2/23/94	L. Baci	SNL/CA-Center for Engineering Services & Electronic and Mechanical Engineering Center	Environmental planning; training
I-F-10	2/23/94	L. Baci	SNL/CA-Center for ES&H and Facilities Management	Training
I-F-11	2/24/94	L. Baci	SNL/CA-Center for ES&H and Facilities Management	Environmental planning; staff resources
I-F-12	2/24/94	L. Baci	SNL/CA-Center for ES&H and Facilities Management	Chemical information system
I-F-13	2/24/94	L. Baci	SNL/CA-Human Resources & Business Operations Center	Training
I-F-14	2/24/94	L. Baci	DOE/KAO	Environmental planning
I-F-15	2/25/94	L. Baci	SNL/CA-Center for ES&H and Facilities Management	Budgeting and planning
I-F-16	2/25/94	L. Baci	SNL/CA-Center for ES&H and Facilities Management	Staff resources and training
I-F-17	2/25/94	L. Baci	SNL/CA-Center for Combustion/Materials Science/Tech	Training
			SNL/CA-Center for Combustion/Materials Science/Tech	Training

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Auditor	Organization	Topic
I-F-18	2/25/94	L. Baci	SNL/CA—Center for ES&H and Facilities Management	Planning and training
I-F-19	2/25/94	L. Baci	SNL/CA—Center for ES&H and Facilities Management	Training
I-F-20	2/25/94	L. Baci	SNL/NM—Laboratories Services Division	Environmental planning and budgeting
			SNL/NM—Laboratories Services Division	Environmental planning and budgeting
I-F-21	2/28/94	L. Baci	SNL/NM—Laboratories Services Division	Staff planning
I-F-22	2/28/94	L. Baci	SNL/CA—California Laboratory	Staff resources and environmental planning
I-F-23	3/1/94	L. Baci	SNL/CA—Center for ES&H and Facilities Management	Planning; staff resources and training
I-F-24	3/1/94	L. Baci	SNL/CA—Center for ES&H and Facilities Management	Training
I-F-25	3/1/94	L. Baci	SNL/CA—Center for Human Resources and Business Operations	Training
I-F-26	3/3/94	L. Baci	SNL/NM ES&H Training Department	Training
DEBORAH MCCARTNEY - NATIONAL ENVIRONMENTAL POLICY ACT				
I-G-1	2/2/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA programs
I-G-2	2/10/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA oversight
I-G-3	2/17/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA
I-G-4	2/18/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	Waste minimization
I-G-5	2/23/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Auditor	Organization	Topic
I-G-6	2/23/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA/environmental restoration
I-G-7	2/23/94	D. McCartney	SNL/CA—Center for Combustion/Materials Science/Tech	NEPA
I-G-8	2/24/94	D. McCartney	SNL/CA—Center for Materials & Applied Mechanics	NEPA process
	2/24/94	D. McCartney	SNL/CA—Center for Materials & Applied Mechanics	NEPA process
I-G-9	2/24/94	D. McCartney	SNL/CA—Center for Engineering Services	NEPA process
I-G-10	2/24/94	D. McCartney	SNL/CA—Center for Combustion/Materials Science/Tech	NEPA process
I-G-11	2/24/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA process
	2/24/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA process
I-G-12	2/24/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	PHAs and SOPs
I-G-13	2/24/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	SOPs
I-G-14	2/25/94	D. McCartney	DOE/KAO	NEPA
I-G-15	2/25/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	Categorical exclusions
I-G-16	2/25/94	D. McCartney	SNL/CA—California Laboratory	NEPA
I-G-17	2/25/94	D. McCartney	SNL/NM—Laboratories Services Division	SOPs and NEPA
	2/25/94	D. McCartney	SNL/NM—Laboratories Services Division	SOPs and NEPA
I-G-18	2/25/94	D. McCartney	DOE/KAO	Tiger Team Corrective Action
I-G-19	2/28/94	D. McCartney	DOE/KAO	NEPA and Corrective Action procedures

