FMOC

# Specification Section 1065 Environment, Safety, and Health for Construction Contracts

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Sandia National Laboratories

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

U.S. DEPARTMENT OF ENERGY

NNSA National Nuclear Security Administration

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Appendix A: Occupational Medicine Services

# Change Log

| Rev. No. | Changed by | Date | Change Description | Pages Changed |
|---|---|---|---|---|
| 2 | JCG | 5/17/10 | Reformatted the specification to FMOC standards and edited for grammar and punctuation. Added section 3.02, "Medical/Health Protection" and Appendix A, "Occupational Medicine Services." | All |
| 3 | JCG | 6/22/10 | Added a sentence to the end of paragraph T in section 3.04 to satisfy a corrective action. Changed the cover and footer date to June, 2010 and the Revision Number to 3. | 32, All |
| 4 | DH | 8/26/10 | Corrected outdated attachments and provided reference to correct information. Removed Attachments A, B, and D and renumbered C to become Attachment A. | Attachments |
| 5 | KLB/GK/BB | 4/30/12 | Revised section 3.04.C, D, R, and T to better reflect current requirements regarding excavation and penetration permits, digging, hoisting and rigging, and electrical work. | Various |
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# Part 1 - General

## 1.01 Summary

A. This section includes requirements and guidelines in performance of work concerning the protection of the environment and property, and the safety and health of Contractors, Sandia National Laboratories (SNL) and Department of Energy (DOE) employees, visitors to SNL, and members of the public.

### B. Related Sections

Refer to the following sections for related work:

1. Section 01505, "Construction Waste Management"
2. Section 01563, "Dust Control"
3. Section 16475, "Primary System Safety Requirements"

## 1.02 References

### A. American Conference of Governmental Industrial Hygienists (ACGIH)

- Threshold Limit Values (TLVs) for Chemical Substances
- Physical Agents and Biological Exposure Indices (BEIs)

### B. American National Standards Institute (ANSI)

| Number | Title |
|---|---|
| Z41 | Personal Protection - Protective Footwear |
| Z49.1 | Sections 4.3 and E4.3 Welding, Cutting, and Allied Processes |
| Z88.2 | Practices for Respiratory Protection |
| Z89.1 | Industrial Head Protection |
| Z136.1 | Safe Use of Lasers |

### C. American Society of Mechanical Engineers (ASME)

| Number | Title |
|---|---|
| B30.5 | Mobile and Locomotive Cranes |

### D. Code of Federal Regulations (CFR)

| Number | Title |
|---|---|
| 29 CFR 1926 | Title 29-Labor, Part 1926-Safety and Health Regulations for Construction |
| 29 CFR 1910 | Title 29-Labor, Part 1910-Occupational Safety and Health Standards |
| 10 CFR 851 | Worker Safety and Health Program |

### E. Environmental Protection Agency (EPA)

832-R-92-005 Storm *Water Management for Construction Activities:* Developing Pollution Prevention Plans and Best Management Practices

### F. National Fire Protection Association

| Number | Title |
|---|---|
| 70 | National Electrical Code |
| 70E | Standard for Electrical Safety Requirements for Employee Workplaces |

## 1.03 Definitions

| | |
|---|---|
| **Sandia Contracting Representative (SCR)** | Person authorized to act as official representative of SNL for specific purpose of administering Contract, including payment authorization and approval for change orders. SCR is the only person who may legally obligate SNL for expenditure of funds, change scope, change level of effort, change terms and conditions, negotiate, and sign documents legally binding SNL commitment. Obligations or promises, implied or expressed, by SNL personnel other than the SCR do not bind SNL in any manner. |
| **Sandia-Delegated Representative (SDR)** | Person authorized in the Contract who is authorized to act as delegated Sandia representative for the specific purpose of review, inspection, and acceptance of work, and to interpret plans, specifications, codes, and standards. SDR shall not exercise supervision over Contractor's employees. |
| **Inspector** | The SDR's contract field representative to monitor, document, and report on the progress, quality, and safety of construction work in accordance with contract specifications and plans, and applicable codes. The Inspector assists in coordinating outages for construction operations. The Inspector shall not exercise supervision over Contractor's employees. |
| **Sandia Facilities Environmental, Safety & Health Support Team** | Persons authorized to act as official representative of SNL for the specific purpose of supporting SCRs, SDRs, and SCOs with ES&H observations and resolution of issues/concerns associated with Contractor safety performance. The team has representation from Sandia's Safety Engineering, Industrial Hygiene, Environmental, Radiological Protection, and Asbestos programs. |
| **Sandia Project Lead (SPL)** | Person responsible for the review and acceptance of the Contract-Specific Safety Plan, coordinating the Preconstruction Meeting, and providing written justification/authorization for energized electrical work. The SPL shall not exercise supervision over Contractor's employees. |
| **Activity Hazard Analysis (AHA)** | A documented plan that identifies and plans for the mitigation of hazards associated with activities. Activities are general classes of separately definable construction work (for example excavation, foundations, structural steel, and roofing). Activities are not time- or location-specific. An AHA is a required section of the CSSP. |
| **Task Hazard Analysis (THA)** | A process that may include dialog (such as a pretask plan or tailgate meeting), document (such as checklist or permit), or knowledge (such as training) that identifies and plans for the mitigation of hazards associated with a task. A task is a specific segment of a particular scope of construction work that is time-, condition-, worker- and/or location-dependent. Documented Task Hazard analysis is required on a graded approach, for example, permits. |

## 1.04 Submittals

### A. Contract-Specific Safety Plan (CSSP)

Submit in accordance with Quality Assurance requirements for review and approval by the Sandia Project Lead (SPL) prior to commencement of onsite work.

### B. Safety Plan Addendum

Submit modification to CSSP, if required to address activity hazards not previously identified in Contract-Specific Safety Plan.

### C. Pollution Prevention Plan

Submit in accordance with requirements of Quality Assurance article when required.

### D. Fugitive Dust Control Permit

Submit an application for a Fugitive Dust Control Permit when required.

## 1.05 Quality Assurance

### A. Regulatory Requirements

Comply with applicable environmental, safety, and health laws, rules and regulations, as amended, of the federal, state, and local governments, the DOE, and SNL. Adhere to safety rules and regulations, access restrictions, and emergency egress procedures that are unique to Contractor's work at SNL-controlled premises, as defined in the following sections of this specification, the Contract documents, and as determined through consultation with SDR.

### B. Flowdown of Requirements

Prime Contractor shall flow down the requirements identified in this specification to subcontracts and visitors for all tiers. Sandia reserves the right to validate that the work is being performed in accordance with a documented safety plan, and to stop work and resolve any noncompliance with applicable ES&H requirements for this contract, and for subcontracts for all tiers associated with this contract.

### C. Contractor Safety Officer

Safety Officer shall ensure compliance and implementation of requirements in the Contract-Specific Safety Plan, and may or may not be the designated "competent person" as prescribed by 29 CFR 1926. Proposed Safety Officer shall be subject to acceptance by SDR based on the scope of work, anticipated hazards, and training and experience that meet the following minimum requirements:

1. **Education:** Two-year degree with course work in occupational health and safety, industrial hygiene, environmental engineering, or related field. Documented experience in safety

inspection and coordination may be substituted on a year-for-year basis in lieu of formal course work.

2. **Experience:** Two years of documented experience in safety inspection and coordination.

3. Shall be knowledgeable of the following:

   a. Principles and practices of industry and construction site safety
   b. Safety and occupational health laws and procedures
   c. Methods of assessing safety hazards and controls
   d. Hazardous material storage and transfer procedures
   e. Emergency preparedness activities

### D. Competent Person

When required by the Occupational Safety and Health Administration (OSHA) to provide a competent person, the following shall be completed prior to starting work requiring the competent person:

1. Identify the competent person.
2. Submit competent person's credentials, which may include a Professional Engineering license when required by 29 CFR 1926.
3. Competent person shall be onsite at all times when work requiring competent person is underway.

### E. Prime Contractor Superintendent or Delegate

Shall directly superintend the work at all times during performance of this contract (excluding periods of work inactivity) and until the work is completed and accepted.

1. Superintendent or Delegate shall be knowledgeable of the project's hazards and have full authority to act on behalf of the construction Contractor.

2. Superintendent or Delegate shall perform frequent and regular inspections of the construction work site to identify and correct any instances of noncompliance with the CSSP. Superintendent or Delegate shall document the inspections, including any noncompliance and corrective action taken. The CSSP shall describe the Contractor's methods for performing and documenting these workplace inspections. An example of an acceptable documentation method would be documenting the inspection in the superintendent's daily log book. The documented inspection shall be maintained for the duration of the contract and made available for review upon request by the SPL or SDR.

3. Workers of all tiers shall be instructed to report hazards not previously identified or evaluated to the Superintendent or Delegate. If immediate corrective action is not possible, or the hazard falls outside of project scope, Superintendent or Delegate shall perform the following:

   a. Immediately notify affected workers.
   b. Post appropriate warning signs.
   c. Implement necessary interim control measures.
   d. Notify the Construction Observer of the action taken.

### F. Construction Manager

For the purposes of 10 CFR 851, Sandia is the Construction Manager.

### G. Worker Hazard Awareness and Training

Prime Contractor is responsible for ensuring its employees, Subcontractors, and suppliers are informed of foreseeable hazards and protective measures associated with the work site/project.

1. Prime and Subcontractors shall certify on the Sandia National Laboratories/NM Facilities Contractor Badge/Clearance Request Form that employees have received the following training:
   a. 10-hour OSHA training
   b. Training for Standard Specification Section 01065, *ES&H for Construction Contracts*
   c. Prime Contractor's Contract-Specific Safety Plan

### H. Contractor Safety Program Self-Assessment

The Contractor shall perform one written self-assessment of one element of its safety program per quarter. Examples of elements for self-assessment are training compliance, ladder inspection, fall-protection program, Behavior-Based Safety (BBS) observations, and review of documented safety inspections. These self-assessments shall be made available for review upon request by the SPL or SDR.

## 1.06 Contract-Specific Safety Plan

### A. General

The Contract-Specific Safety Plan shall state the nature of the work, potential hazards anticipated, and how these hazards will be mitigated or how workers, including Subcontractors, service providers, area/building occupants, site visitors, and/or pedestrians in the vicinity of the construction activities, will be protected from hazards for each separately definable construction activity (for example, excavation, foundations, structural steel, electrical, and roofing).

1. CSSP: Address OSHA CFR 1926, ACGIH, and SNL-specific requirements. SNL requirements are identified in Section I and Section II (Standard Terms and Conditions) of the Contract, Uniform Construction Package (UCP), Jobsite Hazard Evaluation, and this Specification. All requirements and recommendations identified in the Jobsite Hazard Evaluation shall be considered part of the CSSP unless an alternate hazard control/mitigation for the identified hazard has been submitted by the Contractor and accepted by the SPL.

2. Prime Contractor may incorporate Subcontractors' CSSPs into a single CSSP package and submit for review and approval (any differences between the Prime Contractor's safety plan and the Subcontractors' safety plans shall be addressed prior to submitting package for review). Example: General Contractor may want to include electrical Subcontractors' safety plan sections involving NFPA 70E arc flash and LOTO for electrical hazards.

