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INTEGRATED SAFETY MANAGEMENT SYSTEM (ISMS) DESCRIPTION

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1.0 INTRODUCTION

1.1 Purpose

Sandia Corporation (Sandia) takes a comprehensive, institutional approach to its Integrated Safety Management System (ISMS). This Description articulates the institutional requirements for all operations, **on and off Sandia-controlled premises, unless the Sandia National Laboratories (SNL) Integrated Safety Management (ISM) requirements are superseded by those of another site with a DOE-approved ISM program.** We measure the effectiveness of the SNL ISMS through the mechanisms of the [Environment, Safety and Health \(ES&H\) Assurance System](#).

This Description provides a road map to requirements which reside in Sandia's Management and Operating (M&O) Contract, Corporate Business Rules, *ES&H Manual*, Program Documents, and other related documentation. Incorporated into the ISMS is the Environmental Management System (EMS), which has been developed, and incorporated into SNL ISMS, as required by [DOE O 450.1](#), Environmental Protection Program. This Description, for use by SNL's workforce, is available for those in Lockheed Martin, the Department of Energy (DOE), and the National Nuclear Security Administration (NNSA) organizations **that perform oversight**, review operations, verify compliance, and approve modifications.

When using the Integrated Safety Management System Description (ISMS D), readers should be aware of its relationship to other corporate documents as defined in Corporate Policy Statement [CPSR001.3](#), *Integrated Laboratory Management System (ILMS)*, and [CPSR400.1](#), *Environment, Safety and Health Policy Statement Requirement*.

Sandia's Integrated Laboratory Management System (ILMS) is the formal framework for managing SNL operations and provides the context for implementing Sandia's ISMS. As defined in [CPSR001.3](#), *Integrated Laboratory Management System (ILMS)*, ILMS establishes essential elements that must be implemented as part of all work management processes. ISMS is one of several ILMS constituent elements. Others include [The Corporate Work Process](#), [Formality of Operations Manual](#), and [ES&H and Emergency Management Center Quality Assurance Plan \(QAP\)](#).

“Safety” throughout this document is used synonymously with environment, safety, and health (ES&H) to encompass protection of the public, the workers, and the environment (as defined in DOE Policy 450.4, Safety Management System Policy). The Laboratories regard protection of the environment and promotion of employee good health as essential components in its overall safety management system. Critical to the interface with Environmental and Health Systems is the responsibility **and accountability** of the line to include these parts of “safety” in all their

operations, facilities, and activities.

1.2 Background

SNL is a government-owned, contractor-operated, multi-program research and development facility. Lockheed Martin Corporation manages and operates SNL under M&O Contract DE-AC04-94AL85000 for DOE. This defines the principles, working relationships, and contractual and legal requirements under which the Laboratory must operate. The institutional ISMS requirements result from SNL's careful examination of the M&O Contract's requirements and adhere to the ISMS structure described by DOE.

SNL follows the requirements and considers the guidance from DOE Headquarters and the National Nuclear Security Administration (NNSA)/Sandia Site Office (SSO).

Sandia currently employs about 8582 fulltime and 1496 Limited Term/Temporary employees. Subcontracted work includes approximately 1068 staff augmentation and 2227 other contractors as Members of the Workforce (MOW).

The Sandia National Laboratories, New Mexico (SNL/NM) site is in Bernalillo County, New Mexico, and is situated within the external boundaries of Kirtland Air Force Base (KAFB), which encompasses 51,558 acres. Many SNL/NM facilities operate under a complicated series of land-use agreements, permits, and leases between the NNSA Service Center (formerly the DOE Albuquerque Operations Office), the U. S. Air Force, the State of New Mexico, the Pueblo of Isleta, and the U. S. Forest Service. As of 2006, the SNL/NM site consists of 921 buildings totaling 5.4 million gross square feet.

The Sandia National Laboratories California site (SNL/CA) is located in Livermore, California. The 410 acres comprising the SNL/CA site are owned by the DOE, with the exception of some utility easements crossing the site and a 0.258-acre lease for the Sandia Credit Union. As of 2006, the SNL/CA site consists of 82 buildings totaling 909,826 gross square feet.

In addition, SNL has facilities at Tonopah Test Range in Nevada; Carlsbad, New Mexico; Washington, D.C.; Pantex in Amarillo, Texas; and various other locations throughout the United States.

1.3 Document Change Control Process

The Corporate ISM department has the responsibility of preparing, maintaining, reviewing, revising, approving, issuing, and implementing the ISMS D. The ISM department manager shall schedule, and assign responsibility for conducting an annual assessment of the ISMS D. Annual changes, updates and/or revisions to the ISMS D will be submitted for approval to the NNSA/SSO contracting officer through the SNL Business Management and Enabling Services

Division Vice President.

SNL is responsible for planning, managing, and performing the defined and assigned scopes of work. Performance objectives and performance measures have been established for the assigned scopes of work, and the desired outcomes are documented in the Performance Evaluation Plan (PEP). SNL is committed to systematically performing work following the processes described in this document.

As required by Sandia's M&O Contract, Clause [I-78](#), Department of Energy Acquisition Regulation (DEAR) 48 CFR 970.5223-1, Integration of Environment, Safety, and Health into Work Planning and Execution (Dec. 2000), is incorporated into the contract. Changes to policies and/or programs referenced in this description, which alter the intent, must receive NNSA/SSO concurrence prior to implementation.

The controlled copy of this document resides on the SNL Intranet. Users of documents printed from the SNL Intranet are personally responsible for ensuring that the current version is used to perform work. Do not retain the printed copy to perform future work without first verifying that it is the current version.

The record copy of this document is filed with ES&H Central Document Control/Records Management System.

2.0 INTEGRATED SAFETY MANAGEMENT PROGRAM

2.1 Objectives, Safety Management Functions, and Guiding Principles

2.1.1 Objectives

Sandia is committed to performing work safely and ensuring the protection of Members of the Workforce, the public, and the environment.

The ISMS D includes a broad definition of safety and efforts that have been made to incorporate ES&H in all aspects of the ISMS. ES&H programs provide guidance within the frame work of ISMS and are described in this section. ES&H performance at Sandia is based upon the five Safety Management core functions and the seven guiding principles of ISMS.

The ES&H Policy, [CPSR400.1](#), states Sandia's commitment to protect and preserve the environment and to ensure the safety and health of its employees, contractors, visitors, and the

public; while maintaining the corporate vision and mission. As part of its mission, Sandia has adopted three ES&H principles:



- All employees take responsibility and are accountable for improving the work environment and ES&H performance at Sandia.
- An unwavering belief that job-related injuries, illnesses, and environmental incidents are avoidable and unacceptable.
- Each employee is accountable for minimizing the impact on the environment in their communities.

Additionally, Sandia's ES&H Performance Excellence Objectives are to create a work environment that strives for:

- Zero job-related injuries and illnesses.
- Zero environmental incidents.
- Zero operations fines, violations, or penalties.



Sandia's corporate ES&H Program mandates compliance with all applicable laws, regulations, and DOE directives that are included in the Prime Contract between DOE and Sandia. Additionally, internal corporate policy and permit requirements are included as appropriate. ES&H requirements and guidance for line activities is described in the [CPR400.1.1/MN471001](#), *ES&H Manual*, and its supplements. **SNL's approach to meeting the requirements of 10 CFR 851, "Worker Safety and Health" will be described in the Sandia National Laboratories (SNL) 10 CFR 851, "Worker Safety and Health Program Plan," (PG470246).**

SNL has started on a journey, as part of SNL's Operational Excellence, to what is termed Best-In-Complex and ultimately, Best-in-Class. This states that SNL will employ safety management systems that will allow achievement of Best-In-Complex status. Best-In-Complex will be realized when assurance results (ES&H performance measures, metrics, audit results, etc.) meet or exceed those of any other DOE laboratory. The target date for achievement of Best-In-Complex is the end of FY07. Best-in-Class goes beyond just the Complex and aspires to meet or exceed the safety performance of selected industry leaders.



The development and deployment of an Integrated Work Plan (IWP – See Section 2.6) improvement initiative started in 2005. The approach uses an Integrated Work Plan structure for work performed at SNL. A detailed project plan documents the development and implementation by groups of work activities, as well as a sequential implementation strategy.

The objective is the development and sustainable implementation of a common set of IWP

requirements and user friendly tools, the core of which is work controls, for work performed at SNL. This system does not replace existing work control methods but integrates them into a cohesive and user friendly environment. The system is a well defined process that provides an auditable work package at the activity level that clearly documents worker and management accountability, and performance during work planning and execution. Activity level, as used within this description, could easily be a group of laboratories or test facilities.



2.1.1.1 - 10 CFR 851 - *Worker Safety and Health Program Plan*

The Department of Energy (DOE) published 10 CFR 851, "Worker Safety and Health Program," in the Federal Register, Volume 71, Number 27, on February 9, 2006, to implement the statutory mandate of section 3173 of the Bob Stump National Defense Authorization Act (NDAA) for fiscal year 2003, to establish worker safety and health regulations to govern contractor activities at DOE sites. The Program establishes procedures for investigating whether a safety requirement has been violated, for determining the nature and extent of the violation, and for imposing appropriate remedies. The Rule codifies the DOE's worker protection program requirements established in DOE Order 440.1A, "Worker Protection Management for DOE Federal and Contractor Employees." Department of Energy enforcement actions through civil penalties start on February 9, 2007. By February 26, 2007, contractors are required to submit to the DOE, for approval, a written worker safety and health program that implements the requirements of the Final Rule. Beginning May 25, 2007, no work may be performed at a covered workplace unless a DOE approved worker safety and health program is in place.



In response to the issuance of the 10 CFR 851, SNL developed the SNL Worker Safety and Health Program Plan (WSHPP) that describes the methods for implementing the requirements of the Rule. The WSHPP illustrates how SNL complies with the applicable requirements set forth in the Rule and integrates the requirements with other related site-specific worker protection activities and with the SNL Integrated Safety Management System. SNL conducted a gap analysis between existing documentation comprising the SNL Worker Safety and Health Program and the Final Rule issued on February 9, 2006. Gap owners were assigned and charged with the responsibility for developing and completing action plans to ensure full compliance with the Rule by February 9, 2007.

The WSHPP developed in accordance with 10 CFR 851 requirements and the guidance provided by the NNSA to accomplish the following:

1. Identify the purpose and scope for WSHPP; describe the background of the DOE rulemaking process and SNL actions to implement requirements, and provide a summary of the Rule.
2. Identify roles and responsibilities for all levels of the workforce within the SNL organization and SNL subcontractors.



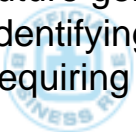
3. Describe the SNL Corporate Business Rule System utilized to ensure compliance and identify the principal SNL Programs.
4. Identify the requirements within the Rule and describe the processes used by SNL to ensure compliance for the applicable requirements.
5. Provide an implementation matrix that documents review of the Rule criterion, identifies off-site work locations, and lists applicable workplace safety and health requirements referenced in 10 CFR 851.23 and 10 CFR 851.27.



The WSHP cuts across all organizational and project lines. The WSHP applies to all facilities, operations, and activities, and to all Sandia [employees](#) at [Sandia-controlled premises](#), unless stated differently in the WSHP and at non-Sandia-controlled premises for offsite activities. The WSHP was developed with the active participation of SNL Management, Members of the Workforce, and ES&H Subject Matter Experts. Close coordination with the DOE SNL Site Office (SSO) and the NNSA was maintained throughout the program development that led to the DOE SSO approval of the WSHP. The WSHP will be updated and submitted for approval to the DOE SSO annually or whenever a significant change or addition to the program is made.

2.1.1.2 Environmental Management System (EMS)

Sandia recognizes that the environment needs to be protected and preserved for current and future generations, and is committed to environmental protection. This commitment includes identifying and mitigating potential risks to the environment, and encouraging as well as requiring the incorporation of environmental management as an integrated element of all work.



As required by [DOE Order 450.1](#), Environmental Protection Program, Sandia has implemented an [EMS](#) as part of its ISMS. A detailed description of Sandia's implementation of EMS is available in the [PG470222](#), *Environmental Management System Program Manual*. EMS is the integral part of the ISMS that addresses the environmental consequences of Sandia's activities, products, and services. To achieve environmental goals, the ISMS includes environmental management aspects in all five core management functions that support work planning, hazard analysis, hazard control, work performance, and feedback and improvement.

The EMS is discussed in more detail in Section 4.2 of this document.

The Continuing Core Expectation (CCE) statements ([DOE G 450.4-1B, Volume 1, Chapter IV](#)) are a compendium of relevant topics that can be used to aid in developing an evaluation of the effectiveness of the ISMS. Refer to [Appendix C](#).



2.1.1.3 Behavior Based Safety (BBS) Program Implementation

In keeping with the principle adopted by Laboratory Leadership Team (LLT) on March 14, 2005 that, **“We operate from an unwavering belief that job-related injuries, illnesses and environmental incidents are preventable and unacceptable”** Division 10000 began to collect BBS observation data for logistics and facilities operations and construction work in June 2005. Work was started in January 2006 to expand the Division 10000 BBS implementation to address injuries from office work. In February 2006, the BBS process was implemented in the Division 3000 Health Services Center and the Division 5000 Kauai Test Facility. Planning was begun in March 2006 for implementing BBS in the Division 2000 Responsive NG Deployment Center and in the Division 4000 Safeguards and Security Center. These implementations are specific to Division/Center needs to improve safety performance.

BBS focuses on accident prevention and exposure reduction using a systematic approach that:

- Identifies behaviors (observable acts) that can prevent accidents.
- Reinforces those behaviors through observation and feedback to the worker(s) until the behaviors are firmly established (ideally, until they become habit).
- Identifies and removes system, condition, behavioral barriers that make it difficult or impossible to perform the behaviors required to prevent accidents.
- Measures the use of these behaviors, and the reasons for their use or lack of use, to predict and prevent incidents and injuries.

BBS routinely reduces injuries by 60 to 75% over a three year period. It does not replace traditional safety efforts, but supplements them. It is a worker owned/driven process that is management supported.

Successful BBS implementation requires:

- The BBS process be worker owned and operated
- Observations by anonymous and observation data used only to improve safety
- Open, voluntary observations (no sneak-ups)
- Strong, visible, management and union support
- Adequate resources
- Quick removal of barriers that make it difficult or impossible to perform the behaviors



required to prevent accidents.

Corporate ES&H formed a BBS Strategic Planning Team (SPT) in early FY05 to develop the approach to implementing BBS in Center 10000. The initial SPT membership included the leaders of SNL/NM's three bargaining units, Metal Trades Council (MTC), Office & Professional Employees International Union (OPEIU), Security Police Association (SPA), and representatives of Labor Relations, Procurement, ES&H, Facilities Operations, Logistics, and SNL/CA ES&H.

2.1.2 Safety Management Functions

The five core safety management functions provide the necessary work control structure for all work that could potentially affect the public, the workers, and the environment. It is essential that the five ISM core functions be effectively integrated into work planning and work execution at the activity level to ensure the safety of workers, the public, and the environment. The functions are applied as a continuous cycle with the degree of rigor appropriate to address the type of work activity and the [hazards](#) involved.

- **Define the Scope of Work.** Missions are translated into work, expectations are set, tasks are identified and prioritized, and resources are allocated.
- **Analyze the Hazards.** Hazards and environmental impacts associated with the work are identified, analyzed, and categorized.
- **Develop and Implement Hazard Controls.** Applicable standards and requirements are identified and agreed upon. Controls to prevent/mitigate hazards and environmental impacts are identified, the safety envelope is established, and controls are implemented.
- **Perform Work within Controls.** Readiness is confirmed and work is performed safely, and in an environmentally responsible manner.
- **Provide Feedback and Continuous Improvement.** Feedback information on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, and line and independent oversight is conducted.

Figure1 shows the ISMS star, which is Sandia's graphical depiction of the five safety management functions. The ISMS star is displayed on magnets, posters, document cover sheets, the [ISMS Home Page](#) on Sandia's Internal Web, and other locations.



Figure 1. Sandia's Integrated Safety Management System

2.1.3 Guiding Principles

As required by Sandia M&O Contract, Clause [I-78](#), DEAR 48 CFR 970.5223-1 *Integration of Environment, Safety, and Health into Work Planning and Execution* (Dec 2000)," Sandia's implementation of ISMS ensures that:

1. Line Management is Responsible for Safety—Line management is directly responsible for the protection of the workers, the public, and the environment.
2. Clear Roles and Responsibilities are Defined—clear and unambiguous lines of authority and responsibility for ensuring safety shall be established and maintained at all organizational levels.
3. Worker Competence Is Commensurate with Responsibilities—people possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.
4. Priorities are Balanced—resources are effectively allocated to address ES&H, programmatic, and operational considerations. Protecting employees, the public, and the environment is a priority whenever activities are planned and performed.



5. Safety Standards and Requirements are Identified—before work is performed, the associated hazards are evaluated and an agreed-upon set of ES&H standards and requirements are established which, if properly implemented, provide adequate assurance that employees, the public, and the environment are protected from adverse consequences.
6. Hazard Controls are Tailored to Work Being Performed—administrative and engineering controls prevent and mitigate hazards and are tailored to the work being performed and associated hazards. Emphasis should be on designing the work and/or controls to reduce or eliminate the hazards and to prevent accidents and unplanned releases and exposures.
7. Operations Authorization Exists—the conditions and requirements to be satisfied for operations to be initiated and conducted are established and agreed-upon by DOE and the contractor. These agreed-upon conditions and requirements are requirements of the contract and binding upon Sandia. The extent of documentation and level of authority for agreement shall be tailored to the complexity and hazards associated with the work and shall be established in a Safety Management System.

These guiding principles are implemented through the requirements and mechanisms established as Sandia's ISMS Program. These seven guiding principles and their relation to the five core management functions of ISMS are shown in the table below.

Table 1. Seven Guiding Principles and their relation to the five Core Management Functions of ISMS

ISMS Core Management Functions	ISMS Guiding Principles
All Five Core Functions	1. Line Management Responsibility 2. Clear Roles and Responsibilities 3. Competence to Perform Responsibilities
Functions 1 & 2: <i>Plan Work, Identify, and Analyze Hazards</i>	4. Balanced Priorities
Function 3: <i>Implement Controls</i>	5. Identification of Safety Standards 6. Tailor Hazard Controls to Work
Function 4: <i>Perform Work</i>	7. Operations Authorization
Function 5: <i>Feedback and Improve</i>	All Guiding Principles

2.1.4 Overview of ISMS for the SNL Implementation Baseline

Shown below in Figure 2 is SNL's Integrated Safety Management System Implementation Baseline.

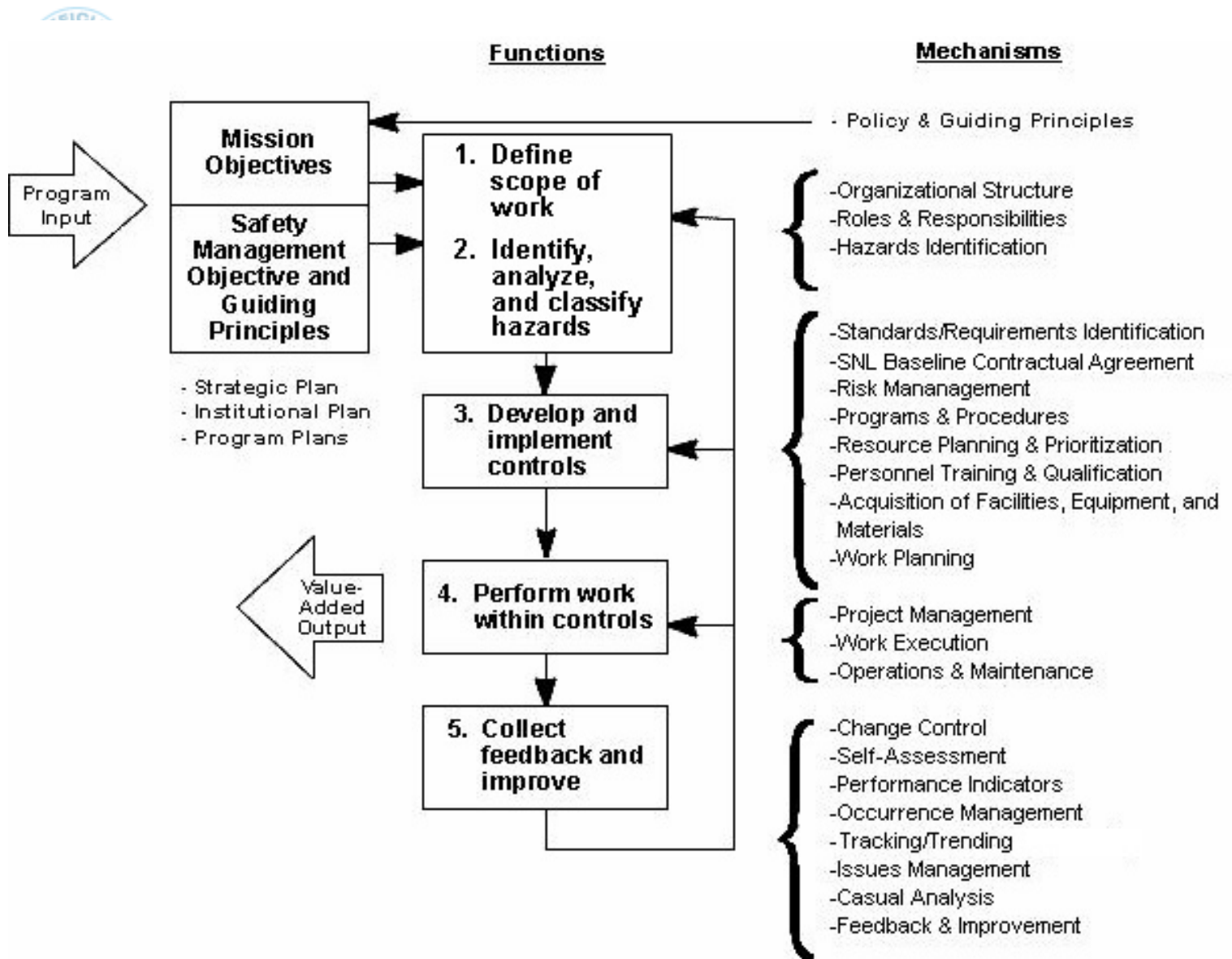


Figure 2. SNL's Integrated Safety Management System Implementation Baseline

The first safety management function is to define the scope of work to be performed. This begins by identifying mission objectives, translating them into a definition of work that will meet those objectives, and then identifying the ES&H requirements for that work. An important part of this function is to perform work planning and allocate resources to ensure that work is performed safely. Section 3.0, "Define Scope of Work," describes SNL's mechanisms for this

function.