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Author	Organization	Topic
I-G-20	2/28/94	D. McCartney	DOE/KAO	Corrective Action procedures
I-G-21	2/28/94	D. McCartney	SNL/CA—Center for ES&H and Facilities Management	NEPA process
I-G-22	3/1/94	D. McCartney	DOE/KAO	NEPA guidance
I-G-23	3/1/94	D. McCartney	DOE/AL	NEPA guidance
WILLIAM SCHRAMM - NATIONAL ENVIRONMENTAL POLICY ACT				
I-H-1	2/23/94	W. Schramm	SNL/CA—Center for ES&H and Facilities Management	NEPA program
I-H-2	2/23/94	W. Schramm	SNL/CA—Center for ES&H and Facilities Management	NEPA program
I-H-3	2/23/94	W. Schramm	SNL/CA—Human Resources & Business Operations Center	NEPA in Procurement
I-H-4	2/23/94	W. Schramm	SNL/CA—Center for Technology transfer	NEPA in Technical transfer
I-H-5	2/23/94	W. Schramm	SNL/CA—Human Resources & Business Operations Center	NEPA in work for others (WFO)
I-H-6	2/24/94	W. Schramm	SNL/CA—Center for ES&H and Facilities Management	ES&H review of WFO/technical transfer
I-H-7	2/24/94	W. Schramm	SNL/CA—Center for ES&H and Facilities Management	NEPA program
I-H-8	2/24/94	W. Schramm	SNL/NM—NEPA	SNL NEPA program
I-H-9	2/24/94	W. Schramm	SNL/CA—CA Weapon Development Center	NEPA
	2/24/94	W. Schramm	SNL/CA—CA Weapon Development Center	Use of preliminary hazard assessment (PHA) and NEPA review
I-H-10	2/24/94	W. Schramm	SNL/CA—Center for ES&H and Facilities Management	NEPA
I-H-11	2/24/94	W. Schramm	SNL/CA—Center for Engineering Services	NEPA
I-H-12	2/25/94	W. Schramm	DOE/KAO	NEPA program

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Interviewer	Organization	Topic
I-H-13	2/25/94	W. Schramm	SNL/CA—California Laboratory	NEPA program
I-H-14	2/25/94	W. Schramm	SNL/NM—NEPA	SNL NEPA program
I-H-15	2/25/94	W. Schramm	DOE/AL	NEPA program
I-H-16	2/25/94	W. Schramm	DOE/KAO	NEPA program
I-H-17	3/1/94	W. Schramm	DOE/EH-25	SNL/CA NEPA program
I-H-18	3/2/94	W. Schramm	DOE/EH-25	SNL/CA NEPA program
ANDREA HEINTZELMAN - TEAM LEADER				
I-I-1	2/15/94	A. Heintzelman	SNL/NM—Laboratories Services Division	Budget; finance; prioritization of ES&H activities
I-I-2	2/23/94	A. Heintzelman	SNL/CA—ES&H and Facilities Management	Management Assurance Notebook
I-I-3	2/23/94	A. Heintzelman	SNL/CA—California Laboratory	LLNL-SNL/CA relationship; budget for ES&H activities; human resources; strategic goals; performance measures
I-I-4	2/24/94	A. Heintzelman	DOE/KAO	Roles; responsibilities; oversight of ES&H activities
I-I-5	2/25/94	A. Heintzelman	SNL/CA—Center for ES&H and Facilities Management	Chemical container inventory system
			SNL/CA—Center for ES&H and Facilities Management	Chemical container inventory system
			SNL/CA—Center for Materials & Applied Mechanics	Chemical container inventory system
			SNL/CA—Center for Materials & Applied Mechanics	Chemical container inventory system
RALPH EARLE - TEAM COORDINATOR				
I-K-1	1/25/94	R. Earle	AIP—CA Department of Health Services	Regulatory interaction
I-K-2	1/25/94	R. Earle	AIP—CA	Regulatory interaction
I-K-3	1/25/94	R. Earle	AIP—CA State Water Resource Control Board	Regulatory interaction

