

LMS/POL/S04328-1.2

Integrated Safety Management System Description with Embedded Worker Safety and Health Program

*S*toller

Legacy Management Team

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Legacy Management Support Contractor

**Integrated Safety Management System Description
with Embedded Worker Safety and Health Program**

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**Integrated Safety Management System Description
with Embedded Worker Safety and Health Program
Document History**

Version No./Revision No.	Date	Description of Change
1.2	6/20/2011	Replaced existing policy "Commitment to Safety and Protection of the Environment" with revised policy.
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Jim Siler
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S.M. Stoller Corporation

Date

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Commitment to Safety and Protecting the Environment Policy

As the Legacy Management Support (LMS) contractor to the U.S. Department of Energy Office of Legacy Management, we are fully committed to the safety of our workers and the public and the protection of the environment. We implement this commitment by integrating Environment, Safety, and Health (ES&H) programs into day-to-day decision-making and long-term planning across project sites and supporting programs. We believe that excellent performance includes respecting people's wellbeing and the world in which they live.

We pledge to protect the public, workers, and the environment by complying with applicable requirements, preventing pollution, and continuously improving our processes. Intrinsic to this pledge is ensuring that line management is responsible for ES&H, workers have clear roles and responsibilities, and management and workers are competent and qualified.

Work Planning

We will identify the activities necessary to accomplish work and include ES&H subject matter experts and workers in work planning. Activities required to protect workers' safety, the public, and the environment will receive top priority during planning and budgeting.

Hazard Identification and Control

We will identify, at all levels, hazards that pose a risk to safety, the public, and the environment. By understanding hazards' potential to affect workers, the public, and the environment, we will be able to tailor controls to the type of hazard, the type of work, and the magnitude of risk. If we cannot control the hazards, we will not perform the work.

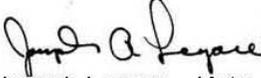
Working within the Controls

After we define and prioritize the activities, identify the hazards, and design the controls, we will confirm that each project is ready to proceed and that its staff is ready to work. We will verify workers' competence and establish support functions before work begins. Personnel competent to understand the hazards and the controls, and able to identify new hazards if they arise, will supervise the work, and all workers will understand their authority to stop work.

Feedback and Continuous Improvement

We will gather information, from a variety of sources, on the effectiveness of our safety and environmental processes. We will measure our performance against established objectives and targets, and we will identify opportunities for improving processes. We will share recommendations for improvement and lessons learned and implement them throughout our projects and organizations.

All LMS contractor workers are responsible for supporting this policy to the best of their abilities within their roles and responsibilities. This policy will be reviewed annually and updated as necessary. Senior management will ensure that this policy is made clear and available to all LMS workers and subcontractors.


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Executive Summary

The Legacy Management Support Contractor (LMS Contractor) to the U.S. Department of Energy's (DOE) Office of Legacy Management provides a variety of field and office services at locations around the country. LMS consists of approximately 300 staff members performing work at almost 100 locations. In most cases the locations are visited only a few times each year during field activities; staff members are permanently stationed at fewer than 10 locations.

This document describes how the LMS Contractor's Integrated Safety Management System (ISMS) incorporates the concepts of Integrated Safety Management, the applicable requirements of Title 10 *Code of Federal Regulations* Part 851 (10 CFR 851), and many elements of an Environmental Management System. The document will be updated and changed periodically as part of a continuous improvement process, and the changes will be subject to the approval of the LMS Contractor general manager and the Head of the DOE Field Element as required by 10 CFR 851. The requirements of this document have been integrated into various implementing policies, procedures, and plans. Those policies, procedures, and plans are the documents that will be used by workers to implement ISMS and 10 CFR 851.

The LMS Contractor's ISMS combines the requirements of 10 CFR 851 with the core functions and guiding principles of integrated safety management and the principles of the ISO 14001 standard (Environmental Management Systems). The ISMS was developed after an assessment of the types of activities the LMS Contractor performs and the types of materials the LMS Contractor handles and was tailored to create a process that promotes worker safety, promotes environmental protection, and provides effective tools for managers and employees.

The law codified at 10 CFR 851 contains general provisions and 12 specific functional areas. The LMS Contractor implements the requirements of 10 CFR 851 through processes that are applicable at all DOE sites where the LMS Contractor is responsible for performing work on behalf of DOE. Attachment 1 provides a crosswalk of the requirements of ISMS to the LMS Contractor's implementing policies, plans, and procedures. Attachment 2 provides a crosswalk of the requirements of 10 CFR 851 to the LMS Contractor's policies, plans, and procedures that demonstrate compliance with the law. Appendix A contains descriptions of the LMS Contractor's general approach to the 12 specific functional areas required by Appendix A of 10 CFR 851. Appendix A and Attachment 2 comprise the portions of this document that refer to enforceable program elements under 10 CFR 851.

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1.0 Introduction

The Legacy Management Support Contractor (LMS Contractor) to the U.S. Department of Energy's (DOE) Office of Legacy Management requires a high level of operational excellence from employees and contractors at all its offices and project locations. In support of that requirement, the LMS Contractor actively pursues the goals of having an injury-free workplace, minimizing adverse effects to the environment, and minimizing waste generation. These goals are established in the LMS Contractor's Commitment to Safety and Protection of the Environment and are implemented through work processes and procedures. In designing the processes and procedures, the LMS Contractor has tried to foster an institutional culture that values the safety of employees and the integrity of the environment above any other goals. The LMS Contractor believes that when safety and environmental protection are integrated into the work, they help meet a moral commitment to ensure the safety of people and the environment, and they complement a sound business strategy by reducing liabilities and costs. Outstanding safety and environmental protection have a substantial net benefit to business.

The Integrated Safety Management System (ISMS) provides the LMS Contractor with a comprehensive, systematic, standards-based, and performance-driven management system for setting, implementing, and sustaining safety performance and meeting environmental expectations. The system is "integrated," meaning that safety and environmental management are normal and natural elements of the performance of the work. Protecting the safety of employees and the environment is how the LMS Contractor does business. The ISMS is the way the LMS Contractor documents its commitment not to injure people or the environment and meets the business imperative of exceeding their clients' safety and environmental requirements.

The ISMS is integral to accomplishing the work at all locations. The goal of the ISMS is to establish protection of workers and the environment as a fundamental value of the LMS Contractor, to be reflected in the attitudes and behaviors of both employees and subcontractors and in the LMS Contractor's business processes. The ISMS is structured to manage and control work at the organizational, project, and activity levels, and seamless integration of environmental, safety, and health (ES&H) protection is fundamental to its success.

Inseparable from this concept is the important principle that line management is responsible for safety, with clear and unambiguous roles and lines of responsibility, authority, and accountability at all organizational levels and with full participation by all employees. The ISMS requires that all work and all workers meet the safety and environmental requirements defined by the LMS Contractor's policy and procedures.

This document describes how the LMS Contractor's ISMS implements the concepts of Integrated Safety Management, the requirements of Title 10 *Code of Federal Regulations* Part 851 (10 CFR 851), and the elements of an Environmental Management System. The document will be updated and changed periodically as part of the continuous improvement process, and the changes will be subject to the approval of the general manager of the LMS Contractor and the Head of the DOE Field Element as appropriate.

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2.0 Profile of S.M. Stoller Corporation

The LMS Contractor is a team led by S.M Stoller Corporation (Stoller).

Stoller provides a variety of environmental, waste management, remediation, and ecological services to the federal government and private sector companies. Stoller is headquartered in Broomfield, Colorado, and serves its customers from various locations across the country. It has been in business since 1959.

Stoller provides its customers with expertise in the areas of high-hazard site and groundwater remediation, facility decommissioning, radioactive and hazardous waste management, environmental surveillance, nuclear engineering, ecological studies, risk assessment, and regulatory compliance.

Stoller is responsible for overall contract execution, projects, and management for DOE's Office of Legacy Management. Employees of teaming partners are used to provide specialized skills or additional support.

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3.0 Overview of Safety Management

The highest priority of the LMS Contractor is to ensure that all employees return from the work environment to their homes and families whole and in good health. This priority is based on three principles the LMS Contractor applies to all aspects of its business. The first is a fundamental obligation to create a work environment that is safe for the entire workforce. The second is that all employees have the right to do their work safely and, conversely, do not have the right to put themselves or others at risk. The third is that employees must all help each other work safely. Zero accidents is the LMS Contractor's goal.

3.1 The Integrated Safety Management System

The LMS Contractor uses an ISMS to perform work safely and in an environmentally responsible manner. The program is "integrated," indicating that safety and environmental protection are treated as routine elements of planning and performing work rather than as external processes. The LMS Contractor makes safety and environmental protection an integral part of the way it does business.

The ISMS provides the institutional system for setting, implementing, and sustaining safety performance and meeting environmental protection requirements. This system supports workers in fulfilling their safety and environmental responsibilities. Through the ISMS, the LMS Contractor strives to create an injury-free workplace, to prevent environmental harm, and to minimize waste generation. The ISMS helps the LMS Contractor reach these goals in a rational and cost-effective way by using a graded approach.

3.2 Worker Responsibilities for the ISMS

The ISMS is a worker-based system, built on the premise that everyone is a worker when it comes to ES&H protection. While management provides leadership and support and bears ultimate responsibility, success in reaching the LMS Contractor's ES&H goals depends on the involvement of all workers at all offices and project locations. Everyone participates in identifying and resolving concerns, making decisions, implementing initiatives, and providing feedback at all organizational levels. The ISMS enables workers to apply their knowledge of the work and their skills to protect themselves, the public, and the environment. All LMS Contractor employees implement the ISMS elements and provide input for continuous improvement of the system.

Worker involvement and ownership of ES&H protection includes a decisive stop-work responsibility and authority that workers use to stop work immediately when they discover a condition of imminent danger or serious hazards, or discover a condition of imminent environmental harm. Supervisors and managers all the way up to the general manager support the use of this worker stop-work authority without any hint of reluctance or retribution.

Line managers play a central role in the implementation of the ISMS because they are in a position to understand the work, listen to workers, and respond to their concerns. At the same time, they have access to information that allows them to analyze ES&H issues from a broader perspective and can take action to improve work practices and processes. When decisions cross multiple organizations or disciplines, managers provide the forums for gathering information,

ensuring that the correct people are involved, and resolving conflicts. To fulfill their role effectively, line managers must behave in ways that demonstrate their commitment to worker safety and environmental protection.

The LMS Contractor provides various means for all workers to identify and help resolve ES&H problems and to contribute to the improvement of the ISMS process. These means include participation in work planning and hazard control; direct communication with managers during walk-arounds, tailgate meetings, and planning meetings; communication with the management of individual team member companies; and direct communication with the general manager.

3.3 The Worker Safety and Health Program

The requirements of 10 CFR 851 “Worker Safety and Health Program,” (WSHP) became effective February 9, 2006. The law establishes a framework for a worker protection program that will reduce or prevent occupational injuries, illnesses, and accidental losses by requiring DOE contractors to provide their employees with safe and healthful workplaces. The law also establishes procedures for investigating whether a requirement has been violated, for determining the nature and extent of such violations, and for imposing an appropriate remedy.

Like ISMS, the requirements of 10 CFR 851 are flexible so that implementation can be tailored to the activities and hazards associated with a particular work environment. DOE expected contractors to implement the requirements mainly through the use of existing policies and procedures created under DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, and through their ISMS. Accordingly, the LMS Contractor has included a general approach to the program requirements of 10 CFR 851 in Appendix A to this ISMS description, has provided a crosswalk as Attachment 2 that demonstrates compliance with the provisions of the law, and has made changes to various policies and procedures where needed.

The definition of “contractor” in 10 CFR 851 includes subcontractors at all levels. The LMS Contractor’s WSHP encompasses the work of subcontractors when the law is applicable to their work. Subcontractors are told they must adhere to the LMS Contractor’s program through procurement documents and pre-job training. For Occupational Medicine, The LMS Contractor interprets the application to subcontractors who work for more than 30 days in a rolling 12-month period as being the equivalent of 240 hours in a 12-month period. That is, if a subcontractor employee enters a DOE site for fewer than 240 hours in the 12-month period, that employee is not considered to be subject to the occupational medicine provisions of the law.

Additionally, the LMS Contractor uses subcontractors to provide many items for which the subcontractor also provides a service; these include portable toilets and handwash stations, garbage collection from outdoor dumpsters, copiers and items of equipment, and the like. If a subcontractor services an item, it will be located in an area without processes or activities that could adversely affect the subcontractor’s employees. The LMS Contractor considers these subcontractors to be “vendors” as defined by the Federal Acquisition Regulations and does not consider 10 CFR 851 to be applicable to their employees while they perform services related to items provided by the subcontractor. The LMS Contractor will provide a safe environment for these subcontractor employees.

