Environmental Health and Safety Plan

Operations & Maintenance

Revision Log

Revision	Date	Description of Change
1st Draft	6-22-2017	For initial review
REV 1	12-31-18	Added Proactive Safety Added Safety Walks Revised Incident Management System Added Safety Coordinator Responsibilities Added Accountability , Disciplinary and/or Sanctioning Revised Hazard Communication Standard Added Field Safety Committee Revised Job Planning/PTP Revised minimum interior illumination requirement Revised PPE policy Revised Hot Work / No smoking policy Revised Fall Protection Revised Hoisting & Rigging Revised Trenching / Excavation Revised Required Protection When Working On Electrical Equipment Added Two Man Task / Safety Second Added Substation Safety Revised Vehicle Driver Safety Revised Housekeeping Added High Wind Procedures (working in the arrays) Updated sPower Forms Library

Forward

The Operations & Maintenance Environmental Health & Safety Plan (OMEHASP) has been developed for sPower employees to help prevent work-related injuries and illnesses. The rules contained within shall not be considered to be all-inclusive, but rather a set of fundamental rules recognized throughout industry as a basic foundation for accident prevention.

Specific subjects within this manual may be addressed under separate policies or procedures that may contain more stringent or detailed requirements. All references to procedures in this manual will refer to the most current approved sPower policies and procedures and/or existing procedures in effect at the time.

Omission of any safety rule herein does not reduce individual responsibility for alertness, good judgment and compliance with safety and health standards in the performance of work.

If instructions contained in this manual conflict with federal, state and local laws or regulations, the more stringent regulation(s) shall apply. If there is a question regarding the interpretation or application of the OMEHASP's provisions, the Supervisor/Crew Leader or senior person will determine the correct course of action. The Safety Department is available as a resource when questions arise regarding this OMEHASP and any safety or health related questions.

This OMEHASP primarily addresses conditional workplace exposures and topics that are regulated by OSHA and other regulatory bodies. What cannot be addressed in a handbook are the human elements that impact employee safety. This is where "Safety Participation" on the part of every employee is critical**.**

If a co-worker, visitor or contractor is observed in a dangerous position or appears to be working in an unsafe manner, the employee is expected to take immediate action by stopping the unsafe activity and bringing this observation to his/her attention. If the co-worker does not heed the warning, the person in charge should be notified immediately. He/she is expected to take the actions necessary to address the situation. In any case, whenever an unsafe condition is identified, supervision shall be notified immediately so prompt action can be taken.

Finally, training and education of the topics contained in this handbook and other company policies and procedures is a critical part of safety and provides employees with information and knowledge on how to do their job safely. It is the employee's responsibility to practice these policies to avoid the negative consequences that can occur when an at-risk action or behavior is taken.

The OMEHASP is located on Sharefile. Each employee shall become thoroughly familiar with its contents. Suggestions for changes in the rules or working conditions to promote safety and health are welcomed from all employees.

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Introduction to the Operations & Maintenance Environmental Safety Plan (OMEHASP)

In accordance with Safety Precautions and Programs and Special Safety Conditions, this document has been prepared and will be used to administer, direct, monitor, enforce and coordinate the safety management process in this company.

sPower is committed to providing a safe and healthful workplace and is responsible for the safety and health of our employees and all of our subcontractors at any tier working at the jobsite. In addition, **sPower** will take all precautionary measures to protect other persons from injury and to protect property.

Terry Barnhill , Safety Director 661-371-6019 is the management person to be contacted in the event a serious safety issue arises.

To be effective, the safety program requires significant effort and commitment from each and every employee of sPower.
Managers, supervisors and field personnel will meet on a regular basis to discuss pertinent safety issues. These meetings can be incorporated into planning or scheduling meetings. Records of the safety issues discussed should be forwarded to the Safety Manager. Pertinent safety issues should include:
Pre-planning for all work with special attention to hazardous work operations
Review of general safety conditions at current work locations, noting positive developments or deficiencies
OSHA, owner generated, or internal safety inspections results, and corrective actions required or taken.
All supervisors, acting supervisors, and lead technicians are responsible for safety compliance in the immediate work environment as well as for the actions of all employees and subcontractors who report or are assigned to them. All supervisory personnel must communicate and enforce all safety policies and procedures within their operations at their jobsites.
All Company employees and subcontractors must perform all operations in a safe manner and never knowingly or willfully violate federal, state, local, site owner or Company safety rules, regulations or procedures.
A copy of this OMEHASP shall be maintained on the jobsite and available for review at all times.
In the event of a conflict between this OMEHASP and federal, state, and local regulations, workers shall follow the most stringent/protective requirements.
Nothing in this OMEHASP shall alter an employer's or employee's statutory and/or contractual obligations, or status, nor shall this OMEHASP infringe upon the rights of any employee, contractor or subcontractor. As a fundamental statutory obligation, each employer must provide a workplace sufficiently free of recognized hazards and must take appropriate, documented measures to safeguard the health and safety of each of their employees.
sPower retains the right to audit, inspect and correct any health or safety deficiency at any time and further to suspend, stop work, bar admittance to the project site, or take reasonable other disciplinary or remedial action with respect to any employee,

contractor, subcontractor (or their respective employees) or visitor from the project site for any observed statutory infraction or violation of site rules as described in this OMEHASP.

Safety Principles

- ***All occupational injuries and illnesses can be prevented.***
- ***Leadership shall strive to cultivate an interdependent safety culture.***
- ***Employee involvement at all levels is essential.***
- ***All employees are responsible for preventing injuries.***
- ***All employees, contractors and visitors are required to work safely and expected to take action to prevent injuries.***
- ***Training shall be appropriate and relevant to the work hazards.***
- ***Safety Observations are integral to an injury-free workplace.***
- ***Safety issues shall be addressed in a timely manner.***
- ***No job is so urgent or critical that we cannot take time to do it safely.***

Policy: Incident and Injury-Free (IIF) Workplace General Information and Expectations

Proactive Safety

Purpose

The Proactive Safety Policy sets minimum expectations for proactive safety measures at sPower which will be implemented by sPower management. Proper implementation and execution of the Proactive Safety Policy is one set of many steps that sPower takes in order to continuously improve and attain an Incident-free workplace and a world class safety culture. This policy sets minimum expectations for proactive safety practices in the followingareas:

Conducting visitor safety orientations;

Communicating information contained in an sPower Safety Alert or sPower Safety Bulletin issued

for communication to sPower People and Contractors exposed to the same or similar safety risks described in the Alert or Bulletin and initiating action as recommended by the Safety Alerts or Bulletin;

Encouraging safe behaviors and reducing the number of Workplace Hazards by performing quality Safety Walks.

Promoting Safe Behavior Observations and Safety Inspections;

Establishing both Cardinal Safety Rules and a Zero Tolerance Policy;

Conducting at least monthly safety meetings; and

Promoting local proactive safety recognition programs.

Scope

This safety policy applies to all sPower employees.

Definitions

sPower Business – All sPower locations which sPower has overall management control, regardless of what percentage of equity control sPower has in that location, business and/or site.

sPower People or Person – Any person working directly for sPower.

Confined Space – The procedures as defined in the sPower Safety Policy for Confined Spaces and Enclosed Spaces.

Contractor – A company, or person working for it, contracted with sPower to work on sPower property or providing onsite operations support work in lieu of sPower People**.**

Cardinal Safety Rules – A specific subset of key, clear and concise safety rules for significant and/or highly prevalent risks that, along with accountability and sanctions for violations of such rules, are fully understood by all people at sPower. While all applicable safety rules, including but not limited to policies and programs, must be adhered to, this subset of safety rules are those that, if violated, represent a high probability or significant risk of occupational injury or illness to sPower People, Contractors, and/or members of the public.

High Risk Activities - As defined in the sPower Incident Management policy.

Immediate Supervisor – As defined in the sPower Incident Management

policy.

Near Miss – As defined in the sPower Incident Management policy.

Safety Alert / Safety Bulletin – A document distributed by sPower Safety Team that provides

the description, causes, corrective actions, and key lessons learned from Significant Incidents and Potential (SIP). Safety Alerts are issued for SIPs that occurred at sPower, and Safety Bulletins are issued for technical safety issues at sPower or safety incidents.

Incident – As defined in the sPower Incident Management policy.

Safety Inspection – The process of observing workplaces within sPower for identifying, documenting, and arranging for the correction of unsafe conditions.

Safety Walk – The process by which leaders systematically observe workplace activities, the associated workers behaviors and working conditions for the express intention of providing positive feedback when workers are exhibiting safe work practices and behaviors, and to correct Workplace Hazards. This process will always include conversation and interaction between the leader and workers performing the workplace activity to interact and reinforce the adherence to safe work practices and specifications of behavior as outlined in the sPower

OMEHASP. Safety Walks are always documented and are distinguished from Safety Inspections by the requirement that the person performing a Safety Walk will interact with people performing the work after observing them for the express intention of providing feedback affirming good safe work practices and behaviors and correcting those practices and behaviors that are not acceptable.

Significant Incident and Potential (SIP) – As defined in the sPower Incident Management policy.

Stop Work Authority – The right and obligation of sPower People and Contractors to stop work as soon as they identify a situation they feel to be unsafe. Stop Work Authority also includes the obligation of all sPower People and Contractors to stop their work as soon as they are asked to stop by a sPower or Contractor Person using the Stop Work Authority.

Visitor – Any person visiting a sPower location who is not permanently assigned to work at that location – it does not include Contractors or visitors who will only be entering non-operational areas of the sPower jobsite (e.g., administrative offices).

Safe Behavior Observations – A process similar to a Safety Walk with the distinction being that Safe Behavior Observations are performed by managers & supervisors as well as peers in the workforce. A Safe Behavior Observation is a process that creates a safety partnership between management and employees that continually focuses people's attentions and actions on theirs, and others, daily safety behavior."

Workplace Hazard – A non-incident-oriented condition or behavior that if left unaddressed could result in injury.

Zero Tolerance Policy – For purposes of this policy, this term means part of or complimentary to the sPower personnel accountability, disciplinary and/or sanctioning policy for accepting unmitigated safety related risks that have the potential to cause fatalities and/ or serious injuries. For means of clarification, “zero tolerance” means that there shall be some level of accountability for violations up to and including termination, where the level of accountability

is determined based on the factual situation, level of willfulness and sPower specific policies.

Guiding Principles

1. sPower has a process which ensures every visitor receives a safety orientation commensurate with the level of risk and types of hazards likely to be encountered by the visitor while at the sPowerjobsite.
2. sPower has a process which ensures each sPower Safety Alert / Safety Bulletin is reviewed within thirty (30) calendar days of initial distribution by all current

   sPower People and any Contractors who may be exposed to similar occupational health and safety risks covered by the Safety Alert/ Safety Bulletin, and implement necessary actions as recommended by the Safety Alert/ Bulletin.

3. sPower has a process in place requiring the establishment of annual sPower Safety Walk, Safe Behavior Observation and Safety Inspection goals. These proactive safety goals are designed to achieve an Incident-free workplace and a world class safety culture at sPower. The business specific Safety Walk, Safe Behavior Observation and Safety Inspection goals need to be set at a reasonable level that is commensurate with the risks associated with the workplace activities and to drive the needed safety culture change.

4. sPower has a Workplace Hazard reporting and management program designed to identify, assess and correct the root causes of Workplace Hazards.

5. sPower has established the details of its Zero Tolerance Policy, and a process to communicate, monitor conformance, and enforce sPower Cardinal Safety Rules which, when followed, will promote an Incident-free workplace and a world class safety culture.

6. sPower conducts a planned monthly safety meeting with 100% sPower participation. The monthly safety meetings will include, as a discussion point, sPower specific or company-wide common safety topic and/ortraining.

Requirements

sPower has developed and implemented a site-specific Proactive Safety Management Program that, at a minimum, contains the following elements:

Written Program Elements

The written program must be legible, readable, and accessible by all sPower People.

The written program must identify the position of the sPower Person at the sPower location who is ultimately responsible for the implementation and maintenance of sPower's' Proactive Safety Management Program.

Procedural Elements

The following procedural elements must be included in the Proactive Safety Management Program at each sPower location.

Visitor Safety Orientations

sPower is required to develop a process to ensure that all Visitors are protected from safety and security hazards that they may be exposed to at the sPower location. Each Visitor is to be instructed through a safety orientation on general safety rules, the specific hazards associated with the sPower location that they are visiting and the precautions necessary to mitigate the risks posed by these hazards.

A safety orientation for every Visitor is required prior to their entry in operational areas of the sPower location. For Visitors who will be accessing a site multiple times, a first-time orientation will satisfy this standard's requirements as long as safety risks the Visitor is exposed to do not change and the orientation is repeated at least annually. The safety orientation will be commensurate with the risks a Visitor may be exposed to and will include as applicable, but not be limited to, the following general safety rules and requirements:

A. Specific Personal Protective Equipment (PPE) requirements.

B. Occupational safety and health hazards present at the business and avoidance/mitigation measures.

C. Emergency procedures (e.g. evacuation routes, muster points, emergency contacts).

D. Site specific traffic rules.

E. Restricted areas/activities (e.g. high voltage equipment, chemical/physical hazard areas, secure/sensitive areas, etc.).