LIST OF CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Auditor	Organization	Topic
I-K-4	1/25/94	R. Earle	AIP-CA	Regulatory interaction
I-K-5	2/15/94	R. Earle	SNL/NM-Laboratories Services Division	Environmental budgeting and planning
I-K-6	2/15/94	R. Earle	SNL/NM-Laboratories Services Division	Environmental budgeting and planning
I-K-7	2/15/94	R. Earle	SNL/NM-Laboratories Services Division	Environmental budgeting and planning
I-K-8	2/23/94	R. Earle	SNL/CA-Center for ES&H and Facilities Management	Management Assurance Notebook; SNL/CA organization
I-K-9	2/23/94	R. Earle	SNL/CA-California Laboratory	Relationship with LLNL; budgeting, planning, and organization

APPENDIX F

**LIST OF
REGULATIONS/REQUIREMENTS/
GUIDELINES EVALUATED AS PART OF
THE SLWCA ROUTINE
ENVIRONMENTAL AUDIT**

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**LIST OF REGULATIONS/REQUIREMENTS/GUIDELINES EVALUATED
AS PART OF THE ROUTINE ENVIRONMENTAL AUDIT**

Regulations/ Guidelines	Sections/Title	Authority
Executive Order 12843	Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances	Office of the President
Executive Order 12856	Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements	Office of the President
DOE 1280.1	Memorandums of Understanding	DOE
DOE 2300.1A	Audit Resolution and Followup	DOE
DOE 2321.1A	Auditing of Programs and Operations	DOE
DOE 3410.1B	Training	DOE
DOE 4320.1B	Site Development Planning	DOE
DOE 4700.1	Project Management System	DOE
DOE 5000.3B	Occurrence Reporting and Processing of Operations Information	DOE
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.3	Hazardous and Radioactive Mixed Waste Program	DOE
DOE 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act	DOE
DOE 5400.5	Radiation Protection of the Public and the Environment	DOE
DOE 5440.1E	National Environmental Policy Act Compliance Program	DOE
DOE 5480.1B	Environment, Safety, and Health Program for Department of Energy Operations	DOE
DOE 5480.4	Environmental Protection, Safety, and Health Protection Standards	DOE
DOE 5480.19	Conduct of Operations Requirements for DOE Facilities	DOE
DOE 5480.20	Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities	DOE
DOE 5482.1B	Environment, Safety, and Health Appraisal Program	DOE
DOE 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE

Requirements/ Guidelines	Sections/Title	Authority
DOE 5500.3A	Emergency Notification, Reporting, and Response Levels	DOE
DOE 5700.6C	Quality Assurance	DOE
DOE 5820.2A	Radioactive Waste Management	DOE
DOE 6430.1A	General Design Criteria	DOE
DOE-STD-1027-92	Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports	DOE
DOE/EH-0070	External Dose Conversion Factors for Calculation of Dose to the Public	DOE
DOE/EH-0071	Internal Dose Conversion Factors for Calculation of Dose to the Public	DOE
DOE/EH-0173T	Environmental Regulatory Guide for Radiological Efficient Monitoring and Environmental Surveillance	DOE
DOE/EH-0229	Performance Objectives and Criteria for Conducting DOE Environmental Audits	DOE
DOE/EH-0232	DOE Environmental Audit Program Guidance	DOE
DOE/EH-0256T	Radiological Control Manual	DOE
November 1992 Guidance	Implementation Guide for Radiological Survey Procedures (Draft)	DOE
DOE/EH-0263T	Implementation Manual for Application of Best-Available Technology Process for Radionuclides in Liquid Effluents	DOE
DOE/EH-0326	Protocols for Conducting Environmental Management Assessments of DOE Organizations	DOE
July 31, 1990, Secretarial Memorandum	Guidance on Environment, Safety, and Health (ES&H) Self-Assessment	DOE
Interim Guide March 8, 1991	DOE Guidance on the Procedures in Applying the ALARA Process for Compliance with DOE 5400.5	DOE
December 1992 Guidance	Self-Assessment Guidance Document	DOE
Implementation Guidance	Implementation Guidance for DOE Order 5400.1	DOE