The second safety management function is to analyze the hazards and risks to Members of the Workforce, the public, and the environment that are associated with implementing the planned work activities. This function includes identifying and analyzing the work hazards and risks and categorizing the facilities and work activities according to hazard levels. Section 4.0, "Analyze Hazards," describes SNL's mechanisms for this function.

The third safety management function is to establish the necessary programs and work controls that allow safe and efficient work management and execution. A key part of this function is to identify and formalize the standards and requirements for performing work safely and to establish a contractual agreement between the DOE and SNL for performing work. The standards and requirements are identified based upon the hazards associated with the work activities. This function involves establishing procedures and permits for safe work management, establishing ES&H support programs, training and qualifying personnel, and other related activities. The existing Sandia Management and Operating Contract serves as the contractual agreement for all SNL baseline work activities. Section 5.0, "Control Hazards," describes SNL's other mechanisms for this function.

The fourth safety management function is to perform the agreed-upon work in a safe and environmentally sound manner. This function relies on management processes, procedures, and training that have been developed to safely execute the work activities and operate SNL's facilities. This function also involves performing readiness evaluations. Section 6.0, "Perform Work," describes SNL's mechanisms for this function.

The last safety management function is to continually assess and improve ES&H performance by establishing and implementing feedback processes to identify and remedy ES&H issues and concerns. This function includes the SNL self-assessment activities and programs and processes necessary for monitoring and evaluating SNL's operating experience and performance. These programs and processes include the [Corporate Dashboard](#), [Lessons Learned Program](#), and Occurrence Management Program. Section 7.0, "Feedback and Improvement," describes SNL's mechanisms for this function.

2.2 Flow-down of ISMS Requirements

Sandia's philosophy for implementing ISMS includes flow-down of ISMS through the Corporate Business Rules system, implementation of distributed process requirements through coordinated mechanisms in each division, graded approach and authorizations based upon hazard classification, and involvement of the worker in all phases of work.

Sandia processes established by the Corporate Business Rules Architecture in [CPR001.1](#), *Corporate Business Rules System Standard*, determine how requirements for the ISMS



Program are transmitted to program owners and how requirements for ISMS implementation are transmitted to line organizations.

The levels of the Business Rules System established in [CPR001.1](#), *Corporate Business Rules System Standard* for ISMS are as follows:

- **Level 0**, External directives – The Sandia [M&O Contract](#) contains the key terms and conditions (controls and commitments) under which DOE authorizes Sandia to perform work. The Sandia M&O Contract contains the following sections and clauses directly related to ISMS:
 - Part I, The Schedule, Section H, "Special Contract Requirements," H-3, *Contractor Assurance System*.
 - Part II, Contract Clauses, Section I, Clause [I-72](#): *Laws, Regulations, and DOE Directives* (DEC 2000) (Deviation)
 - Part II, Contract Clauses, Section I, Clause [I-75](#): *Conditional Payment of Fee, Profit, or Incentives* (DEC 2000) - Alternate I (DEC 2000) (Deviation)
 - Part II, Contract Clauses, Section I, Clause [I-78](#): *Integration of Environment, Safety, and Health into Work Planning and Execution* (DEC 2000)
 - Part III, Section J, Appendix B, "Statement of Work," [Section 6.2](#): *Integrated Safety Management Systems*.
- **Level 1, Corporate Policy Statement (CPS) – (our business philosophy)** – An official statement of Sandia's fundamental values, principles, beliefs, and expectations (who we are), that also prescribes the boundaries within which Sandia conducts its business and for which all employees are held accountable (how we operate). The Executive Office approves the CPS. The Corporate Policy Statement specifically requires that:

“We will preserve and protect the environment in which we operate, and protect and promote the safety and health of our personnel, contractors, visitors, and the public.”
- **Level 2, Corporate Policy Statement Requirements** – [CPSR400.1](#), *Environment, Safety and Health Policy Statement Requirement*, is a formal statement, approved by the Executive Office, which expresses Sandia's ES&H values, principles, and objectives, and prescribes boundaries within which Sandia conducts ES&H and for which all employees are held accountable.

- Level 2, Corporate Process Requirements** – Corporate process requirements establish corporate-level requirements (including the ES&H Manual, in its entirety). Those requirements that implement ISMS mechanisms are referenced throughout this document and in Section 8.0, "References."
- Level 3, Local Requirements** – Level 3 of the business rules hierarchy consists of documents that apply only to a specific division, center, department, or Strategic Management Unit (SMU), including the [technical work documents \(TWDs\)](#), which define hazard controls for that organization's work. Level 3 business rules directly related to ISMS that supplement corporate ISMS mechanisms are listed in [Appendix A](#), "Division-Specific Mechanisms for Integrated Safety Management."

2.3 ES&H Assurance System

The ES&H Assurance System is depicted graphically in Figure 3. The Assurance System is made up of four major systems: External Inputs and Oversight; Interfaces; Implementation; and Assessment. The Implementation and Assessment systems are each composed of subsystems. The [ES&H Assurance System Description](#) provides a complete overview of the Assurance System, organized by system and subsystem, illustrating the flow of data through each element to demonstrate how Sandia measures ISM system effectiveness and improves its ES&H performance.

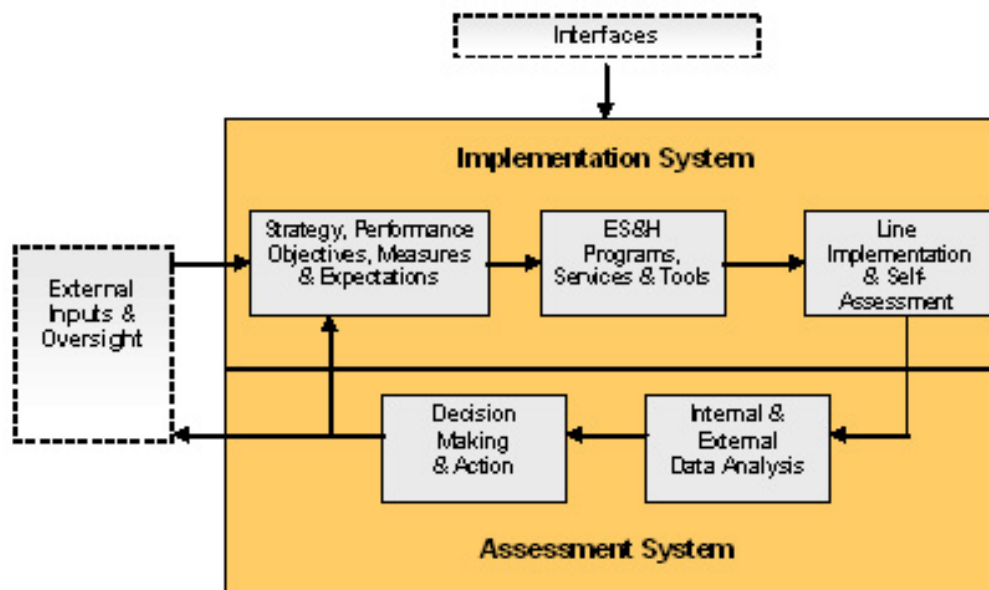


Figure 3. ES&H Assurance System

The Assurance System as a whole is designed to answer four fundamental questions:

1. *How do we know our programs and operational plans and processes are both appropriate and effective?*
2. *How do we recognize issues and risks to enable appropriate mitigation or elimination controls?*
3. *How do we correct problems?*
4. *How do we demonstrate improvement in our results?*

The four fundamental questions are further refined to specifically apply to ES&H Assurance. These questions map to the Assurance System subsystems, and ultimately to the ISMS functions, as follows:

Fundamental Assurance Questions	ES&H Assurance System Questions	Assurance System Subsystem(s)	ISMS Functions
<i>How do we know our programs and operational plans and processes are appropriate and effective?</i>	<i>Have laws, regulations, and customer requirements been adequately translated and communicated?</i>	<i>External Inputs & Oversight/ Strategy, Performance Measures, & Expectations/ Decision Making & Action</i>	<i>Plan work</i>
<i>How do we recognize issues and risks to enable appropriate mitigation or elimination controls?</i>	<i>Have risks and hazards and appropriate mitigations and controls been identified?</i>	<i>ES&H Programs, Services, & Tools/ Program and Line Implementation/ Decision Making & Action</i>	<i>Identify Hazards</i>
	<i>Is work authorized and performed as authorized in accordance with required mitigations and controls?</i>	<i>Program and Line Implementation/ Decision Making & Action</i>	<i>Plan work/ implement controls/ do work</i>
<i>How do we correct problems?</i>	<i>Are mitigations and controls effective?</i>	<i>Data and Analysis (Reporting & Communication)/ Decision Making & Action</i>	<i>Improve Process</i>
<i>How do we demonstrate improvement in our results?</i>	<i>Are Sandia's ES&H programs and work reviewed for opportunities for improvement and improvements made?</i>	<i>Decision Making & Action/ Strategy, Performance Measures, & Expectations</i>	<i>Improve Process</i>

SNL measures the effectiveness of the ISM system by utilizing the ES&H Assurance System. The Assurance System measures effectiveness by receiving input from numerous sources including line self assessments, internal independent assessments, external third party assessments, and internal audits. In addition, the Assurance System incorporates input from the local NNSA site office and external regulators. This information is fed into the **Implementation System** and transformed into specific strategies, performance objectives, measures and expectations, which are then transformed into ES&H programs and supported by services and tools. The line uses those programs, services, and tools to perform work which will meet expectations in terms of safety, health, and protection of the environment; to work safely and to mitigate potential issues and correct problems. Issue and risk management tools are applied to address and respond to unexpected results and issues which have been identified, using feedback, root cause analysis, corrective actions, lessons learned, and tracking and trending as appropriate. Risk management tools are also used to help prioritize risks and in decision making to eliminate or mitigate risks.

Line organization input to the **Assessment System** allows determination as to how well Sandia is making measurable ES&H performance improvement and progress toward the Zero Goals (See [2.1.1](#)).

The Assessment System is the “assurance element” that measures ES&H work results and compares these results to pre-established standards. These standards consist of a set of measures. These measures are a combination of internal goals, targets, and objectives set by the laboratory and/or at the line organization level. Additional performance criteria are negotiated with the NNSA site office in the form of performance objectives, performance indicators, and performance evaluation plans. More specifically, the Assessment System is designed to gather and analyze data; propose modifications (as appropriate) to the **Implementation System** as a result of these analyses; and provide feedback to SNL management, employees, and external oversight and regulatory entities. This system demonstrates our commitment to improve results, and enables us to know if our processes are meeting expectations.

Because measuring system effectiveness is essential to the correct performance of ISMS, reference will be made to the ES&H Assurance System and its subsystems throughout this document.

The Assurance System has been improved in three broad categories:

1. Higher quality information and refined methods to keep upper management informed:

- Corrective Action Management Program (CAMP) – Integration of all corporate corrective actions.

- Early Notification – Implemented early notification to Sandia Site Office (SSO) and upper management within two hours of the discovery of any potential event.
- Internal Management Notification – Implemented to engage management in the injury reporting process and ownership of any subsequent corrective actions.
- Integrated Reporting Management System (IRMS) – Enhanced access to Occurrence Reporting data and Non-Occurrence Trackable Event (NOTE) data.
- [ES&H Data Warehouse](#) – Improved ES&H reporting capabilities.
- Redevelopment of ES&H metrics page – Data for various ES&H Program areas are available on a quarterly basis and form the basis for the VP quarterly reviews.
- Communications with Executive Management – Conduct individual VP briefings providing ES&H performance information on a quarterly basis.



2. Risk Management:

1. Issues Management – Reduced time and resources spent identifying issues and ownership by improving the Issues Management Review Committee (IMRC).
2. Data Analysis – New process incorporates work controls in quarterly performance analysis. This analysis is used to report recurring events as identified under DOE M 231.1-2.



3. Statistical Modeling Function:

Injury/Illness Predictive Model – Model was developed in 2004 and is being evaluated for redevelopment in FY07 due to the fact that training compliance was the focus in FY06.

One of the primary overarching Assurance improvement themes is enhanced management engagement at all levels. The system provides valuable information to management to assist with adequate resource allocation necessary for improving performance.

2.3.1 Quality Assurance (QA) Integration with ISMS

The SNL Corporate Quality Assurance Program (CQAP) [CPR001.3.2](#) defines Sandia requirements that implement [DOE O 414.1C](#), *Quality Assurance*, and [10 CFR 830](#), *Nuclear Safety Management, Subpart A, Quality Assurance*. These documents define a management system that, when implemented, addresses the implementation of the ISMS five core management functions and seven guiding principles.

Both the QA Order and the QA Rule require that the two systems be integrated, or that the contractor explain how QA criteria apply to the safety management system. The ten quality assurance criteria are applied to all work and are implemented in accordance with a level of formality using a graded approach. The integration of this ISMS CPR with the CQAP [CPR001.3.2](#) complies with the requirements mentioned above.

Required corporate controls are found in the Corporate Business Rules System. Sandia will manage all activities in accordance with the policies, directives, and processes specified by the Business Rules to ensure effective and efficient achievement of corporate goals and milestones within the boundaries of the prime contract, applicable laws, Department of Energy, Lockheed Martin Corporate directives, and best business practices. Sandia will conduct self assessments to ensure that the business rules are both adequate and appropriately implemented. The use of the "Assessment Criteria and Guidelines for Performing Assessments of the Effectiveness of Incorporation of Integrated Safety Management and Quality Assurance Principles Into Activity Level Work Planning and Control at NNSA Sites," [Appendix B](#), of NNSA Activity Level Work Planning and Control Processes provides insight into the oversight philosophy of SNL's primary customer, and is an important resource in planning and executing self-assessments for all types of activity level work.

This full spectrum of business rules, including their associated Corporate Process Requirements, potentially applies to any specific work activity, depending upon the nature of the work and its associated risks. The five Corporate Work Process (CWP) elements provide a consistent framework onto which these extensive requirements applicable to specific activities can be identified, logically organized, and integrated with customer requirements into work plans and controls. The business rules describe the various aspects of Sandia's Integrated Laboratory Management System (ILMS) that must be integrated using the CWP.

The Corporate Quality Assurance Department has the institutional responsibility of preparing and maintaining the CQAP consistent with the requirements of the QA Order and QA Rule. The [QA Working Group](#) (QAWG) is managed by the Corporate QA Department and provides direction, guidance, and tactical planning for Sandia's management system related to the QA Program implementation. The Corporate Integrated Safety Management department is responsible for preparing, maintaining, revising, and implementing the ISMS Description. The ISMS core team interfaces and communicates with Corporate QA and the QAWG ensuring consistency and integration of both systems.

2.3.2 Implementation of DOE O 226.1 (Implementation of Department of Energy Oversight Policy)

Sandia National Laboratories is working toward implementation of the DOE O 226.1. An implementation plan was submitted to the Sandia Site Office in November, 2005. An updated

implementation plan and gap analysis was submitted to the SSO in June 2006. A review by the Chief of Defense Nuclear Safety Office of NNSA in June 2006 provided independent feedback on the status of SNL's efforts toward implementation of DOE O 226.1, and the results of that review are being integrated into our planned improvements to the implementing procedures.

2.4 Scope

Section 2.4 of this document addresses the first Guiding Principle of ISMS:

- Line management responsibility – line management is responsible for the protection of employees, the public, and the environment. Line management includes those employees or subcontractors managing or supervising members of the workforce.

2.4.1 Applicability

Sandia's ISMS applies to work performed by Sandia employees and their subcontractors, whether the work is funded by DOE or other entities (e.g., Work For Others or Cooperative Research and Development Agreements).

- ISMS is implemented utilizing a combination of policies and programs that provide ISMS requirements to line organizations as well as the **tools and mechanisms** to enable required compliance, **examples are presented in [Appendix B](#), "Examples of Mechanisms for Employee Involvement."** The line then utilizes the requirements and tools to establish safe, and environmentally responsible operating parameters of their work.

2.4.2 Line Implementation

As established by [CPSR400.1](#), *Environment, Safety and Health Policy Statement Requirement*, **Sandia line management is responsible and accountable for implementing ISMS and for conducting work in a manner that ensures protection of Members of the Workforce, the public, and the environment.** The term "Sandia line management" means the chain of organizational management (as opposed to project management) responsible and accountable as follows:

1. President
2. Deputy for Nuclear Weapons Program, Deputy Director (Executive Vice President and Deputy Laboratory Director), and Deputy Director for Integrated Technologies Programs
3. Vice Presidents
4. Directors

5. Senior Managers (optional position)
6. Department Managers
7. Team Supervisors/Leaders (optional position)
8. All Members of the Workforce (MOW)



Roles for Sandia employees may include the word "manager," such as "project manager," "program manager," or "facility manager," to reflect the tasks for which they are responsible, but not their position in the organizational line (see *ES&H Manual*, [Section 1D](#), "Who Does What," for descriptions of the different types of management).

2.4.3 Sandia Employees Performing Work on Non-Sandia-Controlled Premises

When Sandia employees are working at non-Sandia-controlled premises that are controlled by another DOE contractor that has an ISMS Program, they follow the ISMS of the organization that is responsible for directing the work.



Sandia's interface with the Nuclear Weapons Production Complex is defined in the technical business practice document [TBP-901](#), *Integrated Safety Process for Nuclear Weapons Operations and Facilities*.

When Sandia employees are working at non-Sandia-controlled premises (e.g. foreign countries, DoD sites) where no DOE-approved ISMS exists, they follow Sandia's ISMS Program.

2.4.4 Visitors Performing Work on Sandia-Controlled Premises

Sandia hosts are responsible for ensuring that visitors performing work on Sandia-controlled premises meet all of the requirements of the space to be visited and the activities to be performed, including training on ISMS requirements. Visitors' ES&H responsibilities are discussed in the CPR400.1.1/MN471001, *ES&H Manual*, [Section 1D](#), "Who Does What."



2.4.5 ISMS for Sandia Subcontractors

Sandia's business rules system establishes requirements for employees. Contracts establish requirements for subcontractors. The flow-down of ISMS requirements to Sandia subcontractors performing work on a government site is illustrated in [Figure 4](#).

The following is the standard contract language included in subcontracts:

INTEGRATED SAFETY MANAGEMENT SYSTEM (ISMS) PLAN-SC-618-IS

In performing the work under this contract, the contractor shall perform work safely, in a manner that ensures adequate protection for employees, the public, and the environment, and shall be accountable for the safe performance of work. The Contractor shall manage and perform work in accordance with a documented ISMS Plan that fulfills the requirements of DEAR 970.5223-1 - Integration of Environment, Safety, and Health into Work Planning and Execution.

If the work on the contract is performed on a Department of Energy/National Nuclear Security Administration (DOE/NNSA) site, the Contractor shall comply with Sandia's ISMS Plan and Environmental, Safety, and Health (ES&H) Manual, as well as any other site specific additional safety requirements. However, the Contractor may choose to submit its own safety plan and request that its plan be approved for use in lieu of the Sandia plan.

If the Contractor chooses to do so, the Contractor may elect to submit its own ISMS plan, in accordance with DEAR 970.5223-1. Any work performed by the Contractor on a DOE/NNSA site prior to the Sandia Contracting Representative's (SCR's) issuance of final written approval of any plan submitted by the Contractor shall be performed in compliance with the Sandia provided ISMS Plan located at <http://www.sandia.gov/supplier/docindex.htm> (NOTE: If the Contractor does not have access to the web, a copy of the Sandia provided ISMS Plan may be requested from the SCR.)

This requirement operates in addition to any other specifications or requirements included elsewhere in this contract.

If the work is under a construction contract in which the Request for Quotation (RFQ) Contract has incorporated either Sandia Specification 01065 for work at SNL/New Mexico or Sandia Specification 01860 for work at SNL/California, then the contractor will follow the safety requirements of the specification incorporated.