F. Drug, alcohol and firearms policy.

G. Escort requirements.

H. Site Security requirements as provided in Appendix 1

Safety Alerts and Safety Bulletins

sPower has established a process to present information contained in every Safety Alert / Safety Bulletin to all sPower People and any Contractors who may be exposed to similar occupational health and safety risks covered in the Safety Alert / Safety Bulletin. The Safety Alert / Safety Bulletin process is required to include, but not be limited to, the following elements:

- A mechanism to share the information with every current sPower Person and all current Contractors who may be exposed to similar occupational health and safety risks or perform similar work as described in the Safety Alert/Safety Bulletin within thirty (30) days after their initial issue.

- A method to document that every required sPower Person and current Contractor has reviewed the information in each Safety Alert / Safety Bulletin.

- A process that includes:

  - Reviewing of the Safety Alert / Safety Bulletin for assessing the risks, hazards or issues described in the Safety Alert / Safety Bulletin;

  - Ensuring that the risks, hazards, or issues described in the Safety Alert / Safety Bulletin are mitigated if the risks, hazards or issues are present at the sPower location; and

Safety Walks, Safe Behavior Observations and Safety Inspections

Detecting and correcting Workplace Hazards proactively will reduce the probability of Incidents occurring. This policy sets the requirement for sPower to implement a Safety Walk, Safe Behavior Observation and Safety Inspection programs. For the purposes of this section, Safe Behavior Observations and Safety Inspections **must not** be counted toward the sPower goals for performing Safety Walks.

Safety Walks

The Safety Walk program will describe the methodology used to identify, document and resolve issues discovered during Safety Walks. The program is required to be designed for the express intention of providing positive feedback when workers are exhibiting safe work practices and behaviors, and to identify and eliminate Workplace Hazards. A guideline for the completion of quality Safety Walks is included as Appendix 2 to this document.

The Safety Walk program is required to include, but not be limited to, the following elements:

- A list of each position at sPower responsible for conducting Safety Walks, and the minimum frequency for each position that is required to conduct Safety Walks.
- A process to identify and focus on High Risk Activities
- A process description on how the Safety Walks will be performed and documented with an emphasis on performing high quality Safety Walks with a high degree of personal interaction, identification of High-Risk Activities, reinforcement of safe behaviors, and correction of unsafe behaviors and practices.
- A process to track and correct all Workplace Hazards discovered during Safety Walks, including how and when they were corrected.
- Stated goals, by month and position, for the number of Safety Walks that will be conducted.
- Training programs for all sPower People involved in the Safety Walk program to ensure that Safety Walks are of high quality, meet the intent of the program, and are conducted consistently.
- A documentation and record retention policy for Safety Walks.
- A requirement to upload Safety Walk metrics into the AES Online on a monthly basis and within five (5) business days of the beginning of the next month.

Safe Behavior Observation

sPower has implemented a Safe Behavior Observation program. The program is designed to observe "SAFE BEHAVIORS" as well as "AT RISK BEHAVIORS". The program is required to be designed for the express intention of providing positive feedback when workers are exhibiting safe work practices as well as identifying at risk behaviors and behaviors, and to identify and eliminate Workplace Hazards. The Safe Behavior Observation program shall include, but not be limited to, the following elements:

- A process description of how the Safety Observation will be performed and documented.
- A process to track all Safe Behavior Observations, including SAFE BEHAVIORS & AT RISK BEHAVIORS.
- Stated goals, by month, for the number of Safe Behavior Observations that will be conducted.
- A training program for all sPower People involved in the Safe Behavior Observation program to ensure program quality.
- A documentation and record retention policy for Safe Behavior Observations.
- A requirement to upload the Safe Behavior Observation / Work Activity Observation metrics into the AES Online on a monthly basis and within five (5) business of the beginning of the next month.

Safety Inspections

The Safety Inspection program will describe the methodology used to identify, document and resolve issues discovered during Safety Inspections. The Safety Inspection program should include, but not be limited to, the following elements:

- An unscheduled / random inspection.
- A process to track and correct all Workplace Hazards discovered during Safety Inspections, including how and when they were corrected.
- Stated goals, by month, for the number of Safety Inspections that will be conducted.

- A documentation and record retention policy for Safety Inspections.

- A requirement to upload the Safety Inspection metrics into the AES Online on a monthly basis and within five (5) business days of the next month.

sPower is encouraged to develop and implement a routine process to perform Safety Inspection data analysis to detect and correct emerging trends indicating deficiencies in the associated processes which could have the potential to cause fatalities and serious injuries.

Workplace Hazards

sPower has an internal process for reporting, investigating and correcting Workplace Hazards. These procedures will augment the Incident, Safety Walk, Safe Behavior Observation and Safety Inspection reporting programs. The Workplace Hazard reporting process is required to include the following elements:

A mechanism for sPower People, Contractors and Visitors to report Workplace Hazards.

A system to track and ensure timely investigation and mitigation of Workplace Hazards as necessary.

The minimum notification and reporting requirements as given below:

All sPower People, Contractors and Visitors must immediately report the Workplace Hazard to their Immediate Supervisor;
The Immediate Supervisor must report the Workplace Hazard to the Safety Manager immediately.

If the Workplace Hazard is a SIP, the Safety Manager must report the Workplace Hazard to sPower Leadership immediately.

The Safety Manager or a designated person from sPower is required to post an initial incident report containing basic, factual information into AES Online within 12 hours of recognition of the occurrence of a SIP Workplace Hazard.

Report all non-SIP Workplace Hazards as monthly numbers in AES Online module within five (5) business days of the beginning of the next month. sPower should keep documentation supporting the Workplace Hazard data reported into AES Online.

- A requirement to conduct an RCA for all SIP Workplace Hazards, and upload RCA reports into AES Online according to the SIP RCA requirements and reporting timeline in the sPower Incident Management policy.

- A training program will be put in place for all sPower People to facilitate the identification, documentation, investigation and resolution of Workplace Hazards.

Cardinal Safety Rules

sPower will implement and communicate to all sPower People and Contractors a set of Cardinal Safety Rules and the potential consequences if such rules are violated. The Cardinal Safety Rule policy is required to include, but not be limited to, the following elements:

- No one will operate, disable, remove or otherwise tamper with an energy isolation device that is locked and/or tagged out.

- Never remove a lock and/or tag from an energy isolation device without proper authorization.

- Use only approved and authorized protective grounding before working on de-energized lines.

- Approved fall protection systems must be established when exposed to fall hazards on unguarded working surfaces and when working in aerial equipment (such as bucket trucks and boom lifts). For purposes of this rule, a fall hazard exists when a person is working at elevations equal to or greater than 6 feet (1.8 M) without an appropriate Fall Protection System as described in the sPower Fall Protection Policy. The 6-foot(1.8 M) threshold applies unless fall protection is required to be used at lower heights by local rules or regulations.

- Hoisting and rigging operations including those involving use of a crane shall be planned, supervised and performed by qualified personnel according to the approved standard operating procedures.

- An atmospheric and physical hazard assessment shall be performed, and necessary mitigation measures shall be implemented before entering a confined space.

- Operators of motorized vehicles for company business onsite or on public roadways shall: have a current driver license; drive at posted

speed limits; not be under the influence of alcohol or drugs; never engage in hands-on cell phone use or texting while the vehicle is in motion; and ensure that all people in the vehicle are wearing their seatbelts.

- A live (energized) electrical circuit/system with >50volt must not be approached closer than the Minimum Approach Distance as defined in the Electrical Safety and Qualification policy, unless a worker is insulated, the circuit is insulated, and the worker is electrically qualified to work within the Minimum Approach Distances.

1. A mechanism to clearly communicate the Cardinal Safety Rules to all sPower People and Contractors.

2. A methodology to periodically review and update the sPower Cardinal Safety Rules.

3. All sPower People and Contractors must be given the ability to adhere to Cardinal Safety Rules set by sPower by being provided the necessary resources, equipment, tools, training, and supervision.

Zero Tolerance Policy

sPower has implemented and communicated to all sPower People and Contractors a Zero Tolerance Policy that is appropriate for sPower and compliant with local laws and regulations (e.g., local labor laws, collective bargaining agreements). The Zero Tolerance Policy is required to include, but not be limited to, the following elements:

1. Procedures to monitor compliance with required control measures to mitigate risk that have the potential to cause fatalities and/ or serious injuries.

2. Reference to or inclusion into sPower's' personnel accountability, disciplinary and/or sanctioning policy for accepting or causing unmitigated risks that have the potential to cause fatalities and/ or serious injuries.

Accountability, Disciplinary And / or Sanctioning

Accountability, disciplinary and/or sanctioning policy will be initiated only after determining, through investigation and Root Cause Analysis (RCA), that the unsafe action involves willful violation of one or more of the applicable site EHS requirements that put the employee or others in danger. Accountability, disciplinary and/or sanctioning policy will include one or more of these elements according to sPower policy, local laws and regulations (e.g., local labor laws, collective bargaining agreements).

1. Verbal Warning
2. Written Warning
3. Suspension
4. Termination

Certain behaviors can lead to immediate termination without regard for any of the previous disciplinary steps. Violations will include but are not limited to violation of Cardinal Safety Rules, violating the drug-free workplace program, violence, harassment, theft, fraud, or serious safety violations that put others in imminent danger, such as lockout/tagout errors, failure to utilize fall protection measures, or unauthorized firearm possession on site. sPower will not tolerate at any time any conduct that threatens, intimidates, harasses, or coerces another person working at the site or any member of the public.

Verbal Warning

A verbal warning is meant to be an informal discussion with the employee to point out and make the employee aware of problem behavior. This warning is an opportunity for the employee to take corrective steps to ensure the employee is on the right track. The employee will be informed of further consequences, should he/she fails to adjust properly.

Written Warning

Continued failure to meet EHS expectations will result in a written warning. A written warning is a formally documented warning describing the nature of the problem or issues, instructions for the employee is expected to change, a detail of the verbal warning issued to the employee initially, and the consequences for continuing to act unsafely. The employee will be asked to sign a copy of the warning document and the warning will continue to be effective even the employee decline to sign.

Suspension

At this stage, the employee will be temporarily suspended from all work activities. This is the final step in the disciplinary program process before termination. A written letter will be issued describing the details including duration, conditions and consequences, should the employee return to work and fail to comply with EHSS expectations.

Termination

In the end, failing to make the changes necessary to adjust unsafe work behavior will lead to termination.

Monthly Safety Meetings

sPower conducts, at a minimum frequency, monthly safety meetings to communicate safety related information to all sPower People. The monthly safety meetings are required to include, but not be limited to, the following:

A mechanism in place to document and retain the agendas and the attendance records for each meeting.

A. A monthly requirement for 100% participation of sPower People employed during the month and Contractors working at the Business on a fulltime basis for 20 or more workdays in a month. Anyone not able to attend the meeting at the regularly scheduled time is required to make-up the meeting within 30 days of the original safety meeting via video or other suitable mechanism.

- Include a sPower safety topic(s).

- Upload monthly safety meeting metrics into the AES Online on a monthly basis within five (5) business days of the beginning of the next month. Reporting safety meeting metrics for sPower People and applicable contractors is mandatory.

Stop Work Authority

Stop Work Authority is a process to empower each sPower and Contractor Person to stop work as soon as somebody identifies a situation feel to be unsafe. Stop Work Authority also includes an obligation of all sPower People and Contractors to stop work as soon as they are asked to stop by an sPower or Contractor Person using Stop Work Authority. Stop Work Authority is considered as the last resort to prevent Incidents and there by serious injuries and fatalities.

a. sPower has established a proactive and non-retaliatory process to educate, empower and encourage sPower and Contractor people to use their Stop Work Authority.

b. As soon as the Stop Work Authority is used, the work must be immediately stopped, and the Pre-Task Plan (PTP) of the job has to be reviewed to identify and implement additional control measures, if necessary, to mitigate the risk.

c. Work shall not be resumed without reviewing the PTP.

Proactive Recognition Program

Positive reinforcement is a strong motivator of human behavior and is an effective and important element in attaining a world class safety culture. sPower is required to develop and implement a Proactive Recognition program that recognizes and rewards individuals and/or teams for their positive safety efforts, behaviors and work practices.

Personal Safety Accountability

It needs to be clearly understood that personal safety begins and ends with each individual employee. While management is responsible for preventing injuries, all of us play a key role in ensuring safety is reflected in our actions and mindset. To achieve an injury-free workplace, all of us must do our part. A continuous commitment and dedication to following these values by

all of us will assure that the safest workplace is established and that the safest work behaviors are always used to prevent injuries.

.1 Safety and health policies and procedures are developed and implemented to assist employees in doing their job safely. They also provide a framework for maintaining a safe and healthy place to work. Our Company expects that safety and health procedures will be followed at all times.