3.4 Promoting a Safe and Environmentally Responsible Work Culture

The LMS Contractor promotes a safe and environmentally responsible work culture by demonstrating safety and environmental protection as core values, by enacting a system of personal accountability, by applying positive and negative reinforcement, and by altering perceptions that influence worker and management behaviors. The LMS Contractor also promotes its culture by maintaining open lines of communication, both passive and active; ensuring that ES&H goals and policies are highly visible to all employees; and reinforcing positive behavior in many ways. Two key ways of doing this are management participation in walk-arounds and tailgate meetings.

Walk-arounds help to reinforce safety and environmentally responsible behavior. Management participation in walk-arounds ensures management contact with all workers and provides a flexible and simple strategy to reinforce the ISMS. Walk-arounds give participants an opportunity to observe both working conditions and activities, to coach workers, to provide reinforcement, and to hear worker concerns or suggestions. Management participation in tailgate meetings helps demonstrate the LMS Contractor's commitment to safety and environmental protection and gives managers direct, immediate input into the daily activities. Both walk-arounds and participation in tailgate meetings show employees that their managers care about their well being and value their suggestions.

Although the LMS Contractor's role in fostering a safe work culture is different for its subcontractors than for its employees, the LMS Contractor has programs to ensure that only subcontractors with acceptable ES&H records are hired and that subcontractor employees work to the same standards as LMS Contractor employees while at LMS facilities. Through project flow-down requirements and subcontractor ES&H performance requirements, the LMS Contractor will require subcontractors to promote a safe and environmentally responsible work culture in their own organizations.

3.5 Accountability

Accountability accompanies the responsibility each employee has for behaving in a safe and environmentally responsible manner. All employees of the LMS Contractor, from the general manager down, are held accountable for meeting the LMS Contractor's ES&H expectations. Accountability is reinforced through positive reinforcement and, when required, criticism or discipline. Accountability is also reinforced through the incorporation of performance elements in employee performance plans as well as in the performance review process for each employee. In no case will an employee be criticized or disciplined for exercising legitimate stop-work authority, for bringing safety or environmental concerns to the attention of management, or for refusing to work on a project because the employee fears for his or her safety. Conversely, employees may be criticized or disciplined for failing to notice and respond to hazardous conditions, failing to follow safety procedures, or otherwise failing to meet ES&H expectations.

3.6 Communication

Sustained integration of safety and environmental management requires teamwork and mutual understanding between workers and management. Teamwork and understanding can be promoted only through effective communication that flows both up and down through the

organization. The LMS Contractor is committed to ensuring effective communication and promotes it in several ways: the LMS Contractor's flat management structure ensures that there are not layers of management that could stifle communication; managers participate in walk-arounds and tailgate meetings; each worker has the ability to communicate directly with the general manager if concerns cannot be resolved at the line management level; all workers have access to the Contractor section of the LM intranet, which is used to communicate organizational goals, achievements or concerns, and current versions of ES&H policies and procedures; workers are asked to participate in project ES&H planning, including the development of hazard controls; and worker feedback is actively solicited.

Routine staff meetings are held at all level of the LMS Contractor management. A meeting is held once each week between the General Manager and senior staff, with minutes posted on the Contractor section of the LM intranet. Information from the senior staff meeting is provided by senior staff members to lower-level staff members during their routine group meetings. Pertinent safety information that comes from staff meetings at any level is communicated to field personnel during the next pre-job briefing. Urgent safety information is communicated immediately via e-mail.

4.0 Integrated Safety Management System

Expectations and requirements for the LMS Contractor's ISMS come from internal and external sources. Internally, the LMS Contractor has a commitment to make sure our employees go home each day in the same physical and mental condition they arrived in, to make sure our activities do not harm the environment, and to promote environmental improvement when possible. External expectations come from clients, federal, state, and local laws; and regulatory agencies such as the U.S. Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA).

DOE has complex-wide ISMS expectations that include safety and environmental management objectives, guiding principles, and processes that result in a formal, organized approach to plan, perform, assess, and improve the conduct of work. Integrated safety management consists of guiding principles and core functions that must be satisfied, and the inclusion of Environmental Management System provisions. DOE's requirement for integrated safety management is imposed through the provisions of direct contracts or flow-down requirements for subcontractors. The LMS Contractor implements the requirements of ISMS through policies, plans, and procedures that are applicable at all work locations. Attachment 1 provides a crosswalk of the requirements of ISMS to the LMS Contractor's implementing policies and procedures.

Federal law at 10 CFR 851 governs the conduct of contractor activities at DOE sites. This law requires a WSHP that reduces or prevents occupational injuries, illnesses, and accidental losses by providing DOE contractors and their workers with safe and healthful workplaces at DOE sites. In promulgating the law, DOE instructed contractors to build on existing practices and processes. DOE stated that the law is intended to be complementary to DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, and ISMS requirements. The LMS Contractor implements the requirements of 10 CFR 851 through policies, plans, and procedures that are applicable at all DOE sites where the LMS Contractor is responsible for performing work on behalf of DOE. Attachment 2 provides a crosswalk of the requirements of 10 CFR 851 to the LMS Contractor's implementing policies and procedures. Appendix A contains descriptions of the specific programs required by Appendix A to 10 CFR 851. Appendix A and Attachment 2 comprise the portions of this document that refer to enforceable program elements under 10 CFR 851.

EPA encourages companies to implement an Environmental Management System based on the principles of the International Standards Organization (ISO) 14001, *Environmental Management Systems*, standard. Like the core functions of integrated safety management, the ISO 14001 standard is a plan-do-check-act cycle that ensures environmental concerns are addressed at all phases of an operation or activity and that the company strives for continuous improvement in its environmental performance. Although EPA does not require adherence to ISO 14001, EPA will reduce regulatory oversight and will reduce any enforcement actions or penalties imposed on companies that have implemented effective Environmental Management Systems.

OSHA does not require or encourage employers to develop an ISMS or Environmental Management System. However, OSHA does require employers to provide for the health and safety of all workers. An integrated approach to work planning and worker protection is a sensible way to help meet those requirements.

The LMS Contractor's ISMS combines the requirements of 10 CFR 851 with the core functions and guiding principles of integrated safety management and the principles of the ISO 14001 standard. The system was developed after an assessment of the types of activities we perform and the types of materials we handle, and was tailored to create a process that promotes worker safety, promotes environmental protection, and provides effective tools for managers and employees. The LMS Contractor also maintains a separate, more comprehensive Environmental Management System that includes objectives and targets as well as other details specific to ISO 14001.

4.1 Core Functions and Guiding Principles

There are five core functions and eight guiding principles of the LMS Contractor's ISMS. The core functions define the stepwise process for meeting ES&H expectations:

1. Define the scope of work.
2. Analyze the hazards.
3. Develop and implement controls.
4. Perform work within the controls.
5. Provide feedback and improvement.

The guiding principles must be incorporated into the core functions and identify fundamental mechanisms the ISMS will use to meet expectations:

- Define clear roles and responsibilities.
- Make line management responsible for safety and environmental protection.
- Ensure that competence is commensurate with responsibilities.
- Tailor hazard controls to the work being performed.
- Identify safety and environmental standards and requirements.
- Balance the priorities.
- Ensure that operations are authorized.
- Ensure that all managers are committed and that all workers are involved.

4.2 Core Functions

4.2.1 Define the Scope of Work

Defining the scope of work ensures that managers, clients, and contractors know exactly what services are to be performed. The definition is both on a broad scale, as contained within the contract or work order, and on a narrow scale, as contained within the work package. Work definition is generally a process that progresses from client negotiations to the LMS Contractor's preparation of detailed work packages or plans, although clients may occasionally help develop work packages. During negotiations with the client and work package preparation, the LMS Contractor balances priorities to ensure that worker safety and environmental protection will not

be compromised for any reason. The LMS Contractor will turn down work that poses uncontrollable risks to its workers or work that poses controllable risks a client will not allow the LMS Contractor to control.

At the work package level, the definition of work must include sequence, schedule, task breakdown, personnel lists, or any other details that specify how and when work will be performed. These details are used to determine ES&H standards and requirements for the work, analyze the hazards and develop controls, and determine what skills and training are required. The LMS Contractor also uses the details to ensure that the right resources are allocated to address safety, environmental, and operational considerations. Personnel involved in this effort include the ES&H division, management, and workers.

For environmental considerations, the LMS Contractor takes into account the entire life cycle of the work, including such issues as environmental impacts associated with the production of raw materials used, subsequent processing and disposal of wastes generated, and end-of-service decommissioning.

4.2.2 Analyze the Hazards

The LMS Contractor evaluates the hazards to workers and the environment at three levels: activity—discrete work activities performed in the workplace; location or project—collected activities at a specific location or project; and corporate—collective activities of the team.

Common policies and procedures related to safety and environmental protection are created and maintained by the LMS Contractor's Safety and Health organization. These procedures govern the way the LMS Contractor assesses and analyzes worker and environmental hazards and are contained in many different manuals. The LMS Contractor actively solicits manager and worker feedback on these policies and procedures and updates them as warranted to ensure they continue to meet ES&H expectations.

A given location or project will have specific hazards present, and the client may have specific expectations or requirements. The additional procedures and expectations should be prescribed in the documents that govern the scope of work. The LMS Contractor's hazard assessments build on the defined scope of work, the characteristics of the location, and the general nature of the activities to be performed. The general manager reassesses the need for resources to address safety, environmental, and operational considerations and modifies schedules or priorities to ensure that resources are available when needed. The hazard assessment at each location is a process rather than a single event, to ensure that safe and protective operations are maintained as project conditions change.

Possibly the most important assessment of hazards is accomplished at the activity level. For simple, routine work, the LMS Contractor may accomplish these assessments through checklists. For complex or new activities, or activities for which hazards are not well understood, the LMS Contractor may assess hazards during thorough, systematic examinations by multidisciplinary teams that include workers, managers, and ES&H professionals. The hazard assessments include attention to how activities can affect one another or be affected by other events on the project.

4.2.3 Develop and Implement Controls

In general, it is preferable to eliminate hazards rather than to control them. Hazard elimination can be most effective during the work design stage. Therefore, elimination of hazards is an integral part of the LMS Contractor's work planning process. Elimination of hazards is discussed during initial design of new facilities or systems, during creation of work packages, and as work progresses. Project documents are created or revised as appropriate to reflect changes that eliminate hazards. During work planning, the LMS Contractor considers not only elimination of hazards but also larger life-cycle issues such as waste minimization, decontamination, and decommissioning. Eliminating safety and environmental hazards through process modification or material substitution is preferable to controlling the hazard through personal protective equipment (PPE) or waste management.

Safety and environmental standards and requirements and the LMS Contractor's commitment to ES&H protection are the basis upon which controls are designed. Hazards are eliminated when practicable, mitigated when possible, and controlled when necessary. The LMS Contractor tailors administrative and engineering controls to the work being performed. Controls may be implemented on a Legacy Management-wide, location, or activity basis. The emphasis is on planning the work or designing controls to reduce or eliminate the hazards, to prevent accidents, and to prevent environmental degradation.

Work hazards that cannot be eliminated are controlled by engineering or administrative methods. Engineering controls are physical controls and include operating limits, barriers, and PPE. When engineering controls are used, the LMS Contractor ensures that they are practical and readily available. Simple controls are preferred; complex engineering controls that require special skills or training for use or maintenance are generally not implemented. Administrative controls, including procedures, the work authorization process, and training, are tailored to fit the work environment and the workers. Both the decision-making process and the controls used are documented. The information is shared with workers through training, pre-job briefings, safety meetings, and tailgate meetings and is shared with the client as requested.

For general administrative controls, the LMS Contractor maintains clear and effective procedures for ES&H protection, an effective work authorization process, and a training process that ensures that worker competence is commensurate with worker responsibilities. Depending on the scope of work, the location, and the hazards assessed, the LMS Contractor may use work plans, job safety analyses, quality assurance plans, project safety plans, formally established safety requirements, or other administrative mechanisms to achieve ES&H objectives.

4.2.4 Perform Work Within the Controls

Working safely requires infrastructure mechanisms such as worker training, document control, confirmation of readiness, monitoring or surveillance programs, equipment maintenance, and application of specific control measures. A work authorization process ensures that work is performed within the controls. Work on Legacy Management projects often requires client involvement in, or concurrence with, the work authorization process. In this case, project-specific documents will specify client roles and responsibilities for work authorization; a formal authorization agreement may be required.

The LMS Contractor confirms readiness and controls work through a graded approach that is based on the hazards posed by the activity or project. The depth and rigor of operational readiness or pre-startup reviews is tailored to the associated hazards, the level of uncertainty in the characterization of the work, and the complexity of the hazard control measures. For routine, low-hazard work, work authorization may consist of verifying that personnel are appropriately trained and completing a pre-job briefing or tailgate meeting. For more hazardous or nonroutine work, readiness confirmation and work authorization will be more rigorous and detailed and may involve checklists, readiness reviews, task practice, and the like. In all cases, if an entire project has been shut down because of an imminent safety or environmental danger, both the general manager and the ES&H manager must approve readiness to restart.