### B. Hazard Mitigation or Protection

Conform to requirements of this Specification as applicable to the work activity/task being performed. Mitigation or protection shall meet the intent of 29 CFR 1926 and 29 CFR 1910, as applicable. SNL

ES&H requirements that exceed the requirements of 29 CFR 1926 or 29 CFR 1910 are identified in this Specification.

1. Address hazards that exist at SNL project site where work will take place. Include hazards identified in SNL Jobsite Hazard Evaluation (JSHE), as well as hazards that are introduced to project by construction process. Include protective measures (for example, scaffolding and shoring, as required) identified by a Professional Engineer or other professional.

2. Contractors performing work at SNL facilities shall identify carcinogens that may be introduced to the project by the construction work. Carcinogens may be identified in the Contract-Specific Safety Plan by including a listing of products or Material Safety Data Sheets (MSDSs) that contain carcinogens.

### C. Hazard Communication

Identify methods (including safety meetings) to inform workers, regardless of tier, of the nature of work, potential hazards anticipated, and how these hazards will be mitigated, or how workers will be protected from hazards, focusing on Contract-Specific Safety Plans, prior to commencement of work activities and/or tasks. Hazard communication to workers will include a clear link between the work activity/task, the hazards identified for the work activity/task, and the mitigation controls that will be implemented to protect personnel in the area, the worker performing the work activity/task, and the environment from the identified hazards. Documentation of hazard communication shall be maintained, identifying workers' names, dates of communication, activities and/or tasks, hazards, and controls identified.

1. Contractors shall provide an inventory of all chemicals or chemical products anticipated for use on the project. The Contractor shall describe how the chemical or chemical product will be used and the controls that will be established to ensure they do not present an exposure hazard to construction workers or collocated SNL Members of the Workforce. An exemption to this requirement is consumer products used in the same form, quantity, and concentration as a product packaged for distribution and use by the general public (such as Windex, Simple Green, and WD-40 in packages sold for use by the general public).

### D. Site Control

Contractor is responsible for safety of personnel on construction job site, and shall ensure that persons visiting job site comply with safety requirements identified in the CSSP. Ensure that Contractor and Subcontractor employees and visitors on project job site wear necessary personal protective equipment (PPE). Contractor has responsibility and authority to deny access to any person entering a construction site if he or she does not have appropriate PPE. Headgear: ANSI Z89.1-approved hard hats. SNL employs a 100% hard-hat usage rule at all times during performance of work for SNL construction work, unless written waiver is obtained from SDR. Visibly post waiver at job site or have waiver in possession during performance of work.

1. **Disciplinary Process:** CSSP shall include how the Contractor and Subcontractor disciplinary processes will apply to workers who fail to comply with the requirements of the CSSP.

### E. Emergency Action

Contractor shall be responsible for transporting personnel with non-life-threatening injuries that require medical attention to local medical facilities identified in the CSSP. Use a form SF 2050-P, *Report of Occupational Injury/Illness.(http://www.sandia.gov/engstds/Forms/2050p.pdf.)*

The Contractor Safety Officer (CSSP) shall identify and document the Safety Officer's qualifications in accordance with Quality Assurance requirements.

### F. Accident Scene Preservation

Personnel on the site shall make every effort to preserve accident scene until Sandia Incident Commander, Safety Engineer, SCO, or SDR arrives onsite to assume control of the area.

### G. CSSP Documentation

Keep onsite a copy of accepted CSSP, and documentation demonstrating personnel have received training on the CSSP to ensure all affected personnel are informed of foreseeable hazards and the requirement to follow protective measures. CSSP shall be available to Subcontractors, Construction Observers, and SNL construction safety personnel.

### H. Safety Plan Addendum

Before work activity is performed that involves hazards that were not addressed in original Contract-Specific Safety Plan, submit addendum to Contract-Specific Safety Plan in the form of a modification for acceptance. New hazards may result from changes to scope of work or unexpected site conditions. Addendum shall identify mitigation or control for new hazard as described in "Contract-Specific Safety Plan" Article above.

## 1.07 Jobsite Hazard Evaluation

### A. General

This work site has been evaluated by SNL for nonstandard industrial, environmental, safety, and health concerns or conditions that preexist, and may affect methods and procedures in performance of work. Examples of preexisting hazards may include, but are not limited to, laboratory chemicals, radiological material, asbestos, mold, beryllium, and lead).

1. A documented Jobsite Hazard Evaluation will be included with contract documents for construction work when pre-existing nonstandard industrial, environmental, safety, and health concerns have been identified. The documented Jobsite Hazard Evaluation does not include hazards that may be introduced during execution of work necessary to meet Contract "Statement of Work."

2. Hazards introduced in performance of work shall be evaluated and mitigated in accordance with existing federal, state, and local regulations, including 29 CFR 1926, 29 CFR 1910, and applicable provisions of this Section.

### B. Identified Pre-existing Conditions

Take precautions for preexisting conditions identified on job site, per Jobsite Hazard Evaluation attached in Contract documents. Do not proceed without full knowledge and understanding of these conditions. If corresponding description, or identified paperwork or permit is not attached for identified hazard, contact SCR immediately.

### C. Unidentified Hazard

If a hazard is encountered during the performance of work that has not been identified, contact SCO or SDR for specific requirements prior to performing work that might affect the condition or concern.

## 1.08 Event Notification

### A. General

When the Contractor becomes aware of an event that could adversely impact workers, the public, or the environment, or unplanned disruptions of normal operations, the Contractor shall barricade as appropriate to ensure workers and pedestrians in the area are not exposed to a hazard and notify the CO, SDR, SCR, or SPL of the event (when in doubt, report it). Leaving a message on voice mail or sending a page does not meet this requirement of notification; the Contractor must speak to the CO, SDR, SCR, or SPL.

To report an incident, use form SF 2050-P, *Report of Occupational Injury/Illness*, available on the FMOC Standards Program web site.

### B. Exposure

When the Contractor becomes aware of any monitoring results that indicate personnel exposure to chemical, biological or physical hazards are above limits established by OSHA or ACGIH, the Contractor shall notify the CO, SDR, SCR, or SPL as soon as possible. Leaving a message on voice mail or sending a page does not meet this requirement of notification; the Contractor must speak to the CO, SDR, SCR, or SPL.

### C. Emergency Events

If the event is an emergency, call 911 on SNL telephone, or (505) 844-0911 on outside/ cellular telephone. After calling for emergency support, Contractor shall contact the CO, SDR, SCR, or Project Manager as soon as possible, but not later than two hours following the event.

### D. Nonemergency Events

If the event is not an emergency, Contractor shall contact the CO, SDR, SCR, or Project Manager as soon as possible, but not later than two hours following the event.

E. **If an event occurs during nonstandard hours** (standard hours are considered to be Monday – Friday, 7:30 a.m. – 4:30 p.m.), notify the CO, SDR, SCR, or SPL of the event as soon as possible the next regularly-scheduled business day.

> **NOTE** Ensure barricading is installed as appropriate to provide awareness and protection to workers and pedestrian-or vehicle-traffic in the vicinity of the event.

## 1.09 Suspension of Work

### A. General

All employees, Contractors, and visitors have responsibility and authority to suspend inappropriate or unsafe work activities/tasks when those activities/tasks present clear and imminent danger to employees, Contractors, visitors, the public, or the environment. Personnel may suspend activities/tasks they observe or in which they are a participant, if they believe the activity/tasks presents an imminent danger.

B. Upon receiving suspension of work request (oral or written), immediately cease activity/task, and notify SCO or SDR. Obtain name and telephone number of person requesting suspension, and reason for suspension of work. Work shall not continue on that activity/task until issue has been resolved. SCO or SDR may restart activity/task only after review and approval of oral or written response submitted by Contractor.

### C. Stop Work Order

Stop work order that affects crew for period greater than one (1) hour shall be followed by issuance of formal written Stop Work Order. Work may be restarted only with written work release from SCR. Stop Work Order shall include the following information:

1. Date and time when work was stopped
2. Reason for work stoppage
3. Requirements for Contractor to resume work
4. Date and time when SNL expects corrective actions to be completed, if required

### D. Work Release

SCR shall provide written work release that includes the following:

1. Reference Stop Work Order
2. Reason for work stoppage
3. Conditions for restart of activity/task.
4. Specified date and time when work may resume.

### E. Hold Work Order

A hold work order is a document issued through the contract to that prevents work on some future task. This is a planning tool to require further evaluation of a condition or plan before a task is performed. For example, a Hold Work Order may be issued prohibiting the pouring of concrete until the rebar mat is inspected. A Contractor shall not perform the work described on the Hold Work order until the signature of a Release Authority is obtained. Any Hold Work Orders issued by Sandia shall be available onsite while applicable project is being worked. The Hold Work Order does not affect any other restrictions listed elsewhere in this document. The Hold Work Order is not a Stop Work Order.

## 1.10 Integrated Safety Management System (ISMS)

### A. General

SNL is committed to performing work safely, ensuring the protection of employees, the public, and the environment. To support these commitments, SNL employs an Integrated Safety Management System, which provides the framework for this specification, and the requirements established for contracted construction work at SNL.

### B. ISMS Guiding Principles

The following guiding principles are the cornerstone of an effective safety management program.

1. Contractor Management Responsibility for Safety: Contractor management is accountable for the protection of the public, workers, and environment.
2. Clear Roles and Responsibilities: Clear and unambiguous lines of authority and responsibility for ensuring safety are established and maintained at all organizational levels within the company and its Subcontractors.
3. Competence Commensurate with Responsibilities: Personnel possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.
4. Balanced Priorities: Resources are effectively allocated to address safety considerations. Protecting the public, workers, and environment is a priority whenever work is planned and performed.
5. Identification of Safety Standards and Requirements: Before work is performed, associated hazards are evaluated, and an agreed-upon set of safety standards and requirements are established, which, if properly implemented, provide adequate assurance that the public, workers, and environment are protected from adverse consequences.
6. Hazard Controls Tailored to Work Being Performed: Administrative and engineering controls to prevent and mitigate hazards are tailored to the work and associated hazards.
7. Operations Authorization: Conditions and requirements to be satisfied for operations to be initiated and conducted are clearly established and agreed upon.

**C.** Apply the Integrated Safety Management System (ISMS) work cycle as shown in Figure 1.1 at the task or activity level for construction assignments. Depending on the size and complexity of the work activity/task, some elements of work-planning phase may not be used formally.

1. Refer to Section I of the Contract for specific requirements for prebid visits and conferences. Contractor has the responsibility to visit the project site, and submit questions about ES&H-related issues, that may affect Contractor cost or performance, prior to bid.

2. Table 1 provides requirements for demonstrating effective safety management during the execution phase of this Contract.