.2 Ultimately our actions and response, or lack thereof, dictate the outcome of an encountered hazard. By following procedures, utilizing sound practices and taking responsibility for our own and our co-workers' safety, it's reasonable to believe that work-related injuries and illnesses can be eliminated.

.3 Employees who willfully and/or repeatedly violate safety policies or do not exercise responsible diligence in safely performing their job will be ordered off that work assignment and may face potential disciplinary action.

Enforcement of Safe Work Practices

.1 It shall be the responsibility of the O&M Management to implement and maintain the sPower OMEHASP at each work location under their area of responsibility.

.2 Job safety is the responsibility of all employees. Safe work practices are developed to ensure that safety is made equal to cost, productivity, quality, and employee morale.

.3 Employees acting in a supervisory capacity, either regularly or temporarily, shall require all employees working under their jurisdiction to comply with all applicable policies, safety rules, and safe work practices.

.4 All employees performing work covered by any section of this manual shall follow the rules of that section.

INITIAL INCIDENT NOTIFICATION:

- **Reporting / Incident Management:**

All Safety Incidents will be reported to the sPower O&M Manager and the sPower Safety Manager. Notification shall be made via phone or radio NLT 1 hr. and be documented using the sPower "Initial Incident Notification Form" or the Contractor approved Incident Report.

All OSHA recordable incidents require a Construction Incident Analysis be completed NLT 48 hours after the incident. This process is a formal post- incident review with the appropriate personnel who typically include the sPower O&M Manager and or O&M Director , sPower Safety Manager applicable Supervisor, employee involved as well as additional persons may be required to attend at the discretion of the sPower Site Management.

Purpose

The purpose of this section is to specify the requirements for Safety and Health Incident Management to include incident response, reporting, and root cause analysis to improve our Safety Management System (SMS) processes and to prevent recurrence of incidents at the same sPower location and at other sPower locations. This policy sets minimum requirements for Health and Safety Incident Management and will be used to guide sPower in developing and executing the program for the management of safety and health incidents

INITIAL INCIDENT NOTIFICATION

The following Initial Incident Notification information shall be sent to the O&M

Manager and Safety Manager NLT 60 minutes or as soon as practical after the incident.

- **Date:**
- **Time:**
- **Project:**
- **Specific Location:**
- **Incident Summary**

✓ All Safety Incidents will be immediately (i.e., as soon as practical) brought to the attention of the worker's supervisor and the sPower Safety Dept..

□ Initial response is to ensure that any hazard is safely mitigated, provide medical attention to injured employees, secure the area as necessary and begin factfinding.

✓ Worker injury/illness incidents will be managed by the applicable

Contractor's SafetyStaff. Assistance is also available from the SPower Safety Manager and/or site medical services.

- ✓ Final determination of injury treatment is the responsibility of the injured worker's employer (i.e., sub-contractor).

The following incidents will require an Incident/Accident Investigation The following incidents will be reported promptly (within 60 minutes)

- Personal injury/Illness beyondFirst Aid
- Plant or equipment damage (includes vehicle accidents) that would not be minor in nature **(i.e., the damage is $1000 orgreater)**
- Environmental spills, releases discharges (**10 gallons or greater**), etc. or a violation ofan environmental permit or regulatory requirement
- Near-miss incidents that could have had significant injury or damage

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This policy sets minimum requirements for Health and Safety Incident Management and will be used to guide sPower in developing and executing the program for the management of safety and health incidents.

sPower's Incident Management Program, at a minimum, complies with all applicable local requirements and regulations regarding occupational and public safety and health incident management and reporting. sPower has established policies and procedures that are more stringent than those identified in OSHA. Periodically sPower may need to adapt this policy to reflect their specific organizational and operational structure.

The primary concern immediately after an incident is to secure the area to ensure no further hazard exists and to provide medical treatment to any injured employee(s). Notification to sPower Management may be delayed. Ideally, notification to sPower should be as soon as possible given the nature of the incident and the response that is required.

- □ Completion of the appropriate Initial Incident Report will be provided to the sPower O&M Manager & the sPower O&M Director within 12 hrs. of the incident.
- □ Final Incident Report within 24hrs.
- □ Any deviations from these responses and reporting requirements, including timing ofreporting, must be approved by the sPower SafetyDirector.

<u>Key objectives of sPower's incident management program:</u>

- ➢ *Identify roles and responsibilities of key individuals directly involved in the Incident Management Process;*

- *Ensure timely communication of Incidents and Workplace Hazards to all relevant people in the organization;*

- *Establish a process for conducting investigations into the root cause(s) of Significant Incidents and Potentials, and implementation of corrective actions;*

  - ✓ Use a common language and consistency to the content and format of incident investigation and Root Cause Analysis (RCA) reports, and define the review, approval and distribution channels;
  - ✓ Ensure the timeliness of incident investigation and RCA performance, and communication of their results; and
  - ✓ Mitigate and prevent repeat incidents across sPower through a common reporting system and knowledge sharing process.

Scope

Health and safety-related Incidents and SIP-classified Workplace Hazards involving sPower People, Contractors, Visitors and the Public are covered by and must be managed in accordance with this policy.

Definitions

sPower – Any sPower location in which sPower has overall management control, regardless of what percentage of equity control AES has in that location or business. sPower include Operation & Maintenance, construction projects and administrative offices.

AES Online – A web based EHS Management Information System (EMIS) used to record and track Incidents and Workplace Hazards that occur at sPower as well as other AES business.

sPower Person – Any person employed directly by an sPower.

sPower Reportable Incident – An occupational-related Incident involving an sPower Person or Contractor that meets each of the following requirements:

1. The Incident is recordable under the provisions of OSHA 29 CFR 1904 (Refer to Appendix 1 of this Standard);

2. sPower or its Contractor has sufficient level of control in requiring safe conditions and / or safe behaviors at the time of the Incident.

Exceptions to these include:

a. Illegal activity (these do not represent work activity in the interest of sPower or its Contractor);
b. Travel on commercial carriers and public transportation systems (these do not occur on sPower Business or Contractor property/equipment/systems and therefore the sPower Business or Contractor doesn't have adequate control over them);
c. Public roadway motor vehicle incidents using sPower or Contractor owned motor vehicles involving no violation of either sPower or Contractor safety rules or local applicable traffic rules (sPower or Contractor has insufficient level of control); and
d. Terrorist attacks or Workplace Violence (sPower or Contractor has insufficient level of control on these unsafe behaviors or conditions);

Note: *Applicability of these guidelines is limited only for AES Online reporting purposes. sPower may need to maintain a different set of guidelines and recordkeeping for reporting to local regulatory authorities according to applicable local regulatory requirements.*

Business Leader – The most senior management person at sPower.

Business Leaders include O&M Director, Project Managers & Construction Managers.

Corrective Action Plan – The road map for completing corrective actions based on the Incident root causes identified during the RCA. For each action item, it identifies what work is to be done, how the work will be done, who is responsible for doing the work, when the work is scheduled to be completed, and how much the work is estimated to cost.

Contractor – A company, or person working for it, contracted by sPower to work on sPower property, on sPower equipment networks, or providing operations support work in lieu of sPower People.

Fatality – Death of sPower People or Contractors resulting from an sPower Reportable Incident.

First Aid – A sPower Reportable Incident with an injury which does not require medical treatment as defined by 29 CFR 1904. The first aid treatment does not need to be performed by a physician, paramedic or qualified First Aid responder.

Immediate Supervisor – The first sPower leader (or other sPower person designated in sPower's Incident Management program) in the chain of command that is directly responsible for the injured person, or the involved work program/project/equipment in the case of an Incident or a Public Fatality

Fatality. Incident – An event that resulted in an injury/illness or has the potential to result in injury or illness to sPower People, contractors or members of the public. Incidents include sPower Reportable Incident resulting from Near Miss, First Aid, Recordable, Recordable with Restricted Workdays, Recordable with Modified Workdays, Lost Time Incident and Fatality. A Workplace Hazard is not considered as an Incident according to this standard.

Incident Location – Usually, the physical location where the Incident or Workplace Hazard occurred. Depending on the type of incident, the incident location will contain evidence which if collected and documented can assist in identifying the Root Causes.

Incident Management Program – The program developed and implemented by sPower that meets the requirements of the Incident Management Standard.

Initial Incident Report – Report containing basic, factual information regarding a safety and health Incident or Workplace Hazard reported into AES Online within 12 hours of recognition of the occurrence of a SIP Incident.

Lost Time Incident (LTI) – A sPower Reportable Incident that results in medical treatment where the injured or ill person cannot return to work the following calendar day in accordance with 29 CFR 1904. (See Appendix 1 of this Standard).

Medical Treatment – A sPower Reportable Incident that requires management and care of a patient to combat injury, disease or disorder. Medical treatment does not include:

a. Visits to a physician or other licensed health care professional solely for observation or counseling;
b. The conduct of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications used solely for diagnostic purposes (e.g., eye drops to dilate pupils); or
c. First Aid treatment.

Refer to the Recordable and First Aid treatment comparison table provided in the Appendix 2 of this Standard.

Near Miss – An unintended, unplanned and unexpected Incident that could have but did not result in personal injury.

Note: A Near Miss is an incident and therefore must have an event take place. If there is no injury and no event, then the safety issue would be reported as a Workplace Hazard.

Occupational Injury/Illness – An injury/illness caused or contributed to by an Incident in the workplace. A pre-existing injury or illness that is significantly aggravated or exacerbated by an Incident or conditions in the work environment are also considered an Occupational Injury/Illness. Hearing shifts and physical injuries/illness such as back pain, skin irritation, etc. due to working conditions also must be considered an Occupational Injury/Illness and reported.

Public Fatality/Public Injury – Death or an injury requiring Medical Treatment to a member of the public which meets any of the following conditions:

a. The incident occurs on or because of an sPower controlled worksite/property;
b. The incident involves electrical contact with sPower controlled electrical system infrastructure; or
c. The incident involves a vehicle owned or operated by sPower.

8 **Note:** Death or injury to a member of the public due to public vehicle incidents involving contact with sPower utility poles, transformers, and other properly sited equipment near public roadways are not considered to be sPower Reportable Incidents under this policy and must not be reported into the AES Online System.

Recordable – An sPower Reportable Incident involved with an injury or illness that resulted in loss of consciousness or the person receiving Medical Treatment beyond First Aid but did not lose any time at work or restricted (or transferred) work duty beyond the day of the injury. Refer to the First Aid and Recordable injury comparison table in Appendix 2 of this Standard.

Note: Although all injuries that require treatment beyond First Aid are considered

Recordable injuries, for AES Online reporting purpose a Recordable Incident is less severe than a Lost Time Incident and Fatality.

Recordable with Restricted Workdays – A Recordable Incident which results in one of the following conditions beyond the day of injury/illness:

a. Prevents a person from performing one or more of the routine functions of his or her job (Routine is considered to be a task that is performed at least once per week);or
b. Prevents a person from working the full workday that he or she would otherwise have been scheduled to work.

Recordable with Transferred Workdays – A Recordable Incident which results in the person being transferred to another job for all or part of one or more days beyond the day of injury.

Recurring Events – Events that have, or may have, a common Root Cause, because the same or similar equipment was involved, the same mode of failure occurred, or some other common element contributed to the events.

Root Cause(s) – The most basic cause (or causes) that can reasonably be identified, that management has control to fix and when fixed, will prevent or significantly reduce the likelihood of recurrence of a similar Incident or Workplace Hazard. There are three types of Root Causes and they are Physical, Human and Latent.

Physical – Failure of physical components;

Human – Failures resulting from decisions made by people;

Latent – Deficiencies in management systems and restraining cultural norms that allow failures to occur.

Root Cause Analysis (RCA) – The process used to find the root cause(s) of an Incident or a Workplace Hazard. In this context, the RCA process also includes identifying and implementing corrective actions and tracking their completion to measure success.

Safety Manager – The person(s) designated by sPower who provides health and safety support to the sPower's Safety Management System. A sPower appointed Safety Manager will be trained and thoroughly familiar with this Incident Management Process and with RCA methodologies that sPower will use to conduct RCAs.

Serious Injury – Any one or more injuries listed in Appendix 4 of this Standard.

Significant Incident and Potential (SIP) – An Incident or Workplace Hazard as determined using the flow chart in Appendix 5 in conjunction with the supporting lists in Appendixes 3 and 4 of this Standard.

SIPs are high hazard situations which could lead to fatalities and/or serious injuries if management controls are not complied with, absent or ineffective. SIPs include Incidents and Workplace Hazards associated with High Risk Activities (Appendix 3) and involve or have the potential for Fatalities and or Serious Injuries (Appendix 4).

Triggering Event – Event(s) related to the worksite condition or people actions that directly lead to the Incident.

Unsafe Behavior – An action/behavior of a sPower Person or Contractor which is contrary to accepted safe work practices and introduces a risk of injury to sPower Person(s), a co-worker, a Contractor, or a member of the public.