4.2.5 Provide Feedback and Improvement

The LMS Contractor determines whether hazard controls and work performance meet ES&H standards through internal assessments and worker feedback, supplemented by tracking incident and near-miss information and lessons learned. Through the Quality Assurance Program, the LMS Contractor performs audits and surveillances and tests equipment and procured items as required to ensure that they perform as required; the LMS Contractor performs internal audits to ensure that work is performed according to plans, procedures, and client requirements; and the LMS Contractor ensures that corrective actions are developed and implemented in a timely manner. Corrective actions may also be developed outside the Quality Assurance Program as a result of worker feedback, lessons learned, or ES&H performance data. Corrective actions are incorporated into those aspects of procedures, processes, and the ISMS where they will be most useful.

Worker feedback is solicited for activities and projects through post-job briefings in which all aspects of the work are discussed. The LMS Contractor uses a graded approach for conducting post-job briefings, in which routine tasks may have a post-job briefing only once a month, annually, or as requested, but in which nonroutine or hazardous tasks may have post-job briefings as frequently as once a day. Post-job briefings generally include discussing the work sequencing, adequacy of work scope definition, adequacy and ease of use of controls, and worker training. Problems identified and suggestions for improvement are documented on the Job Safety Analysis form and are incorporated into future work planning for the same or similar tasks through a lessons-learned or corrective action process, depending on the nature of the issue. Workers may also raise concerns or make suggestions to line management at any time. Managers are responsible for letting workers know how their concerns or suggestions are resolved.

The LMS Contractor reports and tracks incidents and near-misses through the Safety and Health Program to understand the active errors and the latent errors that contributed to the event. The LMS Contractor gathers data to look for negative and positive trends in safety and environmental protection and to assess root causes of trends. Information from the trends and root causes is used to modify procedures, work planning, training requirements, hazard controls, and work activities through the corrective action or lessons-learned process. Lessons learned may be negative, such as those required to prevent future accidents, or positive, such as ways to reduce project waste generation. Lessons learned are shared within the projects and across Legacy Management program activities through communication from managers to managers or to all employees.

4.3 Guiding Principles

The requirements of the guiding principles are incorporated into the processes by which the LMS Contractor meets the five core functions. More clarification is provided below.

4.3.1 Define Clear Roles and Responsibilities

LMS Contractor Employees: Implementing plans and procedures and project-specific documents, such as Quality Assurance plans, Safety and Health plans, and work plans, specify how the LMS Contractor functions are to be carried out and identify who has the responsibility and authority to carry out those functions. Depending on the complexity of the project, documents may specify the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing the work. The documents indicate how responsibilities flow from management to the worker, and the flow-down to subcontractors or suppliers as applicable.

All workers are expected to comply with ES&H standards. In particular, all workers must:

- Remain aware of hazards to workers or the environment.
- Exercise stop-work authority without hesitation.
- Ensure that training is completed.
- Provide feedback.
- Use required engineering controls, including wearing PPE.
- Follow operating procedures and work plans.
- Actively participate in work planning processes.

Subcontractors: When the LMS Contractor needs to use the services of a subcontractor to perform work, a subcontracting mechanism is used. Part of the subcontracting mechanism is a process to identify and communicate the hazards that the subcontractor may be exposed to while performing work and a process to identify and communicate the hazards that the subcontractor may cause to others. Included in the process is a means by which the subcontractor agrees to perform work safely and to meet applicable codes and standards. Subcontractors are aware that if their safety performance drops below the level specified in the subcontract, the subcontract will be terminated.

Personal services subcontractors use LMS Contractor facilities and equipment and are directly supervised by LMS Contractor personnel. The subcontractor's personnel assume the same responsibilities for ES&H protection as LMS Contractor employees. In this relationship, the LMS Contractor is responsible for safety and environmental protection, but subcontractor personnel accountability remains the responsibility of the subcontractor.

Other subcontractors have specific statements of work identifying discrete tasks and deliverables. There is no direct supervision of subcontractor personnel by the LMS Contractor, other than technical direction and safety and health oversight. The LMS Contractor requires these subcontractors to meet minimum ES&H requirements while performing the work, including meeting safety and environmental expectations that are at least equivalent to those of the LMS

Contractor. Some safety and environmental protection responsibilities may be transferred to the subcontractor through the procurement documents. The LMS Contractor will remain responsible for providing a safe work environment for the subcontractor's personnel and for communicating ES&H expectations. Unless specified otherwise in procurement documents, all subcontractors fall under the LMS Contractor's ISMS and WSHP.

4.3.2 Make Line Management Responsible for Safety and Environmental Protection

To reinforce the responsibilities outlined above for line management, the LMS Contractor holds managers (and all employees) accountable for complying with ES&H expectations, standards, policies, and procedures. The LMS Contractor does this through a reward and discipline process, where positive actions are reinforced and negative actions are discouraged. Positive reinforcement may be verbal, written, or financial. Positive reinforcement can take the form of praise, a letter to the employee's personnel file, time off with pay, or financial award. Negative reinforcement may be verbal, written, or financial, depending on the severity of the action and the extent of employee culpability. Negative reinforcement can take the form of a verbal reprimand, a letter to the employee's personnel file, leave without pay, or termination of employment. All workers are required to be aware of the company's accountability process for maintaining safety and environmental protection, including how managers and workers are held accountable for results.

4.3.3 Ensure that Competence is Commensurate with Responsibilities

The LMS Contractor uses a graded, systematic approach to training to ensure that training needs are assessed, that all employees receive training needed to perform their job duties, and that training and retraining are provided in a timely manner. Training is assessed at three levels: LMS Contractor-wide, project or work location, and activity or position. The LMS Contractor-wide training is that required to ensure employees understand LMS Contractor policies and procedures; project training is that required by the circumstances of a particular project or work location; and activity training is that required to perform a particular activity or act in a given job position. Training may be obtained through vendors, through documented on-the-job training or required reading, or through equivalent education or certification received elsewhere. Depending on the type of training needed, training may be just-in-time, pre-job, site access, scheduled retraining, or overtraining.

New employees are given extensive ES&H training immediately after hiring as part of their LMS Contractor-wide training. The training includes a discussion of the LMS Contractor's safety and environmental protection values, the ISMS, implementation documents such as the *Health and Safety Manual* (LMS/POL/S04321), and specific job training. The LMS Contractor's goal is to ensure that new workers are aware of safety and environmental issues, and their responsibilities to themselves and other workers before they begin work.

When filling positions that require specific credentials, the LMS Contractor either ensures that applicants possess those credentials or the LMS Contractor provides the means for them to receive the appropriate credentials within a reasonable time. Employees are not allowed to work without supervision on tasks related to ES&H protection until the appropriate credentials are received.

Similarly, when workers are asked to perform activities that require specific training, the LMS Contractor ensures that the workers receive the appropriate training before they are allowed to work without supervision.

4.3.4 Tailor Hazard Controls to the Work Being Performed

The LMS Contractor eliminates hazards when practicable, mitigates hazards when possible, and controls hazards when necessary, in that order of precedence. Elimination and mitigation of hazards are always the preferred options. When controls are necessary, the LMS Contractor tailors administrative and engineering controls to the work being performed. When engineering controls are used, the LMS Contractor ensures that they are practical and readily available. Simple controls are preferred; complex engineering controls that require special skills or training for use or maintenance are generally not implemented. Administrative controls, including procedures, the work authorization process, and training, are tailored to fit the work environment and the workers. The LMS Contractor communicates the controls for each project or task clearly and thoroughly to all workers involved.

4.3.5 Identify Safety and Environmental Standards and Requirements

As an organization, the LMS Contractor is committed to employee safety and environmental protection. Our management processes and procedures establish the ES&H standards that we follow in all our operations. The LMS Contractor's work planning process is the mechanism through which project safety and environmental standards and requirements are identified, beginning with Core Function 1, "Define the Scope of Work." Task managers are responsible for remaining aware of changes to safety and environmental laws, assessing their applicability to LMS Contractor operations, and assessing the effects the changes will have on LMS Contractor operations. These changes are incorporated as necessary into LMS Contractor policies, plans, and procedures.

4.3.6 Balance the Priorities

The LMS Contractor balances overall Legacy Management and individual project priorities to ensure that worker safety and environmental protection will not be compromised for any reason. The LMS Contractor will turn down work that poses uncontrollable or unacceptable risks to our workers, or work that poses controllable risks a client will not allow us to control. Through the definition of work scope, the LMS Contractor determines the sequence, schedule, task breakdown, personnel lists, and other details that specify how and when work shall be performed. These details are used to determine ES&H standards and requirements for the work, analyze the hazards and develop controls, and determine what skills and training are required. The LMS Contractor also ensures that the right resources are allocated to address safety, environmental, and operational considerations.

4.3.7 Ensure that Operations are Controlled

The conditions and requirements to be satisfied for work control are clearly established during the work planning process, after work is defined and hazards are assessed. The LMS Contractor ensures that work is not performed until adequate controls have been implemented. Readiness is confirmed before work is allowed to start. The LMS Contractor confirms readiness and controls

work through a graded approach that is based on the hazards posed by the activity or project. The depth and rigor of work readiness or pre-startup reviews is tailored to the associated hazards, the level of uncertainty in the characterization of the work, and the complexity of the work control measures. A Work Package Checklist may be used to confirm readiness according to the agreed-upon work control requirements.

4.3.8 Ensure that All Managers are Committed and All Workers are Involved

The LMS Contractor provides ES&H leadership from the general manager down to demonstrate the importance of ISMS and the WSHP. Managers and workers have clear ES&H expectations, and adherence to those expectations is reinforced through a reward and discipline process in which positive actions are reinforced and negative actions are discouraged. Any employee who consistently violates ES&H policies and procedures, whether intentionally or not, will be terminated.

The LMS Contractor believes that things as fundamental as integrating safety and environmental protection should not be the sole responsibility of specialists. The LMS Contractor uses a team approach to integration at all phases of projects, in which supervisors, workers, and ES&H professionals assess hazards and develop controls. This approach helps workers understand the hazards and controls and helps to instill a strong sense of ownership.

4.4 Work for Others

Work for others includes all work sponsored by an agency other than the Office of Legacy Management, even if that work is for another DOE division. The ISMS requirements found in this system description apply to work for others with the same force and effect. Work for others must meet all applicable LMS Contractor, facility, and activity requirements. Work that cannot be performed safely and in an environmentally responsible manner shall not be started, and work that is not being performed within the LMS Contractor safety and environmental requirements shall be stopped. The LMS Contractor will withdraw its employees, if necessary, to ensure that they do not participate in any such work.

4.5 Record Keeping and Reporting

In support of its safety and health activities and responsibilities, the LMS Contractor creates and maintains various types of records and reports occupational injuries and illnesses. The work-related injuries and illnesses of both the workers and subcontractor workers are recorded and reported in a manner consistent with DOE Manual 231.1-1A, *Environmental, Safety and Health Reporting Manual* and with 10 CFR 851.26. The LMS Contractor records include hazard inventory information, hazard assessments, exposure measurements, and exposure controls. In addition to reporting accidents, injuries, and illnesses, the LMS Contractor investigates the root causes and analyzes the data for trends and for lessons learned.

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5.0 Glossary and Acronyms

Administrative controls: Provisions relating to organization and management, procedures, record keeping, assessment, training, and reporting necessary to ensure safe operation of a facility.

Authorization agreement: A documented agreement between DOE and the contractor for high-hazard facilities (Categories 1 and 2), incorporating the results of DOE's review of the contractor's proposed authorization basis for a defined scope of work. The authorization agreement contains key terms and conditions (controls and commitments) under which the contractor is authorized to perform work. Any changes to these terms and conditions would require DOE approval.

Authorization basis: Safety documentation supporting the decision to allow a process or facility to operate. Included are corporate operational and environmental requirements as found in regulations and specific permits, and, for specific activities, work packages or job safety analyses.

Change controls: A process that ensures all changes are properly identified, reviewed, approved, implemented, tested, and documented.

Client: An entity for which the LMS Contractor performs work through a contractual arrangement or intra-company work order.

Core functions: Requirements for integration of worker safety and environmental protection into the LMS Contractor processes. Adapted from DOE requirements, the core functions are a stepwise process that the LMS Contractor follows to define the scope of work, analyze the hazards, develop and implement controls, perform work within the controls, and provide feedback and improvement.

Covered workplace: A place at a DOE site where the LMS Contractor is responsible for performing work in furtherance of a DOE mission.