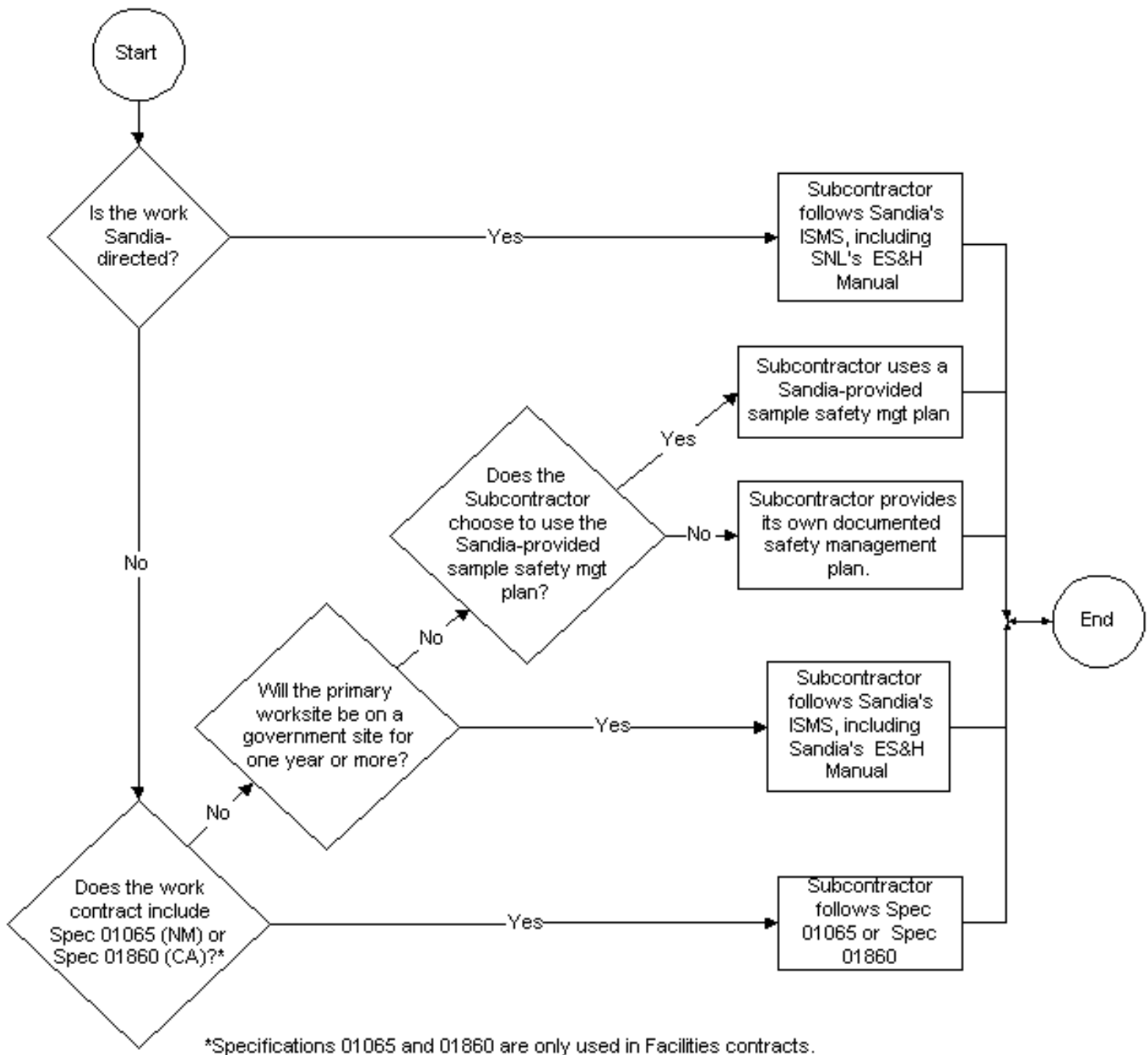


Figure 4. Flow-down of ISMS Requirements to SNL Subcontractors Performing Work

Sandia's authority to stop work being performed by a subcontractor is established in subcontracts through the inclusion of Sandia M&O Contract, [Clause I-78](#), paragraph (i).

2.5 Distributed, Coordinated Implementation

Section 2.5 of this document addresses the second Guiding Principle of ISMS:

- Clear roles and responsibilities

Because of the broad scope of SNL operations, the formality and rigor of ISMS are tailored to the nature of the work and the associated hazards.

2.5.1 Tailored Requirements

Corporate requirements documents state what shall be performed. Individual organizations determine how to implement those requirements in their work processes and procedures. Complete implementation of Sandia's ISMS allows for customization and includes implementation of mechanisms within every division. Corporate documents that contain ISMS requirements and mechanisms are referenced throughout this document. The IWP will provide a consistent framework for line organizations to manage all work while allowing customization that aligns with the scope of operational activities.

The documents defining implementing mechanisms at the division level are listed in [Appendix A](#), "Division-Specific Mechanisms for Integrated Safety Management."

These requirements are reflected in the ES&H Assurance System through the External Oversight and Inputs System, through which DOE and other federal, as well as state and local requirements, are placed upon SNL and are communicated through the [Requirements Management](#) program. These requirements are translated into: Strategy, Performance Measures, Objectives, and Expectations, as a part of the "Plan Work" element of ISMS; and are realized as Programs, Services, and Tools ("Analyze Hazards," "Control Hazards") to be used by the line ("Perform Work"). Collectively, these functions comprise the Implementation System of the ES&H Assurance System.

The line provides feedback to the Assessment System in various forms described in detail below. Once the data is analyzed recommendations are made for improvements: to the strategies, performance measures, objectives and expectations, ES&H programs, services and tools, and in line implementation.

2.5.2 Coordination by LIWG

The [Line Implementation Working Group \(LIWG\)](#) is chartered by the [ES&H and Emergency Management](#) (10300) Director. Responsibilities of LIWG are stated in the [charter](#) and in the *ES&H Manual*, [Section 1D](#), "Who Does What." LIWG consists of the division ES&H coordinators representing the line organizations, managers of ES&H Subject Matter Experts (SMEs) on support teams, ES&H Program owners, and professional advisors.

The LIWG approach promotes sharing of tools and best practices; and assures more consistent integration of ISMS implementation across the divisions. LIWG members are also

responsible for communicating division-implementing mechanisms to line management within their divisions. In addition to this ongoing integration function, [Division ES&H Teams](#) provide distributed ES&H support to assist with implementation at the line level as well as coordination at the program level.

2.6 Integrated Work Plan (IWP) / Work Controls

Section 2.6 of this document addresses the first two Guiding Principles (see below), as well as establishing relevance with the third through the seventh Guiding Principles of ISMS:

1. Line management is responsible for safety
2. Clear roles and responsibilities
3. Competence commensurate with responsibility
4. Balanced priorities
5. Identification of safety standards and requirements
6. Hazard controls tailored to work being performed
7. Operations authorization

The [Integrated Work Plan](#) facilitates documentation at the activity and operations level that clearly maps to all seven guiding principles. For additional information on work planning and control process implementation see [CPR001.3.14](#), *Work Planning and Control*.

2.6.1 Work Planning and Control

The purpose of the Corporate Work Planning and Control Process is to implement a robust, documented, and scalable process for integrated work controls within the ISMS framework. The goal is safe, efficient, and reliable conduct of work in support of Sandia missions.

All work performed by MOW shall be planned and executed in accordance with the specific activity level work planning and control attributes listed in [Attachment B](#), *Work Planning and Control Required Attributes*, of [CPR001.3.14](#), *Work Planning and Control*.

The [Integrated Work Plan \(IWP\) tool](#) facilitates implementation of many of the requirements delineated in [Attachment B](#). This tool is available to all organizations for use in the development of the work planning and control process, procedure documents and subsequent work planning and control.



2.6.2 Primary Hazard Screenings (PHSs)/Hazard Assessments (HAs)

Work controls are implemented primarily through the Programs, Services, and Tools subsystem of the ES&H Assurance System. The key tool in this subsystem is the Primary Hazard Screenings (PHSs). Additional tools used for work controls are discussed in [Section 2.6.4](#), "Supervisory Tools." Through the use of [PHS](#), Sandia can determine what work controls should be applied based on the type of work that is planned and the hazards that are identified. The PHS is commonly referred to as part of the ISMS software.

Note: In 2004, Sandia integrated the Hazards Analysis (HA) program into the PHS. It is commonly referred to as PHS with integral HA, or just PHS.

The PHS identifies hazards and impacts based on the users' input and determines the hazard classification of the operation. Work controls are applied in a graded approach to Sandia operations, based on the hazard classifications determined through the PHS, as described in CPR400.1.1/MN471001, *ES&H Manual*, [Section 13A](#), "Hazards Identification and Classification Process." All hazards that a member of the workforce may be exposed to, and potential environmental impacts, must be bounded by a PHS. Additionally, hazards that are classified as "low" or higher must be analyzed using either the integral HA portion of the PHS or a standalone HA. Line organizations may analyze identified standard industrial hazards using a standalone or integral HA as well.

The objective of the PHS is to promote safe operations by ensuring that the hazards associated with facility operations and work activities are clearly understood and appropriately managed. The PHS will identify hazards associated with the operation. All low hazards will also be analyzed to ensure appropriate controls are established. Consistent with the graded approach process, the greater the hazards associated with a facility or activity the more rigorous preparation and authorization process is required. Sandia has established four facility/project designators and nine hazard classification levels for work activities based on specific hazards and thresholds. Work control and approval/concurrence requirements have been established to ensure safety is properly and consistently addressed.


The PHS will establish a hazard classification based on the hazards and is used to establish the safety envelope and types of activities that can be conducted in a facility. It defines and documents, the content, and particulars of activities allowed in that facility. A basic function of the PHS is to ensure that a planned activity is done within the safety envelope authorized for the operation.

Any Member of the Workforce may institute a PHS for work operations, but it is the responsibility of the line or project manager to ensure that a PHS exists and is appropriate for his or her programs and work spaces (in accordance with CPR400.1.1/MN471001, *ES&H Manual*, [Section 13A](#)).


Identified hazards and environmental impacts are controlled through a combination of administrative and engineered controls. PHSs identify some of the applicable [administrative controls](#) (e.g., TWDs and required ES&H training) and point to ES&H Manual sections and supplements that require or recommend additional engineering controls, Personal Protective Equipment (PPE), and warning signs. Questions and resulting logic developed for the PHS module of the ISMS software are maintained in Administrative Operating Procedures (AOPs) for each version of the PHS question set.

The integral HA of the PHS leads the author through a simplified failure modes and effects analysis, and helps the author evaluate the acceptability of possible hazard controls. The hazards analysis is described in [Section 4.0](#), "Analyze Hazards," below. See CPR400.1.1/ MN471001, ES&H Manual, [Section 13A](#), "Hazards Identification and Classification Process," and [Section 13B](#), "Hazards Analysis Process," for additional information.

The PHS will classify an operation by both its facility/project designator and hazard classification based on:

- 
- Hazardous material quantity
 - [DOE Standard 1027-92](#) (nuclear facility threshold quantities)
 - [10 CFR 830](#) (nuclear and radiological facilities)
 - [DOE Order 420.2B](#) (accelerators)
 - SME derived criteria (hazard specific)
 - Manager designation of hazard

The PHS will select the highest classification of all identified hazards to establish the overall hazard level of the operation. The PHS hazard classifications are:

- 
- [Business Occupancy](#) (Office)
 - Standard Industrial Hazard (SIH)
 - Low
 - Moderate
 - High*

- Accelerator
- Category 3 nuclear
- Category 2 nuclear
- Category 1* nuclear



***Note** : SNL does not currently have or run operations classified as High or Category 1 nuclear.

All work activities have to include attention to safety and use of the ISMS in order to address and improve the overall safety performance at Sandia-controlled premises. This can be accomplished by using the facility/project designators described below. The designators are connected to the hazards and are related to the documentation required for the operation's authorization. The PHS will select the applicable designation based on the overall hazard classification and hazard types of the facility/project. The PHS facility/project designators are:

- Accelerator
- Nuclear
- Radiological
- Nonnuclear



The PHS will prescribe required hazard-driven training which may be supplemented by additional courses and/or qualification requirements assigned by the manager. In addition, managers implement project-, site-, or facility-specific procedures through on-the-job training and formal or informal mentoring processes. For example, the training requirements for explosives operations include on-the-job training, "Required Reading," and "Timely Instructions to Operators" as outlined in [CPR400.1.1.33](#), Conduct of Operations Manual, "Explosives Operations."

Required training is listed in the Results and Conclusions section of the PHS. A corporate four-hour training module (ISMS100) for the ISMS software is available in Sandia's Training and Educational Development System (TEDS) and is to be completed by ES&H Coordinators prior to reviewing a PHS. PHSs are a matter of record and may have wide applicability. PHS is a hazard awareness tool for employees. As of 2006, there are currently 1,391 PHSs in the system and the following hazard classification levels have been determined:



Accelerator

2

Business occupancy	56
Category 3 nuclear	3
Category 2 nuclear	2
Low (nonnuclear or radiological)	632
Moderate nonnuclear	5
Standard Industrial Hazard (SIH) (nonnuclear or radiological)	691



As shown above, the majority of Sandia's operations are similar to those found in industry and commerce, and are categorized as one of the following three hazard **classifications**:

- Business occupancy (office)
- SIH
- Low-hazard

As a group, these operations are referred to as "less hazardous operations."

Sandia operations involving hazards that are not commonly found in industry or commerce are referred to as "more hazardous operations." These include operations of the following hazard **classifications**:



- Moderate-hazard
- Accelerator
- Category 2 nuclear facility
- Category 3 nuclear facility

Responsible Line Managers must sign off on the following statement to approve PHSs, thereby incorporating management accountability and authorization into the process.

"I have reviewed this PHS and concur with the identified hazards, results, and conclusions. I authorize the proposed work; and before commencement of work, will ensure that adequate resources are available, applicable readiness verification is performed, and that work is prioritized as appropriate."



Members of the Workforce are required to develop primary hazard screenings (PHSs) as described in 2.6.2 Primary Hazard Screenings (PHSs)/Hazard Assessments (HAs) of this document, and also in CPR400.1.1, *ES&H Manual*, [Section 13A](#), "Hazards Identification and Classification Process." Hazards analyses (HAs) are also described in [Section 13B](#), "Hazards Analysis Process," using the [ISMS software](#). A process called the Hazard Aggregation Rollup Process ([HARP](#)) identifies hazards at a facility level for those facilities that meet specific criteria outlined in [Section 13A](#), "Hazard Aggregation Rollup Process" to better understand and control aggregate hazard risks and to develop appropriate emergency response strategies. For example, radiological materials are managed utilizing the HARP. The HARP author is notified when the total radiological material exceeds 1% of CAT III limit. This allows the HARP owner to maintain overall Facility Classification below CAT III nuclear facility designation.



2.6.3 Authorization Basis

The Authorization Basis is the set of documents produced that management relies upon to ensure that Sandia facilities, activities, and operations adequately control hazards within the bounds of regulatory requirements and acceptable risk. Each operation identifies and evaluates the associated hazards to determine the appropriate classification levels described in the previous section. The levels are directly connected to the types and effects of hazards in the operation. Sandia requires additional analysis, safety documentation, approvals, and control of hazards for more hazardous operations in order to authorize work. *ES&H Manual*, [Section 13C](#), "Authorization Basis Documentation Process," summarizes the preparation and authorization process elements and the hazard analysis mechanism is identified for each level in the form of the document or action required to perform the function. The *ES&H Manual* contains necessary specifics and additional information for the reviews before startup or restart at each level.

A site-wide authorization agreement constitutes the agreement between the contractor and DOE/NNSA to conduct all operations according to the site-wide authorization basis. The Sandia M&O Contract is the "site-wide authorization agreement" for Sandia. In addition to the site-wide authorization agreement, some of Sandia's nuclear facilities require additional facility-specific authorization agreements. For details, see [CPR400.1.1.35](#)/GN470099, *Authorization Agreements (AAs) for Category 1 or 2 Nuclear Facilities or High-Hazard Nonnuclear Facilities*. Work authorization for startup and restart of more hazardous operations requires NNSA approval.

A Safety Assessment (SA) covers Moderate Hazard facilities. Guidance for the preparation of a SA is contained in [CPR 400.1.1.20](#)/GN470088, *Preparation and Review of Safety Assessments for Moderate- and High-hazard Nonnuclear Facilities*.

Accelerator facilities are covered by a document called a Safety Assessment Document (SAD). This is described in *ES&H Manual*, [Section 13C](#), under the subtopic "Accelerator Activities Assurance Process."



DOE/NNSA has established two categories for startup and restart of nonnuclear (including radiological) operations:

- **SSO Approval:** Facilities/activities for which there is a potential for significant off-site consequences to the public. This category represents operations with a high hazard classification and requires SSO approval for startup and restart.
- **Sandia Approval:** Facilities/activities for which there is no potential for significant consequences to the public. This category represents operations with a business occupancy, SIH, Low, or Moderate hazard classification. Startup and restart of operations in this category will follow the process in *ES&H Manual*, [Section 13C](#), "Authorization Basis Documentation Process." Sandia has startup and restart approval for these operations and will use a "notify and go" approach to start operations.

Note: Because Sandia has no [high-hazard \(nonnuclear or radiological\) operations](#) or [Category 1 nuclear facilities](#), the ISMS D does not discuss those hazard classifications. However, the corporate Safety Basis Department reviews all moderate-hazard and Category 2 nuclear facilities to ensure correct classification as described in CPR400.1.1/MN471001, *ES&H Manual*, [Section 13A](#).

Figure 5 shows whether Sandia or DOE authorizes an operation based on the hazard level.

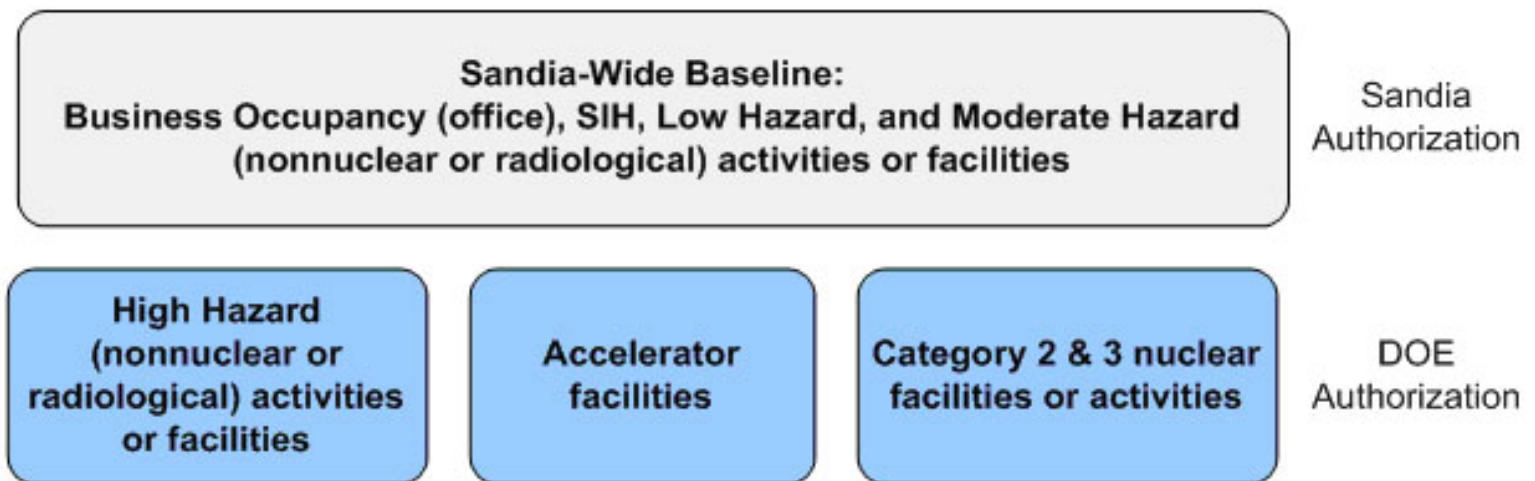


Figure 5. Graded Approach to ISMS by Hazard Classification

2.6.4 Supervisory Tools

In addition to the PHS discussed in Section [2.6.2](#) above, management utilizes readiness assessments to ensure that operating controls are in place and validated before work is begun and self-assessments (after a specified amount of time has elapsed) after work has begun to ensure the operations are in accordance with ISMS safety functions and adequately covered by

the PHS and supplemental documentation. In addition, a quarterly sampling review of PHS documents is performed by a SME from the Sandia [Safety Basis Department](#).

A readiness review is required for hazard classifications of SIH, low, moderate, high, accelerator, or nuclear category 2 and 3 (Sandia has no Category 1 nuclear facilities or high hazard facilities). Each of the facilities classified as above require either a formal safety assessment or analysis. The process for the development of safety basis documentation for nuclear facilities including a flow diagram and the necessary specifics is in [CPR400.1.1.38/GN470101](#), *Preparation and Review of Documented Safety Analyses (DSAs) and Technical Safety Requirements (TSRs) to meet 10 CFR 830*. Various types of readiness assessments and their applications are found in the ES&H Manual, [Section 13D](#), "Readiness Review Process - Planning, Review, and Approval." The review follows a graded approach and includes a check of the control measures listed in the PHS.

Line self-assessments and management self-assessments (and surveillances) are done to ensure that work is conducted in accordance with work controls and ISMS safety functions. The purpose of the self-assessment is to ensure a proactive approach to safety and to improve safety performance. The specific objectives of Sandia's safety self-assessment program as outlined in the *ES&H Manual* are to ensure:

- Operations comply with applicable safety policies and procedures.
- Safety-related requirements are integrated into all levels of facility, management, and operational activities.
- Safety-related deficiencies are identified, analyzed, and managed to minimize their occurrence or recurrence.

Elements of the line self-assessment and management self-assessments normally include compliance sampling as well as performance validation. These self-assessments are normally performed by the people involved in the facility or program being assessed.

2.6.5 Worker Involvement

ES&H success at SNL depends on the active involvement, communication, and participation of Members of the Workforce. Management is responsible for creating and maintaining an environment that involves workers throughout all five core management functions of ISMS. Mechanisms for worker involvement are embedded throughout the implementing documents referenced herein and examples are presented in [Appendix B](#), "Examples of Mechanisms for Employee Involvement."

2.7 Organizational Structure, Roles, and Responsibilities

2.7.1 Source Documentation

The *ES&H Manual*, [Section 1D](#), "Who Does What," is the description of ES&H roles and responsibilities at SNL. It identifies responsibilities of individuals, groups, and Sandia management, including:

- [Laboratory Leadership Team](#) and the [Infrastructure Council](#)
- [Strategic Management Units SMUs](#)
- Sandia's Environment, Safety, and Health Programs.
- Standing safety committees (see [Attachment 1D-3](#), "Standing ES&H Committees") of the *ES&H Manual*.
- Line, program, and space responsibilities as defined in organization programs (see *ES&H Manual*, [Section 1D](#), "Who Does What")

2.7.2 Division ES&H Teams (SNL/NM)

[Division ES&H Teams](#) at SNL/NM consist of the division ES&H coordinators, center ES&H coordinators, and ES&H **professionals**, usually provided from the [ES&H and Emergency Management Center](#) (10300). This team approach enables Sandia organizations to effectively manage the risks associated with the hazards and environmental impacts in their operations.

The roles and responsibilities of division and center ES&H coordinators are described in "[Responsibilities of Groups](#)" in *CPR400.1.1/MN471001*, *ES&H Manual*, [Section 1D](#), "Who Does What."