Unsafe Condition – A workplace or equipment condition which is contrary to accepted safety standards and introduces a risk of injury to sPower Person(s), a co-worker, a Contractor, or a member of the public.

Visitor – Any person visiting an sPower jobsite but who is not permanently assigned to work at that location.

Visitors are not expected to participate in operational or maintenance activities of the sPower facility they are visiting. Incidents involving Visitors must be reported into AES Online using the following criteria:

a. Non-sPower People Visitors will be considered as members of the public;

b. Non-sPower People Visitors involved in operational or maintenance activities must be considered as Operational Contractors;

c. A sPower Person who visits another sPower jobsite and does not get involved in operational or maintenance activities of the site he/ she is visiting, will report the Incident under the sPower reporting policy and:

Workplace Hazard – A non-incident-oriented condition or behavior that if left unaddressed could result in injury.

Guiding Principles

The purpose of an Incident Management Program is to determine what happened, identify the Triggering Events and the Root Causes of the Incident and determine the appropriate corrective/ preventive actions so that Recurring Events do not occur at the same sPower jobsite or at other sPower jobsites.

Requirements

sPower must develop and implement (or when working under specific contractual conditions ensure the contractor maintains and utilizes) an Incident Management Program that at a minimum consists of the following elements:

Written Program Elements

1. The Incident Management Program must be legible, readable, and
2. accessible by all sPower People and Contractors.

3. The Incident Management Program must identify the position/person that is ultimately responsible for the implementation and maintenance of the organization's Incident Management Program.

4. The Incident Management Program must clearly and specifically outline the scope, purpose, responsibilities, authorization, rules, and techniques to be applied to the incident

   management process and the measures to enforce compliance with the Incident Management Program, including:

   a. A specific statement of the intended use of the Incident Management Program;
   b. Specific procedural steps to define the Incident response, reporting and investigation process; and
   c. Specific procedural steps to define the follow-up actions required to address the recommendations from the Incident investigation and Root Cause Analysis.

5. The Incident Management Program must include a process to classify the incidents

in the right category according to the definitions provided in this Standard (Refer to Appendix 6). The person/position that is responsible for determining the category of incidents is to be identified in the program.

6. The Incident Management Program must include pro-active processes to encourage and promote the timely reporting of Incidents and Workplace Hazards by sPower People and Contractors.

Procedural Elements

Initial Response:

1. Following an Incident or recognizing a Workplace Hazard, sPower must initiate the following actions as applicable:

a. Stop the work in the area and report the Incident or Workplace Hazard immediately to the Immediate Supervisor.
b. If necessary, initiate the appropriate level of the Emergency Response and Contingency Plan (based on the site-specific Emergency Response/Preparedness Plans;
c. Make the work area safe (mitigate or remove the exposure to any imminent dangers);
d. Secure the Incident Location to ensure protection of others (i.e., sPower People, Contractors and the Public) and to aid with the Incident investigation;
e. Once the Incident Location is secure, the sPower Safety Manager shall collect and preserve evidence from the Incident Location, which may help the RCA team to determine Root Causes(s) of the Incident. The Safety Manager may delegate this responsibility to other individuals, once assured that these individuals are capable of performing the task;
f. If the Incident involves an injury:
    1. Provide First Aid and activate emergency medical services and other emergency services as required; and
    2. Ensure that the injured person is transported to emergency medical services for medical attention as necessary;
g. Begin an initial investigation and complete the Initial Incident Report;
h. Do not resume the job or disturb the Incident Location if the Incident Location is being secured by Emergency/Police services. The Incident Location must be treated in the

    same fashion as a crime scene would be where site owner is excluded until the crime scene is released back to them by the concerned authority; and
i. Resume the job with permission from the Immediate Supervisor only after the initial investigation is completed, and corrective actions to mitigate the Triggering Events of the Incident or Workplace Hazard are implemented.

Incident Notification

a. Workplace Hazard, Near Miss and First Aid:
    1. All sPower People, Contractors and Visitors must immediately report the Workplace Hazard or Incident to their Immediate Supervisor;

2. The Immediate Supervisor / sPower employee must report the Workplace Hazardor Incident to the sPower Safety Manager immediately.
3. The Safety Manager is expected to post an Initial Incident Report containing basic, factual information into AES Online within 12 hours of recognition of the occurrence of a SIP-classified Near Miss, First Aid or WorkplaceHazard.

Incident with Injuries beyond
First Aid Incident with Fatality
Incidents with Public Fatality or Injury:

In cases of Incidents that result in a Public Fatality or Public Injury which requires Medical Treatment:

4. sPower People or Contractors must notify the Immediate Supervisor as soonas becoming aware of the Incident;
5. The Immediate Supervisor shall report the incident to the sPower Safety Manager & sPower Construction Manager as soon as becoming aware of the Incident;
6. The sPower Chief Operating Officer must notify the incident to Local and Corporate Legal Advisors as appropriate; and
7. sPower Safety Manager shall initiate appropriate level of RCA.

SIP Determination

The Safety Manager in consultation with the Immediate Supervisor or an assigned person must classify the incident as either a SIP or a Non-SIP, using the SIP determination flow chart provided in the Appendix 5 of this Standard.

Initial Investigation & Initial Incident Report

The sPower Construction Manager together with the sPower Safety Manager must ensure that an initial investigation is conducted for all Incidents. The purpose of this investigation is to:

a. Provide a description of the Incident;
b. Identify the specific activity associated with theIncident;
c. Identify the extent of injuries and/or potentialinjuries;
d. Identify the Triggering Events of the Incident;
e. Determine the level of investigation required; and
f. Recommend corrective actions that address the TriggeringEvents.

On the basis of its initial investigation, the Business must initiate an Initial Incident Report and upload it into AES Online according to the reporting timeline provided in the section
5.2.6.c of this document. The Initial Incident Report must be factual, avoid

speculative comments and be based on the best available information at the time it is prepared.

Root Cause Analysis

a. The Safety Manager or another person who is trained and familiar with this incident management process and with RCA methodologies that sPower will use to conduct RCAs and to administer the Business' RCA program

b. The Safety Manager or the designated person must initiate an appropriate level of Root Cause Analysis for each incident in accordance with the significance of an Incident as follows:

   1. A RCA must be conducted for all SIP Incidents and Workplace Hazards.

   2. A RCA may be initiated for non-SIP Incidents and Workplace Hazards using a methodology and depth as deemed appropriate by sPower.

   3. RCAs must be conducted by individuals who are trained and qualified in RCA methods.

c. RCA Team Formation - An RCA team's organization is generally expected to have the following components:

   1. Executive Sponsor – provides guidance to the team; reviews and approves team results; supports the team's commitment to and timely execution of the RCA. Typically, the Business Leader is the executive sponsor.

   2. Core Team functions
      a. RCA Team Leader – responsible for managing the overall effort of the RCA team. The RCA team leader is not necessarily the Safety Manager.
      b. RCA Team Members – provide the knowledge and expertise needed and do the RCA work.
      c. Facilitator – plans and manages the working sessions; provides the tools and techniques to foster teamwork and expedite the RCA process.
      d. Technical/Safety Advisors – resources that provide additional expertise and support, when required, to augment RCA team member capabilities.

   3. The RCA team leader is expected to be trained and thoroughly familiar with the RCA methodologies that sPower will use to conduct RCAs and to

administer sPower's' RCA program.

4. If sPower does not have a competent person to lead/facilitate a RCA for a SIP Incident or Workplace Hazard, or if they believe a situation exists that will prevent them from conducting a thorough, unbiased and timely RCA, the sPower leadership or Safety Manager may request the support of an independent third-party RCA leader from the AES Global EHS Team.

5. Fatality RCAs are to be led by an independent competent person outside of sPower. The AES Global EHS Managing Director will select the RCA team leader and members, with advice and support from the sPower Safety Manager and the sPower leadership team.

6. For non-fatality Incidents and Workplace Hazards, the sPower Safety Manager will select the RCA team members, with the support of the sPower leadership team. Team members will normally come from sPower conducting the RCA; however, other sPower resources can be used if necessary or desired.

7. When selecting RCA team members, the individuals should have a mix of the following skills: Leadership, Teamwork, Communication, Analytical Skills, Creativity, Business Knowledge, Technical Knowledge, and Direct Knowledge of the Triggering Event.

RCA Execution

1. RCAs initiated for SIPs are expected to be performed using a methodology that includes testing of all hypotheses and verification using rigorous tools designed to ensure all physical, human and latent Root Causes are Identified and corrected.

2. The RCA will, at a minimum, contain the following elements:

   a. Problem Statement (describes the condition or event)
   b. Data Collection – Gathering the facts using different methodologies including document reviews, personnel interviews, physical evaluation of evidence and the Incident Location, etc.
   c. Data Analysis – Using an appropriate tool, arrange and analyze the collected data. sPower may select an appropriate tool, such as ***PROACT***®, ***TapRooT***®, Apex, etc., which are adequate for data recording, organizing and analyzing.
   d. Determination of Root Causes – Evaluate the information systematically using an appropriate tool to expose all actual root causes. RCA will not be successful just because of the tool. Thorough data collection and effective analysis of the data

      collected using the tool are essential.
   e. Recommend and Implement Solutions - What can you do to prevent the

problem from happening again, how will the solution be implemented and who will be responsible for it?

3. Irrespective of the methodology and/or tools used, the Root Causes are to be segregated and recorded as follows:
   a. The Root Causes are to be divided into 3 main types and they are:
      - Physical
      - Human
      - Latent
   b. The Root Cause types are to be further sub-classified into primary and secondary Root Cause categories
   c. The list of primary and secondary Root Cause categories which could be grouped under each Root Cause type are provided in Appendix 8 of this Standard.

4. The expectation for completing the RCA is 30 calendar days from the date of
5. Incident. For RCAs that extend beyond 30 days, sPower will institute a mechanism to routinely report the status of the process to the respective sPower leadership and the Global EHS Managing Director. In these cases, the sPower leadership is expected to use all reasonable means to help expedite the RCA process to a satisfactory conclusion.

6. An RCA is considered complete when the corrective action plan has been approved and authorized to be executed by the Business Leader, plus any higher-level approvals should the estimate of implementation costs exceed the Business Leader's signature authority.

7. No RCA must be finalized without identifying the latent causes.

8. One or more corrective action(s) are to be identified for each identified root cause of the incident.

9. A hierarchy of control measures are to be followed for determining corrective actions and they are the following in order of preference:
   a. Hazard Elimination;
   b. Hazard Substitution;
   c. Engineering Controls;
   d. Administrative Controls; and
   e. Personal Protection Equipment (PPE).

10. Corrective actions are expected to include actions adequate to:
    a. Correct the Triggering Events involved in the Incident;
    b. Correct similar conditions or situations which may exist in other areas or process of the business;
    c. Correct root causes of the incident; and
    d. Ensure continuing effectiveness of implemented corrective actions and prevent recurrence of incidents.

Quality Assurance & Control Reviews

1. sPower will develop a process to conduct a QA/QC of all SIP-related RCA reports before finalizing.

2. Before changing a SIP-related RCA report to final and closing the Incident report in AES Online, the sPower Safety Manager or a designee must conduct a QA/QC review of all SIP Incident and Workplace Hazard RCA reports, and provide comments to the sPower leadership to ensure the report is complete; all physical, human and latent causes have been identified; and the corrective actions are adequate to prevent recurrence of similar Incidents or Workplace Hazards.

3. Leaders may initiate QA/QC for non-SIP Incidents and Workplace Hazards as deemed necessary.

4. After the Safety Manager QA/QC comments' have been addressed, AES Global EHS will conduct a QA/QC review of SIP-related Incident and Workplace Hazard RCA reports and provide comments to sPower.

Approvals

1. Each RCA report must be approved by the sPower leadership.

2. The sPower leadership must not approve RCA reports which do not identify the Incident or Workplace Hazard latent cause(s).

3. According to the complexity and exposure involved in the Incident, sPower leadership may initiate additional levels of review and approval of RCA reports from specific expert groups such as legal, insurance, etc.

Documentation and Reporting

1. The Safety Manager will be responsible for posing final RCA reports on AES Online.

2. In order to disseminate information to others as quickly as possible, the final RCA reports will be entered into AES Online within 30 days from the Incident date.

3. All RCA reports are expected to contain the following minimum information:

    1. General Incident information such as location, date of occurrence, etc.
    2. Executive Summary of the Incident
    3. List of involved and / or injured people including details (e.g., name, date of birth, experience, training attended, date of hire)
    4. A thorough description of the Incident or Workplace Hazard
    5. Pre-Incident, Incident and post-Incident sequence of events included in a timeline
    6. Persons interviewed
    7. Summary of written statements
    8. All identified Root Causes – physical, human and latent
    9. Additional contributory factors or lessons learned from the Incident, if any
    10. Corrective action developed to cure each identified Root Cause
    11. Corrective action plan, including corrective action items, completion dates, responsible persons and estimated cost
    12. Method for tracking results of completed corrective action items
    13. Names and positions of RCA team members
    14. Contact person who can provide more information
    15. Photographs
    16. Other supporting documents, for example, written statements by witnesses, drawings/pictures/diagrams/sketches, JSA / hazard analysis / training record copies, permits, etc.