Deactivation: The process of placing a facility in a stable and known condition, including the removal of hazardous and radioactive materials to ensure adequate protection of the worker, public safety and health, and the environment, thereby limiting the long-term cost of surveillance and maintenance. Actions include the removal of fuel, draining and/or de-energizing nonessential systems, removal of stored radioactive and hazardous materials, and related actions. Deactivation does not include all decontamination necessary for the dismantlement and demolition phase of decommissioning (e.g., removal of contamination remaining in the fixed structures and equipment after deactivation).

Decommissioning: Takes place after deactivation and includes surveillance and maintenance, decontamination, and/or dismantlement. These actions are taken at the end of the life of a facility to retire it from service with adequate regard for the safety and health of workers and the public and protection of the environment. The ultimate goal of decommissioning is unrestricted release or restricted use of the site.

Decontamination: The removal or reduction of residual radioactive and hazardous materials by mechanical, chemical, or other techniques to achieve a stated objective or end condition.

DOE: The U.S. Department of Energy.

DOE site: A DOE-owned or DOE-leased area or location, or other area or location controlled by DOE, where activities and operation are performed at one or more facilities or places by the LMS Contractor in furtherance of a DOE mission.

Engineering controls: Physical controls, including set points, operating limits, barriers, and PPE.

Environmental Management System: An overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining environmental protection and pollution prevention. The LMS Contractor's ISMS description incorporates the requirements of ISO 14001 and DOE requirements for ISMS.

EPA: The U.S. Environmental Protection Agency.

ES&H: Environmental, safety, and health.

Facility: The buildings, utilities, structures, and other land improvements associated with an operation or service and dedicated to a common function.

Guiding principles: Conditions for performance of work that the LMS Contractor's ISMS addresses. Adapted from DOE requirements, the guiding principles are (1) define clear roles and responsibilities, (2) make line management responsible for safety and environmental protection, (3) ensure that competence is commensurate with responsibilities, (4) tailor hazard controls to the work being performed, (5) identify safety and environmental standards and requirements, (6) balance the priorities, (7) ensure that operations are authorized, and (8) ensure that all managers are committed and that all workers are involved.

Hazard: A source of danger with the potential to cause illness, injury, or death to personnel or damage to a facility or to the environment without regard to the likelihood or credibility of accident scenarios or consequence mitigation.

Hazard analysis or assessment: The determination of material, system, process, and facility characteristics that can produce undesirable consequences, followed by the assessment of hazardous situations associated with a process or activity. The hazard analysis examines the complete spectrum of potential accidents that could expose members of the public, workers, and the environment to hazards.

Hazard classification: Classification of hazards according to the consequences if they are not controlled:

- Category 1: The hazard analysis shows the potential for significant off-site consequences.
- Category 2: The hazard analysis shows the potential for significant on-site consequences.

- Category 3: The hazard analysis shows the potential for significant localized consequences.
- Category 4: No or insignificant hazards to workers or the environment.

Hazard controls: Design features, operating limits, and administrative or safety practices, processes, or procedures to prevent, control, or mitigate hazards.

ISMS: Integrated Safety Management System. A management system that systematically integrates safety into management and work practices at all levels. The LMS Contractor's ISMS integrates the DOE requirements for integrated safety management systems and the requirements of ISO 14001.

ISO: The International Organization for Standardization. ISO is a nongovernmental network of the national standards institutes of 147 countries.

ISO 14001: The International Organization for Standardization's international standard for Environmental Management Systems.

Life cycle: The life of an asset from planning through acquisition, maintenance, operation, and disposition; also, the life of an activity from planning through completion.

Line management: Any management level within the line organization that is directly responsible and accountable for directing and conducting work.

Manual: Documented instructions that define methods, processes, and procedures for the LMS Contractor to use in requirements and guidelines. Manuals for the ISMS document the way the LMS Contractor integrates worker safety and environmental protection into work planning, authorization protocols, formality of operations, and feedback and improvement processes.

OSHA: The Occupational Safety and Health Administration.

Pollution prevention: The use of materials, processes, and practices that reduce or eliminate the generation and release of pollutants, contaminants, hazardous substances, and waste into land, water, and air. This includes recycling activities. Pollution prevention is often referred to as "waste minimization." EPA requires certain waste generators to have a waste minimization program.

Procedure: A document that prescribes a process or a sequence of actions to be performed to achieve a desired outcome safely.

RCRA: The Resource Conservation and Recovery Act. RCRA is the codification of many EPA laws.

Readiness review or assessment: A systematic, documented examination of facilities, equipment, personnel, procedures, and hazard control systems to ensure that an activity can be conducted safely and without causing harm to the environment. The readiness review may build on the requirements of client documents such as those that compose the approved safety basis.

Risk: The quantitative or qualitative expression of possible loss that considers both the probability that a hazard will cause harm and the consequences of that event.

Safety Analysis Report: A report used at DOE nuclear facilities that provides the basis for a determination that the facility can be constructed, operated, maintained, shut down, and decommissioned safely and in compliance with applicable laws and regulations.

Safety envelope: The range of conditions covered by hazard assessments or the DOE's Safety Analysis Report under which safe operation is adequately controlled.

Standard: A term used to describe a specified set of mandatory or discretionary rules, requirements, or conditions concerned with performance, design, operation, or measurements of quality to accomplish a specific task. Standards may include federal laws, regulations, state laws, federal agency directives, national and internal technical standards, codes of conduct, or even organizational "internal use only" documents.

Tailgate (toolbox) meeting: An informal meeting held with workers, usually at the beginning of the day, at the worksite (sometimes at the rear of a pickup). It is used to remind workers of safety information or the daily work plan, demonstrate the use of tools or equipment, perform stretching exercises, etc.

Tailoring: Adapting something, such as a safety program, practice, or requirement, within the ISMS system to suit the need or purposes of a particular operation/activity, taking into account the type of work and associated hazards.

Waste minimization: The use of materials, processes, and practices that reduce or eliminate the generation of pollutants, contaminants, hazardous substances, and waste. This includes recycling activities. Waste minimization is an essential component of pollution prevention. EPA requires certain waste generators to have a waste minimization program.

Work: The process of performing a defined task or activity.

Work control: The process used by line management to permit a task or activity to be initiated as planned, having determined that it can be performed safely.

Work for others: The performance of work for non-Legacy Management entities by the LMS Contractor personnel, including work performed for other DOE divisions.

Work planning: The process of planning a defined task or activity. Addressing safety and environmental protection as an integral part of work planning includes execution of the WSHP functions. These functions include (1) definition of the scope of work, (2) formal analysis of the hazards by specialists and workers, (3) identification of resulting safety controls including safety structures, systems and components, and other safety-related commitments to address the hazards, and (4) approval of the safety controls.

WSHP: Worker Safety and Health Program. The LMS Contractor's WSHP meets the requirements of 10 CFR 851 and is embedded in this Integrated Safety Management System Description.

Attachment 1

**Crosswalk Between the ISMS
and
LMS Contractor's Implementing Documents**

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Crosswalk Between the ISMS and the LMS Contractor's Integrating Documents

ISMS Requirement	LMS Contractor Implementing Document
Define scope of work	<i>Quality Assurance Manual (LMS/POL/S04320), QAI 1.3</i>
Identify the aspects that could have significant impact on ES&H protection	<i>Health and Safety Manual, Section 1 and Section 5</i>
Identify standards and requirements	<i>Quality Assurance Manual, QAI 1.3</i>
Establish ES&H goals	<i>Quality Assurance Manual, QAI 1.3</i>
Plan work to achieve ES&H goals	<i>Quality Assurance Manual, QAI 1.3</i>
Balance priorities	<i>Integrated Safety Management System Description with Embedded Worker Safety and Health Program, "Commitment"</i>
Analyze the hazards	<i>Quality Assurance Manual, QAI 1.3</i>
Develop and implement controls	<i>Health and Safety Manual, Section 1</i>
Tailor controls to work being performed	<i>Health and Safety Manual, Section 1 and Section 5</i>
Ensure that employees have access to procedures	<i>Health and Safety Manual, Section 1</i>
Ensure that competence is commensurate with responsibilities	<i>Quality Assurance Manual, Criterion 2</i>
Authorize work	<i>Quality Assurance Manual, Criterion 5, QAI 1.3</i>
Perform work within controls	<i>Quality Assurance Manual, Criteria 5 & 9</i>
Provide feedback and improvement	<i>Quality Assurance Manual, Criterion 9</i>
Monitor and assess key activities	<i>Quality Assurance Manual, Criterion 9</i>
Periodically review ISMS	<i>Quality Assurance Manual, Criterion 9</i>
Identify and correct problems	<i>Quality Assurance Manual, Criterion 9</i>
Incorporate lessons learned	<i>Quality Assurance Manual, Criterion 3</i>
Communicate ES&H goals and issues	<i>Integrated Safety Management System Description with Embedded Worker Safety and Health Program, "Commitment"</i>
Make line management responsible	<i>Health and Safety Manual, Section 1, Introduction and all Standards</i>
Have clear roles and responsibilities	<i>Quality Assurance Manual, QAI 1.3</i>
Identify potential emergencies and off-normal events and the procedures for responding	<i>Health and Safety Manual, Section 11; Comprehensive Emergency Management System (LMS/POL/S04326)</i>
Maintain ES&H records	<i>Records Management Manual (LMS/POL/S04327)</i>

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Attachment 2

**Crosswalk Between the Requirements of
10 CFR 851 and the LMS Contractor's Implementing Documents**

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Crosswalk Between the Requirements of 10 CFR 851 and the LMS Contractor's Implementing Documents

851 Section	Requirement	LMS Contractor Implementing Documents
851.20(a)	(1) Establish written policy, goals, and objectives (2) Use qualified safety and health staff (3) Assign responsibilities, evaluate personnel performance, and hold personnel accountable for safety and health performance (4) Provide mechanisms for worker involvement in the development of the WSHP and identification and control of hazards (5) Provide workers with access to information (6) Establish procedures for workers to report problems without reprisal and make recommendations to control hazards (7) Provide for prompt response to such reports and recommendations (8) Provide for regular communication about S&H matters (9) Establish stop work procedures (10) Inform workers of their rights and responsibilities by appropriate means	(1) <i>Integrated Safety Management System Description with Embedded Worker Safety and Health Program</i> , Commitment to Safety and Protection of the Environment (2) <i>Health and Safety Manual</i> , Section 1, Introduction (3) <i>Health and Safety Manual</i> , Section 1, introduction 5.0; <i>Construction Procedures Manual</i> (LMS/POL/S04324), (4) <i>Health and Safety Manual</i> , Section 1, Introduction; form LMS 1748e; form LMS 1554e (5) <i>Health and Safety Manual</i> , Section 1, Introduction; form LMS 1748e; form LMS 1554e (6) <i>Health and Safety Manual</i> , Section 1, Introduction (7) <i>Health and Safety Manual</i> , Section 1, Introduction (8) Implemented through weekly staff meetings (9) <i>Health and Safety Manual</i> , Standard 1.2.; <i>Construction Procedures Manual</i> (10) <i>Health and Safety Manual</i> , Section 1, Introduction; form LMS 1748e; form LMS 1554e
851.20(b)(1) – (b)(9)	Worker rights and responsibilities	<i>Health and Safety Manual</i> , Section 1, Introduction; DOE worker protection poster
851.21(a)	Establish procedures to: (1) assess worker exposures through monitoring (2) document the assessments; use accredited and certified labs (3) record results (4) analyze the designs of new facilities and modifications for potential hazards to workers (5) evaluate operations (6) perform routine job activity-level hazard analyses (7) review S&H experience info (8) consider interaction between hazards (i.e., workplace and radiological)	(1) <i>Health and Safety Manual</i> , Sections 5 & 7 (2) <i>Health and Safety Manual</i> , Sections 5 & 7 (3) <i>Records Management Manual</i> (LMS/POL/S04327), Chapter 1.0 (4) <i>Construction Procedures Manual</i> (5) <i>Construction Procedures Manual</i> (6) <i>Construction Procedures Manual</i> (7) <i>Construction Procedures Manual</i> (8) <i>Quality Assurance Manual</i> , QAI 1.3; <i>Construction Procedures Manual</i>
851.21(b)	Submit a list of closure facility hazards and controls within 90 days after identification	Not applicable: LMS does not “close” facilities or demolish facilities. LMS works at DOE sites where facilities have already been closed or demolished. Hazards and controls are addressed in accordance with methods for addressing all types of work hazards and controls.
851.22(a)	Establish a process to prevent or abate identified hazards in a timely manner	<i>Health and Safety Manual</i> , Section 1, Introduction, and Section 5; <i>Construction Procedures Manual</i>
851.22(b)	Select hazard controls based on hierarchy	<i>Health and Safety Manual</i> , Section 1, Introduction and Standard 5.2, Section 4.4
851.22(c)	Address hazards when selecting or purchasing equipment, products, and services	<i>Quality Assurance Manual</i> , Criterion 7; <i>Procurement Manual</i> (LMS/POL/S04334), Policy 101; Training Module HR920