- **Plan Work:** Contract requirements are translated into work, expectations are set, activities and /or tasks are identified and prioritized, and resources are allocated.
- **Analyze Hazards:** Hazards associated with the work are identified, analyzed, and categorized.
- **Control Hazards:** Applicable standards and requirements are identified. Controls to prevent or mitigate hazards are identified; contract-specific safety plans are developed, and controls are implemented.
- **Perform Work:** Contractor's readiness to perform contract work is confirmed, and work is performed safely.
- **Feedback and Improve:** Feedback information on the adequacy of controls is gathered, opportunities for improving the definition of planning of work are identified and implemented, oversight is conducted, and when necessary, controls are modified to ensure a safe work environment.

***Figure 1.1 Integrated Safety Management System Work Cycle***

## *Table 1.1 ISMS Contractor Requirements*

| Work Cycle Phase | Contractor Requirements | Expectations |
|---|---|---|
| **Plan Work** | | |
| Review of SNL Jobsite Hazard Evaluation Checklist | Understand existing conditions and controls that might affect worker safety and health. | Contractor will review JSHE and incorporate existing site hazards and controls into its Contract-Specific Safety Plan (CSSP). |
| Prebid Site Visit | Identify potential job and site hazards and hazard combinations. | Contractor will review its potential hazards and determine effect on existing SNL hazards.<br>Contractor will document how the combination of hazards will be controlled in its CSSP. |
| Prebid Conference | Resolve emergency-preparedness responsibilities and other safety issues not identified in Request for Quote. | Contractor will identify emergency action plan and document it in the CSSP. |
| Bid Submission | Commit adequate level of resources for job conditions. | Contractor will ensure adequate competency and level of resources are available and provided as submitted in bid. |
| **Analyze Hazards** | | |
| Job Safety Analysis | Evaluate job-specific activity/task and site-specific work requirements and hazards. | Contractor will review work requirements and hazard controls. Task hazard analysis shall be performed for high-hazard tasks (for example, confined-space entry, critical lifts, hot work, excavation, penetration, energized electrical work, or respiratory protection). |
| SNL Hazard Information | Request and incorporate hazard identification and hazard-control information supplied by SNL | Contractor will ensure that information from Job Site Hazard Evaluation (JSHE) is incorporated into its CSSP. |
| Job Task Analysis | Resolve job-assignment and personnel-fitness issues. | Contractor will ensure that workers have the appropriate training and skills for assigned tasks. |
| Control Hazards | | |
| Safety Program | Identify company safety management policies, processes, and procedures. | Contractor's Safety Program will be complete and contain its company-specific safety information. |

| Work Cycle Phase | Contractor Requirements | Expectations |
|---|---|---|
| Contract-Specific Safety Plan (CSSP) | Address all contract-specific safety requirements and protective measures, including combined requirements and combined controls. | CSSP will incorporate company-specific information from company Safety Program as well as contract-specific requirements.<br>CSSP will document how the combination of company-specific hazards and contract-specific hazards will be controlled.<br>Subcontractor's addenda will be incorporated into the Prime Contractor's CSSP.<br>CSSP will identify methods used by the Contractor to perform oversight and self-assessment of compliance with the CSSP. |
| Preconstruction meeting (as appropriate) | Participate in preconstruction meeting with intent of understanding conditions/restrictions identified on the hazard evaluation checklist. | Contractor, Subcontractors, and workers are aware of their responsibility to review the Prime Contractor's safety program and the CSSP prior to the start of work and as needed. |
| Hazard Awareness | Ensure employees, Subcontractors, and suppliers are informed of foreseeable hazards and protective measures associated with work activities, as appropriate, prior to initiating work. | Supervisors will be responsible for ensuring that work activities, work hazards, and work controls are clearly linked and flow down to all workers regardless of tier through documented training, safety meetings, toolbox talks, and pretask meetings.<br>Subcontractors and their workers will be knowledgeable about the Prime Contractor's CSSP.<br>Workers attend documented safety meetings, toolbox talks, and pretask meetings as required.<br>Workers are familiar with the hazards and work controls that result in safe working conditions. |
| Work Authorization | Ensure that safety plans/corrective action plans are reviewed and work is authorized prior to initiating work or corrective actions. | Contractor will obtain and follow all permits as required by SNL. Permit information will be flowed down to Subcontractors and affected workers during documented toolbox talks, pretask meetings, and safety meetings.<br>Corrective actions will be completed as required. |
| **Perform Work** | | |
| Job Supervision | Ensure that all workers have appropriate safety supervision by Contractor management at all times. | Supervisors assume responsibility for the safety of the work site and workers. When unanticipated hazards or environmental risks are introduced, work will be paused until revised work planning, hazards, and environmental effects are analyzed; and any additional controls are documented and approved, as appropriate. |

| Work Cycle Phase | Contractor Requirements | Expectations |
|---|---|---|
| Safety Inspections | Conduct and document daily workplace inspections, with or without SNL personnel, to identify and correct hazardous conditions and instances of noncompliance with safety plan/requirements. | Supervisors are responsible for ensuring that daily inspections are documented, and immediate action is taken for all identified noncompliance issues. |
| Emergency Response | Ensure that all personnel at the work site can recognize off-normal or unsafe conditions, and know how to respond. | Train workers to recognize off-normal, unsafe conditions, and understand how to respond to the conditions by controlling and reporting the condition. Every worker understands he/she has the responsibility and authority to suspend an activity/task, if the worker believes it presents an imminent danger. |
| Corrective Actions | Implement interim controls for unsafe or off-normal conditions, including notification to workers and SDR. | Contractor has controls in place to immediately address unsafe or off-normal conditions. |
| Work Cycle Phase | Contractor Requirements | Expectations |
| **Feedback and Improve** | | |
| Self-Assessment | Identify opportunities for safety-process and work-performance improvements. | Contractor will review daily inspection reports, lessons learned, and injury/illness reports to identify areas that require improvement. |
| Performance Reviews | Discuss performance strengths and weaknesses with employees and Subcontractors. | Information on strengths and weaknesses will flow down to Subcontractors and workers. |
| SNL Feedback | Communicate suggestions for SNL improvements to the SDR. | Contractor will provide updated information and/or suggestions to the SCR that will add value to ongoing improvement programs.<br>Contractor will provide a means for workers to report unidentified or uncontrolled workplace hazards. |

## 1.11 Work Site Identification

### A. Construction Safety Bulletin Board

Provide and maintain weather-tight safety bulletin board in a visible location, not less than 3 feet by 5 feet in size. Bulletin board shall be used only to post official announcements.

1. For projects under $50,000 provide and maintain legible, durable, and weatherproof 8⅛-inch by 11-inch sign in a visible location with the following information:

   a. Company name
   b. Superintendent name
   c. After-hours telephone number
   d. SNL Contract number
   e. SNL contact name and telephone number

2. For projects over $50,000, in addition to the information required in 1.11.A.1, the bulletin board shall also include the following:

   a. Equal Opportunity Posters
   b. Employment Standards
   c. Project Davis-Bacon Wage Decisions
   d. DOE Safety Posters
   e. Contractor's Accident Prevention
   f. Fire Prevention
   g. Emergency Phone Numbers
   h. First Aid Plan

3. For all projects, an SNL-reviewed copy of Contractor's Contract-Specific Safety Plan must be readily available at project site.

### B. Hazard Identification Signage and Barricades

Provide appropriate hazard identification and barricades in accordance with 29 CFR 1926 to warn Contractor personnel and work site visitors of specific work hazards, and to communicate safe bypass information to nonconstruction personnel in the vicinity of the site. Prior to start of work, ensure personnel onsite know and understand SNL signage that might be present onsite during performance of work.

1. Use flagging and tape barricades only for temporary or interior protection, unless otherwise accepted by SCO. Use orange safety fencing or snow fencing around excavations and trenching. Fencing shall be minimum 4 feet-high (1.2 m high) and secured vertically every 10 feet (3 m).
2. Provide signage in compliance with 29 CFR 1926. Protect unattended sites with applicable signs and barricades at all times.

### C. Documentation

The following documents shall be available for review at each project site:

1. Project plans, specifications, and work authorizations
2. All required permits
3. Contract-Specific Safety Plan
4. Material Safety Data Sheets for onsite chemicals

# Part 2 - Products (Not Used)

# Part 3 - Part 3 – Execution

## 3.01 Coordination of Work Affecting Ongoing SNL Operations

### A. Overhead Work

Schedule work required to be performed above occupied areas for nonstandard hours, unless specific and approved precautions including signage, barricades, occupant consent, and any other precaution deemed necessary by SNL is provided in advance of operation. Final approval for work in occupied areas during normal work hours must be received from SDR.

### B. Utility or System Outages

Submit to the SCO an Outage Request Worksheet in advance of activity/task requiring utility or equipment shutdowns that will affect ongoing SNL operations, observing the advance-notice requirements thereon.

### C. Removal of Administrative Tags

SNL personnel may use locks and/or tags to prevent unauthorized use of or access to equipment or systems. These locks and/or tags are not used for lockout/tagout purposes (protection during the maintenance and servicing of equipment). Contractor shall obtain permission from the SCO prior to removing any administrative lock and/or tag.

## 3.02 Medical/Health Protection

### A. Occupational Medicine Program

Contractors at all tiers who are onsite for more than 30 work days in a calendar year, or have employees who are enrolled for any length of time in a medical or exposure-monitoring program required by the 10 CFR 851, Worker Safety and Health Program rule and/or any other applicable federal, state, or local regulation, shall have an Occupational Medicine Provider (OMP). Please see Appendix A, Occupational Medicine Services for more information.

1. Contractors shall submit the name of a credentialed provider; the company name, address, telephone number, and the name of a management contact for their Occupational Medicine Provider in their Safety Plan. Complete a "Declaration of Occupational Medicine Provider." (This form is available on the FMOC web site in the Forms Locator.)

### B. Emergency Action

For life-threatening injuries or illnesses, immediately call for medical assistance by dialing 911 on an SNL telephone or (505) 844-0911 on outside/cellular telephone.

1. Post medical and nonmedical emergency telephone numbers conspicuously at the project site. Ensure that all employees are aware of medical and nonmedical emergency telephone numbers. Placards with emergency telephone numbers can be obtained from the SNL construction office.
2. Transport personnel with nonlife-threatening injuries or illnesses that require medical attention to Contractor's identified medical facility.
3. **Electrical Shock:** Accompany any employee receiving an electrical shock to the SNL Medical facility during standard working hours for immediate medical attention, no matter how minor the shock appears. During nonstandard hours, seek medical attention at an offsite facility. Notify SCO or SDR immediately after transporting the individual to SNL Medical.

**Notification of Accidents, Injuries, and Illnesses:** Verbal notification to SDR or SCO shall be performed as soon as possible. Submit form SF 2050P, *Report of Occupational Injury/Illness* to SDR within 3 days. The form is available on the FMOC Standards Program web site.

4. Other
   a. **Nonemergency Medical Incident:** Notify CO, SPL, SDR, or SCO as soon as possible.
   b. **Serious or Life-Threatening Accident or Illness:** Notify SDR or SCO immediately after taking emergency action.