AES ONLINE Incident Reporting

Incidents and Workplace Hazards must be reported into AES Online by the AES Business in accordance with the following guidelines:

a. All AES Reportable Incidents, Workplace Hazards which are classified as SIPs, and Public Fatalities must be reported into AES Online;
b. At the AES Business' discretion, Public Injuries requiring medical treatment maybe reported into AES Online; and
c. Incidents shall be entered into AES Online within the following timeframes.

Incident or Workplace Hazard Type	Time from Incident Occurrence	
	Initial Notification	Complete Final Report
SIP	12 Hours	30 Days

Non-SIP	3 Working Days	30 Days

Incident Data Analysis and Proactive Use of RCA

a. The sPower Incident Management Program is expected to include a process to perform individual and multiple Incident and Workplace Hazard data analysis to detect and correct common trends indicating deficiencies in the Safety Management System and associated processes have the potential to cause fatalities and serious injuries.

b. sPower is expected to initiate proactive RCAs on common Incident and Workplace Hazard trends which would help to identify and correct deficiencies in sPower's Safety Management System and associated processes.

c. A sPower Incident Management Program must include appropriate trigger criteria for initiating RCAs proactively on common Incident and or Workplace Hazard trends. These trigger criteria may include, but are not limited to:

1. Recurrence of similar Incidents or Workplace Hazards or multiple Incidents associated with a specific activity/process within a specific period of time, and
2. Increases in Incident and Workplace Hazards rates including SIPs, LTIs, Recordable incidents, severity, etc.

sPower is expected to have a process for reviewing SIP-related safety alerts or monthly reports from Global EHS to assess if the same or similar conditions that contributed to the SIP events may be present, and if they are, to ensure that all steps either have or promptly will be taken to correct those conditions.

Program Administration

1. **Enforcement:** The sPower Incident Management Program will list applicable enforcement policies. The enforcement policies will describe how sPower will monitor the application of the Incident Management Program and the method for ensuring that people are held accountable for meeting the sPower safety-related performance expectations.

2. **Clearly Defined Roles and Responsibilities:** The Incident Management Program will clearly define the specific roles and responsibilities of each person involved in the Incident Management Program, and these will be assigned to people according to the organizational structure of sPower.

3. **Auditing:** The Incident Management Program shall be internally audited by the sPower according to sPower Internal EHS Audit Standard requirements and schedule.

4. **Training:** sPower must provide periodic training at least once every two years, or whenever the Incident Management Program is modified, to ensure that sPower People involved in the Incident Management Program have the knowledge and skills to perform their assigned responsibilities. sPower must maintain documented training records with each sPower Person's name and dates of training.

References:

This sPower Safety policy was developed using the following publications as the source of the requirements contained herein:

2. *International Labor Organization, Recording and Notification of Occupational Accidents and Disease, 1995.*

3. *Occupational Safety and Health Administration (OSHA) 29 CFR 1904.7, Accident / Incident Reporting and Investigation*

Safety Responsibilities

Safety Director

Managers shall ensure the well-being of employees by promoting a workplace that is conducive to occupational safety and health.

Safety Manager Responsibilities

The sPower Safety Manager is responsible for:

- Providing direction, coordination and safety oversight of all sPower activities. This includes all subcontractor personnel performing work on the site.
    i. Ensure communication, implementation, enforcement and maintenance of all sPower safety related policies, programs, and procedures. This includes all requirements specified in this OMEHASP.
    ii. Applying safety and occupational health laws, regulations, principles, theories, practices and procedures to advise on or resolve technical matters dealing with occupational safety and healthrequirements.
    iii. Implementing safety and occupational health practices and procedures to eliminate, mitigate or control potential hazards to a state as low as reasonably possible (ALARP).
    iv. Coordinating with sPower and O&M Management of on-site safety related issues. This includes notification of personnel safety training that is required to remain compliant with applicable health and safety regulations as well as sPower policies and procedures.
    v. Ensure all site incidents – accidents, injuries, near misses, and deficient conditions are reported, and investigations conducted in a timely fashion. Incident information shall be captured in the sPower EHS management database.
    vi. Recognizing and reinforcing safe work behaviors and "good-catch" events.
    vii. Being the initial point of contact for regulatory inspectors (OSHA) wishing to visit the site.
    viii. Ensuring that all safety metrics and statistics reporting

(such as weekly man- hour report) is completed and forwarded to the appropriate site and headquarters personnel.

ix. Conducting safety assessments and audits of work conditions and behaviors and advising sPower Site and Regional management on recommended enhancements to safe work methods and procedures.

x. Developing or implementing programs to reduce the frequency, severity, and cost of accidents and occupational illnesses.

xi. Analyzing or evaluating new and existing jobs, processes, products, or other systems for the possible existence of hazards and mitigation means for those hazards.

xii. Inspecting or surveying workplaces, processes, products, or other systems for compliance with established safety and occupational health policies or standards and to identify potential new hazards.

xiii. Ensuring sufficiently comprehensive site safety orientation of all new hires and visitors is conducted in accordance with sPower policy.

Safety Coordinator

The responsibilities of the Safety Coordinator are to:

- Ensure that workplace hazards are identified and evaluated.
- Conduct and document periodic safety inspections of facilities, jobsites, equipment and projects to identify unsafe conditions and practices.
- Conduct investigations of occupational incidents, accidents and injuries.
- Establish and/or review methods and procedures for correcting unsafe and unhealthy conditions and work practices.
- Ensure that Employees receive training programs on general and specific safety and health practices for the company and on each of their job assignments.
- Ensure that there is a procedure for communicating sPower safety and health rules and procedures to employees, in an understandable manner.
- Ensure compliance with safe and healthy work practices.
- Ensure that records on training, inspections, and corrective measures

are properly maintained, as required by this Injury and Illness Prevention Program and Federal and State Laws.

- Ensure that all employees are provided with appropriate personal protective equipment (PPE) and are trained on the proper use and maintenance of such equipment.
- Maintain Area/Job compliance with sPower safety policies.
- Ensure that all hazardous materials are properly labeled, stored and, as appropriate, identified for disposal.
- Ensuring sufficiently comprehensive site safety orientation of all new hires and visitors is conducted in accordance with sPower policy.
- Compile weekly & monthly reports in a timely manner.

Supervisors/Crew Leaders

Supervisors/Crew Leaders are responsible for establishing a positive safety attitude Supervisors/Crew Leaders will review the safety performance of their subordinates and bring about positive change when necessary.

The Supervisors/Crew Leaders are responsible for establishing and maintaining a safe work environment and safe work practices in accordance with company safety policies/procedures and state and federal regulations. Supervisors/Crew Leaders are responsible for ensuring personnel perform their tasks in a reliable manner, that they are not under the influence of any substance, legal or illegal, that may impair their ability to perform, and are not mentally or physically impaired from any cause that can adversely affect their ability to competently perform their duties.

Employees

Each employee is required to follow safety practices for personal protection, protection of fellow workers and protection of the public. Each employee shall accept safety as a personal responsibility and actively participate in the Safety and Health Program by developing safe working habits, working safely, reporting all incidents, injuries/near misses, and by reporting to the Supervisors/Crew Leaders hazardous working conditions and unsafe work practices.

Every employee is responsible for their own safety and the safety of others. Any employee that observes a situation that may result in an injury to themselves or others shall report the situation immediately and warn surrounding personnel in the area.

If an emergency condition or situation is reported, the employee receiving the report shall get the reporting person's name, location and nature of trouble.

sPower O&M Manager (Operations and Maintenance)

The O&M Manager has management authority and responsibility for all construction operations, including safety.

Responsibilities

The O&M Manager is responsible for:

- Recognizing and reinforcing safe work behaviors and "good-catch" events
- Assuring that contract documents and specifications describe and support the Project's safety missions and objectives;
- Monitoring the contractor and subcontractor selection process and adherence to established guidelines;
- Participating in contractor/subcontractor kick-off meetings;
- Safe Behavior Observations, at least one during each field visit. (Completed forms to be submitted to sPower Safety Manager)
- Conduct Two Person Inspection of Critical& High-Risk Activities
- Working with the sPower Safety Manager, Supervisors and lead personnel to develop and implement corrective action plans to correct deficiencies discovered during any Safety Audit or because of an incident or near-miss.
- Supporting project staff and cooperating with all designated personnel in completing corrective actions necessary to comply with this OMHASP.
- Participating in accident/incident investigations on high risk incidents.

Authority

The O&M Manager has the authority to:

- Verify all operations follow the requirements of this OMHASP and halt any activity which poses a potential hazard to personnel, property, or the environment;
- Suspend individuals from work activities and/or take any appropriate actions for infractions against this OMEHASP, work rules or statutory or permit requirements.

Working Alone

- Working alone is defined as work being carried out in an area where normal means of contact with another individual are not generally available, so that the potential risk of any existing hazard(s) are increased to an extent where extra precautions need to be taken.
- This may involve working in an isolated area, on or off-site, including local or regular work sites, either during or outside normal working hours.

Note: These situations applies to ALL employees and contractors involved in Working Alone activities at the facility.

- The use of a cellular phone or another form of direct reliable correspondence, shall be used to establish an effective means of communication between the lone employee and contact person.
- You should always check In with Control Room before starting work.

Working Alone is prohibited if performing the following activities:

- No Electrical Hot Work (Live)
- Working with or around hazardous or flammable systems.
- Performing Hot Work
- No Working at Heights that require a personal fall arrest system.
- No entries into confined spaces
- No use of respiratory protective equipment , other than dust mask for nuisance dust.
- Severe weather.
- Additional limitations can be based on work site analysis.

Safety Behavior Observations:

- O&M Supervisors shall conduct a minimum of 1 Safe Behavior Observation / week of work being performed to ensure compliance with safety policies, procedures and work rules.
- Safety Manager and O&M Managers will conduct a Safe Behavior Observation when visiting an O&M crew in the field.
- sPower Safety Coordinators will conduct a minimum of 1 Safe Behavior Observation per day.
- sPower Safe Behavior Observations are to be submitted to the sPower Safety Manager.
- Deficiencies found during an observation shall be addressed immediately by the person conducting the observation and if possible be corrected on the spot.
- If correction cannot be achieved immediately, an incident report will be generated for investigation and corrective actions.

How To Perform A Safe Behavior Observation (SBO)

- *The SBO can be completed while observing employees performing a SINGLE task. The SBO is NOT an all-day event.*
- *The average SBO takes only a few minutes.*
- *Not all sections on the card need to be addressed during your audit. Only sections*

that apply to the specific task that you're observing need to be addressed. For example, if you are observing an employee install PV modules, the section addressing EXCAVATIONS or HOT WORK do not apply to your task being observed, therefore no entry is required in this section.

- *Remember, this is a no name, no blame audit. We want to identify SAFE BEHAVIORS as well as AT RISK BEHAVIORS. This data will help us to identify trends and allow us to better focus our safety topics of discussion.*

Once you complete your audit, review it with the employee. Positive feedback on the SAFE BEHAVIORS are important. If AT RISK BEHAVIORS are observed, discuss them and suggest a corrective action. Document this in the COMMENTS SECTION of the form.

- *Managers / Supervisors shall perform at least 1 observation per week.*
- *Safety Professionals will perform 1 observation per day.*

See an example of a SBO for your review.

SAFE BEHAVIOR OBSERVATION

Observer's Name	**Barnhill**
Observer's Company	**sPower**
Date / Time	**7-20-18**
Company Observed	**XYZ**
Number of Employees	**3**
Specific Location	**ANTEX 2**

	Safe	At Risk		Safe	At Risk
Face/Eye PPE	2	1	Manual Lifting		
Foot PPE	3		Ladders	3	
Hand/Arm PPE	3		Scaffolds		
Head PPE	3		Access	3	
Hearing PPE			Aerial Lifts		
HI VIS Vest	3		Barricades/Signs	3	
Snake Chaps	3		Slip/Trip/Fall	3	
Mobile Equip.			Lifting/Rigging		
Electrical/GFCI			Confined Space		
Lockout/Tagout			Equipment/Tools	3	
Work Permits JSA / PTP	3		Housekeeping	3	
Excavations	2	1	Lighting		
Hot Work			Chemical		
Storage Area			Other		

COMMENTS:

- Three employees working in trench. 1 employee did not have their safety glasses.
- 1 employee stepped over an open trench.

AT RISK items were discussed and corrected on the spot.

Safety Walks:

The purpose of this document is to set out guidelines for the consistent completion of quality Safety Walks and to provide advice on the various elements of the Safety Walk process. This document will be used to develop Safety Walk training programs and/or as a supplementary training document.

A single page quick guide for quality Safety Walks is included as Attachment 2 to this document.