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Crosswalk Between the Requirements of 10 CFR 851 and the LMS Contractor's Implementing Documents (continued)

10 CFR 851 Appendix A		
851.23(a)	Comply with the following safety and health standards as applicable: (1) 10 CFR 850 (2) 29 CFR 1904.4-1904.11, 1904.29-1904.33, 1904.44, 1904.46 (3) 29 CFR 1910 (4) 29 CFR 1915 (5) 29 CFR 1917 (6) 29 CFR 1918 (7) 29 CFR 1926 (8) 29 CFR 1928 (9) ACGIH "Threshold Limit Values...." (10) ANSI Z88.2 (11) ANSI Z136.1 (12) ANSI Z49.1 (13) NFPA 70 (14) NFPA 70E	(1) Not applicable. (2) <i>Health and Safety Manual</i> , Standard 11.1 (3) <i>Health and Safety Manual</i> , Section 1, Introduction (4) Not applicable. (5) Not applicable. (6) Not applicable. (7) <i>Health and Safety Manual</i> , Section 3, Introduction (8) Not applicable. (9) <i>Health and Safety Manual</i> , Section 7, Introduction (10) <i>Health and Safety Manual</i> , Standard 7.4 (11) Not applicable. (12) <i>Health and Safety Manual</i> , Standard 4.1 (13) <i>Health and Safety Manual</i> , Standard 10.1 (14) <i>Health and Safety Manual</i> , Standard 10.1
851.23(b)	Comply with additional necessary S&H requirements	All LMS Contractor procedures list applicable standards; <i>Health and Safety Manual</i> , Introduction requires that applicable standards are identified and incorporated.
851.24	Have a structured approach to worker S&H, including minimum provisions for functional areas	<i>Integrated Safety Management System Description with Embedded Worker Safety and Health Program</i>
851.25(a)	Develop and implement an S&H training program	<i>Quality Assurance Manual</i> , Criterion 2; <i>Health and Safety Manual</i> , Section 1, Introduction; <i>Training Manual</i> (LMS/POL/S04323), Section 1.0
851.25(b)	Provide: (1) Initial training before or at the time of assignment (2) Periodic training (3) Additional training for changed conditions	(1) <i>Training Manual</i> , Section 1.0 (2) <i>Quality Assurance Manual</i> , Criterion 2 (3) <i>Quality Assurance Manual</i> , Criterion 2
851.26(a)	(1) Establish and maintain records of hazard inventories and assessments, and exposure measurements and controls (2) Ensure injuries and illnesses are recorded in accordance with DOE Manual 231.1-1A	(1) <i>Records Management Manual</i> , Chapter 1.0, Section 4.0 (2) <i>Health and Safety Manual</i> , Section 11
851.26(b)	(1) Report and investigate accidents, injuries, and illnesses (2) Analyze data from trends and lessons learned	(1) <i>Health and Safety Manual</i> , Section 11 (2) <i>Quality Assurance Manual</i> , QAI 3.1, QAI 3.4; <i>Construction Procedures Manual</i>

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Crosswalk Between the Requirements of 10 CFR 851 and the LMS Contractor's Implementing Documents (continued)

1.	Construction Safety	
1.(a)	For each separately definable activity (1) Prior to the beginning of work, prepare and have approved an activity hazard analysis (2) Ensure workers are aware of hazards and control measures described in activity hazard analyses before work begins (3) Require that workers acknowledge being informed; discipline those who don't use prescribed protective measure	(1) <i>Health and Safety Manual, Section 3; Construction Procedures Manual</i> (2) <i>Health and Safety Manual, Section 3; Construction Procedures Manual; form LMS 1748e</i> (3) <i>Health and Safety Manual, Section 5; Construction Procedures Manual; form LMS 1748e; form LMS 1554e</i>
1.(b)	Have a representative on the worksite during active construction; representative must perform frequent and regular inspections of worksite to identify or correct hazards	<i>Health and Safety Manual, Standard 1.5; Construction Procedures Manual</i>
1.(c)	Instruct workers to inform representative of new hazards and stop work if hazard cannot be corrected	<i>Health and Safety Manual, Section 1, Introduction paragraph 3; Construction Procedures Manual</i>
1.(d)	Prepare a written project S&H plan and obtain approval before work begins	<i>Health and Safety Manual, Section 1, Introduction paragraph 4; Construction Procedures Manual</i>
10 CFR 851 Appendix A		
2.	Fire Protection	
2.(a)	Implement comprehensive fire safety and emergency response program	<i>Health and Safety Manual, Section 4</i>
3.	Explosives Safety: Not applicable	<i>See Integrated Safety Management System Description with Embedded Worker Safety and Health Program, Appendix A, Section 3</i>
4.	Pressure Safety	
4.(a)	Establish policies and procedures for pressure systems	<i>Health and Safety Manual, Section 6</i>
4.(b)	Ensure pressure systems conform to standards	<i>Quality Assurance Manual, Criterion 7; Health and Safety Manual, Section 6</i>
5.	Firearms Safety: Not applicable	<i>See Integrated Safety Management System Description with Embedded Worker Safety and Health Program, Appendix A, Section 5</i>
6.	Industrial Hygiene	
6.(a)	Perform initial/baseline surveys and periodic resurveys and/or exposure monitoring as appropriate	<i>Health and Safety Manual, Section 7, Introduction</i>
6.(b)	Coordinate with planning/design personnel to anticipate and control hazards from proposed facilities and operations	<i>Construction Procedures Manual</i>
6.(c)	Coordinate with occupational medical, environmental, health physics, and work planning professionals	<i>Health and Safety Manual, Section 7, Introduction paragraph 5.5</i>
6.(d)	Have policies and procedures to mitigate the risks from occupational carcinogens	<i>Health and Safety Manual, Sections 1, 5, & 7</i>
6.(e)	Have professionally and technically qualified industrial hygienists manage and implement the program	<i>Health and Safety Manual, Section 7, Introduction paragraph 5.9</i>
6.(f)	Use NIOSH or DOE approved respirators	<i>Health and Safety Manual, Standard 7.4</i>

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Crosswalk Between the Requirements of 10 CFR 851 and the LMS Contractor's Implementing Documents (continued)

7.	Biological Safety: Not applicable	See <i>Integrated Safety Management System Description with Embedded Worker Safety and Health Program</i> , Appendix A, Section 7
8.	Occupational Medicine	
8.(a)	Provide comprehensive services to workers who: (1) Work on a DOE site more than 30 days per 12-month period. (2) Are enrolled for any length of time in a monitoring program	Occupational Medicine Services provider contract
8.(b)	Services must be under the direction of a licensed provider	Occupational Medicine Services provider contract
8.(c)	Personnel providing occupational medical services must be licensed, registered, or certified as required in the state where employed	Occupational Medicine Services provider contract
8.(d)	Give the provider access to the following hazard information (i) current info on actual or potential work-related site hazards (1)(ii) employee job-task and hazard analysis info, including essential job functions (1)(iii) actual or potential work-site exposures of each employee (1)(iv) personnel actions resulting in change of job functions, hazards, or exposures (2) Notify the provider when an employee is absent more than 5 consecutive workdays (3) Give the provider the opportunity to participate in worker S&H meetings and committees (4) Give the provider access to the workplace for evaluation of job conditions relating to a worker's health	(1) <i>Health and Safety Manual</i> , Standard 8.1 (2) <i>Health and Safety Manual</i> , Standard 8.1 (3) Occupational Medicine Services provider contract (4) Occupational Medicine Services provider contract
10 CFR 851 Appendix A		
8.(e)	Designated occupational medical provider must (1) Plan and implement the services (2) Participate in worker protection teams to build and maintain partnerships	Occupational Medicine Services provider contract
8.(f)	Develop and maintain a record for each employee for whom medical services are provided; maintain the records in accordance with E.O. 13335 (1) Keep records confidential, protected from unauthorized use, and store as required. (2) Provide access to records per Privacy Act and EEOICPA	Occupational Medicine Services provider contract
8.(g)	Occupational medical provider must determine the content of worker health evaluations, which must be conducted under the direction of a licensed physician (1) Inform workers of the purpose and nature of evaluations and tests verbally and in writing; document the communication in the worker's medical file (2) Conduct the following evaluations when determined necessary by the provider (2)(i) physical baseline evaluation for new or transferred employees (2)(ii) periodic monitoring or evaluations (2)(iii) diagnostic examination to evaluate injuries or illnesses for work relatedness (2)(iv) return-to-work evaluation after absence greater than 5 consecutive days due to any injury or illness (2)(v) employment termination general health evaluations if desired by employee	Occupational Medicine Services provider contract

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Crosswalk Between the Requirements of 10 CFR 851 and the LMS Contractor's Implementing Documents (continued)

8.(h)	Provider must monitor ill and injured workers to facilitate rehab and safe return to work, and minimize lost time (1) Place an individual under medical restrictions when needed; notify worker and management when restrictions are imposed or removed	Occupational Medicine Services provider contract
8.(i)	Provider staff must communicate results of evaluations to management and S&H to facilitate the mitigation of worksite hazards	Occupational Medicine Services provider contract
8.(j)	Provider must include measures to ID and manage principle causes of morbidity and mortality (1) Contractor must have programs when they are cost-effective (2) Contractor must give provider appropriate access to info from insurance plans	Occupational Medicine Services provider contract
8.(k)	Provider must review and approve of the medical and behavioral aspects of contractor health promotion programs including (1) Contractor EAPs (2) Contractor alcohol and substance abuse and rehab programs (3) Contractor-sponsored wellness programs (4) Immunization, blood-borne pathogens, and bio-haz waste programs (5) Provider must develop and periodically review medical emergency response procedures	Occupational Medicine Services provider contract
10 CFR 851 Appendix A		
9.	Motor Vehicle Safety	
9.(a)	Implement a motor vehicle safety program for drivers and passengers of vehicles and powered industrial equipment	<i>Health and Safety Manual, Standards 9.1 & 9.2</i>
9.(b)	Tailor the program to the site or facility, based on needs	<i>Health and Safety Manual, Section 9</i>
9.(c)	Address the following, as applicable (1) Minimum licensing (2) Use of seat belts or other safety devices (3) Training (4) Inspections and maintenance (5) Traffic and pedestrian control devices and signs (6) On-site speed limits and traffic rules (7) Enforcement provisions	<i>Health and Safety Manual, Standard 9.1</i>
10.	Electrical Safety	
	Develop and implement a comprehensive electrical safety program appropriate for the activities at a site	<i>Health and Safety Manual, Section 10</i>
11.	Nanotechnology Safety—Reserved	<i>Integrated Safety Management System Description with Embedded Worker Safety and Health Program, Appendix A, Section 11</i>
12.	Workplace Violence Prevention—Reserved	<i>Integrated Safety Management System Description with Embedded Worker Safety and Health Program, Appendix A, Section 12</i>

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Appendix A

General Approach to Worker Safety and Health Functional Areas

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A.1 Construction Safety

The Legacy Management Support Contractor (LMS Contractor) achieves construction safety primarily through the *Health and Safety Manual* (LMS/POL/S04321), and the *Construction Procedures Manual* (LMS/POL/S04324). The *Construction Procedures Manual* contains a set of clear construction operating procedures that systematically integrate health, safety, environment, and Quality Assurance management into all facets of work planning and execution. Unless specifically exempted within a procedure's scope or by other written exemption, all procedures within the *Construction Procedures Manual* apply to all organizations that perform construction and to all organizations that provide support to construction activities.

In implementing the Integrated Safety Management System (ISMS) concept, the Worker Safety and Health Program (WSHP) ensures that health, safety, and environmental compliance issues are addressed throughout the construction process, from the design package through the constructability review. The Environmental, Safety and Health, and Quality organization provides oversight and guidance to construction line management throughout the design process. This organization reviews each design package for implementation and consistency with the hazard assessment, procedures, checklists, and surveys to ensure that environmental, health, and safety concerns are appropriately addressed. The process is the same whether work is performed by the LMS Contractor or by a subcontractor.

Fundamental to protection of safety and the environment are personal commitment and accountability, open communications, continuous improvement, employee involvement, and line management responsibility for safety and environmental protection. Therefore, construction management procedures identify overall job positions in which authority, responsibility, and accountability are vested within line management and are commensurate with the project effort.