### C. Contractor's Industrial Hygiene Program

Conduct assessment of worker exposure to reduce the risk of work-related disease or illness. Assess worker exposure to chemical, physical, biological, or ergonomic hazards through appropriate workplace monitoring (including personal, area, wipe, and bulk sampling), biological monitoring, and observation. Monitoring results shall be recorded. Documentation shall describe the activities or tasks and locations where monitoring occurred, identify workers monitored or represented by the monitoring, and identify the sampling methods and durations, control measures in place during monitoring (including the use of

personal protective equipment), and any other factors that might have affected sampling results. Contractor shall be informed of the precautionary measures that need to be taken to protect workers during the normal operating conditions of the workplace and in foreseeable emergencies, that is, identification of inherent chemical, physical, biological, or ergonomic hazards in the workplace, and the established corresponding control measures, through the Job Safety Hazard Evaluation (JSHE) process (reference section 1.07).

1. **General:** Comply with the current edition of the ACGIH Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs) when the ACGIH TLVs and BEIs are lower (more protective) than OSHA Permissible Exposure Limits (PELs).

   **NOTE** Applicable OSHA expanded health standards shall be complied with, even when ACGIH TVLs are used.

2. **Gases, Vapors, Fumes, Dusts, and Mists:** Use engineered, administrative, or personal protective equipment controls to keep employee exposures within prescribed limits.
   a. Controls must be evaluated to ensure the appropriate level of protection to the worker.
   b. Equipment and technical measures used to determine an occupational exposure shall be performed by a technically qualified person and conform to current analytical methods.
   c. For all welding, cutting and brazing operations, the contractor is required to submit a completed "Contractor Welding, Cutting, Brazing Exposure Assessment Form" (SF 2001-WLD) to the Division ES&H Customer Support Team Industrial Hygienist (http://www-irn.sandia.gov/corpdata/liwg/Names_Numbers/custsupptop.htm).
      - Contractor or contractor's qualified health and safety representative shall identify hazards, and select and implement effective controls to ensure worker safety and health. Control measures (e.g. full face air-purifying respirators or local exhaust ventilation) may be required.
   d. The Division ES&H Customer Support Team Industrial Hygienist will document approval of the proposed control measures on the "Contractor Welding, Cutting, Brazing Exposure Assessment Form" (SF 2001-WLD).
   e. No work shall proceed without approval of the proposed control measures by the Division ES&H Customer Support Team Industrial Hygienist.
   f. Engineering controls equipment, such as local exhaust ventilation devices, shall be appropriate for their use and operated to manufacturer's requirements. This may include incorporation of fire-prevention features for hot-work applications, or processes or gauges to assure HEPA filters are operating within effective range. When Contractor AHA requires LEV units, the manufacturer and the serial number of the unit shall be identified. The CST Industrial Hygienist can provide further criteria and examples of acceptable LEV units to help ensure units meet applicable requirements.

3. **Physical Hazards:** Includes noise (sound pressure levels), ergonomics, lasers, nonionizing radiation, and thermal stress.
   a. **Noise, nonionizing radiation, and thermal stress:** Comply with ACGIH TLVs.

b. **Lasers:** Comply with ANSI Z136.1, *Safe Use of Lasers.*

- Class 1, 2, and 3a lasers may be used.
- Do not use Class 3b or Class 4 lasers without the written approval of the SNL/NM site Laser Safety Officer.
- When used for operations such as leveling floors, roads, and sidewalks, the laser beam shall not be directed above the horizon, through navigable airspace, or towards aircraft ground operations. Laser beam shall be backstopped with a nonreflective surface that is opaque (nontransparent) to the laser's beam.
- All outdoor laser operations other than described in 3.b (third bullet) must be reported to the SDR for SNL approval prior to laser operations being performed.

c. Comply with ANSI Z88.2, *Practices for Respiratory Protection.*

4. **SNL Oversight Compliance Monitoring:** SNL has the authority to conduct reasonable investigations for oversight purposes, including, but not limited to, environmental (area) sampling and attaching personal sampling equipment/devices, such as dosimeters, pumps, and badges, to construction contract personnel to monitor or measure exposures. Monitoring results shall be provided to the Contractor.

## D. Substance Abuse Prevention and Testing

Use of drugs (including misuse of prescribed substances) or alcohol onsite shall be grounds for removal of individual from work site, and may include other corrective action including Contract termination.

## E. Radiological Safety

Employee may not enter area that contains posted radiological sign, signified by radiation symbol on yellow background with black or magenta markings, without prior authorization and SNL-provided training appropriate for radiological hazard.

1. If work is required in posted area, and specific written instructions have not been issued, do not enter the area. Contact SDR or SCO for instructions.

2. For performance of work in posted radiological areas, ensure the following:

   a. Jobsite Hazard Evaluation (JSHE) for work activity/task performed in radiological areas is obtained.

   b. Employees understand and follow Jobsite Hazard Evaluation requirements.

   c. Obtain Radiological Work Permit (RWP), when required by Sandia Radiation Protection Department, and understand and follow provisions and requirements.

   d. Employees shall be current on radiological training required for site or activity/task (for example, General Employee Radiation Training (GERT), Rad-Worker I, or Rad-Worker II).

   e. Employee shall be 18 years of age or older.

   f. Comply with Contract requirements for work in radiological areas.

   g. Comply with Contract-Specific Safety Plan for work as reviewed by SNL.

3. **Dosimetry:** Workers with appropriate training, and who have elected to work in radiological areas may be required to participate in SNL's external and internal dosimetry monitoring program. Contractors participating in the dosimetry monitoring program shall ensure their Thermoluminescent Dosimeters (TLDs) are current. TLDs must be returned to SDR for exchange by last day of quarterly expiration date. Failure to exchange in a timely manner may result in loss of the TLD.

4. Each project involving use of accountable radioactive source or radiation-generating device (RGD) requires prior approval by SDR and SNL's Radiation Protection Department. Examples of such devices include, but are not limited to, soil testing densitometers and XRF analytical devices for lead detection.

5. For clarifications contact the Radiation Protection department or refer to the Radiological Protection Procedures Manual (RPPM).

## 3.03 Waste Management and Disposal

### A. General Requirements

Waste generated during construction operations may be regulated as hazardous waste. Property items and equipment that may be reused for their intended purpose are not considered waste and shall be managed as U.S. Government Property.

### B. Construction and Demolition Debris

Construction and demolition debris shall be managed in accordance with Section 01505, "Construction Waste Management." As defined by 20 New Mexico Administrative Code 9.1, "Construction and demolition debris" means materials generally considered to be not water soluble and nonhazardous in nature, including but not limited to, steel, glass, brick, concrete, asphalt roofing materials, pipe, gypsum wallboard, and lumber from the construction or demolition of a structure project, and includes rocks, soil, tree remains, trees and other vegetative matter that normally results from land clearing. If construction and demolition debris is mixed with any other types of solid waste, it loses its classification as construction and demolition debris. Construction and demolition debris does not include asbestos or liquids; including but not limited to, waste paints, solvents, sealers, adhesives, or potentially hazardous materials.

### C. Residue Material and Equipment

Intact and dismantled equipment and material removed while performing construction operations shall remain the property of the government. If the equipment and material is not reused in the performance of the project, the Contractor shall manage it as residue material and equipment. All residue material and equipment shall be staged by the Contractor and evaluated for hazardous and radioactive contamination by SNL personnel before being delivered to the reapplication yard.

### D. Empty Containers

A container that held any chemical (including cleaning products) or hazardous material, except a substance identified as an acute hazardous waste, is defined as an empty container if all of the following criteria are met:

1. All material has been removed that can be removed using the practices commonly employed to remove material from that type of container, such as pumping, pouring, or aspirating.

2. No more than 3% by weight of the total capacity of the container remains in the container.

3. Containers with capacity of 5 gallons or less that meet above criteria may be thrown in trash. Empty containers with capacity of greater than 5 gallons shall be managed as chemical waste. Those containers shall be marked with words "Empty Container."

### E. Fluorescent Lamps

Fluorescent, sodium and incandescent lamps shall be removed from light fixtures and managed as chemical waste. These items shall be boxed and labeled to identify the contents.

### F. Light Ballasts

Remove ballasts from all light fixtures, and submit residue material for characterization by the Facilities ES&H Team.

1. Ballast clearly labeled "No-PCBs" shall be placed in a container for disposal.
2. Ballasts that are NOT clearly marked "No-PCBs" shall be managed as PCB Chemical Waste.
3. Light fixtures installed prior to 1980, with evidence of ballasts leaks, shall be removed and treated as PCB Chemical Waste.
4. All PCB Chemical Waste must be double bagged or double wrapped with the words "Removed From Service on _____ (supply the correct date)."

### G. Oil-Containing Equipment

Equipment containing oil or other petroleum products shall be drained of oil, and managed as residue material. Drained oil shall be managed as chemical waste.

### H. Chemical Waste/Hazardous Waste

SNL manages chemical wastes as regulated wastes. This designation applies to all chemical wastes, used oil, asbestos-containing wastes, and PCB-containing wastes as examples. Because of regulatory liability, SNL assumes responsibility for management and disposal of chemical wastes. Chemical wastes shall be managed as hazardous waste, unless specific guidance is provided in Contract. Coordinate hazardous chemical waste disposal through SNL's Facilities ES&H Team. The procedure for disposal of chemical/hazardous waste is as follows:

1. Inventory all items.
2. Label all containers. (Labels shall include contents, project number or name, and contact phone number.)
3. Notify SNL Construction Observer that waste is ready for pickup as soon as possible.
4. SNL personnel will pick up the waste and determine the appropriate disposal method.

### I. NORM Materials

Naturally occurring radioactive materials (NORM) used in commercial products that have measurable radioactivity above SNL established policy (which includes State of New Mexico established limits), shall be managed as radioactive waste when declared waste, and is not deemed for Reapplication. Some examples are as follows:

1. Chemicals with naturally-occurring radioactive material
2. Ceramic insulators (with some exceptions)
3. Glass-containing thorium or uranium for coloring purposes
4. Smoke detectors

### J. Radioactive Waste

Material that is found to have detectable radioactivity above SNL free-release limits shall be managed as radioactive waste. Store and dispose of radioactive waste in accordance with applicable federal, state, and local regulations to minimize effects of waste on personnel, public, and environment. Before removal from the work location, SNL Radiation Protection technicians shall survey waste generated from Radiological Management Areas.

### K. Mixed Waste

Residue or waste that is found to be both hazardous and radioactive shall be managed as mixed waste through the Sandia Radioactive and Mixed Waste Management Organization. Mixed waste can only be generated with written SNL approval.

### L. Transportation of Hazardous Waste

Facilities Contractors are prohibited from transporting hazardous waste.