[Line Work Agreements](#) between the [ES&H and Emergency Management Center](#) (10300) and division ES&H coordinators are negotiated, as needed, to establish the levels of support services to be provided. Team size and composition vary across divisions, based on the hazards and risks of division operations. **ES&H professionals supporting line operations** are primarily funded through the indirect project structure of the ES&H and Emergency Management Center. Direct funding is provided by line organizations in some instances.

ES&H professionals are involved during the line organization's work planning and execution. While the line organization is accountable for decisions made, the **ES&H professionals** help ensure that ES&H issues are identified and appropriate options for solutions are incorporated throughout the work process from planning to implementation. **ES&H professionals may** include representatives from safety engineering, industrial hygiene, radiation protection, environmental

protection, and emergency management.

ES&H professionals, generally, are responsible for:

- Translating requirements within their area of expertise for organizational activities supported.
- Providing advice and options to organizations and clearly identifying risks and consequences of not following this advice.
- Learning and understanding the operations of the organizations that they support.
- Contributing fully, to the success of the organization in achieving their objectives while maintaining their corporate responsibility to help ensure that SNL is a safe, healthful, and environmentally benign workplace.
- Providing practical, cost-effective recommendations and advice within their field of expertise and within the five safety management functions of ISMS for resolving ES&H issues and concerns.
- Ensuring that their recommendations comply with applicable regulations and DOE and SNL requirements.

ES&H professionals of the same ES&H discipline meet on a regular basis with the [ES&H and Emergency Management Center](#) (10300) manager responsible for that program and may discuss any or all of the following topics:

- Regulatory issues
- Changes to the applicable chapter of the *ES&H Manual* or supplement
- Lessons learned
- Development of common processes and procedures to maintain consistency throughout SNL

2.7.3 SNL/CA Interdisciplinary Team

The [Interdisciplinary Team \(IDT\)](#) at SNL/CA consists of subject matter experts (SMEs) for all ES&H disciplines who meet with researchers, facility engineers, and functional program managers to evaluate ES&H hazards and define methods to control them. The IDT reviews all proposed projects and programs and any major project and program changes. The IDT then provides requirements, recommendations, and assistance to the project and program owners.

2.7.4 Additional Safety Committee Oversight of Accelerator and Nuclear Operations

Safety committees provide additional oversight for the accelerator and nuclear operations at SNL.

The 1600 [Pulsed Power](#) Safety Committee reviews and approves proposed tests, experiments, and modifications performed at SNL's accelerator facilities or other pulsed power devices, as defined in its charter. It serves as an advisory committee to all SNL center directors responsible for accelerator operations and reviews any special issues requested by the center directors.

The Nuclear Facilities Safety Committee (NFSC) independently reviews safety at reactor and nonreactor nuclear facilities in Technical Area V, and reports to the Vice President of the managing organization. Committees that report to the NFSC include the following:

- Radiological Criticality Safety Committee (RCSC)
- Annular Core Research Reactor Committee (ACRRC)
- Sandia Pulsed Reactor Committee (SPRC)
- **Nuclear Facilities Safety Committee (NFSC) for the Sandia Reactor Safety Committee**
- **Sandia Nuclear Criticality Safety Committee (SNCSC) for non-TA-V activities**

These committees evaluate the safety of the associated facilities, as well as onsite and offsite activities that fall within their scope involving Members of the Workforce. They communicate recommendations and action items through meeting minutes.

See *CPR400.1.1/MN471001, ES&H Manual*, Section 1D, [Attachment 1D-3](#), "Standing ES&H Committees," for information about other standing ES&H committees.

3.0 PLAN WORK



This section addresses the first safety management function, "Plan Work," which involves translating the mission into work, setting expectations, prioritizing tasks, and allocating resources (see *CPR400.1.1/MN471001, ES&H Manual*, [Section 2A](#), "Plan Work"). Work



planning takes place on many levels, from the initial setting of strategic targets to the day-to-day conduct of operations. Thus, this ISMS function has an impact on several of the Assurance System subsystems: External Inputs & Oversight; Strategy, Performance Measures, & Expectations; Decision Making & Action; Line and Program Implementation. An example of how the “Plan Work” core safety management function incorporates work controls is provided below:

- The author completes/submits a PHS - the institutional process for the recognition and classification of work hazards and environmental impact. The author of the PHS is responsible for:

- Stating the technical objectives.
- Defining the work activities to be performed.
- Identifying the hazards within the facility and involved with the work activities.
- Identifying the facility in which the work will take place.
- Identifying the individual who will be supervising the work activity.

- The hazards are identified for any new research project in the PHS whereby:

- The hazards are classified.
- The project is described.
- The validated procedures are listed.
- The job hazard analysis as part of the required training is listed.
- The controls are provided.
- Required briefings are held.
- Technical and quality reviews of the PHS are completed by the ES&H Coordinator, the Industrial Hygiene PHS reviewer, etc.

- The management chain and list of required reviewers that results from these determinations are responsible for ensuring the work activity is properly analyzed, controlled, performed, and monitored.

Once the above are completed, the Department Manager gives final approval after the reviews.

In addition, a quarterly sampling review is performed by a SME from the Sandia [Safety Basis Department](#).

3.1 Translate Mission into Work

“Line of sight” is the concept that employees' work and performance expectations are clearly linked to goals established by the program/project, department, center, and division; and that those goals conform to the Sandia-wide corporate direction, mission, and vision. This linkage should be formally documented on every employee's performance management form (PMF).

Annually, Sandia engages in a strategic planning process which begins with a review of strategic objectives and intermediate goals, any necessary revisions of those planning elements, and the generation of representative fiscal year milestones. These corporate planning elements (objectives, goals, and milestones) appear in the [Institutional Plan](#), and if changes occur, the latest planning elements appear in documents accessed through the [Laboratory Planning and Executive Support web site](#). These are sufficient to identify Sandia's major long-range and intermediate-range goals, and enough fiscal year milestones to represent the depth and breadth of Sandia's major programs.

The *Institutional Plan* provides a comprehensive yearly "snapshot" of Sandia's major programs, facilities, human resources, and budget. This document also includes overviews of missions, organizations, capabilities, planning functions (such as strategic objectives), milestones, and accomplishments.

Representative fiscal year milestones are set each year by the seven Strategic Management Units (SMU) (the four business SMUs and the foundation, initiative, and service SMUs). The Laboratory Leadership Team reviews progress on representative fiscal year milestones every quarter.

SMU leaders, SNL program managers, and line managers develop work plans consistent with the planning elements in the *Institutional Plan*. Although corporate-level plans use three planning levels, managers at these levels may use as many planning levels as they need to clearly communicate expectations (see CPR400.1.1/MN471001, *ES&H Manual*, [Section 2A](#), "Plan Work").

Annual performance planning between individual Sandia [employees](#) and their direct supervisors establishes the objectives against which employees are evaluated. The performance management form (PMF) can include applicable ISMS-related objectives (see [CPR300.2.1](#), *Performance Management*).

Performance of ES&H-related job responsibilities is rewarded or penalized as any other type of job responsibility by the annual salary review, monetary or non-monetary awards for specific

activities given by the person's management, or disciplinary action, if appropriate. Disciplinary actions concerning noncompliance with ES&H policies and procedures are established in [CPR300.4.3](#), *Employee Conduct and Corrective Discipline*.

3.2 Set Expectations

Sandia annually negotiates a [Performance Evaluation Plan](#) (PEP) with DOE/NNSA that defines performance criteria by which DOE/NNSA will appraise Sandia's performance.

Individual organizations also establish expectations. Expectations with respect to work planning at the program and organizational level are described in CPR400.1.1/MN471001, *ES&H Manual*, [Section 2A](#), "Plan Work." Expectations for each individual are established through the performance management process.

3.3 Prioritize Tasks and Allocate Resources

3.3.1 Corporate-Level Institutionalized Processes

At SNL, ES&H requirements are integrated into programmatic, customer, and stakeholder requirements. This integration is established to ensure that operational requirements are analyzed and developed in conjunction with safety requirements. These balanced and integrated requirements then form the basis for determining work prioritization and resource allocation (see CPR400.1.1/MN471001, *ES&H Manual*, [Section 2A](#), "Plan Work"). Resources for operational and safety requirements are reviewed and negotiated, when necessary, throughout the life cycle of the project.

The key document that contains the requirements for budget processes that apply to all work in all divisions is [CPR500.1.1](#), *Financial Manual*.

The *Financial Manual* is to business planning (resource allocation and work prioritization) what the ES&H Manual is to safety planning. It provides the requirements for all Sandia program and project plans and includes the Spend Plan Tool (see *Financial Manual*, [Chapter 10](#), "Spend Plan"). The *Financial Manual* contains the mechanisms that SNL program and project managers must use when developing their budget plans, which must include both work prioritization and resource allocation.

Sandia organizations use work planning processes and systems that are tailored to the work they perform. Although different organizations may use different planning documents, the planning processes must comply with the *Financial Manual*.

3.3.2 Annual ES&H Plan Preparation

Sandia is required to annually review and update, for SSO approval; its safety performance objectives, performance measures, and commitments in accordance with contract clause I-78, consistent with and in response to SSO's program and budget execution guidance and direction. Resources are identified and allocated to meet the safety objectives and performance commitments, as well as maintain the integrity of the entire System. The System is integrated with Sandia's business processes for work planning, budgeting, authorization, execution, and change control.

In addition, Sandia submits to DOE an **ES&H Compliance Liability Estimate on a quarterly basis**. This estimate represents costs to bring facilities and operations into compliance with existing ES&H laws, regulations and applicable Department of Energy Orders.

4.0 ANALYZE HAZARDS



This section addresses the second safety management function, "identify and analyze hazards associated with the work." See CPR400.1.1/MN471001, *ES&H Manual*, [Section 2B](#), "Analyze Hazards." The function is addressed in the *ES&H Programs, Services, & Tools; Program and Line Implementation; and Decision Making & Action* subsystems of the ES&H Assurance System.

The "Analyze Hazards" function incorporates these steps of Work Control when, for example:

- The Readiness Review Process verifies that the controls described in the PHS are implemented and functional before start-up of experiments or operations (CPR400.1.1/MN471001, *ES&H Manual* [Section 13D](#), "Readiness Review Process - Planning, Review and Approval"). The review follows a graded approach and includes a check of the control measures listed in the PHS.
- The Self-Assessment process gives managers the tools for effective oversight of activities.

Note: See [Section 2.6.4](#), "Supervisory Tools," for additional descriptions on these items.

The IWP creates a cohesive link between identified hazards and environmental impacts, their mitigation and/or elimination at the activity level.

4.1 Safety Analysis

Hazard management is the responsibility of each person involved in an activity, from planning to clean up.

Management is responsible for ensuring that hazards are identified and that adequate measures are in place to provide a safe, healthful, and environmentally benign workplace. This responsibility includes performing routine workplace assessments to ensure that hazards are identified and controlled, that work is performed safely, and that the environment is protected.

All Members of the Workforce are responsible for suspending and reporting operations they believe to be unsafe or environmentally unacceptable and refraining from participating in such operations.

In addition, Members of the Workforce are responsible for:

- Helping management identify hazards to both Members of the Workforce and to the environment.
- Helping management identify actions needed to perform work safely and in an environmentally acceptable manner.
- Performing their work in a safe and environmentally acceptable manner.

The purpose of both [DOE O 450.1](#), *Environmental Protection Program*, and of the PHS is to help Members of the Workforce and management identify hazards that pose risks to workers and the environment, and to assess the adequacy of actions planned to mitigate the consequences of such hazards. The PHS Process, as a Sandia tool, is designed to assist in managing hazards. The level of effort applied to mitigate a workplace hazard depends on the potential consequences to workers, the public, and the environment. For example, most hazards at Sandia are equivalent to those routinely encountered in industry. Controls for these standard industrial hazards have been defined by industry or regulatory bodies. Some Sandia-unique processes or equipment may not have industry-defined controls. These hazards may need additional analysis or development of special controls. ISMS software is a tool to help managers and workers recognize the need for this additional analysis and to understand the level of approval needed to start an activity or operation (for example, managers approve operations involving standard industrial hazards; DOE approval is needed for some higher hazard operations).

The PHS description section defines the scope of work that is covered under the specific PHS; includes hazard identification at a high-level; identifies requirements for hazards and controls (e. g. training, ES&H Manual sections); and identifies hazards classification.

The PHS outputs documentation of processes, activities, and hazards, including the following

information:

- Applicable hazard **classification** (e.g., [business occupancy \[office\]](#), [standard industrial hazard](#), [low-hazard nonnuclear](#), [moderate-hazard nonnuclear](#), [accelerator](#), [Category 2 nuclear](#) facility, or [Category 3 nuclear](#) facility)
- Readiness reviews (see CPR400.1.1/MN471001, *ES&H Manual*, [Section 13D](#), "Readiness Review Process — Planning, Review, and Approval")
- Highest-level required safety documentation (e.g., [PHS](#), PHS with integral [HA](#), [safety assessment \[SA\]](#), documented [safety analysis \[DSA\]](#), or [safety assessment document \[SAD\]](#))
- Required [technical work documents \(TWDs\)](#)
- Sections in the *ES&H Manual* that identify applicable requirements from regulations, DOE directives and SNL policies
- Warning messages
- Analysis of all low hazards (and, optionally, standard industrial hazards) **using a modified Failure Modes and Effect Analysis (FMEA) technique.**

The ISMS PHS Process identifies sections of the *ES&H Manual* that address requirements applicable to the operation's particular hazards. Members of the Workforce who perform work can further tailor these requirements by developing TWDs.

4.2 Environmental Management System (EMS) Analysis

Sandia has implemented an institutionalized EMS. The EMS, in accordance with [DOE Order 450.1](#), Environmental Protection Program, specifically addresses the environmental elements and required integration with ISMS.

The purpose of the EMS is to provide a prevention-based environmental management system that goes beyond compliance and provides a system for continuous improvement of environmental protection.

Sandia conducted a site-wide aspects/impacts analysis to define significant environmental impacts to help develop goals to reduce these impacts. Additionally, each division reviewed their operations, identified key environmental impacts and developed goals and actions to mitigate these impacts. In conjunction with the FY06 DOE Pollution Goals, Sandia has developed a set of environmental metrics that is tracked to show progress in meeting

objectives. These goals and supporting metrics are communicated through division ES&H teams to the worker level. This ensures that planned activities address environmental impacts and **identify how to** implement the necessary controls. Aspects/Impact analyses are conducted annually to assess progress and develop new goals.

An important element of Sandia's EMS is National Environmental Policy Act (NEPA) compliance. Sandia assists DOE in meeting DOE's NEPA responsibilities by:

- Performing internal reviews of proposed actions for potential environmental impacts as one of the initial elements of project planning, and documenting these reviews. A module of ISMS software assists with this evaluation and documentation.
- Identifying both those actions that are within the scope of existing DOE NEPA determinations, and actions that require additional DOE NEPA review. Sandia must submit documentation to NNSA/SSO for actions requiring additional DOE NEPA review.
- Complying with CPR400.1.1/MN471001, *ES&H Manual*, [Section 10B](#), "National Environmental Policy Act (NEPA), Cultural Resources, and Historic Properties."
- Making maximum use of data generated and analyzed for [DOE/EIS-0281](#), *SNL/NM Site-Wide Environmental Impact Statement (SWEIS)*, and DOE/EA-1422, *Final Site-Wide Environmental Assessment of the Sandia National Laboratories/California Site* (January 2003), by incorporating facility operational descriptions, materials and effluent quantities, and hazard descriptions into NEPA review to help:
 - Ensure that operations remain within the conditions analyzed.
 - Identify when proposed actions may lie outside those conditions.

The ISMS Software NEPA Module is the corporate tool recommended for meeting these requirements. However, some line organizations (including the California site) use equivalent processes and tools.

5.0 CONTROL HAZARDS



This section addresses the third safety management function, "develop and implement hazard controls," which involves identifying applicable requirements, identifying controls to prevent/mitigate hazards, establishing the safety envelope, and implementing controls. (See

CPR400.1.1/MN471001, *ES&H Manual*, [Section 2C](#), "Control Hazards.") It also specifically addresses Guiding Principle 3, Competence Commensurate with Responsibilities, in a further discussion of ES&H training.

"Control Hazards" is addressed in the following:

- The ES&H Assurance System
- The ES&H Programs, Services, and Tools subsystem
- The creation of ISMS tools such as the PHS
- The Decision Making & Action subsystem, where input from the Data Analysis and Reporting subsystem is used to recommend or authorize changes to the programs, services and tools to better identify and control hazards.

The "Control Hazards" function incorporates these steps of Work Control when, for example, a readiness review, as described in *the* CPR400.1.1/MN471001, *ES&H Manual* [Section 13D](#), "Readiness Review Process - Planning, Review, and Approval," verifies that safety related structures, systems, components and administrative controls specified in the CPR400.1.1/MN471001, *ES&H Manual*, [Section 13C](#), "Authorization Basis Process," are implemented and functional prior to startup or restart of a Sandia activity.

The "Control Hazards" function is accomplished through a variety of mechanisms; the most common of which are Technical Work Documents (TWDs). TWDs record hazards, so that potential environmental impacts are mitigated or eliminated, and the steps necessary to perform the technical aspects of the work. Stop Work conditions are identified, when appropriate, in each task description contained within a TWD.

TWDs are approved and signed at the appropriate level prior to performing work. Authorized users are required to read the TWD and confirm their status as an authorized user by signing the TWD. Work is performed safely within control measures established and communicated by the TWD. Work is not permitted to be performed outside the controls established for the activity-level hazards identified in the TWD without additional revision and approvals. [CPR400.1.1/MN471001, *ES&H Manual*, Chapter 21, Technical Work Documents (TWDs), "[Incorporating ISMS into TWDs.](#)"]

5.1 Identify Applicable Requirements

The Sandia M&O Contract, [Clause I-72](#), specifies that Sandia must comply with two categories of requirements:

- All applicable federal, state, and local laws and regulations.
- All DOE directives agreed to by the Corporate Contracts Management and Policy Department and the NNSA/Sandia Site Office (NNSA/SSO) Contracting Officer that are identified in the Sandia M&O Contract, Section J, [Appendix G](#), "List of Applicable Directives and NNSA Policy Letters." See [CPR200.2.2](#), *Baseline Directives Management*, for processes used by Sandia to manage DOE/NNSA directives, including adding directives to the Sandia M&O Contract.

The process through which applicable **ISMS** requirements are reviewed, tailored, and communicated to Members of the Workforce is established in the Administrative Operating Procedure ([AOP 04-02](#)), *ES&H and Emergency Management Requirements Management Process*.

Sandia line organizations obtain their ES&H requirements from the [ES&H Manual](#) and its supplements. The information in the *ES&H Manual* is:

- Organized according to applicable ES&H functional program areas or program elements (e.g., radiation protection, pressure safety, etc.).
- Authored by SMEs who interpret the ES&H requirements and tailor them for SNL.
- Formatted to separate mandatory requirements from optional guidance.
- Restricted to "what" is required or recommended, not "how" it is to be implemented in organizations (except where uniformity within SNL is deemed necessary).
- Tied to requirements source documents (e.g., federal, state, and local laws, regulations, and ordinances and applicable DOE directives identified in Section J, [Appendix G](#) of the Sandia M&O Contract).
- Inclusive of training requirements located in each chapter or section's "Training" topic and in [Chapter 11](#), "ES&H Training."

Oversight of *ES&H Manual* processes (e.g., development, revision, review, and approval) is provided by the ES&H Manual Committee (ESHMC). The ESHMC includes [ES&H and Emergency Management Center](#) (10300), [California Site Operations](#) (8500), line Members of the Workforce, and Sandia's [ES&H attorney](#). These processes are intended to ensure that the *ES&H Manual* captures requirements and changes from higher-level documentation (i.e., regulations, DOE directives, and Sandia corporate policy statements) and tailors them into corporate process requirements for flow-down to activity-level work planning and work controls that are understood and integrated as part of line operations.

The ESHMC sets priorities for development of new sections, chapters, supplements, and updating of existing documents. At any given time, some contractual requirements may not be captured in the *ES&H Manual* but should appear on the revision schedule.

As external requirements change, the appropriate SMEs are responsible for communicating current program requirements in their area of expertise.

Program requirements applicable to ES&H program operations and Members of the Workforce are communicated through program description documents and other appropriate mechanisms (see AOP 04-02 Environmental Safety & Health (ES&H) and Emergency Management Requirement Management Process.)

Line organizations can further tailor program-level requirements from the ES&H Manual into activity-specific requirements. Tools available for this purpose include an Index of Hazards within the ES&H Manual, output from the ISMS software, and technical work documents (TWDs). See [Section 5.2.2](#) for more information on TWDs. The Index of Hazards provides a quick and effective method to search for hazards and associated controls and guidance, enabling line organizations to ensure that they are aware of and applying necessary hazard controls. The output from the ISMS PHS/HA process tailors program-level requirements from the ES&H Manual into activity-specific requirements for line organizations. A completed TWD is a working-level document that defines and communicates controls that mitigate potential ES&H hazards associated with work activities or facilities.

5.2 Identify Controls

Controls include design features, engineering controls, and administrative controls (e.g., personal protective equipment, TWDs, warning signs, and ES&H training).

Eliminating hazards or identifying mitigation controls is accomplished primarily through a combination of the ISMS software, TWDs, training, worker involvement, and [Division ES&H Team](#) support.

See CPR400.1.1/MN471001, *ES&H Manual*, [Section 2C](#), "Control Hazards," for a general discussion of hazard controls and links to applicable *ES&H Manual* sections and supplements.

Controls associated with facilities infrastructure (e.g., water; sewer; electrical; and heating, ventilation, and air conditioning systems) are implemented at SNL through the [Sandia Sites Comprehensive Plan](#) and Sandia Internal Lease Agreements (ILAs). See [CPR400.4.2, Corporate Space and Real Estate Management](#), for more information on ILAs.

5.2.1 ISMS Software

The ISMS software is discussed in detail in Section 2.6.2, Integrated Work Plan/Work Controls. The PHS program is part of the [ISMS software](#) and is available through the Sandia Restricted Network (SRN) and accessible from all Sandia locations.