Evaluating newly assigned or reassigned employees is essential to ensure that adequately trained personnel are provided on all construction projects. In addition to receiving the LMS Contractor's basic new employee training, all newly hired or reassigned construction employees will receive an orientation and an evaluation of their readiness to perform their project-specific position requirements. Based on the results of the evaluation of their level of training, knowledge, relevant experience, job proficiency, medical requirements, and risks associated with the project, employees will be directly supervised (mentored) for a period of time until line management determines they are adequately qualified to perform their duties. When applicable, annual refresher training is scheduled to maintain proficiency and enable the employee to adapt to changes in technology, methodology, procedures, or job responsibilities. To ensure safe, efficient, and cost-effective work practices, all personnel will be familiar with applicable procedures prior to the start of work, along with the requirements identified in the applicable project safety plans, safety and health (S&H) plans, job safety analysis, the *Quality Assurance Manual* (LMS/POL/S04320), Quality Assurance Program or Project Plans, the *Environmental Protection Manual* (LMS/POL/S04329), and the *Health and Safety Manual*.

A.2 Fire Protection

The LMS Contractor specifies fire prevention, protection, and response through the *Health and Safety Manual* and through individual site or project emergency information sections of the *Comprehensive Emergency Management System* (LMS/POL/S04326). These sections establish

the requirements for fire prevention and fire protection, including measures designed to protect employees, visitors, subcontractors, and facilities from the effects of fire and explosion.

Locations with permanent buildings are equipped with fire alarms. Most buildings contain sprinkler systems; buildings that house particularly valuable equipment, processes, or records contain sprinkler systems designed for the type of property to be protected. The individual site or project emergency plans specify the methods of personnel egress and accountability during an emergency, the types of audible notification for emergencies, and the local emergency response organizations. Fire fighting efforts by trained LMS Contractor employees shall be limited to incipient fires that can be controlled or extinguished by portable fire extinguishers. Employees not trained in the use of fire extinguishers shall evacuate any area in which a fire exists and shall report the fire using the established emergency telephone number.

Memorandums of Understanding or contracts are in place with local emergency response organizations where necessary. The LMS Contractor recognizes that the local emergency response organizations are staffed by professionals subject to various rigorous requirements. The LMS Contractor believes these other requirements are equivalent to, and in excess of, the requirements of 10 CFR 851. Because imposing the requirements of 10 CFR 851 on the professional response organizations would result in no increase in safety to contractor employees or to the responders, LMS does not flow down 10 CFR 851 to these organizations. Response organizations with which DOE or the LMS Contractor do not have written agreements have been notified by letter of the location of the site, access to site, the unique hazards associated with the site that could affect fire response personnel, and site contact information.

Most Legacy Management sites are not staffed on a continual basis, with staff being present only during routine maintenance or inspection activities. Many of the sites are in remote areas. The LMS Contractor is aware that emergency response organizations may not be able to reach some sites quickly due to the distance involved. To compensate for the inability of emergency organizations to provide rapid response, personnel who go to remote sites are trained in First Aid and may also be trained in cardiopulmonary resuscitation. Personnel carry a mechanism for contacting emergency responders, such as an emergency transponder, cellular telephone, or satellite telephone.

Wildland fires are not a concern for facilities in urban locations. At sites where the Office of Legacy Management conducts prescribed burns, planning for environmental and property protection is done in accordance with DOE Order 450-1, and the site emergency plan contains appropriate response measures should a fire become out of control.

At facilities outside urban areas, management plans consider cost-effective ways of protecting assets from wildfire damage. This includes protecting the interface between wildlands and facilities or equipment, such as through fuel modification efforts (primarily mowing of plant materials), placing equipment in fuel-free areas, and using fire-resistant materials in construction of monitor wells. The site emergency plans specify what actions will be taken, if possible, to protect structures and equipment if a wildfire threatens a site. After a fire, an assessment will be made to review physical damage and determine if additional sampling is required to quantify any effects to the surface or ground water at the site. Sampling will be performed in accordance with the appropriate procedure for the medium and constituents of interest.

A.3 Explosives Safety

Section 3, Appendix A, to 10 CFR 851 requires that contractors responsible for the use of explosive materials must establish and implement a comprehensive explosives safety program and must comply with the policy and requirements of DOE Manual 440.1-1A. According to DOE Manual 440.1-1A, the *DOE Explosives Safety Manual*,

“...the requirements in this Manual apply to all DOE elements that engage in developing, manufacturing, handling, storing, transporting, processing, or testing explosives, pyrotechnics and propellants, or assemblies containing these materials. With the notable exception of onsite explosives storage and transportation, this description is not meant to include routine construction or routine tunnel blasting which are covered by OSHA safety requirements.”

The LMS Contractor does not engage in any of the activities that are covered by DOE Manual 440.1-1A and therefore has not developed an explosives safety program.

A.4 Pressure Safety

20 CFR 851, “Worker Safety and Health Program,” defines pressure systems in the following terms:

“Pressure systems are comprised of all pressure vessels, and pressure sources including cryogenics, pneumatic, hydraulic, and vacuum...Associated hardware (e.g., gauges and regulators), fittings, pumps, and pressure relief devices are also integral parts of the pressure system.”

The LMS contractor does not design or fabricate pressure systems. However, the contractor routinely uses equipment that contains pressure systems, and uses compressed gasses and cryogenic liquids.

To protect employees from the hazards of using procured pressure systems and components, the contractor follows established policies and procedures for procurement and quality assurance, which require that procured items be manufactured, installed, tested, inspected, maintained, and repaired in accordance with American Society of Mechanical Engineers codes. Employees follow written procedures when using equipment that contains pressure systems or components.

Procedures have been established for the safe operation and use of compressed gasses and cryogenic liquids. Employees who handle or use compressed-gas cylinders shall attend Compressed-Gas Cylinder Safety training. All employees who handle or use compressed-gas cylinders shall be aware of the information contained in the applicable material safety data sheets. Employees are further trained in procedures specific to the compressed gas being used and to the action being performed with the gas.

A.5 Firearms Safety

Section 5, Appendix A, to 10 CFR 851 requires that contractors engaged in activities involving the use of firearms must establish a firearms safety program. The LMS Contractor does not

engage in any activities involving the use of firearms, including the use of an armed protective force, and therefore has not developed a firearms safety program.

A.6 Industrial Hygiene

A.6.1 Introduction

Industrial hygiene is the science and art devoted to the anticipation, recognition, evaluation, prevention, and control of those environmental factors or stresses arising in or from the workplace and may cause sickness, impaired health and well being, or significant discomfort among workers and the public.

An effective worker protection program encompasses the concept of prudent avoidance of worker exposure to any occupational hazard. Prudent avoidance involves minimizing the number of individuals at risk of exposure, minimizing the individual worker's potential for exposure, and controlling all exposures to chemical and physical agents so that exposures are within established occupational exposure limits and as low as practical. The purpose of the LMS Contractor's Industrial Hygiene program is to implement and integrate recognized industrial hygiene practices within the overall worker protection program. The program also ensures the collection, validation, and maintenance of appropriate industrial hygiene information. Details of the Industrial Hygiene program are found in the *Health and Safety Manual*, Section 7.

A.6.2 Baseline and Periodic Evaluations

The LMS Contractor's industrial hygiene program includes documented initial and periodic evaluations of all workplaces, as appropriate. These evaluations

- Describe the work or task performed.
- Identify the potentially exposed workers.
- Identify and describe potential sources of hazardous agents.
- Evaluate the controls used to prevent or minimize exposure.
- Assess the levels of exposure.
- Include a conclusion, with rationale, whether the identified agents, their uses, and the potential exposures they cause pose a hazard to workers (i.e., generate a positive or negative exposure assessment).
- Recommend additional controls for hazardous agents, where necessary.
- Recommend the scope and frequency of further exposure monitoring, as appropriate.

Identification of health hazards and employee exposure levels is accomplished through an industrial hygiene sampling rationale and strategy. The sampling rationale is based on reviews of work processes, material safety data sheets, employee complaints, exposure incidents, medical records, lessons learned, and previous monitoring results, as appropriate. As necessary, the sampling strategy includes baseline and subsequent surveys that assess employees' exposure through screening and full shift sampling; baseline safety and industrial hygiene exposure assessments and updates; and industrial hygiene monitoring records, results, exposure calculations, analyses, and summary reports.

When designing an industrial hygiene sampling program, the following items are taken into consideration:

- Preliminary baseline sampling (grab samples and initial screening).
- Full-shift or short-term sampling.
- Exposures covered.
- Priorities.
- Schedule—duration, route, frequency.
- Analysis by appropriate methods performed by an accredited laboratory.
- Comparison of sampling results to minimum limits.

A.6.3 Evaluation of Routine Work Operations

Some evaluation practices and strategies are generally best suited to operations with repetitive or predictable work activities and exposure conditions. The frequency at which routine work operations are evaluated is proportional to the risk presented by the hazard(s), the variability of the operation, the operation frequency, and the type and dependability of the controls limiting exposures. As a general rule:

- Industrial areas/activities (e.g., fabrication or processing operations, craft shops) are evaluated at least annually, and more often if appropriate and/or when potentially serious health hazards are present.
- Modified operations are evaluated before starting or resuming operations, and operations are evaluated when significant changes are made in adjacent work areas.
- Frequently changing worksites/operations (e.g., construction sites, hazardous waste activities) are evaluated as often as necessary to characterize health risks.
- Occupied work areas initially determined to have no significant hazards (e.g., administrative offices and other low-hazard facilities) are evaluated at least once every 3 years.
- Unoccupied buildings should be evaluated initially and when their mission changes.

In addition to these periodic evaluations, additional evaluations may be performed in response to employee concerns or reported occurrences, injuries, or illnesses. The LMS Contractor line management also conducts a sufficient number of worksite inspections to determine compliance with standards and program requirements. The frequency and scope of such inspections depends on the size, complexity, and nature of the operations of the worksite.

A.6.4 Evaluation of New, Nonroutine, Transient, or Dynamic Work Operations

The evaluation approaches used for routine work operations are sometimes appropriate when applied to hazardous waste operations, environmental restoration operations, or other dynamic work situations. However, where workplace operations and control and exposure conditions are in the design stage, may vary, and/or are of short, transient, or dynamic nature, traditional baseline and periodic surveys may not be practical nor ensure an adequate level of exposure surveillance and control.

In these cases, the LMS Contractor uses a review group to assess work activities and develop appropriate procedures and controls for specific work packages early in the work planning process. This review group is multidisciplined and consists of technical as well as safety and health subject matter experts. The group identifies or develops controls, walks down the planned work area, and consults with those who will perform the work. The screening process may also identify the need for additional work permits, exposure monitoring, and/or surveillances. Such practices result in an individualized industrial hygiene review for each nonroutine work activity.

A.6.5 Multidisciplined Coordination

The LMS Contractor line management personnel coordinate planning and design activities with a multidisciplined group to anticipate and control health hazards that proposed facilities and/or operations would introduce. Professional/technical disciplines involved may include occupational medicine, epidemiology, ergonomics, occupational safety, audiology, fire protection, radiation protection, environmental protection, facility maintenance, operations, engineering, employee groups, and recognized bargaining units. Because proper initial design is the most cost-effective way to control hazards, reviews are performed at the conceptual design phase when possible.

A.6.6 Risk Mitigation

The LMS Contractor has established various policies and procedures to mitigate risks from identified and potential hazards, whether chemical or physical. The minimum set of hazardous agents generally to be considered are those identified in the American Conference of Government Industrial Hygienists (ACGIH) *Threshold Limit Values for Chemical Substances and Physical Agents* and applicable Occupational Safety and Health Administration (OSHA) regulations. Physical hazards include those to vision, hearing, respiratory systems, and other parts of the human body, including ergonomic hazards. The LMS Contractor line management is required to use appropriate engineering, administrative, work practice, and/or personal protective control methods to limit hazardous exposures to acceptable levels, with a preference for eliminating the hazard entirely.

Controls for chemicals will depend on the physical and chemical properties of the material, how it will be handled (specifically if the material will be handled in a way where it could be dispersed into the air or spread on surfaces), the quantity involved, and the duration and number of potential exposures. Generally, the following controls should be applied to the use and handling of carcinogenic and hazardous chemicals as appropriate:

- Written safety plans, standard operating procedures, and/or experimental protocols are prepared to describe the use of chemicals and the methods used to control employee exposure. These documents are reviewed and approved by the senior industrial hygienist prior to the start of an operation.
- Controlled areas are established where chemicals are used (consistent with OSHA requirements, where applicable). The design and characteristics of these areas are appropriate to ensure that access is controlled and all chemicals are confined. For carcinogenic chemicals, a record is maintained of all personnel working in controlled areas. Provisions are made to ensure that contaminated air is not released into adjacent, non-controlled work areas or to the outside environment.

A.6.7 Documentation

The LMS Contractor line managers are required to ensure that worker exposure assessments for chemical, physical, and biological agents and ergonomic stressors are documented and records are maintained. Further, the results of these exposure assessments must be promptly communicated to the workers and supervisors who perform the tasks evaluated, to the organizations responsible for effecting any needed corrective actions, and to affected disciplines such as occupational medicine, industrial safety, radiation protection, fire protection, and environmental protection, as appropriate.