## 3.04 General Project Work Practices

### A. Significant Hazards

Significant hazards that require a documented safety briefing, activity/task hazard analysis, or both, are listed in this section. Examples of documentation include, but are not limited to, the following:

- CSSP
- AHA
- Permits
- JSHE
- Sign-in sheets of training and/or pretask meeting

Examples of significant hazards include as a minimum, but are not limited to, the following:

- Radiological work requiring ALARA review
- Work in High Contamination Area, High Radiological Area, or Very High Radiation Area
- Potential exposure ≥ TLV
- Work with class IIIb or IV lasers

- Permit-Required Confined Space (PRCS)
- Noise level ≥85 dBA TWA or noise level ≥ 103 dBA for any duration
- Level A or B PPE fire-retardant (FR) radiological clothing
- Hand or motorized trenching, digging, or excavations ≥ 12 inches
- Wall, floor, or ceiling penetration ≥ 2 inches
- Any wall, floor, or ceiling penetration where a site investigation cannot identify all potential hidden hazards
- Routine high-voltage switching (multisource/operations)
- Manipulation of energized circuit components ≥ 50 Volts
- Nonroutine high-voltage switching (multisource/operations)
- Breaking into system with uncharacterized content
- Demolition work with potential legacy waste concerns
- May affect or change a facility's physical or operations environment
- Affects land use
- Work requiring a Fall-Protection Plan
- Scaffold erection greater than 125'
- Potential to exceed exposure limits, including action level, 8-hour TWA, Short-Term Exposure Limit, or Ceiling Limit
- Work with Beryllium or other chemicals having substance-specific OSHA or DOE standards
- Isolating or breaking boundary for hazardous HVAC system
- Work with toxic gases, such as metal hydrides (for example, arsine, diborane) and corrosives (for example, hydrofluoric chlorine)
- Work with flammable liquids near ignition sources
- Work with unbound engineered nanoparticles
- Application of coatings or insulation containing sensitizers
- Critical lifts
- Work involving additional hazards (acute chemical hazards such as toxic or pyrophoric gases)
- Work requiring additional PPE, such as respiratory protection
- Any work within < 10 feet of a overhead power line ≥ 50kV, including equipment movement underneath
- Extreme temperature conditions using special PPE/facilities
- Work on stainless steel or other metal coated with toxic materials, such as lead or cadmium
- Work in close proximity to flammable or combustible materials
- Long-term projects within 5 feet of vehicular traffic
- Work requiring stoppage or rerouting of pedestrian or vehicular traffic
- Motorized sanding, grinding, or breaking of silica-containing materials
- Asbestos work defined as Class I, II or III under 29 CFR 1026.1101

When dealing with significant hazards, Contractors must do the following:

1. Contractors will ensure that work is conducted by qualified and trained workers. When applicable, activities will be conducted by workers who are certified, registered, or otherwise documented as qualified by their trade/profession, or are licensed to perform that activity by the appropriate government organization.
2. Job Safety Hazard Evaluations or Activity Hazard Analysis and permits, such as confined space and radiological work, further address Sandia-specific qualifications and training required for high-rigor activities.
3. Work control is built into numerous FMOC processes. For example, CSSP review; prejob and other scheduled meetings; building permits; additional permits, such as hot work and cutting welding and brazing; and code and safety inspection by FMOC staff.
4. Feedback on FMOC construction activities is provided to Contractors by several means, such as immediate, on-scene feedback by inspectors, quarterly meetings, and the monthly newsletter.

## B. Hidden Hazards Penetration

1. **General:** SNL has adopted a five-step approach to minimize the effects of hidden hazards when performing penetration or excavation operations. This process includes the following: (1) drawing review, (2) site investigation, (3) detection using instrumentation, as appropriate, (4) use of appropriate tools, and (5) PPE.
2. Workers engaging in excavation or penetration operations shall use tools that are in good working condition and shall use PPE, electrically rated gloves, GFCI protection, and double-insulated tools as appropriate.
3. To mitigate risk, the Contractor shall ensure that adequate site investigation, using methods that would not penetrate hidden hazards (for example visual inspection or detection using instrumentation), is performed prior to any excavation or penetration operations. If hidden hazards cannot be identified through site investigation, the SDR shall be notified prior to excavation or penetration operations, and appropriate PPE shall be worn when performing excavation or penetration operations. (Refer to 3.05 C and D for excavation and penetration permit requirements.)

Ground penetrating radar (GPR) is available for assessing proposed penetrations.

## C. Excavation Permit

Obtain permit from the Construction Observer.

1. Obtain an excavation permit prior to start of the following operations:
   a. Digging, saw-cutting, drilling, coring, or trenching into soil, concrete sidewalks, or asphalt to a depth greater than twelve inches.
   b. Excavation of soil beneath concrete sidewalks, slabs, or asphalt to a depth greater than 2 inches.
   c. Excavation into subsurface soil in buildings beneath the slab.
   d. Scraping, blading, or excavation of any area previously undisturbed or that appears to be undisturbed, such as areas covered by native vegetation and blading or improvements to previously unimproved roads or paths.

2. Area to be excavated shall be shown on Drawing, and identified in the field using white paint. Submit permit requests to Construction Observer no more than 14 days and no less than 6 days prior to start of excavation.
3. Excavation Permit process involves environmental, cultural and ecological site review to determine if environmental site impacts will occur due to excavation operations.
4. Confine excavation operations to those areas identified on permit.
5. The contractor's CSSP shall specifically address hand digging. Potential materials such as poly, ductile iron, PVC, or concrete, the soil type, and the depth of potential utility shall be evaluated. Consider these factors when matching the selection of tools and force to ensure minimal or no impact to the utilities.

### D. Penetration Permit

Obtain permit from the Construction Observer.

1. Obtain penetration permit prior to start of the following operations:
   a. Penetration into concrete slabs, floors, ceilings, roofs, or walls greater than 2 inches (50mm) in depth (does not include precast concrete).
   b. Penetration into underground concrete duct banks. All duct-bank penetrations shall be reviewed by FMOC for high-voltage hazards. If high-voltage hazards are identified on the penetration permit, Supervisor authorizing the duct-bank penetration shall ensure that (1) a task-specific (each duct-bank penetration is considered a task) procedure is written and submitted to the duct-bank Penetration Coordinator (or Construction Observer, Construction Manager, or Project Manager), for review and acceptance, and (2) Supervisor authorizing the duct-bank penetration shall attend and ensure attendance of the penetrator at the pretask meeting that will be scheduled by the duct-bank Penetration Coordinator. The task-specific procedure shall be reviewed at the meeting.
   c. Penetrations where a site investigation cannot identify possible hidden hazards.
2. Area to be penetrated shall be shown on drawing. Submit permit requests to the Construction Observer no more than 14 days and no less than 6 days prior to start of penetration.
3. Permit is task-specific. Confine penetration to those areas identified on permit.
4. Maintain a minimum of one inch from ground penetrating radar (GPR) markings. Any anomalies shall be treated as potential energized conductors.

Ground penetrating radar (GPR) is available for assessing proposed penetrations.

### E. Fire Safety

All construction operations in new and existing facilities shall, at a minimum, follow the requirements set forth in the International Fire Code (IFC, ANSI Z49.1, Sections 4.3 and E4.3), and including the following:

1. Emergency vehicle access shall be provided as follows:
   a. Minimum 20-foot-wide vehicle pathway
   b. Must support weight of fire apparatus (75,000 lbs)
   c. Minimum 13-foot, 6-inch vertical clearance

2. A water supply for fire fighting must be provided (either fire hydrants or water tanks of sufficient capacity shall be available onsite).

3. **Access to fire hydrants:** Fire Department inlet connections or fire protection system control valves shall not be hampered. A minimum 3-foot clearance must be maintained around fire hydrants. Storage, vehicles, trash, or other materials or objects shall not be placed or kept near fire hydrants, Fire Department inlet connections or fire protection system control valves. Any temporary fencing installed near fire hydrants or fire protection equipment shall be provided with a gate to allow emergency access.

4. **Housekeeping:** All debris and trash shall be removed at least once per day at the end of shift or more frequently if necessary.

5. Flammable and combustible materials shall be stored in accordance with the IFC. These materials may not be stored near existing facilities, egress routes, emergency vehicle access points or fire protection equipment.

6. **Fire Protection Impairment Permit (FPIP):** Notify the SCO if work will impair or inadvertently activate a fire protection detection or suppression system already in service. Contractor shall submit a FPIP for any fire protection system impairments. Reference standard construction specification 13852, *Intelligent Fire Alarm System*, paragraph 1.09B, for temporary signage requirements. Reference standard construction specification Section 15310, *Automatic Sprinklers and Water-Based Fire Protection Systems*, paragraph 3.15, for fire suppression system impairments.
7. Protective clothing for welding, cutting, and allied process shall be selected to minimize the potential for ignition, burning, trapping hot sparks, or electrical shock.

## F. Hot Work Permit

Prior to cutting, welding, open-flame burning, or use of tar kettles and roof solvents, obtain a Hot Work Permit from SNL Fire Protection Engineering. Display the issued permits in a prominent location at the work site.

1. If welding, brazing, or thermal cutting is performed, submit a completed "Contractor Welding, Cutting, Brazing Exposure Assessment Form" to the Industrial Hygienist supporting FMOC construction operations.

2. Prior to receiving a site-specific Hot Work Permit, operators responsible for performing the hot work and personnel responsible for performing fire-watch duties annually shall view the training videos and read the accompanying literature provided by Fire Protection Engineering. These videos are approximately one (1) hour in combined length.

3. The operators responsible for performing the hot work and the personnel responsible for performing the fire-watch duties shall be trained in the use of portable fire extinguishers annually and shall have demonstrated proficiency through certification.

4. Hot-work operations shall be suspended if in an area where a fire suppression system is impaired.

5. A Fire Watch shall be provided during hot-work operations and shall continue for a minimum of 30 minutes after the conclusion of the work. Fire Protection Engineering or the SDR is authorized to extend the time required for the Fire Watch based on the hazards or work being performed (such as tar-kettle roofing operations).

6. The Fire Watch shall include the entire hot-work area. Hot work conducted in areas with vertical or horizontal fire exposures that are not observable by a single individual shall have additional personnel assigned to Fire Watches to ensure that exposed areas are monitored.

7. Individuals assigned to Fire-Watch duty shall be responsible for the safety of the welders in addition to that of the property, extinguishing spot fires, and communicating an alarm. Individuals assigned Fire-Watch duties must remain in the hot work area until hot work is completed and for thirty (30) minutes afterwards, and shall not have any other duties (for example, not a runner).

8. The Operator shall ensure that his/her Fire Watch is present prior to beginning hot-work activities. If the operator is found to be performing hot-work activities without his/her Fire Watch present, the Operator forfeits the active Hot Work Permit, and his/her supervisor must apply for a new permit.

9. The Operator (if no Fire Watch is required) shall perform a final area inspection, sign the Hot Work Permit, and return the permit to Fire Protection Engineering (MS1468).

10. The Fire Watch shall be present while the Operator is performing hot-work activities at all times. The Fire Watch shall not perform any additional tasks while on duty. If the Fire Watch is found delinquent in his/her duties, he/she forfeits the active Hot Work Permit, and his/her supervisor must apply for a new permit.

11. The Fire Watch shall perform a final area inspection, sign the Hot Work Permit, and return the permit to Fire Protection Engineering (MS1468).