5.2.2 Technical Work Documents (TWDs)

Each line organization identifies hazard-specific work controls in TWDs that tailor requirements to the work. See CPR400.1.1/MN471001, *ES&H Manual*, [Chapter 21](#), "Technical Work Documents (TWDs)," to determine the need for TWDs. A new application, the [Integrated Work Plan \(IWP\)](#) system, has been developed and deployed. The IWP comprises various modules, including the OP module in which TWDs such as Operating Procedures (OPs), Test-Specific OPs, and Standard OPs can be created. To create a new TWD or change an existing eTWD, use the OP module in the [IWP Application](#).

The [Division ES&H Teams](#) or other SMEs in the [ES&H and Emergency Management Center](#) (10300), and [California Site Operations \(8500\)](#) provide assistance with development and review TWDs, as necessary, and assist Line managers and personnel in working safely and meeting applicable requirements defined within TWDs.

5.2.3 ES&H Training

As established in CPR400.1.1/MN471001, *ES&H Manual*, [Chapter 11](#), "ES&H Training," line managers are responsible and accountable for ensuring that:

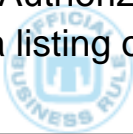
- The *ES&H Manual* and PHS are used to identify required training for Members of the Workforce that is appropriate for the hazards associated with their processes and projects.
- Training requirements are entered into the ES&H Training, Education, and Development System (TEDS).
- Members of the Workforce must complete required training before performing work.
- Additional task-specific training and/or worker qualification requirements are defined by operational management.
- Training requirements consistent with the [Contractor Training Instructional Aid](#) are written into contracts.
- Training completions are documented in Sandia's Training & Employee Development System (TEDS). (Some organizations have site-specific or task-specific training

databases to record completions and perform tracking in addition to TEDS.)

Members of the Workforce are responsible and accountable for completing designated training prior to working on activities that require training. Unless prohibited in policies or programs, line management may approve MOW to work under the direction of an appropriately qualified person.

5.3 Establish the Safety Envelope

The CPR400.1.1/MN471001, *ES&H Manual*, [Section 13C](#), "Authorization Basis Process," contains information related to establishing the safety envelope and process for obtaining Sandia or DOE authorization approval for facilities and activities. See [Section 2.6.3](#), "Authorization Basis/Safety Assessment Documents." The [Safety Basis Department](#) maintains a listing of Sandia higher hazard facilities and corresponding authorization basis documents.



6.0 PERFORM WORK



This section addresses the fourth safety management function, "perform work within controls," which involves confirming operational readiness and performing work safely. (See CPR400.1.1/MN471001, *ES&H Manual*, [Section 2D](#), "Perform Work.")

"Perform Work" is addressed in the ES&H Assurance System in the Program and Line Implementation subsystem. The ES&H programs, services, and tools feed into program and line implementation by identifying **and analyzing** hazards and the steps necessary to mitigate them. In turn, through the various feedback and improvement mechanisms to be described in [Section 7.0](#), the program and line provide data to the Data and Analysis (Reporting/Communication) subsystem, which processes it for input into the Decision Making & Action subsystem to recommend or authorize changes to processes, procedures, programs, services and tools.

6.1 Confirm Readiness

Steps required to confirm readiness to perform work are established in CPR400.1.1/MN471001, *ES&H Manual*, [Section 13D](#), "Readiness Review Process—Planning, Review, and Approval."

6.2 Perform Work Safely



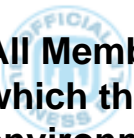
The "Perform Work" function incorporates the corresponding steps of Work Control when:

- The first three safety management functions have been performed. (Plan Work, Analyze Hazards, and Control Hazards).
- The controls that determine the safety envelope are implemented and remain operational. (e.g., No new hazards are encountered, equipment remains functional, Members of the Workforce training remains in compliance; and Members of the Workforce are aware of and follow requirements which are documented in TWDs or are communicated in training or other applicable policies and procedures.)
- If the scope of work changes such that new hazards or environmental risks are introduced, the work must be paused until revised work planning, hazard and environmental impacts are analyzed; and any additional controls are documented and approved.



Members of the Workforce (including management) meet these conditions by complying with:

- [CPSR001.3](#), *Integrated Laboratory Management System (ILMS)*.
- Sandia's expectations for formality of operations as described in the [Formality of Operations Manual](#).
- CPR400.1.1/MN471001, *ES&H Manual*, [Section 2D](#), "Perform Work."
- CPR400.1.1/MN471001, *ES&H Manual*, [Chapter 15](#), "Emergency Preparedness and Management."
- CPR400.1.1/MN471001, *ES&H Manual*, [Chapter 21](#), "Technical work documents (TWDs)."



All Members of the Workforce have the right, responsibility, and obligation to stop work which they believe is being performed in an unsafe manner or may threaten the environment.



7.0 FEEDBACK AND IMPROVE

This section addresses the fifth safety management function, "provide feedback on adequacy of controls and continue to improve safety management," which involves gathering feedback

information on the adequacy of controls; identifying and implementing opportunities for improving the definition and planning of work; conducting line and independent oversight; and, if necessary, addressing regulatory enforcement actions. (See CPR400.1.1/MN471001, *ES&H Manual*, [Section 2E](#), "Feedback and Improve.")

Self Assessment Improvement Plan for FY06

- Revised self-assessment CPR
- Standard tool set for Corporate trending and tracking
- Self-Assessment training – cascaded model
- Clear and defined expectations associated with roles and responsibilities for participants of self-assessment teams (i.e. frequency, participants, expertise/qualifications)
- Integrated issues management and ES&H self-assessment results
- Deploy ES&H Dashboard
- Implement Statistical Process Control (SPC) Methodology in the Causal Analysis of Occurrence Reports (ORs) and Non-occurrence Trackable Events (NOTEs).

Self Assessment Improvement Plan for FY07

- Revised self-assessment CPR
- Standard tool set for Corporate Trending
- Integrated issues management and ES&H self-assessment results
- Develop a process for performing Causal Analysis on the graded approach for the ES&H Data set (to include aggregation of causes against near misses, as well as analysis of ES&H lessons learned, radiological protection improvement reports (RPIRs), self-assessments, injury/illness, Computerized Accident and Incident Reporting System (CAIRS), ES&H Concerns, environmental spills, audits/assessments, PAAA and ES&H Evaluation Reports (ESHERs), as applicable. These latter analyses will be performed by subject matter experts who will review event information and, using best judgment, select a cause code for the event.
- Monthly reporting process for the ES&H Issues Management Review Committee and transmitting monthly reports to SSO.

- Enhancements to the dashboard will include automatic generation of the SPC charts and dashboard displays, and expansion of the dashboard to include indicators for the FY07 PEP PO8 objectives.

Division ES&H Coordinators shall develop an annual fiscal year (FY) division ES&H self-assessment schedule and submit it to the Performance Assurance Department. (CPR400.1.1/MN471001, ES&H Manual, [Section 22A](#), "Scheduling the Self-Assessment.")

Radiological activities are assessed at a minimum of every three years, in accordance with [MN471016](#), *Radiological Protection Procedures Manual*, Chapter 13, "Feedback and Improvement," [Section 4.0](#), "Procedure" (CPR400.1.1/MN471001, *ES&H Manual*, [Section 22A](#), "ES&H Line Self-Assessment (SA) Activities.")

Feedback and Improvement is addressed in the ES&H Assurance System in the Assessment System, which consists of the Data Analysis and Reporting subsystem and the Decision Making & Action subsystem. The Assessment System is specifically designed to measure how well Sandia is meeting the performance measures, objectives, and expectations set forth by SSO and Sandia management. The types of analysis performed are discussed in detail in the ES&H Assurance System Description.

Ongoing reviews and updates of safety performance objectives, performance measures, and commitments to incorporate feedback are necessary to implement continuous improvement. Such reviews and updates depend upon gathering feedback information on the adequacy of controls, identifying and implementing opportunities for improving the definition and planning of work, conducting line and independent oversight, and, if necessary, addressing regulatory enforcement actions. (See CPR400.1.1/MN471001, *ES&H Manual*, [Section 2E](#), "Feedback and Improve.") This process is addressed in the Assessment System of the ES&H Assurance System. The Assessment System compares actual ES&H performance to standards established in the Strategy, Performance Objectives, Standards and Measurements Subsystem, and uses the results of data analysis to propose improvements. The Assessment System also includes the Issues Management process, which addresses issues identified, including causal analysis, corrective actions, lessons learned, and tracking and trending, as appropriate. Issues that Center 10300 controls are handled by subject matter experts and program owners, as appropriate. Issues that are beyond the control of 10300 may be elevated to Corporate Issues Management.

7.1 Feedback

As stated above, feedback involves:

- Gathering information on the adequacy of controls.

- Identifying and implementing opportunities for improving the definition and planning of work.
- Using the SNL ES&H self-assessment system.
- Addressing regulatory enforcement actions.

See Sandia's [ES&H Feedback and Improvement \(F&I\) Program and Services](#).

As feedback is gathered, it is processed through the [Lessons Learned Program](#), which is part of the Feedback and Improvement (F&I) Program. The purpose of the Lessons Learned Program is to gather, screen, create, and communicate useful and timely lessons learned to management; to program owners; to data analysis teams for review and recommendations for policy changes; to Members of the Workforce; and to other DOE and NNSA sites as appropriate, for continuous improvement of ES&H at SNL. Lessons Learned enable Members of the Workforce to learn from the experiences of others to perform work safely and efficiently. The program identifies and encourages use of processes and proactive behaviors that enhance work planning and performance while avoiding adverse ES&H events. For more information on identifying, capturing, and sharing lessons learned, see CPR400.1.1/MN471001, *ES&H Manual*, [Section 22C](#), "Lessons Learned."

Another key element of the ES&H Feedback and Improvement Program is the [ES&H Quarterly Performance Analysis Report](#), which incorporates [data from Occurrence Reporting and Processing System \(ORPS\), NOTEs, PAAA, and Environmental Spills and Releases](#). The data from this analysis is presented to DOE/SSO, ES&H Division and Center Coordinators, ES&H Management on a quarterly basis. The Occurrence Reporting/Lessons Learned Assurance sub-team who is responsible for this analysis meets on a monthly basis. Increased management awareness of their role in ES&H performance has been accomplished with established quarterly reports to Vice Presidents. These [VP Quarterly Reviews](#), by the Director of the ES&H Center, report ES&H data by Division, and the results are then discussed in the meetings of the Laboratory Leadership Team.

7.2 Feedback Information on Adequacy of Controls

The different types of information gathered by Sandia on the adequacy of controls include information about:

- Events (e.g., environmental releases, injuries, or ES&H concerns).
- Self-assessments (e.g., Line self-assessments, program self-assessments, and internal independent assessments).

- Performance with respect to corporate performance measures.
- Monitoring of routine work activities.
- External assessments.

In FY06 the Issues Management Team implemented an improved [ES&H Issues Management System](#) data flow, which incorporates the analysis of ES&H Data: which is presented to both the ES&H Issues Management Review Committee (IMRC) and the ES&H Council. The IMRC, made up of ES&H Performance Assurance data analysts and SME's, is tasked with determining if a potential trend or issue exists and makes actionable recommendations to the ES&H Council. The ES&H Council is made up of ES&H senior managers and the data analysts. The ES&H Council makes a decision on how the potential issue or trend is to be handled. In addition, the ES&H Issues Management System coordinates results with:

- The Occurrence Report/Lessons Learned (OR/LL) Assurance Sub-team. If the ES&H Council determines a Recurring Occurrence they forward the potential recurring occurrence to the OR/LL Assurance Sub-team for action under the occurrence management process.
- The ES&H Management, if the issue needs to be handled as an ES&H Programmatic issue.
- The Corrective Action Management Program, which will monitor and track corrective actions of ES&H issues. Any ES&H issue will follow the CAMP process when performing causal analysis.
- The Corporate Issues Management System, if the potential issue is a corporate issue.

ES&H self-assessment schedules have been developed based on a risk ranking system, to be updated annually. Of the forty ES&H programs risk-ranked, ten programs were determined to be highest risk. Focused self-assessments based on higher risk activity programs will be required including performance-based approaches.

Data from self-assessment results are currently stored in multiple applications: division self-assessment results are stored in the Laboratory ES&H Self-Assessment (LESA) application, Corporate Line Self-Assessment checklists results are captured through a web application, and Programmatic Self-Assessments are captured in 10300 CATS. In FY06, the Corporate Line Self-Assessment checklists were rolled up and reported to the division VP level. Division ES&H self-assessment results were reported through the VP Quarterly Reviews. In FY07 it is expected the ES&H Performance Assurance Program will analyze all Self-Assessment data and determine if any issues exist as a result of the information captured. Assessment by observing work is being emphasized by the phased implementation of a Behavior Based Safety

(BBS) initiative. It is expected that BBS will be implemented Laboratory-wide by the end of FY08.


7.3 Feedback Mechanisms and Documentation


Members of the Workforce can provide input on events and facility conditions through a number of avenues, including but not limited to:

- The MOW's management chain.
 - ES&H [Lessons Learned Program](#)
 - Reports to [Telecon Plus](#) for issues requiring immediate resolution.
 - Maintenance Service Request forms.
 - Facilities E-Services, an online form to request services.
 - Requests for Site Services.
 - The [Corporate ES&H Concerns and Suggestions for Improvement Reporting Process](#).
 - [Division ES&H Team\(s\)](#).
 - Building ES&H coordinator(s) or facility building manager(s).
- Note:** Not all divisions use building ES&H coordinators.
- Union ES&H representative(s) or coordinator(s) for union-represented employees.
 - Various ES&H safety committees as defined in Chapter 1, [Attachment 1D-3](#), "Standing ES&H Committees."
 - [Benchmarking Activities](#).

Sandia identifies data about events which support opportunities for continuous improvement primarily through reporting processes discussed in CPR400.1.1/MN471001, *ES&H Manual*, [Chapter 18](#), "Reporting, Investigating, and Correcting ES&H Events." Corporate processes are addressed in the following documents:

- [Chapter 15](#), "Emergency Preparedness and Management" (Incident Commander's database).


- 
- [Chapter 16](#), "Health, Benefits and Employee Services," (reporting of occupational injuries/illnesses).
 - [Section 18A](#), "Reporting ES&H Concerns and Suggestions for Improvement."
 - [Section 18C](#), "Occurrence Reporting."
 - [Section 18E](#), "Environmental Release Reporting."
 - [Section 18F](#), "Reporting Vehicle Accidents and Property Damage."
 - [Section 18G](#), "Identifying, Reporting, and Correcting Nuclear and Worker Safety Rules Nonconformances."
 - [Section 22A](#), "ES&H Line Self-Assessment (SA) Activities."



These sections and chapters of the *ES&H Manual* describe in detail the avenues available for Members of the Workforce, and program and line management to report events which are then analyzed, tracked, and trended as required through the Data and Analysis subsystem of the ES&H Assurance System. In addition, SNL has initiated expedited incident reporting requirements to expedite management engagement and timely notifications to NNSA/SSO.

Data reported or collected, whether by Members of the Workforce, through self-assessments, or otherwise, are collected through various avenues including the Corporate Corrective Action Tracking System (CATS), 10300 CATS, Laboratory ES&H Self-Assessment (LESA) database, Occurrence Reporting and Processing System (ORPS), ES&H Lessons Learned, and other databases. An ES&H Data Warehouse has been funded to integrate various ES&H data sources. This combined data will increase the quality of subsequent trending and expedite appropriate improvement strategies.

7.3.1 ES&H LIWG Assurance Teams



LIWG has three [ES&H LIWG Assurance Teams](#) to provide line organization participation and input into process improvements in Integrated Safety Management (ISM) programs and implementation. Team membership consists of Division representatives, ES&H program representatives, and DOE/NNSA SSO points of contact. Each team reports quarterly through LIWG. Information from these teams will be used as required in quarterly Joint Performance Review Team (JPRT) or Performance Evaluation Plan (PEP) review briefings. New teams may be formed or existing teams retired as required by the needs of the business. Active teams include:

- Environmental Compliance.
- Occurrence Management/Lessons Learned.
- Issues Management.

The activities and deliverables of each team are based upon strategic and operational goals and plans that are developed using risk management tools, including risk to the environment and to the worker. Quarterly team status report information is presented to LIWG and posted on the Sandia internal web. The scope and emphasis of activities and deliverables of each team are dynamic, and may change during the year as assessments and analyses indicate changing conditions or reprioritization in response to events.

7.3.2 Self-Assessment Information

The ES&H Performance Assurance Department analyzes the content of the Corporate Self-Assessment Checklists, the LESA, as well as the results of ES&H Program self-assessments. This analysis provides information supporting:

- Identification, tracking, and trending of cross-cutting issues.
- Evaluation of quality and consistency of ES&H implementation and self-assessment throughout the labs.
- Continuous improvement in risk-based prioritization of self-assessment topical areas and methodologies.

Sandia National Laboratories/New Mexico and California both have established ES&H Functional Area Self-Assessment Programs. The SNL ES&H Functional Area Self-Assessment is intended to assure that required documentation (program documents, *ES&H Manual* sections and/or operating procedures) and implementation systems have been properly developed, communicated, reviewed, and updated in accordance with applicable laws, regulations and permits, industry standards, and DOE Orders.

Sandia's ES&H [self-assessment processes](#) include but are not limited to the following:

- Corporate self-assessment checklists.
- Line implementation self-assessments.
- ES&H program self-assessments.
- Internal independent assessments.

Corporate Self-Assessment Checklists

- [Conducted every other month on a different program or functional area](#)
- 4 different checklists
 - Member of the Workforce
 - Department Manager
 - Senior Managers
 - Director and Vice Presidents
- Data rolled up at the division level



Line Implementation Self-Assessments

- Are conducted at the division level and below.
- Can vary in scope, frequency, and rigor depending on the programmatic and ES&H hazards and risks associated with activities.
- Are required to comply with CPR400.1.1/MN471001, *ES&H Manual*, [Section 22A](#), "ES&H Line Self-Assessment (SA) Activities."



Some self-assessments are management surveillances conducted according to [CPR400.1.1.4](#), *Performing and Documenting Management Surveillances*. [Division ES&H Teams](#) participate in many of the self-assessments.

Documentation of deficiencies and actions necessary to correct them are maintained by the self-assessing organization. Issues that meet the corporate trigger levels defined in CPR400.1.1/MN471001, *ES&H Manual*, [Section 22A](#), "ES&H Line Self-Assessment (SA) Activities."

ES&H Program Self-Assessments

ES&H Program Assessments are conducted annually in accordance with the ES&H and Emergency Management Center requirements and completed per the guidance in [AOP 04-04](#), *ES&H and Emergency Management Functional Area Self-Assessment Process*. When specific requirements or Sandia priorities identify the need, a review of line implementation aspects

may be included in this level of assessment. Data for an ES&H programmatic self-assessment can be collected as part of a scheduled line self-assessment or through other processes. Programmatic Self-Assessment results are tracked in 10300 Corrective Action Tracking System (10300 CATS).

Environmental Management System (EMS) Program Self-Assessments

An annual Self-Assessment of the EMS Program will be performed to identify deficiencies in the program and to implement corrective actions. Additionally, each Division EMS Champion will conduct an annual self-assessment of their Division EMS Program. Information obtained from these self-assessments will be used to verify that Sandia's EMS is meeting the expectations set forth by DOE O 450.1.

Internal Independent Assessments Internal independent assessments are conducted by the [Independent Audit & Advisory Services Center](#), which is organizationally independent and reports directly to Sandia senior management and the Sandia Corporation Board of Directors. The Audit Center supports Sandia senior management in fulfilling their oversight responsibilities by monitoring the adequacy, effectiveness, and performance of management systems and controls in meeting ES&H and quality requirements and expectations as described in [CPR001.3.5](#), *Audits, Assessment, and Appraisals*. Special internal independent ES&H assessments may also be performed at the request of upper management, a program owner, or an organization (Line) manager. An assessment may focus on a specific line organization or on a specific program implemented throughout SNL.

In addition, the Independent Review Team and its subset - the ES&H External Advisory Panel, the External Advisory Board, as well as other contracted assessments, have taken place as part of the benchmarking efforts for the Best-in-Class initiative.

7.3.3 External Assessments and Regulatory Enforcement Actions

External oversight is provided through external assessments performed by groups such as DOE/NNSA, [DOE Office of Price-Anderson Enforcement](#), Lockheed Martin, the Environmental Protection Agency, the Department of Transportation, and state and local agencies. DOE/NNSA assessment activities include:

- Assessments by DOE/SSO SMEs.
- Oversight by DOE Facility Representatives (FRs) through the FR Program
- Office of Independent Oversight and Performance Assurance (OA) Inspection of ES&H Management and Emergency Management.

- [Chief of Defense Nuclear Safety \(CDNS\) Reviews](#)

- Periodic reviews by the DOE Office of Price-Anderson Enforcement of Nuclear and Safety Programs.

[CPR001.3.5](#), *Audits, Assessment, and Appraisals*, establishes notification mechanisms in the event of an external assessment.

7.3.4 Corrective Action Management

SNL's [Corrective Action Management](#) program is in place to correct findings or observations that result from self-assessments, internal independent assessments, or external audits and enforcement actions. Many of the corrective actions are completed immediately and documented in the line self-assessment database or 10300 Corrective Action Tracking System (CATS) database. Those that require more analysis, additional funding, or other resources are managed and tracked to completion by the appropriate line or program organization. ES&H Self-Assessments activities are mandated by CPR400.1.1/MN471001, *ES&H Manual*, [Section 22A](#), "ES&H Line Self-Assessment (SA) Activities."

Sandia's Occurrence Reporting Program tracks Corrective Actions through the Occurrence Reporting and Processing System (ORPS).

Sandia's Safety and Security Regulatory Support Office/ Defense Nuclear Facilities Safety Board (DNFSB) Coordination Department reviews findings reported through the feedback and improvement processes and databases. PAAA evaluates issues, determines if there are noncompliances with the Nuclear or Worker Safety Rules, and tracks locally or does additional reporting to the DOE PAAA Noncompliance Tracking System (NTS) as necessary. PAAA reporting is according to the ES&H Manual, [Section 18G](#), "Identifying, Reporting, and Correcting Nuclear and Worker Safety Rules Nonconformances" and [CPR400.1.3](#), *Price-Anderson Amendments Act (PAAA) and Nuclear Safety Requirements*. Injury and Illness cases are tracked in the Incident Tracking System, an SNL/NM application owned jointly by Health Services and ES&H. Data are also entered into Computerized Accident and Incident Reporting System (CAIRS), a DOE database. An improved process to investigate and document injuries was implemented through the Internal Management Notification Process.