Requirements/ Guidelines	Sections/Title	Authority
33 U.S.C. 1251 et seq.	Clean Water Act	EPA
42 U.S.C. 6901 et seq.	Resource Conservation and Recovery Act	EPA
42 U.S.C. 7401 et seq.	Federal Water Pollution Control Act	EPA
Titles I-VI	Clean Air Act Amendments of 1990	EPA
10 CFR 834 (Draft January 8, 1991)	Radiation Protection of the Public and Environment	DOE
10 CFR 1021	National Environmental Policy Act Regulations	DOE
29 CFR 1910	Part 1910.120 Occupational Safety and Health Standards	OSHA
29 CFR 1910.120	Hazardous Waste Operations and Emergency Response	EPA
40 CFR 50-88	Clean Air Act Implementing Regulations	EPA
40 CFR 112	Oil Pollution Prevention	EPA
40 CFR 122/123	National Pollutant Discharge Elimination System (NPDES)/State Pollutant Discharge Elimination System (SPDES)	EPA
40 CFR 131	Water Quality Standards	EPA
40 CFR 141	National Primary Drinking Water Regulations	EPA
40 CFR 142	National Primary Drinking Water Regulations Implementation	EPA
40 CFR Subchapter N	Effluent Guidelines and Standards (400 Series, Include Stormwater Regulations)	EPA
40 CFR 260-280	Hazardous Waste Regulations	EPA
40 CFR 300	National Oil and Hazardous Substances Contingency Plan (NCP)	EPA
40 CFR 302	Designation, Reportable Quantities, and Notification	EPA
40 CFR 355	Emergency Planning and Notification	EPA
40 CFR 370	Hazardous Chemical Reporting: Community Right-To-Know Act	EPA
40 CFR 372	Toxic Chemical Release Reporting	EPA

Regulatory/ Guidelines	Sections/Title	Authority
49 CFR 397	Transportation of Hazardous Materials; Driving and Parking Rules	DOT
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions	EPA
40 CFR 1501-1508	CEQ NEPA Guidelines	EPA
CERCLA/SARA	Section 103-Notices, Penalties	EPA
CERCLA/SARA	Section 120-Federal Facilities	EPA
EPA-450/4-87-013	On-site Meteorological Program Guidance for Regulatory Modeling Applications	EPA
OSWER Directive 9230.0-3B	Community Relations in Superfund: A Handbook Interim Version	EPA
OSWER Directive 9355.3-01	Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA	EPA
ANSI N13.1-1969	Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities	ANSI
Vol.IV	Quality Assurance Handbook for Air Pollution Measurement Systems (Meteorological Measurements)	EPA
Regulations	Bay Area Air Quality Management District Rules and Regulations	BAAQMD
California Code of Regulations Title 23, Division 3, Chapter 15	California Water Regulations	State of California
California Code of Regulations Title 22, Division 4, Chapter 15-17	California Drinking Water Regulations	State of California
California Water Code, Division 7	California Porter-Cologne Quality Control Act	State of California
California Code Regulation Title 14	California Solid Waste Management Regulations	California EPA
California Administrative Code Title 17 and 26	California Air Pollution Control Regulations	CARB
California Code of Regulations Title 22	California Hazardous Waste Management Regulations	California EPA