## G. Fire Protection System Impairments

When performing any work activity or task that affects the operation or functioning of a fire protection system (fire alarm and fire suppression systems), either directly or indirectly, the following actions shall be taken:

1. **Fire Protection Impairment Permit:** Prior to performing any work that will generate heat, smoke, fumes, or dust (for example, welding or cutting drywall); or when modifying or disrupting a fire protection system, complete and submit a Fire Protection Impairment Permit (FPIP) to the Sandia SCO to request an impairment.

   a. Obtain FPIP form electronically from the Sandia Facilities Engineering and Architectural Standards external web site (http://www.sandia.gov/engstds), under the heading "Forms," or from the SCO.

   b. Upon receipt of the FPIP form by the SNL Maintenance Planner, allow a minimum of five (5) working days for approval. Each FPIP is valid only for five (5) working days. If the impairment extends beyond 5 days, submit another FPIP form.

   c. Impairment requests will be canceled if person performing work is not present at the building fire alarm control panel within 15 minutes of impairment scheduled start time.

2. Putting a Building Fire Alarm System on "NO ACTION": Fire alarm system put on "NO ACTION" operates in a standalone mode and will not transmit fire alarm signals to emergency responder workstations. Listed below are the requirements for placing a building on "NO ACTION" status:

   a. Submit FPIP form to SCO requesting impairment.

   b. FPIP requestor or designee shall remain in the impaired building for duration of the "NO ACTION" to function as a Fire Watch to call 911 in an actual fire.

   c. If the "NO ACTION" extends into nonstandard work hours, post signs at each ground-level building exit door informing building occupants that the fire alarm system is not in operation and to call 911 in a fire. Fire Watch will be required during nonstandard work hours.

3. Disabling Fire Alarm Devices and Zones: Fire alarm devices and zones are frequently disabled (blocked out) to prevent accidental activation while performing work or to allow modification to occur on fire alarm system. Listed below are the requirements for disabling fire alarm system devices or zones:

   a. Submit FPIP form to SCO requesting impairment.

   b. FPIP requestor or designee shall remain at the fire alarm control panel whenever notification appliance circuits (NACs) are disabled to restore operation of the NACs if an actual alarm occurs that requires building occupants to be evacuated. In Building 858, TA-5, and the Radioactive and Mixed-Waste Management Facility (RMWMF), Sandia personnel will be required to stay at panel while NACs are disabled.

   c. For manual pull stations that are nonoperational because they are disabled or are new construction, place a sign over pull station stating "OUT OF SERVICE."

   d. If the fire alarm control panel will be nonoperational during nonstandard work hours, post signs at each ground-level building exit door informing building occupants that the fire alarm system is not in operation and to call 911 in a fire. Fire Watch will be required during nonstandard work hours.

## H. Fugitive Dust Control Permit

For surface-disturbance operations affecting land area greater than 3/4 acre, sandblasting, and other surface preparation or demolition of any building containing over 75,000 cubic feet of total volume, comply with requirements of Division 1, Section 1563, *Dust Control*, and Fugitive Dust Control Permit issued by the City of Albuquerque.

## I. Storm Water Control

For construction sites greater than one (1) acre, develop and submit Pollution Prevention Plan to the SDR for review prior to construction operations. The Pollution Prevention Plan shall follow the EPA's National Pollution Discharge Elimination System (NPDES). This system addresses silt control and other possible storm-water effects. The NPDES requires inspections at least every fourteen (14) calendar days, and within 24 hours of the end of a storm event of 0.5 inches or greater. Inspections shall continue through the duration of the project. Contractors shall report spills and accidental releases to storm sewer system immediately to SDR. All documents associated with the Pollution Prevention Plan, including inspection documents and reports, shall be submitted to the SDR upon request of final payment.

### J. Earth Fill and Borrow Areas

Project-specific fill and borrow areas shall not be near or on underground or aboveground utilities. If Contractor has written authorization from the SNL Project Manager or contract documents to use a designated borrow or fill area in a location other than the project site, Contractor shall do the following:

1. Ensure that Contract-Specific Safety Plan adequately addresses hazards identified in the designated area. If the designated area is located within the boundaries of a project site controlled by another Contractor, visiting Contractor shall coordinate access with the controlling project site Contractor and comply with all requirements for that site.
2. Obtain required Fugitive Dust Control Permit prior to disturbing the soil.

### K. Bird Nesting Sites

Bird nesting sites are not to be disturbed. If nesting sites are discovered during the course of operations, contact the SNL Construction Observer for further direction.

### L. Paved and Graded Roads

Contractors shall keep vehicles on paved or graded roads at all times unless prior approval has been obtained to travel into previously undisturbed areas.

### M. Sanitary Sewer Discharge

Notify SDR of planned discharges to sanitary sewer system, other than routine sewage, prior to discharge. SDR will review planned discharge, and coordinate authorization from the Sandia Water Quality organization. Report spills and accidental releases to sanitary sewer system immediately to your SDR.

### N. Surface Discharge

Notify SDR of planned surface discharges, prior to discharge. SDR will review planned discharge, and coordinate authorization from Sandia Water Quality organization. Report spills and accidental releases immediately to SDR.

### O. Underground Storage Tanks (UST)

Underground storage tank installation and maintenance operations shall comply with New Mexico Environment Department (NMED), UST Bureau requirements. NMED UST Bureau-Certified Contractor shall perform work activities/tasks on USTs. If an unanticipated UST is discovered during construction operations, contact SCO for notification to SNL's Facilities ES&H Team.

### P. Contractor's Staging Area

The SDR shall approve staging area locations prior to use. Stored vehicles and equipment, intended for use on SNL property, shall be in serviceable and safe operating condition. Immediately repair, or remove defective or unsafe equipment from SNL property until proper repairs are completed. Staging area shall not be used for storage of hazardous materials not intended for timely use (within 30 days) for work activity. Remove or dispose of excess hazardous material in accordance with "Waste Management and Disposal" article.

## Q. Temporary Buildings/Storage Areas

Obtain approval from SDR for location of temporary buildings and storage areas prior to scheduled delivery of building or material.

## R. Hoisting and Rigging

This section applies to all hoisting and rigging lifting operations involving, but not limited to, chain falls, bridge cranes, mobile cranes, forklifts, and all-terrain lifts. Adhere to DOE –STD-1090-2011 during hoisting and rigging operations. Perform a proper hazard analysis for all hoisting activities on a graded approach and in concurrence with your SNL construction team.

1. Mobile Cranes: Notify SPL 48 hours in advance of scheduled mobile crane site arrival time and arrange for an FMOC crane inspection. The inspection shall include, but not be limited to, verification of license or training, load charts, inspection reports, and physical verification of ropes, slings, undercarriage, outriggers, and boom. Additionally, SCO shall document review of crane placement, and lifting plan or sequence with the Contractor and Contractor's crane operator, as appropriate. Buildings or affected parts of the buildings shall be evacuated prior to lifts; this shall be conducted in conjunction with the Sandia construction team.
   a. Provide proof of inspection and load tests in accordance with 29 CFR 1926 and ASME B30 series.
   b. Crane operators shall be properly trained and experienced in operation of the crane or hoisting device. Crane operator shall have one of the following in possession during crane inspection and operation: Valid State of New Mexico Crane Operator's License or certification that indicates completion of a State of New Mexico recognized, in-house training course based on ASME B30 standards for hoisting operators, and who is employed by the entity that taught the training course or contracted to have the training course taught.
2. Ordinary/Documented Lift Plan: A documented lift plan is required for all crane operations. Documentation shall be onsite during the lifting operation and available for review by SPL, SCO, or Safety Engineer. The lift plan shall address at least the following items:
   a. Percentage of load chart for the lift.
   b. Qualifications of operator, rigger and signal person.
   c. Lifts involving field-designed and -installed lifting points when manufacturer's lifting points cannot be used. Lift Plan shall include lift calculations, qualified person in charge (PIC), and method used to approve field-designed lifting points when manufacturer's lifting points cannot be used (for example, qualified engineering review and approval, manufacturer's approval, or x-rays).
3. Critical Lift Plan: All Critical Lift Plans shall be documented, accepted by the FMOC SPL, and onsite during the lifting operation. A lift shall be designated as a critical lift if collision, upset, or dropping could result in any one of the following:
   a. Loss of control of the item being lifted would likely result in the declaration of an emergency as defined by the facility's emergency plan or construction site emergency plan.
   b. The load item is unique and, if damaged, would be irreplaceable or not repairable, and is vital to a system, facility or project operation.

c. The cost to replace or repair the load item or the delay in operations of having the load item damaged would have a negative impact on facility, organizational, or DOE budgets to the extent that it would affect program commitments.
d. If mishandling or dropping of the load would cause any of the above noted consequences to nearby installations or facilities.

For steel erection, a lift shall be designated as a critical lift if:

a. The lift exceeds 75 percent of the rated capacity of the crane or derrick OR
b. The lift requires the use of more than one crane or derrick (refer to 29 CFR 1926.751).

Further site-specific criteria may be developed to supplement those cited above and may include criteria imposed by site or project safety basis requirements as well as lifting loads which require exceptional care in handling because of size, weight, close-tolerance installation or high susceptibility to damage as well as lifts using multiple pieces of lifting equipment. The Critical Lift Plan shall include the following:

a. Ensure the requirements are met for ordinary lifts specified in each section of this standard for each particular equipment category.

b. The operating organization shall appoint a Person-In-Charge (PIC) for critical lifts. A PIC shall be present at the lift site during the entire lifting operation. The PIC shall:

    - Have the necessary knowledge and experience of the specific type of equipment and assigned lifting operations.
    - Understand the site rules and procedures addressing the following areas:
        - a) Administrative requirements for lifting operations
        - b) Personnel assignments and responsibilities commensurate with job requirements
        - c) Selection of proper slings, rigging hardware, and lifting equipment
        - d) Recognition and control of hazardous or unsafe conditions
        - e) Job efficiency and safety
        - f) Critical-lift determination and documentation

c. The PIC shall ensure a qualified person prepares a documented pre-job plan or procedure that defines the operation and includes the following:

    - Identify the item to be moved, its intrinsic characteristics (e.g., load integrity, loose materials, liquids), weight, dimensions, its center of gravity, its ability to support imposed lifting forces (both the load and any lift points), and whether it contains any hazardous or toxic materials.
    - Identification of operating equipment to be used by type and rated capacity (e.g., mobile crane, overhead crane, forklift).
    - Rigging sketches and/or descriptions that include (as applicable):

- Identification and rated capacity of slings, lifting bars, rigging accessories, and below-the-hook lifting devices. Calculate and provide the rated capacity of equipment in the configuration in which it will be used.
- Load-indicating devices
- Load vectors
- Lifting points
- Sling angles
- Required lifting equipment movement (e.g., boom and swing angles, trolley and bridge motions)
- Methods of attachment
- Crane orientations
- Other factors affecting equipment capacity (e.g., load path sketch, key point heights, floor or soil bearing capacity)

- Operating procedures and special instructions to operator including rigging precautions and safety measures to be followed as applicable.