7.4 Issues Management

The [ES&H Issues Management System](#) (IMS) is an element of the *Data and Analysis* (reporting/communication) Subsystem of the ES&H Assurance System. The goal of the IMS is to direct management attention to ES&H areas or activities that require management action (1) to stay within defined process parameters or (2) to provide the response and resources necessary to correct unacceptable trends in ES&H performance. It describes how to manage issues identified through a formal audit or assessment, analysis of ES&H incident data and

reports, or through identification via a subject matter expert or manager. The purpose of the IMS is to:

- Analyze available data from assessments, audits, and/or reports (OR, Injury/Illness, 2050 P forms, etc.) to look for issues, events, or conditions trending towards issues.
- Analyze and track opportunities for improvements.
- Analyze and track strengths or verification that conditions are under control.
- Allow for standard (quarterly, regular) as well as custom (special, emergency) reporting.
- Allow for verification/validation of effectiveness of corrective actions implemented.
- Check, verify and validate ES&H compliance.
- Interface with the Corporate Issues Management System.

The ES&H IMS employs a five-step process:

1. Gather and/or identify potential ES&H "issues-data" currently utilizing existing Corrective Action Tracking Databases such as 10300 CATS and the corporate CATS.
2. Analyze and trend data, through the trending and analysis expertise of the 10335 data analysts.
3. Identify ES&H issues, through the ES&H Issues Management Review Committee (IMRC).
4. Report and track ES&H issues, through the Corrective Action Management Program (CAMP).
5. Verify completion of actions and correction of issues through CAMP.

The Issues Management Review Committee (IMRC) consists of the Data Analysts that are trending and analyzing the data. The IMRC is responsible for identifying issues as a result of the data analysis and submitting them to the **ES&H Council for a decision on how the potential issue or potential trend should be handled. Potential recurring occurrences are handled by the Occurrence Report/Lessons Learned Assurance Sub-team.** Issues that are within the scope of 10300 are handled by the Program Owner or the Subject Matter Expert. Issues that are outside the 10300 Center **scope** or require corporate attention are sent to the Corporate Issues Management system for decision-making and action.

7.5 Measurements

7.5.1 Performance Measures and Indicators

Sandia corporate ES&H performance measures and indicators are established externally through the DOE/NNSA and SNL Performance Evaluation Plans (see [Section 3.2](#), "Set Expectations") and internally through Sandia executive management.


The [ES&H Performance Indicators Program](#) is an element of the Decision Making & Action and Strategy, Performance Objectives, and Measures and Expectations Subsystems of the ES&H Assurance System, which uses both leading and lagging indicators to develop and maintain:

- Analytical ES&H data to base decisions, establish goals, identify performance trends, provide early identification of potential problems, and apply lessons learned and good practices.
- A robust program that identifies, gathers, verifies, analyzes, trends, and disseminates ES&H information to improve performance by:
 - Using data to demonstrate improving or deteriorating performance relative to identified goals.
 - Analyzing and correlating data as a means to suggest further improvement by identifying good practices and lessons learned.



Dashboard

SNL developed and deployed a web-based tool, the [ES&H Dashboard](#), which provides the status of SNL's ES&H performance via leading and lagging indicators. Performance data is displayed by Division as well as at the corporate level using both a scorecard and a dashboard format. The dashboard provides the capability to "drill down" to a statistical process control chart for each performance indicator. The performance indicators displayed on the dashboard were selected by a focus group comprised of line personnel. The dashboard concept was developed as an outgrowth of benchmarking with other DOE sites. The Flour-Hanford approach using statistical process control methodology was selected as the model for the SNL dashboard. The ES&H data warehouse is the source of information used to update the dashboard. FY07 enhancements to the dashboard will include automatic generation of the SPC charts and dashboard displays, and expansion of the dashboard to include indicators for the FY07 PEP PO8 objectives. Three improvement cycles are planned for the dashboard in FY07.



Performance measures pertinent to specific individuals or programs are incorporated into general management responsibilities, individual performance management forms (PMFs), and project plans. Additional measures are developed and communicated continuously.

High-level Corporate ES&H Objectives are established by Sandia's executive management with input from Sandia's ES&H Program Functional Managers, DOE/NNSA, and Lockheed Martin. The corporate objectives were articulated in the [December 12, 2003 Sandia Lab News](#), as "Doing quality work while protecting people, the environment, and our nation's security." The high-level objectives are:

- Zero job-related injuries and illnesses—every member of the workforce should expect to go home injury-free every day.
- Zero environmental incidents—Sandia operations are planned and conducted to minimize environmental impact.
- Zero operations fines, violations, or penalties—Sandia operations are conducted in full compliance with laws, regulations, and permit requirements.



Also, worker input is provided into SNL worker safety and health program goals, objectives,

and performance measures. Examples of mechanisms that provide worker input are Standing ES&H Committees, Lessons Learned, Line Implementation Working Group, Union Tripartite Safety Committee, and Union/Management Safety Committee. For a complete listing, see [Appendix B](#) of this CPR.

The Sandia performance expectations (specific numerical “targets” or “limits”) for each corporate measure have been established for the period 2006 - 2008 based both on historical Sandia performance and upon improvement goals established by Corporate Energy Environmental Safety and Health (CEESH). The performance expectations are also based upon extensive benchmarking, and taking into account input from DOE/NNSA, including the results of the DOE/OA Audit and the [FY0 6 Performance Evaluation Report](#). Please see [Appendix A](#), of the EMS Manual for EMS division and environmental program objectives and targets.

A systems approach to leading and lagging ES&H indicators is being implemented to select indicators such that the indicators will be tied to associated events (lagging) and outcomes (leading) to ensure effective work planning and process quality.

A one-to-one correspondence between leading and lagging indicators does not necessarily exist, so a system approach in order to view the state of health of ES&H from a corporate perspective is appropriate. Table 5 outlines how indicators can be used to look at a particular area of concern from this perspective.

Table 5. System approach to leading and lagging indicators

Leading Indicators					Lagging Indicators
Primary Goals & Intent	Program Elements	Attitude	Behavior	Conditions	Outcome Measured

What is the goal and the intent of the goal?	What program elements are we trying to ensure are covered?	What tools or methods can be used to determine attitude?	What behaviors are manifested as a result of the conditions listed?	What conditions are observed?	What metrics can measure associated outcomes?
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These questions, when asked consistently, result in consistent categories and the use of both leading and lagging indicators.

The elements of this systems approach are interdependent. For example, we must ask:

- Do the program elements support our goals?
- Are tools or methods available to measure what needs to be measured?
- Do conditions reflect the ideal presented under program elements?
- Can a set of diagnostic metrics be developed which indicate where a problem is?
- Are these metrics actionable? Can measurable changes be made which will result in a different result?

Injury and Illness Predictive Model (IIPM)

One important tracking tool within ES&H Performance Assurance is the Injury & Illness Predictive Model. This model will be evaluated for redevelopment since much emphasis has been placed on training that this no longer appears to be a characteristic of interest. ES&H has identified additional characteristics which should be reviewed to determine if these characteristics would also be leading indicators of injury & illness results.

Integrated Enabling Services (IES) SMU Indicators

Performance indicators are also established for Sandia’s ES&H programs as an element of the IES SMU. The performance indicators are intended to measure support program progress in meeting IES goals of: agility, productivity, decreased hassle, and cost worthiness. Examples include results from customer satisfaction surveys, and measures of turn-around time for services.

ES&H Performance Assurance Reports the Vital Few to executive management on a quarterly basis. The Vital Few include:

- Total Number of Recordable Cases - Lagging



- Number of Days Away Cases - Lagging
- ES&H Training Completions - Lagging
- Number of Near Misses - Leading

Leading and lagging indicators have been developed and are being reported through various mechanisms:

- IES Vital Few presentations to LLT
- VP Quarterly Reviews
- ES&H Performance Assurance Metrics web page



- ES&H Dashboard

7.5.2 Monitoring Data

Sandia monitors and reports ES&H performance of its operations. Some examples include water discharges, occupational radiation exposure, and occupational injuries and illnesses of Members of the Workforce (e.g., Days Away Case Rate, Total Recordable Case Rate, other OSHA metrics). The information provided by such monitoring is fed into the *Data and Analysis* Subsystem of the ES&H Assurance System for analysis, trending, tracking, and evaluation for recommendations to management for continuous improvement. These reports consist of:

- ES&H Performance Assurance Department Technical Analyses.
- OR/LL Sub-team Quarterly Performance Analysis.
- IIPM – currently being evaluated for redevelopment of the model due to the emphasis on ES&H training compliance in FY06.
- Early Notification.
- Occurrence Reports.
- NOTES.
- Executive Notifications.
- Lessons Learned.



Others as required.

The ES&H Performance Assurance Data Analysis Team/ES&H Issues Management Review Committee select the issues which are forwarded to the ES&H Council for further consideration and action.

In addition, in FY05, an [Executive Notification](#) process was implemented which mandated early notification to executive management of significant events, in addition to required notifications to SSO. [SNL continues to report to executive management and SSO on our performance regarding Early Notification.](#)

DOE/NNSA conducts a separate annual performance review documented in an annual performance evaluation report. Currently, the Corrective Action Management Program ([CAMP](#)) and [Occurrence Reporting](#) is providing a mechanism for validation and verification to substantiate the effectiveness of corrective actions completed as part of assurance. ([ES&H Manual, Section 22D, "Corrective Action Development, Verification of Completion, and Validation of Effectiveness."](#))

7.6 Identify and Implement Opportunities for Improving Safety Management

Primary methods for identifying opportunities for improvement include:

- Analysis of ES&H information using various qualitative and quantitative methods, as appropriate.
- Analysis and Investigation of events, including occurrences. [DOE M 231.1-2](#) requires that "The contractor should use a graded approach when determining the level of effort required for the investigation into the causes of the occurrence." Root cause analysis (RCA) (see CPR400.1.1/MN471001, *ES&H Manual, Section 18C*, "Occurrence Reporting") and reportable nuclear safety rule nonconformances (see CPR400.1.1/MN471001, *ES&H Manual, Section 18G*, "Identifying, Reporting, and Correcting Nuclear and Worker Safety Rules Nonconformances"). The RCA process may also be used for nonreportable incidents and other situations that could have significant impact on future activities if not mitigated. Causal analysis is used on a graded approach as appropriate to the significance category of the occurrence, as specified by [DOE M 231.1-2](#).

Implementing mechanisms for improvement opportunities include:

- Completing corrective actions that result from formal and informal investigations and self-assessments.

- Executive management direction based on review of corporate milestones.
- Process for reviewing employees' performance.
- Annual NNSA Performance Evaluation Plan Opportunities for Improvement.
- SSO identified opportunities for improvement (OFIs) in FY05 Performance Evaluation Report (PER). SNL tracked all OFIs during FY06 and provided Quarterly Report to SNL Executive Management.



8.0 REFERENCES

8.1 Requirements Source Documents

[10 CFR 830](#), *Nuclear Safety Management*.

[10 CFR 851](#), *Worker Safety and Health Program*.

[DOE M 231.1-2](#), *Occurrence Reporting and Processing of Operations Information*.

[DOE O 226.1](#), *Implementation of DOE Oversight Policy*.

[DOE/EIS-0281](#), *SNL/NM Site-Wide Environmental Impact Statement (SWEIS)*.

[DOE/EA-1422](#), *Final Site-Wide Environmental Assessment of the Sandia National Laboratories/California Site*.

[DOE O 414.1C](#), *Quality Assurance*.

[DOE O 420.2B](#), *Safety of Accelerator Facilities*.

[DOE O 450.1](#), *Environmental Protection Program*.

[DOE P 450.4](#), *Safety Management System Policy*.

[DOE STD 1027-92](#), *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports*.



[Management and Operating Contract](#) Between Sandia Corporation and DOE:

- Part I, Section H, "Special Contract Requirements," [H-3](#), *Contractor Assurance System*.
- Part II, Section I, Clause [I-72](#): *Laws, Regulations, and DOE Directives* (DEC 2000) (Deviation).
- Part II, Section I, Clause [I-75](#): *Conditional Payment of Fee, Profit, or Incentives* (DEC 2000) (Deviation).
- Part II, Section I, Clause [I-78](#): *Integration of Environment, Safety, and Health into Work Planning and Execution* (DEC 2000).
- Part III, Section J, Appendix B, Statement of Work, [Section 6.2](#): "*Integrated Safety Management Systems*."

SNL [CPSR001.3](#), *Integrated Laboratory Management System (ILMS)*.

SNL [CPR001.3.5](#), *Audits, Assessment, and Appraisals* .

SNL [CPSR400.1](#), *Environment, Safety and Health Policy Statement Requirement*.

8.2 Implementing Documents

[Contractor Training Instructional Aid](#).

[DOE/NNSA and SNL Performance Evaluation Plan \(PEP\)](#).

[ES&H Performance Assurance Quarterly Report](#).

NNSA, [Activity Level Work Planning and Control Processes](#).

SNL [CPR001.3.2](#), *Corporate Quality Assurance Program*.

SNL [CPR001.3.3](#), *Formality of Operations Manual*.

SNL [CPR001.3.4](#), *Corporate Work Process (CWP)*.

SNL [CPR001.3.14](#), *Work Planning and Control*.

SNL [CPR200.2.2](#), *Baseline Directives Management*.

SNL [CPR300.2.1](#), *Performance Management*.

SNL [CPR300.4.3](#), *Employee Conduct and Corrective Discipline*.

SNL [CPR400.1.1](#),/MN471001, *ES&H Manual, and Supplements*.

SNL [CPR400.1.1.4](#), *Performing and Documenting Management Surveillances (GN470034)*.

SNL [CPR400.1.1.20](#), *Preparation and Review of Safety Assessments for Moderate- and High-Hazard Nonnuclear Facilities (GN470088)*.

SNL [CPR400.1.1.33](#), *Conduct of Operations Manual: Explosives Operations*.

SNL [CPR400.1.1.35](#), *Authorization Agreements (AAs) for Category 1 or 2 Nuclear Facilities or High-Hazard Nonnuclear Facilities*.

SNL [CPR400.4.2](#), *Corporate Space and Real Estate Management*.

SNL [CPR500.1.1](#), *Financial Manual*.

SNL, [Business Rules](#).

SNL, Center 10300, [AOP 97-07](#), *Corporate Quarterly ES&H Report*.

SNL, Center 10300, [AOP 98-05](#), *Primary Hazard Screening (PHS) Question Sets* .

SNL, Center 10300, [AOP 98-06](#), *Integrated Safety Management System (ISMS) Software PHS Question Sets 19 and 20*.

SNL, Center 10300, [AOP 04-02](#), *ES&H and Emergency Management Requirements Management Process*.

SNL, [10300 ES&H Findings & Observations](#) (Corrective Action Management Program).

SNL, [ES&H Assurance System Description](#)

SNL, [Feedback and Improvement Programs](#).

SNL, [Institutional Plan](#).

SNL, [Issues Management System](#).

SNL, [ES&H Lessons Learned](#).

SNL, [Line Work Agreements](#).

SNL, [Sandia/California ES&H Council Policy](#), SCEC Policy, [Interdisciplinary Teams](#).

SNL, [Sandia Corporate Planning Elements](#).

SNL, [Strategic Objectives - Mission and Operational](#).

[TBP-901](#), *Integrated Safety Process for Nuclear Weapons Operations and Facilities*.

8.3 Related Documents

DOE G 450.4-1B, *Integrated Safety Management System Guide*, [Vol. 1](#) and [Vol. 2](#).

DOE, [Integrated Safety Management System Verification Phase I & II Final Report for Sandia National Laboratories](#).

[DOE P 450.5](#), *Line Environment, Safety and Health Oversight*.

[DOE O 5480.19, Chg 2](#), *Conduct of Operations Requirements for DOE Facilities*.

Lawrence Livermore National Laboratory (LLNL), [ISMS Description](#).

Idaho National Laboratory (INL), *Integrated Safety Management System*.



[Nancy Linarez-Royce, njlinar@sandia.gov](mailto:njlinar@sandia.gov)

CHANGE HISTORY

CPR400.1.2, Integrated Safety Management System (ISMS) Description

April 26, 2007

This document was revised to:

- **Add:** The following to this document.
 - 2.1.1.1 10 CFR 851 - Worker Safety and Health Protection Program Description
 - 2.1.1.3 Behavior Based Safety Program Implementation
 - 2.1.4 Overview of ISMS for the Sitewide Implementation Baseline
 - 2.3.2 Implementation of DOE O 226.1 (Department of Energy Oversight Policy)

Note: The above subsections are new and should be read in their entirety.

- **Delete:** Text references to any of the 22 work control elements through out this document.
- **Change:** "Hazard category," to "hazard classification."
- Under topic, "Purpose," in 1.1
 - **Change:** "Sandia National Laboratory (SNL) takes a comprehensive institutional approach to its Integrated Safety Management System (ISMS). This Description articulates the institutional requirements for all operations (in New Mexico, California, the Tonopah Test Range, or at any other sites where Laboratory employees and subcontractors work), unless the Sandia ISM requirements are superseded by those of another site with a DOE approved ISM program. We measure the

effectiveness of the SNL ISMS through the mechanisms of the Environment, Safety and Health (ES&H) Assurance System."

to

"Sandia Corporation (Sandia) takes a comprehensive, institutional approach to its Integrated Safety Management System (ISMS). This Description articulates the institutional requirements for all operations, on and off Sandia-controlled premises, unless the Sandia National Laboratories (SNL) Integrated Safety Management (ISM) requirements are superseded by those of another site with a DOE-approved ISM program. We measure the effectiveness of the SNL ISMS through the mechanisms of the Environment, Safety and Health (ES&H) Assurance System."

- **Change:** "This Description, for use by SNL's workforce, is available for those in Lockheed Martin and Department of Energy (DOE) and National Nuclear Security Administration (NNSA) organizations who review operations, verify compliance, and approve modifications."

to

"This Description, for use by SNL's workforce, is available for those in Lockheed Martin, the Department of Energy (DOE), and the National Nuclear Security Administration (NNSA) organizations that perform oversight, review operations, verify compliance, and approve modifications."

- **Change:** "Critical to the interface with Environmental and Health Systems is the responsibility and accountability of the line to include these parts of "safety" in all their operations, facilities, and activities."

to

"Critical to the interface with Environmental and Health Systems is the responsibility and accountability of the line to include these parts of 'safety' in all their operations, facilities, and activities."

- Under topic, "Objectives," in 2.1.1:
 - **Add:** "SNL's approach to meeting the requirements of 10 CFR 851, 'Worker Safety and Health' will be described in the CPR 400.A.A, "Worker Safety and Health Protection Program."
 - **Change:** "This system does not replace existing safety systems but integrates them into a cohesive and user friendly environment. The system will be a well defined process that provides an auditable work package at the activity level, and clearly documents individual and management accountability and performance during work execution. Activity level, as used within this description, could easily be a group of laboratories or test facilities."

to:

"This system does not replace existing work control methods but integrates them into a cohesive and user friendly environment. The system will be a well defined process that provides an auditable work package at the activity level that clearly documents worker and management accountability, and performance during work planning and execution. Activity level, as used within this description, could easily be a group of laboratories or test facilities."

- Under topic, "Environmental Management System (EMS)," in 2.1.1.2:
 - **Delete:** "A crosswalk of the requirements of the Order, and how Sandia meets the environmental requirements, is available in the Crosswalk of DOE Order 450.1 Contractor Requirements Document (CRD) and SNL's ISMS."
- Under topic, "Guiding Principles," in 2.1.3:
 - **Add:** "Line management is directly responsible for the protection of the workers, the public, and the environment."
 - **Change:** "These seven guiding principles are embedded in the five safety management functions described above."

to

"These seven guiding principles and their relation to the five core management functions of ISMS are shown in the table below."

- **Add:** Table 1, "Seven guiding principles and their relation to the five Core Management Functions of ISMS."
- Under topic, "Flow-down of ISMS Requirements," in 2.2:
 - **Change:** "The Executive Office approves the CPS and all Internal Directives." **to** "The Executive Office approves the CPS."
 - **Change:** Level 2 title from "Internal Directives" **to** "Corporate Policy Statement Requirements."
 - **Change:** Level 2 title from "Corporate Business Rules System Standard" **to** "Process Requirements."
 - **Change:** Level 3 title from "Business Unit Information" **to** "Local Requirements."
- Under topic, "ES&H Assurance System," in 2.3:
 - **Change:** Statistical Modeling Function, "Injury/Illness Predictive Model – Developed a behavioral model that scores risk for Divisions and centers. Eight characteristics proved to be statistically significant predictors of injury/illness. These data are reported on a quarterly basis to Laboratory Leadership Team (LLT) and ES&H Management."

to:

"Injury/Illness Predictive Model – Model was developed in 2004 and is being evaluated for redevelopment in FY07 due to the fact that training compliance was focus in FY06."

- Under topic, "Quality Assurance (QA) Integrations with ISMS," in 2.3.1:

- **Add:** "Sandia will conduct self assessments to ensure that the business rules are both adequate and appropriately implemented. The NNSA Guide, "Attributes, Best Practices, and Guidance for Effective Incorporation of Integrated Safety Management and Quality Assurance Into Activity Level Work Planning and Control Processes" provides insight into the oversight philosophy of SNL's primary customer, and is an important resource in planning and executing self-assessments for all types of activity level work."
- **Change:** "The business rules describe management systems that must be integrated together and ILMS using the CWP framework." **to** "The business rules describe the various aspects of Sandia's Integrated Laboratory Management System (ILMS) that must be integrated using the CWP."
- Under topic, "Applicability," in 2.4.1:
 - **Change:** "ISMS is implemented utilizing a combination of policies and programs that provide ISMS requirements to line organizations as well as the tools to enable required compliance."

to

"ISMS is implemented utilizing a combination of policies and programs that provide ISMS requirements to line organizations as well as the tools and mechanisms to enable required compliance, examples are presented in Appendix B, "Examples of Mechanisms for Employee Involvement."
- Under topic, "Line Implementation," in 2.4.2:
 - **Delete:** "Executive Vice President" from the list of those in line management whom are accountable.
 - **Add:** "Deputy for Nuclear Weapons Programs, Deputy Director, and Deputy for Integrated Technologies & Systems" to the list of those in line management whom are accountable."