Expectations

The basic expectations for leaders conducting Safety Walks are:

- Lead by example emulating safe behaviors and complying with all safety program requirements.
- Every Safety Walk must have interaction with people focusing on behaviors, hazard awareness and work processes.
- Every Safety Walk needs to include positive reinforcement with people when positive safety behaviors are observed.
- Every safety shortfall observed during a Safety Walk needs to be discussed with the people performing the work task during the Safety Walk.
- Unsafe situations must be taken care of immediately or have temporary measures put in place while a final fix to the issue is developed.
- Every Safety Walk must be documented.
- Any areas of improvement identified during a Safety Walk must be addressed, acted upon and tracked until they are closed.

Safety Walks – General

Every person is surrounded by some level of risk each moment of the day whether it is sitting at a desk, walking in a hallway, climbing a pole, performing planned pump maintenance, restoring a network following a storm or finding a tube leak during a forced outage. Our goal is to have every person that works for us identify all of the risks and hazards before and during their work and take the appropriate steps to mitigate them. The more hazards that we all can identify and eliminate then the lower the risk for our people performing the work. Safety Walks are an opportunity to heighten the risk awareness of our people, identify Workplace Hazards and start correcting them so that all of our people go home to their families at the end of their workday.

sPower has safety programs, policies and procedures that if followed keep our people safe. Likewise, each of our locations has equipment and infrastructure that if used appropriately will not cause harm to our people. Safety Walks help us assess, reinforce and, where needed, alter the human element to ensure that people follow the safety documentation and appropriately use the correct tools.

People do not change their behaviors simply because leaders either want or tell people that they must change. Leaders must set clear expectations for their people, ensure that the tools and infrastructure are available to meet the expectations, frequently interact and monitor to ensure those expectations are met and provide real-time feedback to people both when meeting and falling

short of the expectations. Safety Walks are leadership's opportunity to frequently interact and provide feedback to their people.

Leaders need to view Safety Walks as mentoring opportunities. Safety Walks give leaders time to talk directly with people performing work in a one-on-one or small group environment, explain and reinforce our safety beliefs and goals, and help people grow.

The focus of Safety Walks needs to turn from quantity to quality. Leaders need to meet the quantity goals that are set but ensure that they meet the intent of the program in support of a sustainable safety culture where people always make the safe choices.

In building a world-class safety culture every leader needs to consciously think about what their actions demonstrate and what behaviors and acts are rewarded and tolerated. During a Safety Walk what a leader says, what they don't say and how they say it has a tremendous impact on the people

performing the work. Providing positive recognition reinforces the safe behaviors and acts that need to

continue. When an unsafe situation is observed but the leader does not discuss it with the team then people can assume that the behavior is tolerated or actually approved and will continue to repeat it. Finally, the tone of the conversation and how questions are phrased will either build trust and help develop a strong safety culture or they can erode both; accusatory tone and questions must be avoided. Anyone can conduct a Safety Walk. If you are uncomfortable with your technical knowledge and understanding of the work or workplace safety in general, perform Safety Walks with a person that has the appropriate skills. People that are not technical experts bring a different and worthwhile perspective.

Non- technical experts bring an objectivity and view that is different from the people that are around the work and hazards each day. This fresh perspective can identify issues that others may not see. What is important is being comfortable in raising and asking questions in a proper manner, the Safety Walk process in general and believing that working safely is the most critical part of our daily lives.

Elements of a Quality Safety Walk

Overview

A Quality Safety Walk has the following key elements that are more fully described below and depicted in the flow chart in Attachment 1:

- Schedule the Safety Walk.
- Prepare for, go to the job location and observe the work task.
- Engage in open dialogue with the people performing work.
- Reach agreement on safe work behaviors.

- Document the Safety Walk.
- Follow-up on any items identified in the Safety Walk and share the findings.

Schedule Safety Walks

Until we are at a point in our culture where safety is fully embedded into all of our work processes and our people think about safety in all aspects of their work, we will need to set goals to conduct Safety Walks on a frequent basis. Safety Walks need to be self-scheduled by each individual leader and completed on a frequency that meets the local, regional and overall corporate goals for completion.

Self-Schedule

Each leader manages their own time and balances priorities. Adequate time in each of our schedules needs to be set aside to complete quality Safety Walks with the people that work with us. Self-schedule by setting aside the time needed to perform Safety Walks where the sole focus of the activity is interaction with people regarding safety.

Safety Walks should be unannounced as much as possible. The intent of the observation element of the Safety Walk is to see people's natural tendencies when performing work. If it is announced that a Safety Walk is being performed, then people may alter their natural tendencies and the observation process and feedback elements will be flawed preventing an opportunity to alter behaviors and giving leaders a false sense of the safety culture. The unintended result of such a missed opportunity and misperception could lead to people getting hurt.

Consider going out at different times to assess and interact with people performing non-routine tasks or during times that leadership is not normally present, i.e., going out on a night shift, during emergency repairs and during key outage work will demonstrate leadership commitment and assess workplace behaviors when the conditions can be the most hazardous.

Discuss and coordinate your Safety Walk plans with other leadership team members. Leaders can often wait until the end of the month to perform Safety Walks and this can lead to multiple Safety Walks on the same job and work team. By coordinating the leadership team's efforts, Safety Walks on different work activities can be done so that more people and activities are involved in Safety Walks. More importantly, it reduces the frustration a work crew can have by being observed multiple times on a single day. This in itself degrades the Safety Walk process because people will believe that Safety Walks are only being performed to meet a goal and not for their intended purpose of helping to keep people safe.

Finally, if you have a non-technical person that wants or needs to be involved in a Safety Walk, schedule the time with them and ensure that they are prepared for the activity. This may include briefing them on the activity, the typical hazards involved in the work and the equipment required to safely perform the

Safety Walk. Limit the number of people performing the Safety Walk to two as too many people can make the people performing the work nervous which can negatively impact the discussions that need to takeplace.

Work and People to Observe During Safety Walks

Leadership has a tendency to focus their Safety Walks on maintenance activities only. It is suggested that the type of work activities observed be varied and that the focus include operations and maintenance activities as well as some level of administrative office work. Observing and interacting with operators during tasks

such as routine operational rounds, chemical off-loading, material handling operations, routine system checks, meter reading, etc., involves many more people and helps to improve overall workplace safety culture and all work processes.

Contractors are a key stakeholder and integral part of our workforce. Performing Safety Walks on contractor's activities will help instill safety expectations and safety beliefs as well as help our partners safely complete their work. Some business and regions have set goals around the number of Safety Walks needed to be done with contractors. Consult local and regional requirements for these goals.

At times it can be difficult to understand and identify what work may be going on in your area, plant and/or region. Tools that can be used to identify where to perform a Safety Walk include:

- Logbooks
- Morning and/or shift turn-overmeetings
- Talk with the control room, other operators and/orschedulers
- Lock-Out/Tag-Out (LOTO)log
- Call the dispatcher
- Other internal planningmeetings

Duration of a Safety Walk

There is no advice provided on the exact length of time needed to complete a quality Safety Walk. Each person must dedicate the appropriate time needed to observe, have engaging two-way discussions, complete the required documentation and perform any needed follow-up. The key parts are observation and engagement and these, when done effectively, will take time. Do not rush a Safety Walk. Performing a rushed or abbreviated Safety Walk and not dedicating the time to quality interaction and observation will degrade the entire process. Rushing may cause leaders to miss out on the opportunity for recognition or overlook Workplace Hazards and will give the impression to the work team that Safety Walks are not important.

Prepare, Go Out and Observe

Prior to engaging with people during a Safety Walk leader must prepare themselves by understanding the potential hazards involved in the work activity and then observe the workers while they are performing the work.

Lead by Example

In all aspects of work, leaders must lead by example and exemplify the same safety standards that are required of their workforce. During Safety Walk leaders must be acutely aware of the safety rules and requirements and must follow all safe work practices, procedures and programs. Workers will replicate the behaviors and attitudes that are displayed by leaders and they may latch onto any apparent shortfalls and use them as examples. When leaders do not meet the expectations that they set for their people there may be a loss of trust and a build-up of resentment and cynicism. Our goal is to have a strong workplace safety culture where workers step in and correct their peers and leaders when they identify any unsafe behaviors.

Prior to going out and performing a Safety Walk the leader must understand and

properly use the appropriate personal protective equipment (PPE). The correct PPE will include the basic PPE required for all work at the business along with any additional equipment needed to safely complete the job which should be indicated on the safety documents. Remember that to use the needed PPE each person must be appropriately trained and qualified in its use.

Safety Document Review

Where possible, prior to going to where the work is conducted the safety documentation should be reviewed (some businesses have the documentation located at the point of work and the documents would need to be reviewed later in the Safety Walk process with the work team). Items such as the LOTO, job safety analysis (JSA), safe work procedures and pre-job briefing (PJB) will provide insight on the risks and hazards associated with the work activities. During the review assess the quality of each document for items that include the identification of hazards and the mitigation methods used to make the system and equipment safe for performing the work.

Discuss the safety documents and any other work that may be going on in the area with the Controlling Authority. Because environmental conditions and other work in the area (above, below and around) can have an impact on the safety of

the people performing the work it needs to be considered in the Safety Walk. If any issues are discovered with the documents, make the Controlling Authority aware of them immediately.

Where applicable due to local safety rules for the job task, follow the relevant

procedures to sign and/or lock onto the appropriate safety documents such as the LOTO, JSA and/or Confined Space Permit.

Needed Safety Walk Documentation

People react differently when notes are being taken or when Safety Walk documents are completed during a Safety Walk. In some cases, it can be a distraction and will inhibit open conversation because the sight of a clipboard can make people nervous. Additionally, the act of taking notes or completing a form reduces the concentration needed for an interactive discussion. Local leaders need to understand how their people react to and are impacted by such activities. If unsure, try it with and without paperwork to identify which process fosters the best interaction and then decide how to conduct Safety Walks in the future based on those interactions.

Observation

Observation of the work team prior to approaching them for a discussion is key

element of the Safety Walk process. Observation from a distance allows a leader to assess the normal work behaviors of people while there in a potentially lower stress environment compared to only having a discussion with a leader.

The duration of the observation is completely dependent on the leader performing the Safety Walk. It needs to be of adequate duration to observe all of the actions, behaviors and environmental and other work going on in the area. However, the leader should not wait too long to approach the work team after he is noticed because waiting too long will make the work team uncomfortable and quite often change their behaviors and possibly stop them from working.
Observe the work team for items that include:

- The actions and behaviors of people performing the work.
- PPE that is in use or should be in use.
- Positioning of people and proximity to hazards.
- The working position of the people and any ergonomic considerations.
- How tools and equipment are being used and, if applicable, how they are staged.
- The type and condition of the tools that are being used or should be used.
- Adherence to safety rules, safe work procedures and the safety documents.
- Based on the review of the safety documents, assess if the job being completed has expanded beyond the boundaries and scope of the planned work.
- How the normal, ever-present and mundane risks and hazards are mitigated.

Observe the job area for items that include:

- The orderliness and housekeeping of the work area.

- The condition of general safety including environmental conditions and potential impact from other work that is going on in thearea.
- Adequacy of lighting.
- Level of noise in the area.
- Protection of people that may pass close by to thework.

Situations that Pose Imminent Danger

If a situation that poses imminent danger is discovered during any part of the Safety Walk the work must be immediately stopped. A discussion on the situation needs to take place with the work team along with any other people needed in the discussions such as the Controlling Authority, local leaders and/or contractor supervisors. After stop work authority is employed the situation can be used as a learning and mentoring opportunity.

Before the work can continue either the observation of the task being dangerous

needs to be disproved or the situation needs to be made safe. Both permanent and temporary measures to make the situation safe need to be considered and employed.

Engage

Every Safety Walk must have engagement with people as Safety Walks are about interaction, mentoring and showing leadership commitment to safety with the overall goal of keeping people safe. A quality Safety Walk will always include an interactive discussion with the people performing work along with some level of positive reinforcement for safe acts and behaviors and redirection for behaviors that need to be improved. The actions that leaders demonstrate and the behaviors and acts that leaders reward and tolerate will drive the culture of the business.

Approach the Work Team

Following the observation portion of the Safety Walk the leader needs to approach the work team. Choose an appropriate break in work activity before approaching the work team and engaging in conversation. Don't engage during a part of the work that could cause a distraction, lead to people losing focus on the work and cause an incident.

While approaching the work team leaders need to observe behaviors, reactions and body language. Quite often if a person is doing something that they know is incorrect they will make quick and noticeable adjustments such as put their safety glasses on or put away a screwdriver that was being used as a chisel. Do not
over-react if actions like this are observed – make a mental note to bring them up in a constructive manner during the discussion.

When in range ask the team to stop for a moment to have a discussion. If the people on the work team do not know you, introduce yourself. Let the whole work team know that you are performing a Safety Walk and that you are there to help keep them and the people around them safe and to assess the adequacy of the work procedures and processes. The leader needs to let the work team know that he expects the conversation to be in two directions and needs to understand the work team's ideas on how to make the work that we do safer.