All rigging equipment used in critical lifts (i.e., slings, below-the-hook lifting devices, and rigging hardware) shall be proof-load tested in accordance with applicable ASME standards. Experienced operators trained and qualified to operate the specific equipment to be used shall be assigned to make the lift. Only designated, qualified signalers shall give signals to the operator; *however, the operator shall obey a STOP signal at all times, no matter who gives the signal.* The procedure and rigging sketches shall be reviewed and approved by a qualified person, the responsible manager (or designee), and the responsible oversight organization (such as the safety or engineering departments) before the lift is made. Subsequent revisions shall be approved per site-specific procedures.

A pre-lift meeting involving participating personnel shall be conducted prior to making a critical lift at which the critical lift plan/procedure shall be reviewed and questions shall be resolved. Prior to executing a critical lift, a qualified person shall verify the as-installed rigging matches the configuration in the approved lifting plan. If required by the critical lift procedure, a practice lift shall be done before the critical lift. Conditions for a practice lift should closely simulate actual conditions involving: weight, rigging selection and configuration, load movement path, and other relevant factors. Practice lifts should be done by the same crew using the same lifting equipment that will be used in the lift. Although individual plans are generally prepared for critical lifts, multi-use plans may be employed to accomplish recurrent critical lifts. For example, a multi-use plan may be used to lift an item or series of similar items that are handled repeatedly in the same manner. However, if the lifting equipment or rigging must change to accomplish the lift, the critical lift plan must be revised and approved accordingly.

**4. Millwright/Moving**

1. The contractor shall use properly rated equipment for millwright and industrial moving operations. Considerations shall be made for floor loading, building considerations, knowledge of

the weight being moved, unstable loads, anchor points, tie-downs, chocks, struck-by, caught-between hazards, and training.

## S. Confined-Space Entry

Contractor work practices and procedures shall incorporate all applicable regulatory requirements and SNL specifications, and knowledge of the content of applicable regulatory standards should be considered fundamental for any Contractor who proposes to engage in confined-space operations at SNL.

1. **Three types of construction confined space entry are recognized at SNL/NM:** Permit-Required, Non-Permit, and Telecommunications. The Contractor is responsible for developing confined-space entry programs, and issuing Confined-Space Permits.

2. **Signage:** In areas that appear to qualify as a confined space, absence of appropriate signage shall not be interpreted to mean that the area is not a confined space.

   a. Permit-Required Confined Space signs state DANGER – CONFINED SPACE – ENTER BY PERMIT ONLY or other similar language.

   b. Non-Permit Confined Space signs state CAUTION - CONFINED SPACE – CONTACT SPACE OWNER FOR PERMISSION TO ENTER or other similar language.

3. **Written Confined Space Program:** The Contractor is responsible for developing confined space entry programs, and issuing confined space permits. Note: Telecommunication confined space requirements are covered under number 6 of this section. The contractor's written confined space program shall comply with 29 CFR 1910.146 and include at a minimum the following requirements:

   a. Define how spaces are classified:

      - Permit-required confined space (PRCS)
      - Non-permit confined space (NPCS)

   b. Define alternate procedure/reclassification of PRCS (optional)

      - C5 alternate procedure (atmospheric hazard only)
      - C7 reclassification (non-atmospheric hazards)

   c. State training objectives/requirements for:

      - Supervisor authorizing entry (SAE);
      - Authorized entrant; and
      - Attendant

   d. Implement measures that prevent unauthorized entry into permit-required confined space;

   e. Identify and evaluate the hazards of permit spaces;

   f. Develop and implement procedures for safe permit space entry operations, including, but not limited to, the following:

      - Define atmospheric monitoring requirements:

- - Instrument used calibration and bump testing, hazards monitored, and documentation of results.
- - Acceptable Entry Conditions specifies OSHA PEL or ACGIH TLV, whichever is most protective.

- Identify control measures including:
  - Communication: radio, voice, visual, etc.
  - Isolation
  - Cleaning
  - Purging
  - Inerting
  - Flushing
  - Ventilation
  - Protective equipment
  - Rescue equipment
  - Lockout/tagout of equipment
- State pre-entry briefing requirements:
  - Frequency
  - Items/safety issues covered
  - Attendance requirement and documentation
- Addresses requirement for entrant protection from outside hazards as necessary via pedestrian, vehicle, or other barriers.
- Addresses verification procedures of conditions in the permit space as being acceptable for entry throughout the duration of an authorized entry.
- Provision for authorized entrant or their authorized representative to have the opportunity to observe any monitoring or testing of permit spaces.
- If C5 alternate procedures are incorporated into written plan, then develop and implement requirements set fore in 1910.146(c)(5).
- If C7 reclassification is incorporated into the written plan, then develop and implement requirements set forth in 1910.146(c)(7).

g. Identify non-entry rescue methods

- Non-entry retrieval equipment

- Extraction procedures

h. Develop and implement an Emergency Response Plan that has appropriate elements of:

- "Rescue of Personnel in Confined Spaces at SNL/NM" and
- SNL Incident Commander (IC) notification methods:
  - Just prior to entry,
  - After entry is terminated and
  - If any emergency situation occurs.

i. Includes forms for permit-required confined space entry

- SF 2001-CSS "Confined Space Permit Sign-in/Sign-out Sheet for Emergency Response"
- Contractor's Permit
- Contractor's C5 alternate procedure form – if implemented into written confined space program
- Contractor's C7 reclassification form – if implemented into contractor's written confined space program

j. Address method used to inform SDR of hazard(s) confronted or created in permit spaces through a debriefing or during entry operations.

4. Permit Required Confined Space: The contractor must meet with representatives from the SNL Confined Space Program prior to entry to ensure that all hazards are adequately identified and that all entry requirements comply with the applicable standards. Must comply with:

a. 29 CFR 1910.146 and approved written confined space program,

b. SAE, attendant, and authorized entrant(s) shall be current with training requirements,

c. Conduct a pre-entry briefing

d. Fill out permit

- Implement all controls noted on permit
- Wear all PPE required for entry noted on permit

e. Personnel making a confined space entry shall follow the procedures in Attachment A, "Rescue of Personnel in Confined Spaces at SNL/NM" to establish their confined entry plan.

f. Notification requirements include the following:

- Communication must be established with the Incident Commander (IC) at the jobsite prior to entry. This can be accomplished via cell phone, if working outside of Limited areas, or two-way radio. SNL Construction Observers have radios that can be loaned to the contractor for a confined space entry.

- Contractor shall identify the specific location of the confined space (building, room, space type; if the space is outside, indicate the direction [NW, SE, etc.] from the closest building).

- Contractor shall identify the individual serving as the SAE (for purposes of overseeing the entry), the company name, and number of entrants and attendants.

- Contractor shall identify the communication equipment used to contact emergency personnel (IC), and, means used to communicate between the attendant and entrants.

g. *Confined Space Permit Sign-In/Sign-Out Sheet* (SF2001-CSS): is used to maintain an accurate, real time tracking of entrants for emergency response. Use of this form only becomes necessary when the permit extends beyond a single day, or different entrants other than those initially identified on the permit are involved in the entry.

h. Atmospheric Monitoring: Perform atmospheric monitoring on a continuous basis for the duration of the entry. If monitoring indicates the presence of atmospheric contaminants above acceptable concentrations, NO ENTRY IS ALLOWED. If entry has already occurred when contaminants are detected, exit the space immediately and contact the Construction Observer, SDR and Incident Commander.

- If C5 alternate procedures are allowed under contractor's written confined space program and are used, IC does not need to be notified.
- If C7 Reclassification is allowed under the contractor's written confined space program and is used to entry the PRCS:
  - IC does not need to be notified,

  - Atmospheric monitoring is not done (no actual or potential hazardous atmosphere exists), and

  - Non-atmospheric hazards are eliminated during entry.

i. Completion/Termination of permit entry:

- Notify IC that PRCS entry is terminated
- Debrief SDR of hazard(s) confronted or created in permit spaces

5. **Non-Permit Confined Space:** Fits the definition of a confined space, but lacks any inherent or introduced hazards. Entry into this type of space includes:

   a. Pre-entry briefing

   b. If operations performed within and/or in close proximity to the confined space will create additional hazards that will impact safeguards and entry procedures, space shall be treated as a Permit-Required Confined Space and follow the requirements of 1910.146 and contractor's written confined space program.

6. **Commissioned Telecommunication manholes and vaults:** Must comply with:

   a. 29 CFR 1910.268

b. Telecommunication manholes and vaults that have been newly constructed and part of an ongoing construction project are not considered commissioned, and shall comply with 29 CFR 1910.146.

## T. Electrical Safe Work Practices

Ensure that electrical work, equipment, and installations are in compliance with the National Electric Code (NEC), National Electric Safety Code (NESC), NFPA 70E, *Standard for Electrical Safety in the Workplace*, and OSHA standards. When conflicts exist between OSHA and NFPA 70E, the contractor shall review the affected work with the Sandia team prior to operations.

1. **Training:** Employees who face a risk of electrical hazard that is not reduced to a safe level by the applicable electrical-installation requirements shall be trained to understand the specific hazards of electrical energy and to identify and understand the relationship between electrical hazards and possible injury. Retraining is required for qualified workers every three years (110.2(D)(3).

2. **Documentation:** The Contractor shall document that each employee has received the training on electrical hazards and controls necessary for his/her safety. Records shall be maintained for the duration of the employee's employment and shall contain each employee's name and dates of training.

3. **Lockout/Tagout:** Lockout/tagout procedures shall be documented in Contractor's CSSP. The procedures shall be appropriate for the experience and training of the employees and conditions as they exist in the workplace. The procedure shall address employee and management responsibilities associated with LOTO, training, system/hazard communication, and energy control methods (for example, types of locking devices, authorized testing equipment, and PPE). A lock must always be applied (article 120) NFPA70E.

4. **Arc-Flash Protection:** Arc-flash-protection procedures shall be documented in Contractor's CSSP. At a minimum, documentation shall include requirements for (1) developing arc-flash boundaries; (2) requirements for protective clothing, hard hats, eye protection, face shields, hand and foot protection, and hearing protection based on hazard/risk category classifications; and (3) care and maintenance of ARC-Rated (AR)-Rated (AR) clothing, AR flash suits, and other PPE.

   If the SNL electrical equipment/system to be worked on has an Arc-Flash Hazard (AFH) warning label, contract employees will wear PPE and establish flash boundaries specified in their employer's CSSP for the hazard level/category identified on the label. If the electrical equipment is not provided with an AFH warning label, contract employees will implement controls, wear PPE, and establish flash boundaries as identified in their employer's CSSP for the hazard/risk categories specified below.

   a. **Hazard Risk Category Zero:** Circuits operating between 50 and 208 volts single-phase. A 4-foot arc-flash boundary will be established.

   b. **Hazard Risk Category One and Two:** Circuits operating between 120 and 600 volts, excluding circuits operating at 50 and 208 volts single-phase (see above), Category Three and Four (see below), three-phase service entrance equipment and switchgear (see below), and equipment identified with a Level V AFH label (see below).

   c. **Hazard Risk Category Three and Four:** Three-phase service entrance equipment and switchgear operating between 120 and 600 volts, excluding those systems with a RED, Level

V Arc Flash Hazard label (see below). Only persons identified as Qualified Electrical Craftspersons may perform work activity on switchgear or service entrance equipment/systems.

d. **Hazard Risk above Forty Calories:** All three-phase equipment operating between 208 and 600 volts and identified with a Level V (red) Arc-Flash Hazard label, reflecting an Incident Energy level in excess of forty cal/cm2, shall be deenergized prior to performing any work. Contractor personnel shall contact their SDR, CO, or SPL to obtain documented location-specific arc-flash hazard information, PPE requirements, and instructions for verifying electrical safe work controls.

e. **Hazard Risk Category for High Voltage Electrical Work (over 600 volts):** Contractors shall obtain an arc-flash hazard analysis for all work performed on systems operating above 600 volts, excluding work in 15 kV power manholes.