- Under topic, "Sandia Employees Performing Work on Non-Sandia Controlled Premises," 2.4.3:
 - **Delete:** Reference to Section 2A, "Plan Work."
- Under topic, "Visitors Performing Work on Sandia-Controlled Premises," in 2.4.4:
 - **Delete:** Reference to Section 2A, "Plan Work."
- Under topic, "Integrated Work Plan (IWP) / Work Controls," 2.6:
 - **Change:** The IWP requires documentation at the operations level that clearly maps to all seven guiding principles.

to

"The Integrated Work Plan facilitates documentation at the activity and operations level that clearly maps to all seven guiding principles. For additional information on work planning and control process implementation see CPR001.3.14, *Work Planning and Control*."

- Under topic, "Work Planning and Control," in 2.6.1, over 75% or more of the text has changed or is new and should be read in its entirety.
- Under topic, "Primary Hazard Screenings (PHSs)/Hazard Assessments (HA)," in 2.6.2, over 75% of the text has changed or is new and should be read in its entirety.
 - **Delete:** "Managers must sign off on the following statement to approve PHSs, thereby incorporating management accountability and authorization into the process." "I have reviewed this PHS and concur with the identified hazards, results, and conclusions. I authorize the proposed work; and before commencement of work, will ensure that adequate resources are available, applicable readiness verification is performed, and that work is prioritized as appropriate."
 - **Delete:** "users are required to perform a Hazards Analysis (HA) within the PHS system for any low hazards. Line organizations may analyze

the identified standard industrial hazards as well.

PHSs identify some of the applicable administrative controls (e.g., TWDs and required ES&H training) and point to ES&H Manual sections and supplements that provide details and require or recommend additional engineering controls, Personal Protective Equipment (PPE), and warning signs. Questions and resulting logic developed for the PHS module of the ISMS software are maintained in administrative operating procedures (AOPs) for each version of the PHS question set. The hazards analysis section of the PHS leads the author through a simplified failure modes and effects analysis, and helps the owner evaluate the acceptability of possible hazard controls. See CPR400.1.1/MN471001, ES&H Manual, Section 13A, "Hazards Identification and Classification Process," and Section 13B, "Hazards Analysis Process."

- **Delete:** Low, Moderate, or High hazard classifications of "nonnuclear"
- **Delete:** "Identified hazards and environmental impacts are controlled through a combination of administrative and engineered controls."
- **Delete:** "Any employee may institute a PHS for work operations, but it is the responsibility of the line or project manager to ensure that a PHS exists and is appropriate for his or her programs and work spaces (in accordance with CPR400.1.1/MN471001, ES&H Manual, Section 13A)."
- Under topic, "Authorization Basis," in 2.6.3, over 75% of the text has changed or is new and should be read in its entirety.
 - **Delete:** "Sandia requires additional analysis, safety documentation, approvals, and control of hazards for more hazardous operations in order to authorize work. See *ES&H Manual*, Section 13C, "Authorization Basis Documentation Process," for a list of required authorization basis documents for each hazard category."
 - **Delete:** Work authorization for startup and restart of less hazardous operations requires Sandia management approval.

- Under topic, "Supervisory Tools," in 2.6.4, over 75% of the text has changed or is new and should be read in its entirety.
 - **Delete:** "Line self-assessments are done to ensure that work is conducted in accordance with Work Control elements and ISMS safety functions."
- Under topic, "Source Documentation," in 2.7.1:
 - **Delete:** The Mission Council and the Risk Management Oversight Council from the list of ES&H Roles and responsibilities at SNL.
- Under topic, "Division ES&H Teams (SNL/NM)," in 2.7.2:
 - **Change:** "ES&H Customer Support Teams (CSTs)" throughout the section to "ES&H professionals."
 - **Clarify:** "ES&H professionals supporting line operations are primarily funded through the indirect project structure of the ES&H and Emergency Management Center."
- Under topic, "SNL/CA Interdisciplinary Team" in 2.7.3:
 - **Change:** "The Interdisciplinary Team (IDT) at SNL/CA is similar in composition and serves the same purpose as the CSTs at SNL/NM. The IDT consists of subject matter experts (SMEs) for all ES&H disciplines who meet with researchers, facility engineers, and functional program managers to evaluate ES&H hazards and define methods to control them."

to

"The Interdisciplinary Team (IDT) at SNL/CA consists of subject matter experts (SMEs) for all ES&H disciplines who meet with researchers, facility engineers, and functional program managers to evaluate ES&H hazards and define methods to control them."

- Under topic, "Additional Safety Committee Oversight of Accelerator and Nuclear Operations," in 2.7.4:

- **Add:** "Nuclear Facilities Safety Committee (NFSC) for the Sandia Reactor Safety Committee" **and** "Sandia Nuclear Criticality Safety Committee (SNCSC) for non-TA-V activities" to the list of committees that report to the NFSC.
- Under topic, "Plan Work" in 3.0, over 75% of the text has changed or is new and should be read in its entirety.
- Under topic, "Annual ES&H Plan Preparation," in 3.3.2:
 - **Change:** "In addition, Sandia submits to DOE an "ES&H Five-Year Site Plan" which identifies a five year projection of ES&H issues and resource needs. The ES&H Five-Year Site Plan includes:
 - Estimates of direct and indirect budget for ES&H operations.
 - A summary of the most important ES&H issues and potential non-compliances.
 - A description of any significant ES&H risks or issues that are not currently adequately addressed with existing resources.
 - The annual ES&H Compliance Liability Estimate."

to

"In addition, Sandia submits to DOE an ES&H Compliance Liability Estimate on a quarterly basis. This estimate represents costs to bring facilities and operations into compliance with existing ES&H laws, regulations and applicable Department of Energy Orders."

- Under topic, "Analyze Hazards" in 4.0, over 75% of the text has changed or is new and should be read in its entirety."
 - **Delete:** "The date of review is entered in the PHS."
- Under topic, "Safety Analysis," in 4.1 to Members of the Workforce responsibilities:

- **Delete:** "Members of the Workforce are required to develop primary hazard screenings (PHSs) as described in Section 2.6 of this document, and also in CPR400.1.1, *ES&H Manual*, Section 13A, "Hazards Identification and Classification Process." Hazards analyses (HAs) are also described in Section 13B, "Hazards Analysis Process," using the ISMS software. A process called the Hazard Aggregation Rollup Procedure (HARP) identifies hazards at a facility level for those facilities that meet specific criteria outlined in Section 13A, Attachment 13A-5, "Hazard Aggregation Rollup Process" to better understand and control aggregate hazard risks and to develop appropriate emergency response strategies. For example, radiological materials are managed utilizing the HARP. The HARP owner is notified when the total radiological material exceeds 10% of CAT III limit. This allows the HARP owner to maintain overall Facility Classification below CAT III nuclear facility designation."
- **Add:** "The PHS description section defines the scope of work that is covered under the specific PHS; includes hazard identification at a high-level; identifies requirements for hazards and controls (e.g. training, *ES&H Manual* sections); and identifies hazards classification."
- **Change:** To last bullet in the list which includes the types of PHS documentation of processes, activities, and hazards, "Analysis of all low hazards (and, optionally, standard industrial hazards)" **to** "Analysis of all low hazards (and, optionally, standard industrial hazards) using a modified Failure Modes and Effect Analysis (FMEA) technique."
- Under topic, "Environmental Management System (EMS) Analysis," in 4.2:
 - **Clarify:** "This ensures that planned activities address environmental impacts and identify how to implement the necessary controls."
 - **Delete:** "Sandia has finalized the EMS program documents to fully implement EMS into ISMS and enhance integration of environmental considerations into all Sandia work activities."
- Under topic, "Control Hazards," in 5.0:

- **Delete:** "The Program and Line Implementation subsystem with the use of those programs, services, and tools in identifying hazards and the steps necessary to mitigate them; and"
- Under topic, "Identify applicable Requirements," in 5.1:
 - **Change:** The process through which applicable requirements are reviewed, tailored, and communicated to the worker is established in CPR400.1.2.2, *Process for Flow-Down and Tailoring of Requirements and Standards that Support Sandia's Integrated Safety Management System*, and in the Administrative Operating Procedure (AOP 04-02), *ES&H and Emergency Management Requirements Management Process*.

to

"The process through which applicable ISMS requirements are reviewed, tailored, and communicated to Members of the Workforce is established in the Administrative Operating Procedure (AOP 04-02), *ES&H and Emergency Management Requirements Management Process*."

- Under topic, "ISMS Software," in 5.2.1:
 - **Change:** "The primary elements of the ISMS software, PHSs and HAs, are discussed in detail in Section 2.6, Integrated Work Plan/Work Controls. The PHS/HA tool, part of the ISMS software, is available through the Sandia Restricted Network (SRN) and accessible from all Sandia locations."

to

"The ISMS software is discussed in detail in Section 2.6.2, Integrated Work Plan/Work Controls. The PHS program is part of the ISMS software and is available through the Sandia Restricted Network (SRN) and accessible from all Sandia locations."

- Under topic, "Technical Work Documents (TWDs)," in 5.2.2:

- **Change:** "Each line organization identifies hazard-specific work controls in TWDs that tailor requirements to the work. See CPR400.1.1/MN471001, *ES&H Manual*, Chapter 21, "Technical Work Documents (TWDs)," to determine the need for TWDs. An optional web-based electronic technical work document (eTWD) system is currently available. The Division ES&H Teams or other SMEs in the ES&H and Emergency Management Center (10300) and California Site Operations (8500) provide assistance with development and review of TWDs, as necessary, and assist Line managers and personnel in working safely and meeting applicable requirements defined within TWDs."

to:

"Each line organization identifies hazard-specific work controls in TWDs that tailor requirements to the work. See CPR400.1.1/MN471001, *ES&H Manual*, Chapter 21, "Technical Work Documents (TWDs)," to determine the need for TWDs. A new application, the Integrated Work Plan (IWP) system, has been developed and deployed. The IWP comprises various modules, including the OP module in which TWDS such as Operating Procedures (OPs), Test-Specific OPs, and Standard OPs can be created. To create a new TWD or change an existing eTWD, use the OP module in the IWP Application."

- Under topic, "Perform Work," in 6.0:
 - **Change:** "The ES&H programs, services, and tools feed into program and line implementation by identifying hazards and the steps necessary to mitigate them."

to

"The ES&H programs, services, and tools feed into program and line implementation by identifying and analyzing hazards and the steps necessary to mitigate them."

- Under topic, "Feedback and Improve," in 7.0 to 7.2, over 75% or more of the text has changed or is new and should be read in its entirety.

- Under topic, "Feedback Mechanisms and Documentation," in 7.3:
 - **Add:** To the list of the above topic,
 - ES&H Lessons Learned Program
 - Benchmarking Activities
- Under topic, "ES&H LIWG Assurance Teams," in 7.3.1:
 - **Change:** Title of the teams **from** "ES&H Assurance Teams" **to** "ES&H LIWG Assurance Teams"
- Under topic, "Self-Assessment Information," in 7.3.2:
 - **Add:** To the list of what self-assessment processes include:
 - Corporate self-assessment checklists.

Corporate Self-Assessment Checklists
 - Conducted every other month on a different program or functional area
 - 4 different checklists
 - Member of the Workforce
 - Department Manager
 - Senior Managers
 - Director and Vice Presidents
 - Data rolled up at the division level
 - **Change:** "Environmental Management System (EMS) Program Self-Assessments"

An EMS program self-assessment was conducted to determine the knowledge level of environmental consequences associated with work activities. The results from the EMS self-assessment will be used to determine the awareness of environmental issues and to develop a strategy to identify weaknesses."

to

"Environmental Management System (EMS) Program Self-Assessments

An annual Self-Assessment of the EMS Program will be performed to identify deficiencies in the program and to implement corrective actions. Additionally, each Division EMS Champion will conduct an annual self-assessment of their Division EMS Program. Information obtained from these self-assessments will be used to verify that Sandia's EMS is meeting the expectations set forth by DOE O 450.1."

- Under topic, "External Assessments and Regulatory Enforcement Actions" in 7.3.3:
 - **Add:** "DOE Office of Price-Anderson Enforcement" to the list of external assessments groups.
 - **Add:** "Periodic reviews by the DOE Office of Price-Anderson Enforcement of Nuclear and Safety Programs." to the list of assessment activities.
- Under topic, "Corrective Action Management" in 7.3.4, over 75% of the text has changed or is new and should be read in its entirety.
 - **Delete:** "Programs such as Occurrence Reporting and Price Anderson Act Amendment (PAAA) track Corrective Actions through the DOE database, Occurrence Reporting and Processing System (ORPS) and Noncompliance Tracking System (NTS), respectively."
- Under topic, "Issues Management," in 7.4:

- **Change:** "The Issues Management Review Committee (IMRC) consists of the Data Analysts that are trending and analyzing the data. The IMRC is responsible for identifying issues as a result of the data analysis and submitting them to the CAMP process for corrective action management. Issues that are within the scope of 10300 are handled by the Program Owner, Subject Matter Expert or the 10300 Risk Management Council. Issues that are out side of the scope of the 10300 Center or require corporate attention are sent to the corporate Issues Management system for decision-making and action."

to

"The Issues Management Review Committee (IMRC) consists of the Data Analysts that are trending and analyzing the data. The IMRC is responsible for identifying issues as a result of the data analysis and submitting them to the ES&H Council for a decision on how the potential issue or potential trend should be handled. Potential recurring Occurrences are handled by the Occurrence Report/Lessons Learned Assurance Sub-team. Issues that are within the scope of 10300 are handled by the Program Owner or the Subject Matter Expert. Issues that are outside the 10300 Center scope or require corporate attention are sent to the Corporate Issues Management system for decision-making and action."

- Under topic, "Performance Measure and Indicators" in 7.5.1 through 7.5.2, over 75% of the text has changed or is new and should be read in its entirety.
 - **Delete:** The "Performance Excellence Objectives" poster and reference to it in the text.
 - **Delete:** "SNL corporate self-assessment is documented annually in a self-assessment report which includes analysis of SNL performance."
- Under topic, "Identify and Implement Opportunities for Improving Safety Management," in 7.6:
 - **Add:** To the Implementing mechanisms for improvement opportunities:

- SSO identified OFIs in FY05 PER
- SNL tracked all OFIs during FY06 and provided Quarterly Report to SNL Executive Management.
- Under topic, "References" in 8.1:
 - **Add:** Requirements:
 - 10 CFR 830, *Nuclear Safety Management*
 - 10 CFR 851, *Worker Safety and Health Program*
 - DOE O 420.2B, *Safety of Accelerator Facilities*
 - DOE STD 1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports.*
- Under Appendix A:
 - **Change:** Division 6000 contact **from** "Suzanne Weissman" **to** "Sue S. Collins."
- Under Appendix B, The table which list the Employee Involvement for each Safety Management Function:
 - **Add:** To "Plan Work":
 - IWP
 - ESHERS/DRATS
 - Readiness Review
 - **Add:** To "Perform Work":
 - Safety Basis
 - Readiness Review

- **Add:** To "Feedback and Improve":
 - ES&H Lessons Learned Program
 - Upward feedback processes
 - Under Appendix C:
 - **Delete:** Appendix C, "Integrated Work Plan (IWP) Process Description."
-

Administrative Changes Only April 6, 2006

This Change History was revised to:

- **Delete.** The note in the Change History of April 3, 2006 to clarify the substantive changes posted on that date.

This section was revised to:

- Under topic, "7.1, Feedback":
 - **Delete:** The reference to *ES&H Manual*, Attachment 22A-2, "Requirements for Quarterly Division ES&H Reports." This attachment no longer exists.
-

April 3, 2006

Annual review and update of ISMS D for DOE approval is required per Section II-I, Clause 78. DEAR 970.5223-1 Integration of Environment, Safety, and Health into Work Planning and Execution (e). SNL submitted ISMS D version 2005 to SSO on August 17, 2005 for annual review. The SSO review and approval required multiple staff and management reviews and content iterations within Sandia in advance of SSO's ultimate approval on November 9, 2005, and SNL received the approval letter from SSO on December 1, 2005.

This document was revised to:

- **Change.** CPR SME from Ashley McConnell to Johnny Vaughn to Nancy Linarez-Royce.
- **Change.** Update links and Divisions/Centers/Organization numbers throughout this document.

Under the topic heading, “Introduction”:

- **Change.** Include Continuing Core Expectation (CCE) Statements in Appendix D.
- **Add.** IWP/WC and BIC approaches to ISMS improvement.
- **Add.** New section, 1.3 “Document Change Control Process.”

Under the topic heading, “Integrated Safety Management Program”:

- **Add.** New section, 2.1.1.1 “Environmental Management System (EMS), discussion on the implementation of EMS as required by DOE O 450.1.”
- **Add.** To section, 2.3:
 - How the ES&H Assurance system improved during 2005.
 - Quality Assurance integration with ISMS
 - The following paragraph: “One of the primary overarching Assurance improvement themes is enhanced management engagement at all levels. The system provides valuable information to management to assist with adequate resource allocation necessary for improving performance.”
- **Change.** In section, 2.3:
 - “The ES&H Assurance System receives **Input and Oversight** from a number of external and regulatory agencies.” to “ SNL measures the

effectiveness of the ISM system by utilizing the ES&H Assurance System. The Assurance System measures effectiveness by receiving input from numerous sources including line self assessments, internal independent assessments, external third party assessments, and internal audits. In addition, the Assurance System incorporates input from the local NNSA site office and external regulators.”

- “The line provides input to the **Assessment System**, and the Assessment System operates on that input, to determine whether ...” to “ Line organization input to the **Assessment System** allows determination as to how well Sandia is making measurable ES&H performance improvement and progress toward the Zero Goals.”
- **Change.** In section 2.3.1: DOE O 414.1B was replaced with DOE O 414.1C.

Note: On June 17, 2005 DOE O 414.1B was replaced with DOE O 414.1C and this was included in SNL Prime Contract on November 30, 2005.
- **Change.** In section 2.4:
 - Reflect new SNL organization structure.
- **Clarify.** In section 2.4.5, site is specifically named in text (DOE/NNSA).
- **Change.** Section 2.6 heading, “Work Controls—Authorization/Graded Approach” to “Integrated Work Plan / Work Controls.”
- **Change.** To reflect how the SNL Work Control (WC) Initiative - Integrated Work Plan (IWP), interfaces and connects with the ISMS, and BIC.
- **Add.** To section 2.6.2:
 - “Managers must sign off on the following statement to approve PHSs, thereby incorporating management accountability and authorization into the process.”
- **Move.** From section 2.6.4 to section 2.6.2:

- *“I have reviewed this PHS and concur with the identified hazards, results, and conclusions. I authorize the proposed work; and before commencement of work, will ensure that adequate resources are available, applicable readiness verification is performed, and that work is prioritized as appropriate.”*
- **Clarify.** Reworded for comprehension.
- **Add.** To section 2.6.3:
 - **“Note:** Because... However, the corporate Safety Basis department reviews all moderate-hazard nonnuclear and Category 2 nuclear facilities to ensure correct classification as described in CPR400.1.1/ MN471001, *ES&H Manual*, , [Section 13 A](#) .”
- **Delete.** To section 2.6.3:
 - The controls suggested by the tools discussed above are implemented (ISMS Function 3, Work Control Elements 9-12; discussion in Section 5) and work is performed (ISMS Function 4, Work Control Elements 13-19; discussion in Section 6). Opportunities for Feedback (ISMS Function 5, Work Control Elements 20-22) exist throughout the process through the mechanisms which are discussed in detail in Section 7, Feedback and Improvement.
- **Delete.** In section 2.7.2, the paragraph discussing Line Work Agreements:
 - “CSTs are primarily funded through the indirect project structure of the ES&H and Emergency Management Center (10300).”
- **Change.** The bulleted items under “Members of CSTs generally are responsible for:”
 - “Providing advice and options to organizations and clearly identifying risks and consequences of not following this advice.
 - Learning and understanding the operations of the organizations they support.

- Being full contributors to the success of the organization in achieving their objectives while maintaining their corporate responsibility to help ensure that SNL is a safe, healthful, and environmentally benign workplace.
- Providing practical, cost-effective recommendations and advice within their field of expertise and within the five safety management functions of ISMS for resolving ES&H issues and concerns.
- Ensuring that their recommendations comply with applicable regulations, and DOE and SNL requirements implemented through the *ES&H Manual* (and supplements).”

to:

- “Translating requirements within their area of expertise for organizational activities supported.
 - Providing advice and options to organizations and clearly identifying risks and consequences of not following this advice.
 - Learning and understanding the operations of the organizations that they support
 - Contributing fully, to the success of the organization in achieving their objectives while maintaining their corporate responsibility to help ensure that SNL is a safe, healthful, and environmentally benign workplace.
 - Providing practical, cost-effective recommendations and advice within their field of expertise and within the five safety management functions of ISMS for resolving ES&H issues and concerns.
 - Ensuring that their recommendations comply with applicable regulations and DOE and SNL requirements”
- **Add.** To section 2.73: “The IDT then provides requirements, recommendations, and assistance to the project and program owners.”