Discussion and Questions

Safety Walks must have interactive discussion with the work team at the point of work. The discussion will include questions from the leader to the people

performing work. It is important to frame the questions in an open-ended manner (questions that cannot be answered with a “yes” or “no”) and in a way that does not intimidate or make the people feel guarded or otherwise impede the conversation. Leaders need to be aware of the tone of the conversation and questions and make sure that they are not accusatory which could also impede the Safety Walk process.
A good question to always start off with is, “can you tell me about the job that you are performing”. This ensures that the leader and work team all understand the scope of the work that is being completed. While the answer is being explained think about the safety documents that were reviewed to assess if the work being done is within the scope of the planned work.

Other good open-ended questions that can be asked include:

- Can you tell me about the risks and hazards of the job that you are doing?
- Could you explain to me the single biggest risk of the job that you are performing?
- What has been done to mitigate the risks and hazards of the job?
- Can you tell me about any special precautions or work procedures that need to be followed to keep you, your team and the people around you safe?
- Can you think of any ways that this job can be conducted in a more safe manner?

Questions that begin with “why” can be intimidating to some people. It is important for leaders to understand how their people react to questions and how those questions are asked. Alternative means to start off “why” questions include:

- Can you tell me about…?
- Did you consider…
- What other methods can you think of…

If a situation appears to be unsafe, or could be done in a safer manner, ask questions related to that specific situation. Similar to using the “5-why” technique, continue to ask questions that will lead the work team to either identify a safety shortfall and potential means to overcome it or provide adequate reasoning as to why the situation is safe.

Recall the observations that you made from afar and when approaching the work team and ask open-ended questions related to those observations. Perceptions regarding acts and behaviors made from observation and through discussion can often lead to identification of a latent root causes that include:

- Poorly written processes and procedures that leave too much room for interpretation.
- Shortfalls in training programs including failure to provide training.
- Reward systems and leadership requests that are contradictory to safety

requirements.
- Failure to provide appropriate tools and equipment.

The outcome of an effective line of questioning can lead to both positive reinforcement and redirection/correction. When leaders perform their Safety Walks they should attempt to end different series of questioning with both of these two outcomes in mind for the purposes of culture change and mentoring.

Positive Reinforcement

Positive reinforcement of safe behaviors is an important tool in every leader's arsenal. People will repeat what they are rewarded and recognized for and positive reinforcement will motivate individuals and teams to continue with the efforts that leaders notice and outwardly identify as positive. Because leaders are interacting to change culture there should be more positive feedback during a

Safety Walk than redirection or correction in most cases. Starting off the conversation with the positive, sincere and genuine feedback, based on observations, and showing that you truly care about the work team's safety and well-being will also lower people's defenses and allow for a more open dialogue.

Leaders can find parts of the job to positively reinforce on almost all Safety Walks. If not, there are other issues that need to be investigated and addressed. Areas for positive reinforcement can include:

Proper use of the needed PPE especially those beyond the basic PPE.

- Proper positioning of people while performing work.
- Establishing and following permit requirements.
- Understanding the hazards of the work that is being performed and how those hazards have been mitigated (including the routine and mundane risks).
- Generating and following a high-quality and thorough JSA and/or PJB (In some cases positive reinforcement will be used on the portions of the JSA or PJB that are documented and adhered to well and redirection will be provided for other sections).
- Other positive acts and behaviors identified during observation and through conversation.

Redirection and Areas Needing Improvement

During Safety Walks leaders will identify that improvements in behaviors, actions, programs, processes and other work practices are needed. Some of these will be more subtle such as areas for continuous improvement and others will be more blatant and obvious overall shortfalls. Observations may show that people are not following safe work practices or using the appropriate

equipment, however, this is not always due to personal performance. The shortfalls may be due to poorly written or understood programs, poorly developed or communicated processes, poor or non-existent training or failure to provide appropriate equipment. Leaders need to ask questions along these lines to find out if the issues are related to the observed people's behavior or if there are failures in the processes or in certain elements of leadership. Feedback for actions that need to be improved should, as much as possible, be aimed at systems and process. Personal performance issues will need correction in cases where people's actions are not meeting established expectations, and when these happen, frank straightforward feedback needs to be provided. Do not blame or initiate personal attacks as these will inhibit the conversation and will not alter behavior.

Telling people what they did incorrectly and/or that they must do something different because a rule or leader "says so" does not lead to sustainable systemic

change. People are much more prone to changing behaviors when they understand the reason for the change and how the change impacts them personally. People want to know "what is in it for them". An area that does work in most, if not all cultures, is explaining how continued following of the practice that is an issue can impact personal health and safety and consequentially on that person's family, friends and teammates. The heart and emotions, not just analytical thinking with the brain, need to be engaged for lasting change.

When areas of safety improvement are identified, it is best for the leaders to ask open-ended questions in regard to the issue in order to engage people's critical thinking instead of telling them what the issue is and what they must do. The intent of the questioning is to get people to identify the safety shortfall, how it needs to be overcome and the reason why it is important (the consequences to the person, teammates and the impact outside of work for not meeting expectations). Taking a tact such as this builds ownership of the issue at the personal level, buy-in for the change and sustainable positive culture shift.

When unsafe situations are observed leaders should follow the following:

- Ask questions that get the work team to identify the safety issue(s).
- Discuss the potential consequences to the work team, their teammates, public and families.
- Get the work team to identify means to perform the work or tasks in a safer manner.
- Reach agreement with the entire work team to do it the safe way that was discussed for this task and similar tasks.

The following is an example of two different methods to address the issue with the work team:

Scenario – You are performing a Safety Walk where the work team is working in a high noise area and notice that the work team is not using any hearing protection. The safety rules are clear about hearing protection, people have all been trained on hearing conservation and there is signage indicating that hearing protection is required.
Straight Forward Issue Identification (less sustainable) – After approaching and letting the work team know what you are doing you say, "I notice that you are not wearing hearing protection. As you all know our safety rules require the use of hearing protection in this area and you need to follow the rules. Let's stop and put our hearing protection on now."
This first method gets the message across but does not indicate why it is personally important for the workers and does not generate a critical thinking process. People will rely on leadership and others to keep them safe rather than think through situations on their own.

Questioning Approach to engage critical thinking and buy-in (more sustainable) - *After approaching and letting the work team know what you are doing you ask about the job that is being performed. After the job is explained ask, "can you tell me about some of the hazards from the surroundings that may impact you while you are working?" Noise levels may come out at the beginning of the conversation or it can take some further questioning on your part to steer to the work team in that direction. If noise levels do not come up in a reasonable period of time ask, "can you tell me how noise in our work environments impacts our health and safety?" Have a quick conversation about how lost hearing cannot be recovered and that we need to protect our hearing at work and during our home life. Continue the discussion about the activity that is being done and how we can identify when hearing protection needs to be used. Get the work team to say that they need to be using their hearing protection in this activity and similar ones in the future.*

Where significant shortfalls are identified the leader can and should take on a more stern tone to correct the shortfall especially when it comes to repeat behavioral shortfalls or failures in well-established expectations. Leaders owe it to their people to have these difficult conversations because leaders want the people that are working for and around them to go home healthy and safe at the end of the workday.

Every safety shortfall identified during observation and discussion needs to be raised and discussed during the Safety Walk. Finally, noticing an issue and including it in the Safety Walk document but not discussing it with the work team during the Safety Walk will degrade the trust between the work team and leadership and is a lost mentoring opportunity.

Two Way Conversation

Safety Walks are two-way conversations - an opportunity for leaders to talk "with" their people. Safety Walks are conversations with people at the point of work with open and honest dialogue intended to create and sustain a safe workplace.

In order to give feedback leaders must also be open and willing to receive feedback from the work team. Listening to the feedback is essential to the Safety Walk process and to building trust. Listening is not just waiting for your turn to talk; leaders must take in and fully understand what the people are saying. Non- accusatory, clarifying questions should be asked if the intent of what is being said is not understood; asking for examples can assist in understanding.

Until there is a culture of openness, and people trust and believe that leaders will act on concerns and questions that are raised, there may not be many questions from the work team involved in the Safety Walk. If you do not get questions, let the work team knows that you need to hear their concerns and ask questions such as:

- What can you and the leadership team does to help with safety?
- What other tools, equipment and/or infrastructure are needed to safely complete the work?
- What parts of the safe work programs, procedures and processes does the work team believe needs to be improved?
- What other suggestions does the work team have to improve safety at the location and/or perhaps the company in general?

Leaders will need to separate what a person says from who the person is. Leaders cannot let their feelings and perceptions about a person or that person's personality cloud the message in the feedback. Leaders cannot over-react to the feedback that is being provided. Listen, take in, consider the emotions and potential stress that the person may be under and try to calmly understand and address the issues.

Leaders do not know everything regarding all aspects of safe work practices and there may be questions and concerns raised that the leader cannot confidently answer during the Safety Walk. Leaders cannot be over-confident and if they cannot answer with certainty, tell the people that you are not able to address the question at this time but that you will get back with them with the answer. When in doubt, err on the conservative side of safety and mitigate the possible risk with a temporary solution. Other alternatives include:

- Bringing other people (EHS people, other leaders, technical experts) that may be able to address the question into the Safety Walk discussion.
- Take the question to the safety committee.
- Follow up with other people with the relevant knowledge after the Safety Walk.

However, the individual leader decides to address questions and concerns that cannot be answered during the Safety Walk, there must be communication back with the people that raised the questions. Leaving questions open will degrade trust, perception of leadership commitment to safety and the entire Safety Walk process.

Reinforcement of Key Focus Areas

Safety Walks are a key opportunity to not only discuss safety of the job being conducted but they can be used to reinforce local safety needs such as trends in behaviors and/or incidents as well as regional and corporate issues such as the four shared safety beliefs. Stop work authority and ensuring that each person, AES and contractor alike, understands their right and obligation to stop unsafe work is a good topic to reinforce.

Safety Walks can be used to help address local safety issues. As an example, if the business is seeing an incident (first aids, recordables, LTIs) or behavioral (previous Safety Walks conducted) trend related to hand injuries then the local leadership team can make a decision to require an assessment for hand protection during each Safety Walk.

Keeping the Discussion Focused on Safety

At times the discussion during a Safety Walk can veer away from safety and turn into a discussion on other work-related activities. Don't let the Safety Walk be turned into a discussion on outage schedule, unit start-up issues or other work- related activities. Keep the discussions during the Safety Walk focused on safety but let the people know that you can address these other questions with them following the safety conversation.

Reach Agreement

To help instill an ongoing commitment to working safely at the end of each Safety Walk it is good to get a verbal and even handshake agreement from each member of the work team to make any agreed upon changes that were identified and discussed and to always work safely. There is a psychological impact for many people when making this type of informal agreement. Leaders should consider other methods for getting commitment to safety that fit well in the local culture. Prior to leaving, leaders need to thank the people for their time and their commitment to working safely.

Document

Leaders need to document each Safety Walk on a form that is acceptable to the business. The form is then submitted for follow-up by local leadership.

What gets documented on a Safety Walk form should never be a surprise to the work team. Leaders must discuss the positive observations and areas for improvement with the people performing work.

Trending of the observations from Safety Walks can be done to measure the impact of safety initiatives and to identify areas of needed improvement or success. Trends can lead a business to shortfalls in process, procedures, beliefs and behaviors that all can be acted upon. Increasing trends of positive observations can be celebrated with the whole business to visibly show the success of the entire team. Various Safety Walk forms facilitate the collection and analysis of different trending information and each business should consider which ones meet their needs.

Follow-Up and Share

Follow-up and sharing of Safety Walk findings and observations is essential for both addressing safety shortfalls and for celebrating success. Both addressing shortfalls and celebration of successes are needed to establish and maintain a world class safety culture and incident free workplace.

Follow-Up Items That Must Be Addressed

Every area for improvement identified in a Safety Walk needs to be followed up on and closed out. Each business is required to have a process to track Safety Walk items until closure and the person completing the Safety Walk needs to ensure that the items identified are included in the appropriate tracking tool and that they are appropriately being acted upon in a timely manner.

There is typically one person at a business that it responsible for receiving all Safety Walk documents, consolidating the findings, putting them in the tracking systems and providing a monthly or more frequent status.

Tools that can be used to track Safety Walking finds to closure include:

- A tracking list for smaller “punch list” typeitems.
- The businesses work order/computerized maintenance management system for condition-based items that are assigned to anasset.
- Bringing any safety program, policy and process-based findings to business leadership or business safety committee meetings for discussion and action.

- The businesses Safety Management System (SMS) Action Plan for safety process, program and other initiative-basedwork.

Sharing of Lessons Learned

Lessons learned from Safety Walks can be shared in a number of manners. The most effective way to deliver lessons learned may be to utilize a combination of methods and will vary on the priority and type of lessons to be shared. Leaders need to understand their people, how messages are effectively received and the speed of message delivery when determining the method of sharing lessons learned.