Requirements/ Guidelines	Sections/Title	Authority
California Code of Regulations Title 23	Waters (except UST Regulations)	State of California
California Code of Regulations Title 17, Division 1, Chapter 5, Subchapter 4, Group 3	Section 30287 Disposal by Release into Sanitary Sewage Systems	State of California
California Health and Safety Code, Chapter 6.95, Division 19	Hazardous Materials Release Response Plans and Inventory	California Office of Emergency Services
California Health and Safety Code, Chapter 6.5, Division 20	California Hazardous Waste Control Act	State of California
California Health and Safety Code, Chapter 6.6.7, Division 20, Section 25270	California Aboveground Storage of Petroleum	State Water Resources Control Board
California Health and Safety Code, Divisions 26 and 27	California Air Pollution Control Laws	CARB
California Health and Safety Code, Section 43000	Air Toxics Information and Assessment Act (AB 2588)	CARB
California Health and Safety Code, Chapter 10.4, Section 25917	Asbestos Notification	State of California
California Environmental Health Code 66504, 66508, 66680, and 66699	Asbestos Management	State of California
CA EPA Guidance	Technical Guidance Manual for Solid Waste Water Quality Assessment Test Report	SWRCB
Local Air Pollution Regulations	Rules and Regulations	BAAQMD
Local POTW Ordinances	Uniform Regulations of the City of Livermore	City of Livermore

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APPENDIX G

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AL	U.S. Department of Energy, Albuquerque Operations Office
ALARA	As low as reasonable achievable
AMCO	Administrative Management Committee
ASER	Annual Site Environmental Report
BAAQMD	Bay Area Area Quality Management District
BMP	Best management practices
CAA	Clean Air Act
Cal/EPA	California Environmental Protection Agency
CEARP	Comprehensive Environmental Assessment and Response Program
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIS	Chemical Information System
CRF	Combustion Research Facility
CRP	Community Relations Plan
CWA	Clean Water Act
CX	Categorical Exclusions
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DTSC	California Department of Toxic Substance Control
EARP	Environmental Assessment and Restoration Program
EC	Environmental Commitment
ECL/ADM	Environmental Checklist/Action Description Memorandum
EH	Office of Environment, Safety and Health
EH-1	Office of the Assistant Secretary for Environment, Safety and Health
EH-24	Office of Environmental Audit
EIS	Environmental Impact Statement
EM	Office of Environmental Restoration and Waste Management
EP	Environmental Protection Programs

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym	Definition
EPA	U.S. Environmental Protection Agency
EPD	SNL/CA Environmental Protection Department
EPIP	Environmental Protection Implementation Plan
ER	Environmental Restoration
ES&H	Environment, Safety, and Health
ESH&C	KAO's Environmental, Safety, Health, and Compliance Branch
FM	DOE Headquarters Office of Field Management
FOS	Fuel oil spill
FP	Formality of Environmental Programs
FTE	Full-time employee
FY	Fiscal Year
GPMPP	Groundwater Protection Management Program Plan
IC	Internal and External Communication
IEC	Incident Examination Committee
IWS	Inactive Waste Sites
KAO	Kirtland Area Office
LANL	Los Alamos National Laboratory
LAP	Laboratory Assessment Program
LIWG	Line Implementation Working Group
LLNL	Lawrence Livermore National Laboratory
LLRWM	Low-Level Radioactive Waste Management Plan
LWRP	Livermore Water Reclamation Plant
M&O	Management and Operating
MA	Management Assurance
MAD	Management Assurance Department
MAP	Mitigation Assessment Plan
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
OS	Organizational Structure
OSHA	Occupational Safety and Health Administration

GLOSSARY OF ACRONYMS AND ABBREVIATIONS (continued)

Acronym	Definition
PE	Program Evaluation, Reporting, and Corrective Action
PHA	Preliminary Hazard Assessment
POC	Performance Objectives and Criteria
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
RM	Environmental Planning and Risk Management
ROD	Record of Decision
RWMP	Radioactive Waste Management Plan
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SCEC	Sandia, California, ES&H Council
SDWA	Safe Drinking Water Act
SEN	Secretary of Energy Notice
SHEAC	Safety, Health, and Environment Appraisal Committee
SNL/CA	Sandia National Laboratories, California
SNL/NM	Sandia National Laboratories, New Mexico
SNL	Sandia National Laboratories, Corporate
SPCC	Spill Prevention Control and Countermeasure
SQLC	Sandia Quality Leadership Council
SR	Staff Resources, Training, and Development
TCM	Toxic and Chemical Materials
TRF	Tritium Research Facility
TRL	Tritium Research Laboratory
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
UST	Underground storage tank
WM	Waste Management

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