Under the topic heading “Plan Work”:

- **Change.** The first bulleted item in section 3.0 from:
 - “The manager completes/approves... This is the institutional process for the recognition and classification of work hazards. Possible hazards are identified for any new research or manufacturing projects... ES&H Coordinator and the Risk Management SMEs... after the reviews.”

to:”

 - “The manager completes/approves ... work hazards and environmental impact. Hazards are identified for any new research or manufacturing projects. ... ES&H Coordinator and an additional quarterly review is performed by the Safety Basis SME. ... after the reviews.”
- **Delete.** The second and third bulleted items:
 - “The output of the PHS is an overall hazard classification, including the activity or scenario that drives the overall risk of the project. Work Packages take the form of an electronic Technical Work Document (eTWD) or Operating Procedure (OP). To ensure the instructions are clear and match current conditions, the eTWD approval process includes an editorial review, and an additional review prior to approval by the Department Manager. Work is broken down by task, and for each task, hold points and special instructions, if any, are noted.
 - Required attendees for pre-job briefings are listed in the eTWD. The purpose of these briefings is to identify and explain potential hazards and their controls, hold points, any other unique aspects of the work.”

Under the topic heading, “Analyze Hazards”:

- **Delete.** From section 4.0, third bullet, “Training and qualification process is included in the PHS. Required training is listed in the Results and Conclusions section of the PHS. In addition, Medical’s Fitness for Duty program ensures that workers are able to perform their assigned job duties in a safe and reliable manner.”

- **Add.** Above the last paragraph, “The IWP will create a cohesive link between identified hazards and environmental impacts, their mitigation, and/or elimination at the activity level.
- **Add.** To section 4.1, bottom of the paragraph below the first list of bulleted items.
 - ["Attachment 13 A-5](#) , "Hazard Aggregation Rollup Process" to better understand and control aggregate hazard risks and to develop appropriate emergency response strategies. For example, radiological materials are managed utilizing the HARP. The HARP owner is notified when the total radiological material exceeds 10% of CAT III limit. This allows the HARP owner to maintain overall Facility Classification below CAT III nuclear facility designation.”
- **Delete.** From section 4.1, bottom of the bulleted list, before last paragraph:
 - ISMS PHS/HA Process
- **Add.** To section 4.1, to the bottom of the bulleted list:
 - Analysis of all low hazards (and, optionally, standard industrial hazards)
- **Add.** To section 4.2, discussion about the EMS implementation phase and upgrades to the program.

Under the topic heading “Control Hazards”:

- **Add** . To section 5.1, last sentence in the paragraph under the second set of bullets:
 - “...controls that are understood and integrated as part of line operations.”
- **Delete.** Two paragraphs down from the above, “(see [ES&H and Emergency Management Center \(10300\)AOP 99-08](#), *Environmental, Safety and Health [ES&H] Requirements Notification and Tracking*). LIWG participates in the review of new requirements and changes to existing requirements.”

- **Delete.** Two more paragraphs down:
 - Link to AOP 99-08 and “LIWG participates in the review of new requirements and changes to existing requirements.
- **Change.** “Program requirements ... communicated through *ES&H Manual* (see "[Writing or Revising ES&H Manual Text](#)").”

to:

“Program requirements ... communicated through program description documents and other appropriate mechanisms (see AOP 04-02 Environmental Safety & Health (ES&H) and Emergency Management Requirement Management Process.)”

- **Delete.** “There is a formal review process in which LIWG reviews new or updated requirements. Managers and subscribers receive electronic notification of requirements changes published in the ES&H Manual. Program requirements applicable to ES&H program operations and Members of the Workforce are communicated through program description documents and other appropriate mechanisms.”
- **Delete.** From the last paragraph, “An eTWD may be used in lieu of paper-version TWDs, e.g., Radiological Work Permit, Confined Space Permit.”
- **Change.** In section 5.2.2, “An optional web-based electronic technical work document (eTWD) system was developed as a tool to assist in the development of an integrated TWD, including necessary permits. The [Division ES&H Teams](#) or other SMEs in the ES&H and Emergency Management Center (10300) and [California Site Operations \(8500\)](#) provide assistance with development and review of TWDs, as necessary, and assist Line managers and workers in working safely and meeting applicable requirements.”

to:

- “An optional web-based electronic technical work document (eTWD) system is currently available. The [Division ES&H Teams](#) or other SMEs in the [ES&H](#)

[and Emergency Management Center](#) (10300) and [California Site Operations](#) (8500) provide assistance with development and review of TWDs, as necessary, and assist line managers and personnel in working safely and meeting applicable requirements defined within TWDs.”

- **Clarify.** Last bulleted item in 5.2.3, “(Some organizations have site-specific or task-specific training databases to record completions and perform tracking in addition to TEDS.)”

Under the topic heading “Perform Work”:

- **Clarify.** By adding to the first bullet in 6.2, “(Plan work, Analyze Hazards, and Control Hazards).”

Under the topic heading “Feedback and Improve”:

- **Add.** To section 7.0, Self Assessment Improvement Plan for FY06.
- **Add.** Division ES&H Coordinators self-assessment responsibilities.
- **Add.** Radiological activities assessment.
- **Add.** To the end of the last paragraph in section 7.1, “Increased management awareness of their role in ES&H performance has been accomplished with established quarterly reports to Vice Presidents. These reports, by the Director of the ES&H Center, present ES&H data by Division, and the results are then discussed in the meetings of the Laboratory Leadership Team.”
- **Add.** To 7.2, “In FY05, the LIWG Issues Management Assurance Team developed and implemented an improved [ES&H Issues Management System](#), which tracks the status and effectiveness of corrective actions from start to finish as a result of assessments.”
- **Add.** Specifics what and how the ES&H Issues Management System performs ES&H Assurance on risk ranking, LSA, and BBS.
- **Add.** To section 7.3:

- The MOW's management chain.
- Reports to [Telecon +](#) for issues requiring immediate resolution.
- Maintenance Service Request forms.
- **Add.** To the bottom of section 7.3, initiated expedited incident reporting requirements and data collection by the Corporate Corrective Action Tracking System (CATS) and other ES&H databases.
- **Delete.** From section 7.3.1, five of eight ES&H Assurance Teams:
 - Emergency Management
 - Non-Nuclear Safety Basis
 - Self-Assessment
 - Performance Indicators
 - Work Control
- **Delete.** From section 7.3.2, "ES&H Self-Assessment Activities," are largely tracked through [WebSIMS](#), Sandia's issues management system, unless otherwise exempted. WebSIMS is currently under review for replacement by an improved tracking system.
- **Clarify.** To section 7.3.2, additional information regarding ES&H Program Self-Assessments.
- **Add.** To section 7.3.2, Environmental Management System (EMS) Program Self-Assessments discussion.
- **Add.** To section 7.3.2, "In addition, the Independent Review Team and its subset - the ES&H External Advisory Panel, the External Advisory Board, as well as other contracted assessments, have taken place as part of the benchmarking efforts for the Best-in-Class initiative.
- **Clarify.** To section 7.3.4, tracking programs.

- **Add.** To section 7.3.4, explanation of how injury and illness cases are tracked, data is entered into a DOE database, and improved investigation and documentation of injuries.
- **Delete.** The last paragraph in section 7.4.
- **Add.** New paragraph to the bottom of section of 7.4.
- **Delete.** From section 7.5.1, first table, 2004 data was deleted.
- **Add.** To section 7.5.1, information regarding:
 - Injury and illness predictive model.
 - Integrated Enabling Services (IES) SMU Indicators
 - Four stated goals for SNL IES
 - Communication mechanisms
 - Performance Indicator Program Assessments
- **Add.** To section 7.5.2, a list of seven reports, from the *Data and Analysis Subsystem* of the ES&H Assurance System, which are provided to management for continuous improvement.
- **Add.** To section 7.5.2, two new paragraphs regarding:
 - Selection of issues
 - Implementation of a new notification process
- **Add.** To section 7.5.2, last paragraph. Discussion on CAMP Plan.

Under the topic heading, “References”:

- **Add.** To section 8.1:
 - [DOE M 231.1-2](#), *Occurrence Reporting and Processing of Operations Information*

- [DOE O 414.1C](#), *Quality Assurance*
- **Add.** To section 8.2:
 - [ES&H Performance Assurance Quarterly Report](#)
 - [CPR001.3.2](#), *Corporate Quality Assurance Program*
 - [CPR200.2.2](#), *Baseline Directives Management*
 - [CPR300.2.1](#), *Performance Management*
 - [CPR300.4.3](#), *Employee Conduct and Corrective Discipline*
- **Delete.** [Corporate Integrated Management Report](#).

Note: In Appendix C, DOE O 414.1B was not replaced with DOE O 414.1C because this appendix was created on August 11, 2005 and DOE O 414.1C was included in SNL Prime Contract on November 30, 2005.

**Administrative Changes Only
June 29, 2005**

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Change: Executive Policy Sponsor from Les Shephard to Frank Figueroa.

[Change History](#), ISMS D: From 10-31-02 Version to 8-10-04 Version

January, 2002

This document was changed to:

- **Add**

- To Section 1.3.1, "Applicability," the category "specified visitors" to those to whom Sandia's ISMS applies whether the work is funded by DOE or other entities.
- To Section 3.3.1 Corporate-Level Processes," a paragraph about the Quality Assurance (QA) Program.
- To Section 5.1, "Identify Applicable Requirements,":
 - Managers and subscribers receive electronic notification of the ES&H Manual changes.
 - Description of electronic technical work documents (eTWD).
- To Appendix B, "Examples of Mechanisms for Employee Involvement," readiness review and a link to ES&H Manual, Section 13D, "Readiness Review Process."

- **Change**

- "SNL personnel" and to "Members of the Workforce."
- In Section 1.1, " Purpose," reference is made to the completion of the final ISMS Verification action and that the ISMS Implementation Plan (IP) is to be archived.
- In Section 1.3.2, "Line Implementation," the chain of organizational management responsibility and accountability to agree with the table in Section 4.1 of CPR 001.4.1, Administrative Approval Authority.
- In Section 2.1.3, "Authorization/Graded Approach," clarify that "some of SNL's nuclear facilities" require additional, facility-specific authorization agreements.
- In Section 2.2.3, "Additional Safety Committee Oversight of Accelerator

and Nuclear Operations Committees,” update the list of committees that report to the NFSC.

- **Delete**

- In Section 3.3.1, “Corporate-Level Processes,” all references to the Budget Call Letter. The paragraph now refers to the higher-level document, CPR500.1.1, *Financial Manual*.
-

April 28, 2000

This document was revised to:

Add:

- Links in Section 1.3.2 to *ES&H Manual*, Section 1D and its definitions that deal with line management and program/project management.
- Clarification of the terms "Sandia" and "SNL" to the Introduction.
- More pointers to information that is located in other documents rather than repeat it in this document, e.g., "Strategic Business Units and Strategic Management Units," "SNL's Environment, Safety, and Health Program,"
- Sections to clarify ISMS coverage of:
 - Sandia employees performing work at non-Sandia-controlled premises.
 - Visitors performing work at Sandia-controlled premises.
- References to the Mission Council, and the Infrastructure Council.
- Pointers to the revised sections in *ES& H Manual*, Chapter 13, Hazards Identification/Analysis and Risk Management," which describes the hazard identification process, the hazards analysis process, the authorization basis documentation process, and the readiness review process.

Change:

- Moved some significant text forward in the document to introduce concepts prior to their being used in the document, e.g., "ISMS for Subcontractors" and "Flowdown of ISMS."
- By agreement with DOE through joint SNL/DOE Facilitation Team, old Attachments 1, "Integrated Safety Management System Description Guidelines Tailored for Sandia National Laboratories (SNL) - Division-Specific Mechanisms," and Attachment 2, "Integrated Safety Management System Description Guidelines Tailored for Sandia National Laboratories (SNL) - Corporate Mechanisms," were archived, and replaced with the following new appendices:
 - Appendix A contains pointers to web sites listing each division's ISMS implementing mechanisms.
 - Appendix B is the table of "Examples of Mechanisms for Employee Involvement" moved from the text.
- Moved "Integrated Laboratory Management System (ILMS)" And "ISMS Program" forward in the Introduction.
- Expanded "Applicability" to clarify coverage of work performed under a CRADA.
- Renamed "Ownership" to "Line Implementation."
- Defined acronyms and initialisms at their first reference in the document, not each section.
- Updated organization, group, and individual responsibilities.
- Changed the title of Section 5.0 from "Develop and Implement Hazard Controls" to "Control Hazards" in keeping with the ISMS safety function titles and to more accurately reflect section content.

- Revised Section 7.0, "Provide Feedback and Continuous Improvement," more accurately show the current state of feedback and improvement processes, such as lessons learned and assessments
- Updated "References" section for changes in regulatory drivers and related internal and external documents.

Delete:

- Out-of-date and difficult to maintain graphics.
- 2.2.3 SNL's Environment, Safety, and Health Program
- References to the "Environmental Checklist/Action Description Memorandum (ECL/ADM)" and replaced them with a link to the NEPA web site.
- "Examples of the Work Planning Process" because they do not accurately reflect the current Sandia budgeting process. Referred readers to the Financial Manual.

August 31, 1999

This document, Issue E, updates the system description to:

- **Include** in the text of the system description or linked documents the improvements appearing as "boxed text" in Issue D.
- **Include** information on worker involvement to complete an ISMS Verification audit corrective action.
- **Include** information on the integration of ES&H requirements into programmatic, customer, and stakeholder requirements through the Internal Spend Plan Call letter to complete an ISMS Verification audit corrective action.
- **Move** text related to authorization basis, safety envelope, ISMS software,

and other hazard identification and analysis topics to the ES&H Manual, Chapter 13.

- **Hypertext link** to documents that contain the actual requirements.
 - **Hypertext link** to definitions in the ES&H Manual Glossary.
 - **Significantly reduce** the size and complexity of the document and correct incomplete or outdated information, including deleting Attachments 3 through 8.
-

November 30, 1998

Issue D incorporated changes requested by the DOE verification team that completed their review of Sandia's integrated safety management system on November 20, 1998, so that they could recommend approval to DOE/AL.

This document was revised to:

- **Update** Section 1.2 to describe the SNL line management chain of responsibility and accountability.
- **Remove** the ISMS Policy from Figure 1-2 as an external directive applicable to SNL (the ISMS Policy is not included in SNL's M&O Contract).
- **Update** Section 1.3.3 to discuss the ES&H requirements flowdown process for subcontractors.
- **Add** new Attachments 1 and 2 and Sections 1.3.4 and 1.3.5 to reference the set of division-specific and corporate implementing documents that describe the ISMS mechanisms.
- **Add** Section 1.3.6 to describe the change control process for this document, its attachments, and CPR400.1.2.1, Sandia National Laboratories' Integrated Safety Management System Implementation Plan.

- **Add** Section 1.3.7 to reference to SNL procedure for supporting the nuclear weapons production complex.
 - **Update** Section 2.8.5 to add information about the SNL site-wide Lessons Learned Program.
 - **Change** the authorization basis definitions for facilities with more hazardous operations in Sections 3.2.2, 3.3.1, and 3.4.2 to be consistent with applicable DOE directives.
 - **Change** the descriptions of the processes used to identify standards/requirements for "more hazardous operations" in Sections 3.2.3.1, 3.3.2.1, and 3.4.3.1 to state that those operations follow the directives management process.
 - **Make** minor editorial changes and add hypertext links.
 - **Add** a list of references.
-

July 30, 1998

Issue C, issued on July 30, 1998 was the first substantial revision of the ISMS description since DOE approval.

The document was revised to:

- **Reflect** reengineering of the corporate business rules and clarify the flowdown of ES&H requirements through that system.
- **Describe** authorization agreements and authorization basis documents.
- **Refer** to the *ES&H Manual*, Section 1D, "Who Does What," for roles and responsibilities.
- **Describe** SNL's use of the directives management approach.

- **Add** descriptions of how SNL tailors controls through PHSs, the *ES&H Manual*, and TWDs.
 - **Delete** description of the ES&H Document Hierarchy since ES&H documents are now part of corporate business rules.
 - **Replace** previous text about training with new text to reflect recent revisions in training program and procedures.
 - **Revise** the discussion of SNL's feedback and improvement process.
 - **Refine** the lists of authorization basis documentation for each hazard category.
 - **Add** a flowchart of the NEPA process and the processes for generating authorization bases for low hazard nonnuclear, moderate hazard nonnuclear, accelerator, and nuclear operations.
 - **Delete** the "Basis for Requirements in the ES&H Manual and Its Supplements" and commit to reconciling that list after the ES&H Manual is reformatted.
-

In July 1996, DOE asked SNL to prepare a description of its safety management mechanisms and a plan for integrating them.

In November 1996, SNL submitted Issue A of the *Sandia National Laboratories' Integrated Safety Management System* (the "system description") and its *Implementation Plan*. DOE approved these on December 2, 1996.

In **March 1997**, both documents appeared on Sandia's internal web as Issue B.



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CPR400.1.1.2, *Integrated Safety Management System (ISMS) Description*


* APPENDIX A – DIVISION-SPECIFIC MECHANISMS FOR INTEGRATED SAFETY MANAGEMENT

Subject Matter Expert: [Nancy Linarez-Royce](#)


Issue L

Revision Date: [April 26, 2007](#); Replaces Document Dated: April 3, 2006

Submitted for Annual Review: September 15, 2006

Approval Date: November 16, 2006

The ISMS Description is controlled as a corporate process requirement document in the Sandia Business Rules system, but is not the source of specific requirements. Division-specific mechanisms are located at division web sites as shown below:



Division	Division title	Contact	Division ES&H Web Site
0001	Executive Offices	Craig Nimmo	ES&H / Security / QA
1000	Science & Technology & Research Foundations	Bess Campbell-Domme	Integrated Protection Page
2000	Weapons Engineering and Product Realization	Melecita Archuleta	Integrated Protection Page
3000	Human Resources, Communications, and Executive Support	Ina Frazier	ES&H / S&S / Quality

4000	Security & Information	Johnny Vaughan	ES&H / S&S / Quality
5000	Defense Systems & Assessments	Bill Lucy	Environment, Safety, and Health
6000	Energy, Security, and Defense Technologies	Sue S. Collins	ES&H / Security / QA
7000	Advanced Concepts Group	Bill Lucy	Advanced Concepts Group
8000	California Laboratory	Terry L. Garner	SNL/CA ES&H
10000	Infrastructure Operations and Business Management	Marc Evans	Division 10000 ES&H
11000	Legal Division	Amy Blumberg	Legal Division ES&H
12000	Division 12000	Craig Nimmo	ES&H / Security / QA



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CPR400.1.1.2, *Integrated Safety Management System (ISMS) Description*

APPENDIX B – EXAMPLES OF MECHANISMS FOR EMPLOYEE INVOLVEMENT

Subject Matter Expert: [Nancy Linarez-Royce](#)

Issue L

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SNL provides numerous opportunities and mechanisms for communications between workers and their management and for worker involvement. Each line organization uses the mechanisms appropriate for its work processes:

Safety Management Function	Example Mechanism for Employee Involvement
Plan Work	<ul style="list-style-type: none"> • IWP • ES&H Lessons Learned Program • ESHERS/DRATS • Primary hazard screening (PHS) development • Readiness Review • Technical work document (TWD) development

Analyze Hazards	<ul style="list-style-type: none">• Hazards analysis (HA)/safety assessment (SA)/safety analysis report (SAR) development• PHS development• Workplace/activity monitoring for changes
Control Hazards	<ul style="list-style-type: none">• Administrative controls• Engineering controls• Non-emergency hotline• Personal protective equipment (PPE)• TWDs• Telecon Plus• Pre-job briefings
Perform Work	<ul style="list-style-type: none">• Respecting hold points• SNL suspend-work authority• Safety Basis• Readiness Review• Work environment monitoring (e.g., IH sampling)• Construction Safety Standing Committee• FMOC Area Safety Rep Committee (ASR)

Feedback and Improve

- [Corporate Ombuds program](#)
- Customer satisfaction surveys
- Employee Concern Program
- [ES&H self-assessments](#)
- Executive VP site queries
- [Incident investigations/2050P forms](#)
- [ES&H Lessons Learned Program](#)
- [Line Implementation Working Group \(LIWG\)](#)
- [Management surveillances](#)
- Manager's "open door" policies
- [Performance management form \(PMF\) processes](#)
- Routine center/division/VP and SNL Town Meetings
- SNL's wide use of "working groups" to develop solutions
- [Standing ES&H Committees](#)
- Union Stewards: Metal Trades Council, Office and Professional Employees International Union, Security Police Association
- Union Tripartite Committee
- Union/Management Safety Committee



- Upward feedback processes
- Worker feedback



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CPR400.1.1.2, *Integrated Safety Management System (ISMS) Description*


APPENDIX C – CONTINUING CORE EXPECTATIONS (CCEs)

Subject Matter Expert: [Nancy Linarez-Royce](#)Issue L
Revision Date: [April 26, 2007](#); Replaces Document Dated: April 3, 2006

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The Continuing Core Expectation (CCE) statements ([DOE G 450.4-1B, Volume 1, Chapter IV](#)) are a compendium of relevant topics that can be used to aid in developing an evaluation of the effectiveness of the ISMS. The following CCE's are identified within the content of this document.

CCE	ISMS D Implementing Section
CCE-1 ISMS Description Document – Annual updates	Subsection 1.3, Paragraph 1
CCE-2 System Effectiveness	Subsection 2.3, Paragraph 3 & 4
CCE-3 Work Activities	Subsection 2.6, 2.6.1 Subsection 2.7.2, Paragraph 4 Section 5.0, Paragraph 4 & 5
CCE-4 Implementing Mechanisms	Subsection 2.7.1
CCE-5 Budget Processes	Subsection 2.7.2, Paragraph 3
CCE-6 Feedback and Improvement	Section 7.0, Paragraph 6 & 7 Subsection 7.4, Paragraph 3
CCE-7 Process for Effecting Changes	Subsection 1.3, Paragraph 3 Subsection 2.6.3, Paragraph 1 Subsection 5.1, Paragraph 1
CCE-8 Performance Objective and Criteria (POC) Guidance	Subsection 2.3, Paragraph 3-7 Subsection 7.5.1
CCE-9 Records	Section 7.0, Paragraph 6 & 7 Subsection 7.1, Paragraph 3 Subsection 7.3, Paragraph 2
CCE-10 Authorizing and Performing Work	Subsection 2.6.3, Paragraph 2 Section 6.0
CCE-11 Role of DOE/SSO	Subsection 2.3, Paragraph 1 Subsection 7.3.3


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