The LMS Contractor ensures that written hazard assessment and control records are developed and maintained for all potentially hazardous work operations and activities. This includes assessments where no significant worker exposures are expected or determined. In general, worker exposure assessments and control records should document the following operational, administrative, personnel, hazard, sampling/exposure measurement, and hazard control information:

- Description of the operation and associated work activities/tasks, including the identity of management/supervisory personnel responsible for the operation.
- Inventory of types and sources of potential health hazards.
- Description of the exposure hazard controls.
- Description of any significant environmental factors that could affect worker exposure potential and/or exposure sampling or measurements.
- Identification of potentially exposed personnel (in accordance with privacy protections), including the rationale for selecting specific workers to monitor/sample, and the frequency and duration of potential worker exposures, as appropriate.
- A technical description of the exposure assessment strategy and monitoring/sampling protocols used, and the identification of the applicable industrial hygiene standards.
- The results of all exposure monitoring/sampling measurements.
- Interpretation of all monitoring/sampling results and other measurements relating to the worker exposure assessment, relative to established standards.
- Description of any recommended additional control measures to reduce worker exposures to be below maximum exposure levels and as low as practicable.
- Where applicable, a detailed schedule (including for regular progress reports) for the implementation of any required health hazard prevention and control measures, including any long-term abatement and interim control measures.

LMS Contractor line management provides the results of personal measurements to affected employees in a timely manner (e.g., within 10 working days of receipt of the results) or as otherwise required. Monitoring results must be provided in a format consistent with OSHA requirements in 29 CFR 1910 or with other applicable occupational health standards.

A.6.8 Worker Training and Involvement

LMS Contractor line managers are required to provide worker hazard training and to encourage employee involvement. Workers are the individuals most in contact with the hazards and, therefore, have a vested interest in the Worker Protection Program. These workers can serve as a valuable resource and problem solvers. Workers who are properly trained and allowed to contribute and implement ideas are more likely to support them since they now have a personal stake in ensuring that rules and procedures are followed. Therefore, workers should be directly involved with and participate in activities such as inspecting worksites, identifying hazards, selecting work practice controls, and serving on worker protection committees.

LMS Contractor line management ensures that workers are trained in

- Methods and observations that may be used to detect the presence of an occupational health hazard in the work area (e.g., use of continuous monitoring devices, visual appearance, or odor of hazardous chemicals when being released).
- An understanding of the physical and health hazards of the chemicals, ergonomic stressors, and harmful physical and/or biological agents in the work area.
- Measures that workers can take to protect themselves from these hazards, including use of engineering controls, specific procedures, or other controls (such as appropriate work practices, emergency actions, and personal protective equipment [PPE]).
- Details of the Chemical Hazard Communication, Laboratory Chemical Hygiene Plan, or Hazardous Waste Operations and Emergency Response programs developed by DOE or the contractor.
- Details of any applicable operations or hazard-specific training programs.

A.6.9 Staff Qualifications

The LMS Contractor uses professionally qualified industrial hygienists to manage and implement the industrial hygiene functions of the WSHP. The LMS Contractor management ensures that its industrial hygiene staff is adequately trained and knowledgeable in the anticipation, recognition, evaluation, and control of occupational health hazards and is provided with the resources and support necessary to maintain and enhance proficiency in industrial hygiene through continued technical training, continuing education, and professional development activities.

The industrial hygiene elements of the WSHP are directed by a senior industrial hygienist with appropriate background and experience, who reports directly to senior management. To be considered “senior,” an industrial hygienist should be certified in the practice of industrial hygiene by the American Board of Industrial Hygiene (ABIH) or, at least, meet the eligibility requirements for ABIH certification. At a minimum, the senior industrial hygienist will have a college or university degree in industrial hygiene, a physical or biological science, or an engineering or technology field, plus special studies and training in the field of industrial hygiene, and no less than 5 years of full-time employment in the professional practice of industrial hygiene.

A.6.10 Respiratory Protection

When respiratory protection is required, LMS Contractor line management must ensure that National Institute of Occupational Safety and Health (NIOSH)-approved respirators are used. However, for specific activities/situations, NIOSH-approved respirators may not exist. In such cases, LMS Contractor line management may use respiratory protection equipment that has been tested under the DOE Respirator Acceptance Program for Supplied-Air Suits (DOE-Technical Standard 1167-2003).

A.7 Biological Safety

Section 7, Appendix A to 10 CFR 851 requires that contractors engaged in activities involving work with biological etiologic agents establish and implement a biological safety program. DOE Guide 440.1-8, "Implementation Guide for Use with 10 CFR 851, Worker Safety and Health Programs," indicates that contractors should consult DOE Notice 450.7, "The Safe Handling, Transfer, and Receipt of Biological Etiologic Agents at Department of Energy Facilities," to develop their biological safety programs. DOE Notice 450.7 applies to any DOE major facilities contractor that may transfer, use, or receive etiologic agents, including biological select agents, through any means. A "biological etiologic agent" is an agent that causes disease in a biological system. The LMS Contractor does not engage in any activities involving the use of biological etiologic agents, and therefore has not developed a biological safety program.

A.8 Occupational Medicine

The LMS Contractor does not directly provide occupational medicine services to its employees at any work location. Due to the relatively small number of employees and the low hazards of the work environments, it would not be practical or economical to staff a facility that can provide comprehensive occupational medicine services. Instead, the LMS Contractor subcontracts with qualified occupational medical providers in the area of each site and provides some services through existing relationships between the companies that compose the LMS Contractor and the medical services providers contracted to those companies. The LMS Contractor coordinates the services of the medical services providers in accordance with the *Health and Safety Manual* and the service providers perform in accordance with their subcontract(s). The occupational medical services provided through the LMS Contractor and requirements specified in the subcontracts with service providers are outlined in this section.

Occupational medicine services are provided by professionals who have been licensed, registered, or certified in the state of employment. These professionals administer services under the supervision and direction of a graduate of a school of medicine or osteopathy who is licensed for the practice of medicine in the state in which the site is located. Services are provided for all LMS Contractor employees and for subcontractor employees who work on a DOE site for more than 30 days in a 12-month period (which for the purposes of the LMS Contractor is equivalent to 240 hours in a 12-month period).

The service providers plan and implement the occupational medicine services. For those services provided through other contractors to the companies that compose the LMS Contractor, the service providers coordinate the services and ensure that they meet all the requirements found in this section. The service providers also review and approve the medical and behavioral aspects of

employee counseling and health promotion programs that are sponsored or supported by the LMS Contractor. The occupational medicine services providers review the medical aspects of immunization programs, bloodborne pathogens programs, and bio-hazardous waste programs. Finally, the service providers develop and review the medical emergency procedures included in the site emergency plans. If necessary, the providers ensure that the LMS Contractor's medical emergency responses are integrated with the emergency plans of nearby communities. The need for such integration depends on the hazardous materials used or stored at a site and the nature of the activities performed at a site.

A.8.1 Pre-Employment, Employment, and Post-Employment Evaluations

The occupational medicine services provider determines which new LMS Contractor employees are required to complete a pre-employment physical evaluation as a condition of employment. The content of the pre-employment physical evaluation for workers at each DOE site is determined by the occupational medicine services provider. These physical evaluations are used to establish a baseline of the physical condition of each employee through several tests and detailed questionnaires about the employee's medical history and expected working conditions and duties. Subcontractor employees who work on a DOE site for more than 240 hours in a 12-month period, or who are enrolled in an exposure monitoring program, also receive baseline physical evaluations as required by the services provider. This is tracked by the medical services provider and by an LMS Contractor occupational medical services coordinator, who works closely with project managers and the procurement group to ensure information about subcontractor employees is captured.

If an employee's job changes to involve new tasks, titles, exposures, or job description, the services provider will determine if the employee's physical condition needs to be evaluated against the new situation to ensure fitness for duty. When regulations require, or when the occupational medicine services provider recommends, employees will also be subject to periodic, hazard-based medical monitoring or qualification-based fitness for duty evaluations.

At the time of separation from employment, employees will be offered a general health evaluation to establish a record of their physical condition at that time. If an employee chooses not to participate in the evaluation, the refusal will be documented.

Workers are informed of the purpose and nature of the evaluations and tests, both in writing and verbally, and the communication is documented in the worker's medical record. Workers are also provided with the results of all evaluations and tests. If health evaluations indicate that a worker should not perform certain tasks, the occupational medicine services provider will place the worker under medical restrictions.

A.8.2 Injury and Illness Evaluations

Employees and supervisors are required to report any suspected work-related illness or injury to the Safety and Health Manager immediately. An occupational medicine services provider contracted to LMS will be used to provide a diagnostic examination of an employee's suspected work-related injury or illness. The examination will evaluate the work-relatedness, the applicability of medical restrictions, and referral to other care, as appropriate.

After any work-related illness or injury, or any illness or injury that results in an absence of 5 or more consecutive working days, the service provider will evaluate the individual's physical and psychological ability to return to duty. The occupational medicine services provider will monitor ill and injured workers to aid their rehabilitation and safe return to work. When health evaluations indicate that a worker should not perform certain job tasks, the service provider will place the individual under work restrictions and will notify the worker and LMS Contractor management when restrictions are imposed or removed.

A.8.3 Coordination Between the LMS Contractor and the Occupational Medicine Services Provider

The LMS Contractor works with occupational medicine services providers to provide them with current information about the actual or potential hazards to which workers may be exposed. These hazards may be chemical, biological, radiological, or physical. Various organizations within LMS may be involved in performing employee job-task and hazard analyses to identify the essential job functions, to identify actual or potential hazards and exposures, and to evaluate the implications of personnel actions that result in a change of job functions, hazards, or exposures. The resulting information will be provided to the services provider. The local occupational medicine services provider also has access to the workplace for evaluation of job conditions and issues relating to worker health.

The services provider for each site is encouraged to participate in worker safety and health meetings and committees. The provider must participate in worker protection teams formed to meet the goal of building and maintaining a partnership among workers, managers, and safety and health professionals. These partnerships are necessary to help establish and maintain a safe workplace.

The occupational medicine services provider must communicate the results of safety and health evaluations with LMS Contractor management in a timely manner so that the LMS Contractor might use this information to help mitigate the worksite hazards.

The medicine services provider must identify the principal, preventable workplace causes of employee illness or death that affect worker health and productivity. The provider must work with the LMS Contractor to prevent and manage these causes if they can be managed cost-effectively. The LMS Contractor will provide the occupational medicine services provider with access to information from insurance plans in order to facilitate this process.

A.8.4 Record Keeping

The service providers develop and maintain records of all data collected for the purposes of occupational medicine. Records are kept confidential, are protected from access by unauthorized persons, and are stored to ensure their long-term preservation. Psychological records are kept separately from medical records, in the custody of the designated psychologist. Access to all records is provided only in accordance with applicable laws.

Records are periodically turned over to the LMS Contractor for long-term retention in accordance with DOE orders and laws.

A.9 Motor Vehicle Safety

The LMS Contractor uses both passenger vehicles and powered industrial trucks in the course of business for DOE. This motor vehicle safety program outlines the measures the LMS Contractor takes to protect drivers and passengers from the hazards of driving or operating motorized vehicles. Because LMS Contractor employees work at various locations around the country, this program presents the requirements common to all use of vehicles. All employees are required to take the DOE's approved defensive driving course. Any site-specific operating or safety requirements will be included in the training provided to the drivers at that site, including any site-specific pedestrian controls, speed limits, rules, or road signs. No employee shall be permitted to operate a motor vehicle if their visual, auditory, physical, or mental capacities are limited to the point where unsafe acts could result. The implementing document for the LMS Contractor's motor vehicle safety program is found in the *Health and Safety Manual*, Section 9.

A.9.1 Passenger Vehicle Safety

The LMS Contractor manages a fleet of motor vehicles at various locations to be used by employees for work purposes. Where there are no government-owned vehicles available or suitable for use, employees may rent a vehicle from a commercial agency or may use a personal vehicle. These vehicles are registered and licensed in the appropriate state. Vehicles in the motor pool receive preventive and corrective maintenance coordinated by the LMS Contractor through a local service provider; vehicles from a commercial rental agency receive maintenance through that agency.

Line supervisors are required to ensure that employees have a valid driver's license, have completed a DOE-approved defensive driving course, are aware of the general requirements for the use of government-supplied vehicles, and are aware of any site-specific requirements. Line supervisors are also required to initiate disciplinary actions against employees for negligent or inappropriate use of vehicles, including not following the requirements.