- **15 kV Power Manholes:** Category 2 PPE shall be worn for work performed in 15 kV power manholes excluding cable terminations. Category 2 head, face, and glove protection may be removed during cable terminations if no other work is being performed in the manhole.

5. **Shock Protection:** Procedures shall be documented in Contractor's CSSP. At a minimum, documentation shall include requirements for the following: (1) developing limited shock approach boundaries, (2) requirements for voltage-rated gloves and insulated tools, and (3) maintenance and testing of PPE.

6. **Electrical Outage Requests:** Prior to performing work on any live parts that are not placed in an electrically safe work condition (that is, prior to performing energized work), Contractor shall contact the Electrical SCO, and request an electrical outage. Exemptions to this requirement include tasks such as testing, troubleshooting, and voltage measuring provided appropriate safe work practices and PPE are provided and used in accordance with NFPA 70E.

7. **GFCI Protection:** Provide listed ground-fault circuit interrupter (GFCI) protection for 120-volt, single-phase, 15- and 20-ampere receptacle outlets on work sites that are not part of permanent wiring of building or structure, and that are in use by employees.

## U. Energized Electrical Work

Work performed on live parts that are not placed in an electrically safe work condition.

1. Energized work shall not proceed without written justification/authorization from the SNL Project Manager, and Contractor's written permit. Permit and authorization shall be available onsite during the energized work task. Contractor's written permit shall include at a minimum all items required by NFPA 70E.

2. When working on or near energized parts in hallway, corridors, or other area used for passage, maintain working space barrier with caution tape and signage. Working space boundary for barriers shall be as defined at the "limited-approach boundary."

3. Do not leave exposed energized parts unattended in area occupied by other than construction personnel. Do not leave exposed energized parts without providing working space barrier at the "limited-approach boundary."

4. Comply with the following when working on energized electrical parts:
   a. Notify SCO before proceeding with work.
   b. Electrical work on energized electrical parts shall be performed by qualified individual with second qualified person available.
   c. Individual shall be knowledgeable and experienced in working with specific type of electrical circuits on which energized electrical work is to be performed. See Division 16 Section 16475, "Primary Systems Safety Requirements," for additional requirements.

## V. Steel Erection Work

Any steel erection operations involved in construction, alteration, and or repair of single- and multiple-story buildings, bridges, and other structures where steel erection occurs.

1. Each employee engaged in steel erection tasks that are on a walking working surface with an unprotected side or edge more than 6 feet above a lower level shall be protected from fall hazards.

## W. Fall Protection

Control the methods used to protect employees from fall hazards, which may include administrative controls, personal protective equipment (PPE), and other controls necessary for fall-restraint or fall-arrest.

1. CSSP shall identify administrative controls, fall-protection methods, or both, to be used for all work within 15 feet of an unprotected side or edge that is more than 6 feet above a lower level for all construction trades, excluding roofers. The requirement is within 6 feet for roofers.

2. Anchor points to be connected by drilling, welding, attaching to SNL structures/buildings used for fall-protection purposes must be reported to the SDR/CO for SNL approval prior to installation and use.

## X. Asbestos Safety

Asbestos might be present in existing building materials, finishes, and mechanical systems.

1. Asbestos-containing building materials will be identified as part of the Jobsite Hazard Evaluation. An Asbestos Work Release Permit will be attached to the Jobsite Hazard Evaluation report.

   Work may proceed only if the Contractor's work activities do not damage or disturb the asbestos-containing materials. If work site conditions or the scope of work changes, or if the Contractor is unsure if work activities will damage or disturb potential asbestos-containing building materials, the Contractor must stop work and contact the SNL Construction Observer or the Sandia-Delegated Representative for further instructions.

   If construction activities uncover hidden finishes or building systems that are suspected to contain asbestos, the Contractor must stop work and contact the SNL Construction Observer or the Sandia-Delegated Representative for further instructions.

2. Asbestos Work Release Permit: This permit documents existing asbestos hazards and provides recommendations to control or eliminate the hazards. The Contractor must conduct a prework safety meeting with workers to review the Asbestos Work Release Permit guidance, and must follow the guidance exactly when performing the work.

# Appendix A: Occupational Medicine Services

## Purpose

All Contractors and their lower-tier Subcontractors must comply with the Department of Energy's (DOE) Worker Safety and Health Program regulation, 10 CFR 851, *Worker Safety and Health Program* (WSHP). The WSHP enforces worker safety and health requirements including, but not limited to, existing standards of the Occupational Safety and Health Administration (OSHA), American National Standards Institute (ANSI), and Workers Compensation Laws, as incorporated in the SNL Worker Safety and Health Program.

To assist in ensuring contractors meet the worker safety and health provisions of 10 CFR 851 in the occupational medicine functional area, SNL requires Contractors to provide a written declaration identifying their Occupational Medicine Providers (OMP), as applicable, prior to performing work.

## Applicability

Contractors at all tiers who meet the applicability criteria below must establish and provide comprehensive occupational medicine services to workers employed at DOE-controlled premises. Occupational health personnel providing services must maintain current license, registration, or certifications as required.

## Criteria

- Work on a DOE site for more than 30 days in a 12-month period

  **or**

- Are enrolled for any length of time in a medical- or exposure-monitoring program required by this rule and/or any other applicable federal, state, or local regulation, or other obligation.

## General Requirements Summary Information

In accordance with New Mexico Workers Compensation Laws, OSHA, and DOE Regulation, 10 CFR 851 *Worker Safety and Health Program*, contractors at all tiers must have an Occupational Medical Provider for performing hazard-based medical monitoring and surveillance; qualification-based fitness for duty medical evaluations; and injury and illness case management. The Contractor is responsible for maintaining the appropriate documentation to demonstrate compliance with the administration of necessary medical and health care programs and may be subject to assessments and audits.

Hazard-based medical monitoring and surveillance programs include, but are not limited to, the following:

- OSHA Specifically Regulated Substances ("Expanded Health Standards") including, but not limited to, the following: Asbestos, Arsenic, Cadmium, Chromium, Lead, and Methylene Chloride.
- OSHA Occupational Noise Exposure

Qualification-based fitness-for-duty (FFD) evaluations include, but are not limited to, the following:

- OSHA/ANSI Respiratory Protection
- Department of Transportation (FMCSA) Commercial Drivers License (CDL)

Injury and illness case management includes, but is not limited to, the following:

- Determination of work-relatedness
- Work restrictions
- Rehabilitation
- Return to work

## Occupational Medicine Program Requirements

Occupational medicine services must be under the direction of a graduate of a school of medicine or osteopathy. Occupational Medical Providers, such as physicians, nurses, physician assistants, nurse practitioners, psychologists, and employee-assistance counselors) must be licensed, registered, or certified as required.

Contractors shall make available to their OMP current activity-level hazard information, such as that listed in the Contract-Specific Safety Plan (CSSP) and addenda. This information must include the following:

- Actual or potential work-related hazards (chemical, radiological, physical, biological, or ergonomic)
- Actual or potential work-site exposures
- Job functions
- Update information when a change to job functions, hazards, or exposures occurs.

The following health evaluations shall be conducted when determined necessary by the OMP. The results of evaluations performed by the OMP must be communicated, as appropriate, to facilitate activity work controls and mitigation of hazards.

- Medical placement evaluation at the time of employment entrance or transfer to a job with new functions and hazards
- Hazard-based medical monitoring or qualification-based fitness for duty medical evaluations required by regulations and standards
- Medical diagnostic examinations to evaluate an employee's injuries and/or illnesses for work-relatedness, applicability of medical restrictions, and referral for definitive care, as appropriate
- After a work-related injury or illness or an absence because of any injury or illness lasting 5 or more consecutive workdays. Inform the OMP provider when an employee has been absent because of an injury or illness for more than 5 consecutive workdays to determine if an evaluation is necessary.
- General health evaluation at the time of separation from employment
- The purpose, nature, and results of evaluations and tests must be clearly communicated verbally and in writing to each worker provided testing, and documented in the medical record of the worker.

Afford the Occupational Medicine Provider an opportunity to participate in worker safety and health meetings and committees, as well as an opportunity to conduct worksite visits. Worksite visits are conducted for an evaluation of job conditions and issues relating to the health of their workers. All sites visits by the Occupational Medicine Provider to Sandia-controlled premises must be coordinated with the

SNL Inspector. The Inspector will notify a representative from Health, Benefits, and Employee Services (HBE) of the visit request.

The Contractor shall ensure the Occupational Medicine Provider will establish a record, to include any medical, health history, exposure history, and demographic data collected for occupational medicine purposes, is developed and maintained for each worker receiving occupational medicine services. Documents shall be stored in a manner that will ensure their long-term preservation and retrieval. Records must remain confidential and protected from unauthorized access. Any psychological records shall be maintained separately from medical records and in the custody of the designated psychologist. Access to the records shall be granted in accordance with DOE regulations implementing the Privacy Act and the Energy Employees Occupational Illness Compensation Program Act.

Contractors at all tiers are responsible for workers' compensation administration and case management. The OMP shall monitor ill and injured workers to determine work-relatedness, facilitate their rehabilitation and safe return to work, and issue and/or remove restrictions as necessary. Ensure the Occupational Medicine Provider notifies the worker and the SDR for any issued and/or removed work restrictions and communicates results of health evaluations to management and safety and health protection specialists to facilitate the mitigation of worksite hazards.

The Occupational Medicine Provider must include measures to identify and manage the principal preventable causes of premature morbidity and mortality affecting worker health and productivity. The contractor must include programs to prevent and manage these causes of morbidity when evaluations demonstrate their cost-effectiveness. If programs are implemented, Contractors must make available to the OMP appropriate access to information from health, disability, and other insurance plans (deidentified as necessary).

Submit Employee Assistance Programs to their OMP (EAP: Substance Abuse Rehabilitation Programs and Wellness Programs) for review and approval of the medical and behavioral aspects of these counseling and health promotional programs.

The contractor shall ensure the OMP will review the medicine aspects of immunization, bloodborne pathogen and biohazardous waste programs to evaluate their conformance with applicable guidelines. The Contractor must determine the applicability and need for the specific programs based on work activities and actual or potential worksite exposures of each employee.

Sandia shall provide the Occupational Medicine Provider the opportunity to review medical emergency response procedures in site emergency and disaster preparedness plans. Contact your Sandia-delegated Representative (SDR) for assistance.

**END OF SECTION**