Employees are required to operate vehicles in accordance with applicable traffic laws and regulations. Before operating a vehicle (at the beginning of the work day or shift) the driver is required to inspect the vehicle for the correct function of operating features such as brakes, wipers, and lights; check the fluid levels and tire pressure on personal vehicles; and check for obvious signs of mechanical problems such as unusual fluid leaks. If the vehicle cannot be operated legally and safely, the driver will report the problem to his or her manager and the manager will obtain another vehicle. Drivers and passengers are required to wear a seat belt and shoulder harness at all times while the vehicle is in motion. The driver shall not use handheld communications devices such as cellular telephones or radios while the vehicle is in motion.

A.9.2 Powered Industrial Trucks

Powered industrial trucks will be chosen based on the load to be carried and work-area-specific conditions, such as ventilation and space. The choice will be made by the line supervisor after consultation with the Safety and Health group or local Safety and Health representative.

Line supervisors must ensure that each powered industrial truck operator is competent to operate the particular truck safely, as demonstrated by successful completion of the training and an

evaluation of competence. Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the line supervisor will ensure that each operator has successfully completed the required training (or previously received appropriate training). Trainees may operate a powered industrial truck only under direct supervision of a person who has the knowledge, training, and experience to train operators and evaluate their competence, and where such operation does not endanger the trainee or other employees.

The LMS Contractor provides training in Grand Junction, Colorado, for the operation of specialty motor vehicles such as powered industrial trucks to employees. At other work locations, the training is provided through local training service providers. In each case, the training is tailored to the specific vehicle to be operated and the location where it will be operated.

Training consists of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, written material); practical training (demonstrations and exercises performed by the trainee); and evaluation of the operator's performance in the workplace. Training and evaluation are conducted by a person with the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence. An evaluation of each powered industrial truck operator's performance must be conducted after initial training, after refresher training, and at least once every 3 years.

Operators receive initial training in the following topics, except in those topics that are not applicable to safe operation in the specific workplace.

- Topics related to the specific vehicle to be operated.
- Topics related to the specific workplace where the vehicle will be operated.
- Topics related to LMS Contractor requirements.

Refresher training, including an evaluation of the effectiveness of that training, is conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. Refresher training also required when:

- An operator exhibits unsafe operation.
- An operator is involved in an accident or near-miss.
- The evaluation indicates a need for further training.
- The operator will use a different type of equipment.
- A workplace condition changes.

If an operator has previously received training that addresses the four major areas of concern outlined below, and the training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely.

Four major areas of concern must be addressed in initial and refresher training:

- The general hazards that apply to the operation of all or most powered industrial trucks;
- The hazards associated with the operation of particular types of trucks;

- The hazards of workplaces generally; and,
- The hazards of the particular workplace where the vehicle operates.

Passengers are not permitted to ride on powered industrial trucks.

The operator shall inspect the industrial truck at least daily or before its use when the truck is not used daily. The truck shall not be placed in service if the inspection shows any condition adversely affecting the safety of the vehicle. Such inspection shall be made at least daily. Where industrial trucks are used on a round-the-clock basis, they shall be inspected before each shift. Defects shall be immediately reported and corrected. If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be tagged and taken out of service until it has been restored to a safe operating condition. All repairs shall be made by authorized personnel.

Annual inspections and load tests of powered industrial trucks will be conducted by a certified inspector. At least once per year, a magnetic particle or other suitable nondestructive, crack-detecting inspection will be made at the right-angle joint of the industrial truck forks, and at the point of attachment to the mast. Before use, the operator shall ensure that the annual inspection period has not elapsed.

A.9.3 Loss of Driving Privileges

Driving a vehicle while conducting government business is a privilege. Abuse of this privilege may result in its removal or disciplinary action. Employees will lose the privilege temporarily or permanently in accordance with, but not limited to, the following infractions committed while using a vehicle in the service of the government:

- Conviction of operating a vehicle while under the influence of alcohol or illegal drugs.
- Vacating the scene of an accident without leaving proper identification.
- Violation of traffic laws.
- Conviction of causing an accident while driving a vehicle for the government.
- Inability to meet appropriate physical standards.

If the ability to drive a vehicle is critical to an employee's job functions, the employee may be reassigned to another position (possibly one that involves a pay decrease) or may be terminated.

A.10 Electrical Safety

This program outlines the safety requirements related to work on electrical components, equipment, and circuits that are or have been energized. Electrical components may be found in many forms, and electricity may be used in many different ways at LMS Contractor work sites. Each application has its own combination of risks that include the potential of electric shock, fire, and burns. It is essential for all employees, including supplemental labor and subcontractor employees, to be aware of the hazards associated with electrical work and know how to use the appropriate protective methods to minimize the risk of an injury or accident. The implementing standards for electrical safety are found in the *Health and Safety Manual*.

A.10.1 General Policy

A “qualified person” is an electrical worker who has been trained in accordance with 29 CFR 1910.269 and 1910.331 through 1910.335 and 1910.269. An “unqualified person” is a person who is not an electrical worker and has not been fully trained in accordance with 29 CFR 1910, but who has been trained in the specific requirements of 1910.333(c)(3)(i)(A).

Employees who perform electrical work shall be trained to recognize the hazards associated with their work environment and know how to minimize the risk of an accident or injury using appropriate procedures and protective equipment. Supervisors shall verify the qualifications and training of all electrical workers before they are permitted to perform electrical work.

Both electrical workers and non-electrical workers whose job assignment requires them to work close to exposed electrical circuits operating at 50 volts or more to ground (in accordance with 29 CFR 1910.332) will receive training in the following areas as appropriate:

- The proper handling of portable tools and appliance cords.
- How to reset overcurrent protective devices.
- How to approach distances to overhead conductors.
- The meaning of electrical safety warnings and barriers.
- Electrical hazards associated with water.
- The proper response to electric shock.

Employees shall use proper design, fabrication, installation, and documentation techniques, proper operational and maintenance procedures, electrical equipment approved by a nationally recognized testing laboratory (NRTL), and proper PPE.

Employees assigned to electrical work shall perform only the tasks for which they are qualified. They shall comply with the requirements set forth by OSHA and the LMS Contractor, including using the proper tools and PPE and adhering to other hazard controls.

Supervisors shall ensure that employees comply with the requirements set forth by OSHA and the LMS Contractor, that proper tools and PPE are available, and that hazard controls are in place before work begins.

A.10.2 Safe Work Practices

Electrical accidents are largely preventable through safe work practices. Examples of these practices include the following:

- **Conductive apparel:** Conductive articles of jewelry and clothing, such as watch bands, bracelets, rings, key chains, necklaces, or metal headgear or clasps, shall not be worn if they might contact exposed energized parts.
- **Hazard assessment and control:** Hazards posed by the presence of electrical components and circuits will be assessed during the work planning process for each project or activity. Hazards posed by electrical components will be controlled with administrative measures if possible; if engineering controls are also required, very detailed work readiness reviews and

work authorization will be used. The LMS Contractor does not perform any work on energized power lines.

- **Electrical equipment:** All electrical equipment, components, and conductors should be listed, labeled, and approved by an NRTL for their intended purpose. Custom-made and installed equipment can be approved for use if built according to specific standards. When building, repairing, or modifying electrical systems, workers must use NRTL-approved equipment if it is available. Non-NRTL-approved equipment (e.g., shop-made extension cords) shall be built in accordance with an approved design.

NRTL-approved equipment is generally recognized as safe for its intended use. To be approved in this category, the equipment item should not be modified and should be installed and used in accordance with the manufacturer's instructions. Detailed inspections and tests of such equipment are not usually required. Checking the following can ensure personnel safety:

- Is the case grounded through the power cord to the grounding pin on the plug?
- Is the plug polarized?
- Do the equipment input voltage and frequency match those of the building's electrical system?
- Is the equipment construction suitable for the intended operating environment?
- Is the equipment in its original, unmodified, and undamaged condition?
- If the equipment has externally accessible supplementary overcurrent protection (e.g., fuses), are properly sized fuses installed?
- Is the plug or receptacle damaged?

If an inspection reveals that an equipment item is unsafe for its intended use, the employee will remove the equipment item from service and tag it as "DEFECTIVE" or "OUT OF SERVICE."

- **Equipment grounding:** all electrical apparatus, equipment, and systems will be grounded in accordance with NEC Article 250 (Grounding) and ANSI standards.
- **Ground-fault circuit interrupters (GFCI):** GFCI shall be used for all 125-volt, single-phase, 15-ampere and 20-ampere receptacles, for temporary wiring outdoors, and wherever employees will be using electrical equipment around water or in damp environments. Receptacles used on a two-wire, single-phase portable generator (or vehicle-mounted generator) with a rating of not more than 5 kilowatts (where the circuit conductors are insulated from the frame and all other grounded surfaces) do not need to be GFCI protected.
- **Guarding:** guarding involves locating or enclosing electrical equipment to ensure that people do not accidentally come into contact with its live parts. Effective guarding requires equipment with exposed parts operating at 50 volts or more to be placed where it is accessible only to authorized people qualified to work with it. Recommended locations are a room, vault, or similar enclosure; a balcony, gallery, or elevated platform; or a site elevated 8 feet (2.44 meters) or more above the floor. Sturdy, permanent screens also can serve as effective guards.
- **Portable electrical tools, equipment, and instruments:** Portable electrical equipment or tools shall always be inspected to identify defects; defective equipment shall be removed from service immediately. Portable electrical equipment shall be connected to a portable

GFCI (or a circuit that contains a GFCI) when used outdoors, in damp locations, in any unsafe environment, or for indoor or outdoor construction.

- **Signs:** Conspicuous signs must be posted at the entrances to electrical rooms and similarly guarded locations to alert people to the electrical hazard and to forbid entry to unauthorized people.
- **Temporary wiring and extension cords:** Temporary wiring or extension cords for electric power and lighting are permitted during periods of construction, remodeling, maintenance, repair, or demolition of equipment or structures; and during emergencies. Temporary wiring shall be approved or identified as suitable for installation and installed in accordance with the rules prescribed in the current edition of the National Electrical Code and 29 CFR 1910 and 1926; shall be protected from accidental damage; and shall be removed as soon as the prescribed activity is completed. It shall not be used as a substitute for permanent wiring. Extension cords shall not be placed where they present a tripping hazard; multiple extension cords (daisy chaining) shall not be used; and extension cords shall be inspected for damage before use.
- **Work on electrical components and systems:**
 - Any live electrical components will be positively de-energized when workers are working on or near electrical circuits, equipment, or systems.
 - Circuits and equipment must be considered energized until opened, locked and tagged out, and verified as deenergized in accordance with the LMS Contractor's lockout/tagout procedures.
 - Where it is possible for the circuits to be energized by another source, or where capacitor devices (including cables) may retain or build up a charge, circuits will be grounded and shorted.
 - Whenever work is to be performed on a positively deenergized system, opportunities for accidental contact with exposed energized parts in the vicinity of the work should be identified and suitable protection should be provided.
 - A qualified worker will verify that all live circuits and parts and other sources of energy (electrical or mechanical) have been disconnected, released, or are restrained.
 - If live electrical components cannot be deenergized and grounded, other protective measures shall be provided before work is started, such as guarding, isolating, or insulating such that employees are prevented from contacting energized lines with any part of their body or indirectly through conductive materials, tools, or equipment.
- **Work procedures:** Electrical work procedures should be clear, simple, and unambiguous. They will specify who is to perform the work; what systems are to be deenergized, tagged, and locked out; and operational requirements necessary to perform the task. The people performing the work must review and concur with the electrical work procedures and the work sequence prior to starting the work.

A.10.3 Emergency Assistance and Rescue

Anyone who experiences or witnesses an electric shock at an LMS Contractor site that involves any of the four circumstances below shall immediately report the incident to the

local emergency phone number, as specified in the site-specific portion of the *Comprehensive Emergency Management System*.

- Obvious serious injury (e.g., loss of consciousness, significant trauma).
- Altered mental status (e.g., confusion, slow/slurred speech).
- Other obvious injury (e.g., laceration, muscle strain, burn).
- At the discretion of the first responder making a judgment of the situation.

In addition, this individual shall

- Initiate cardiopulmonary resuscitation, if appropriate (only trained personnel should perform this task).
- Ensure that all potential sources of energy are safe and in a neutral state.
- Notify the victim's supervisor as soon as possible.
- Properly secure the area once the victim is under care, leaving items and equipment in the same position as much as possible. Try to remember the original position of items that may have been moved during response to the accident.

A.11 Nanotechnology Safety

DOE has chosen to reserve this section. Once the rule is amended to include provisions for nanotechnology safety, the LMS Contractor will evaluate the requirements and comply with those that are applicable.

A.12 Workplace Violence Prevention

DOE has chosen to reserve this section. Once the rule is amended to include provisions for workplace violence prevention, the LMS Contractor will evaluate the requirements and comply with those that are applicable.