Examples of means for sharing lessons learned include:

- Plant communication meetings (monthly or quarterly "all-hands" meetings).
- Ad hoc small or large group meetings called specifically for the topic.
- Daily planning and/or shift turnover meetings.
- Toolbox talks.
- Including details in the monthly safety meeting agenda and having each group discuss it.
- Development of a Near Miss report if applicable for the Event identified.

It is considered a best practice to post Safety Walk documents in central meeting places each month for all people to review. Posting them during critical operational times such as outages in a near "real time" fashion for all people to review can also assist in raising safety awareness and spreading of lessons learned.

Lessons learned that a leader believes deserves to be shared outside of the business can be shared by the leader, safety coordinator or safety champion at the local business contacting their regional or corporate EHS leaders and explaining the subject. When there is a full plan or initiative involved the initiative needs to be put into the business' SMS Action Plan.

Administrative Locations

Performing Safety Walks in strictly administrative locations may be challenging due to the nature of the work typically performed in an office. That being said, there are safe and unsafe behaviors and conditions in office environments from many activities such as: workstation positioning, changing light bulbs, use and placement of extension cords, installation of electrical appliances, and handling and moving office materials and items.

Safety walks that engage office people and enhance their awareness and behaviors need to be conducted. Administrative office Safety Walks need to be geared to the types of risks and hazards that are present at the location. As

in all locations, leaders need to be adequately prepared to conduct Safety Walks that promote safe working behaviors because the principles are the same and Safety Walks will result in fewer incidents.

Recognition and Accountability

Leaders need to view Safety Walks as a mentoring opportunity where leaders are observing and interacting with people at the point of work to "catch" the work team doing their jobs safely and to provide positive reinforcement. There will also be instances where there are areas that need significant improvement and there may need to be some level of accountability.

Positive Recognition

As discussed above, positive reinforcement is an effective tool to be used to permanently alter people's behaviors. Leaders need to know and understand their people and what drives and motivates them.

Individuals will have different motivators and different methods will need to be used to make sustainable improvements. Not all recognition needs to be material; in some cases, recognition and reward can be a pat on the back, public recognition or providing a new challenge or project.

Finally, what rewards and motivates one person may actually de-motivate another. An example of this is where a leader wants to reward a person by giving them the opportunity to present something positive in front of a large group, but this actually causes the person to be frightened or freeze. He may not repeat his positive actions in order to avoid the recognition he received.

Accountability & Training

There may be times during a Safety Walk when safety infractions are observed and there needs to be some level of accountability or discipline. The level of accountability or discipline needs to be such that it permanently improves the behavior in question. Leaders need to use their judgment and local policies to determine what can be dealt with immediately during the safety walk, during one-on-one conversation or through the local accountability process. There needs to be some level of consistency with accountability and leaders need to refer to their local programs.

The person that conducts a Safety Walk must be well trained and knowledgeable in the Safety Walk process and confident in their ability to have open and honest conversations about the importance of safety.

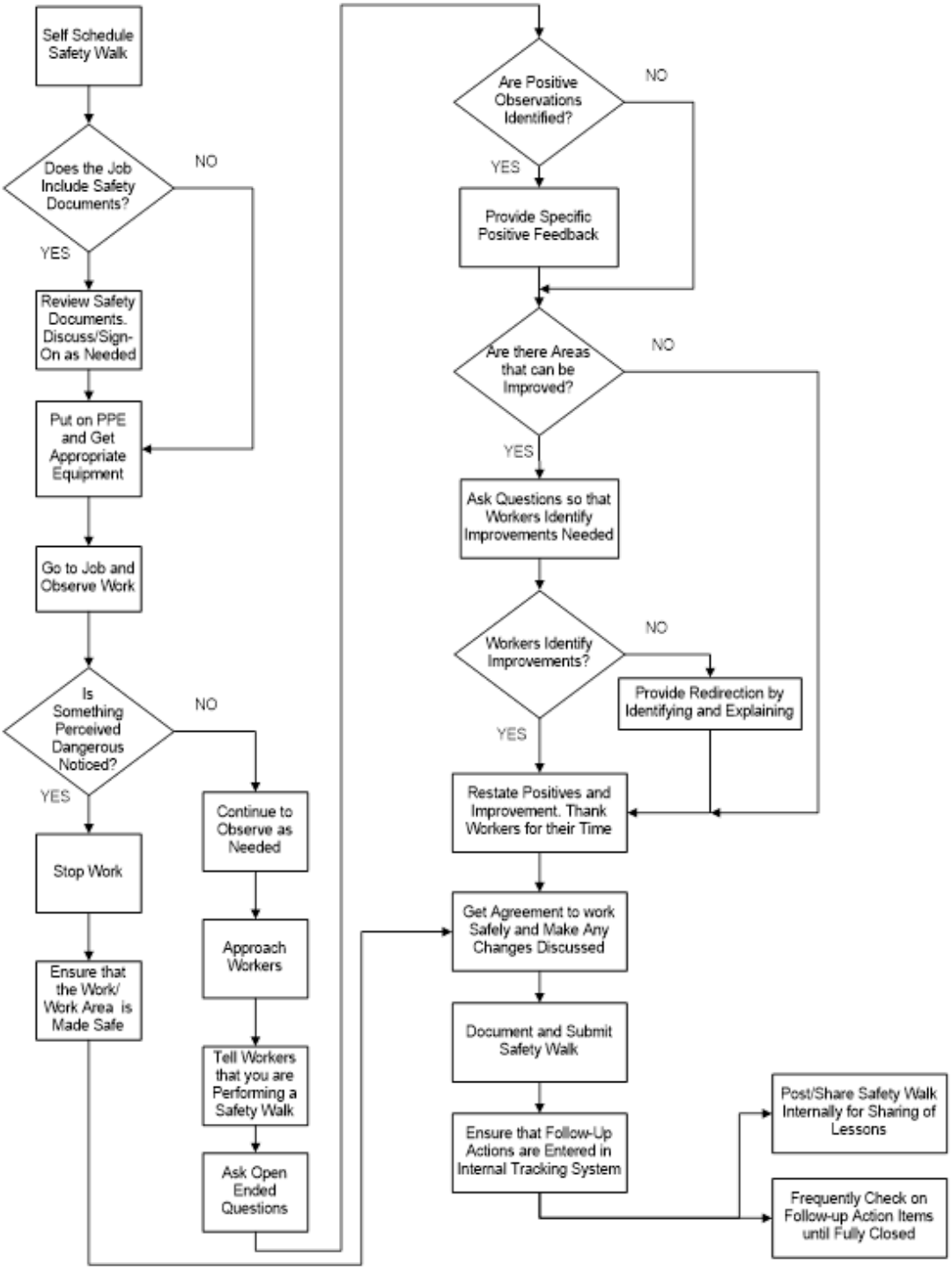
Self-Assessment and Auditing

The requirements for auditing Safety walk processes are included in the AES Global Safety Standard for Proactive Safety, AES-STD-49.

Leaders should also take time to review the Safety Walks performed by their direct reports. This can be completed by reviewing Safety Walk forms on a pre- determined frequency and/or performing a Safety Walk with their people.

Leaders also need to agree upon individual Safety Walk goals for their people and document their requirements in People View. The status towards reaching these goals needs to be discussed in quarterly, mid-year and annual reviews.

Attachment 1 – Quality Safety Walk Flow Process



Hazard Communication

General Requirements

1. Read all warning labels and Safety Data Sheet (SDS) before using any chemicals. SDS documents contain personal protective equipment and safety information and are available from your foreman.
2. Hazardous materials will be handled in accordance with the SDS and label. If personal protective equipment is required, use it.
3. Mixing of chemicals is prohibited at all times unless required by the label. Before you mix, review all SDS documents.
4. Emergency drenching facilities (i.e. safety shower and/or eyewash stations) must be provided in areas of hazardous chemical use. Locate the nearest eyewash or safety shower prior to working with or around hazardous chemicals.
5. In addition to wear appropriate gloves, always wash your hands thoroughly after handling chemicals and before eating or smoking.
6. Never use solvents for hand cleaning. Use the non-toxic hand cleaners provided.
7. Store all hazardous materials properly (i.e. in flammable storage cabinets, designated locations, etc.).
8. Use chemicals only in well-ventilated areas.
9. When using secondary containers, ensure that they are labeled as to their contents and hazards, and are constructed out of material appropriate for the chemical.
10. Cutting and welding on stainless steel or galvanized metal; and work with lead, asbestos, cadmium and other toxic compounds require special precautions. Do not attempt to perform this work without special equipment and training. Contact your Division Superintendent or the Corporate Safety Department prior to performing this work.
11. Coordinate disposal of hazardous materials, including non-electronic ballasts, fluorescent light tubes and bulbs, high intensity discharge, metal halide, sodium, and neon bulbs, and chemical containers (i.e. PVC cement, etc.) with the building owner or your division Support Center/Warehouse Manager.
12. Hazardous material secondary containment:
    a. All hydrocarbon (solvent) based liquids contained in drums or 5-gallon metal safety cans (gasoline, diesel, miscellaneous oils, paints/epoxies, etc.) shall be placed in secondary containment, away from storm drain inlets, while in storage or in dispensing areas in order to prevent spills onsite.
    b. Secondary containment should handle at least 110 percent of the capacity of the largest container.
    c. During wet weather, containment areas subject to rain will be required to be protected from accumulation of water through the use of tarps, roofs, or relocation to non-rain impacted areas. Note: All water that is collected within the containment will be free of hazardous materials before discharge onsite. If the material cannot be verified “hazard free”, the use of a hazardous waste hauler/recycler is required. Contact your Division Superintendent or the Safety Department for more information on hazardous waste disposal.
13. Contact your Safety Department for any hazardous waste disposal.

Hazard Communication/Right-to-Know (RTK) Program

The sPower Hazard Communication/Right-to-Know (HazCom/RTK) Program is administered by the Safety Department. The Safety Department is responsible for supporting Company personnel with the responsibilities listed below, and for verifying that sPower facilities and jobsites:

1. Maintain a list of hazardous chemicals that are on each jobsite.
2. Retain Safety Data Sheets (SDS) on substances that contain hazardous chemicals.
3. Explain the SDS to employees as part of the ongoing safety training. Employees have a right to receive data contained on the sheets. Employees will not be discharged or discriminated against for exercising their rights in this regard.
4. Provide information and training to all employees relative to the Hazard Communication Regulation and about the known potential exposure to hazardous chemicals.
5. Maintain records of employee accidental over-exposure to hazardous chemicals.
6. Make available to, and share with, other contractors or subcontractors SDS information on hazardous chemicals on the jobsite.
7. Training will be conducted, and documented, at safety meetings and will provide at least the following:
    a. Information on which hazardous chemicals are in the workarea.
    b. How to read, interpret and comply with information on SDS and labels.
    c. Signature verification of specific training on highly toxic substances.

For operations in the State of California, workplace warnings are required for any planned use of chemicals known to the State of California as causing cancer, birth defects, or other reproductive harm, in accordance with the Safe Drinking Water and Toxic Enforcement Act of 1986 (known as Proposition 65). Warnings must be posted in a conspicuous place and under conditions that make it likely to be read and understood by employees and other individuals prior to the exposure for which the warnings is given. Examples:

“WARNING: This area contains a chemical known to the State of California to cause cancer.” ‘WARNING: This area contains a chemical known to the State of California to cause birth defects or other reproductive harm.”

Safety Data Sheets (SDSs)

SDS is the abbreviation used to identify a Safety Data Sheet (formerly known as Material Safety Data Sheets or MSDS). A SDS is a document that supplies information about a particular hazardous chemical.

The SDS must provide information on the physical and chemical characteristics of the hazardous chemical; known acute and chronic health effects and related health information; exposure limits; whether the chemical is considered to be a carcinogen by NTP, IARC, or OSHA; precautionary measures; emergency and first aid procedures; and the identification of the organization responsible for preparing the sheets, including name, address, and telephone number.

.1 Safety Data Sheets (SDSs) for all hazardous chemicals will be obtained and maintained in all company trucks that are engaged in O&M activity.

.2 SDSs are managed through the use of a web based SDS Management database system (e.g., SDS Online). An alternate means (e.g., backup CD or other) to access this information shall be available at

each location.

.3 sPower employees shall be trained on and know how to access SDSs.

.4 Prior to use of a product at the station, SDSs shall be reviewed and approved by the Safety Manager and/or Environmental Specialist

Safety Data Sheet (SDS) 16 Sections

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. As of June 1, 2015, the HCS will require new SDSs to be in a uniform GHS standardized format, and include the section numbers, the headings, and associated information under the 16 headings below:

Section 1, Identification product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients chemical ingredients; trade secret claims.

Section 4, First-aid measures important symptoms/ effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures emergency procedures; protective equipment; containment methods and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

Section 8, Exposure controls/personal protection OSHA Permissible Exposure Limits; TLVs; engineering controls; PPE.

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information routes of exposure; symptoms, acute and chronic effects; toxicity ratings.

Section 12, Ecological information* Note: Other agencies regulate this information, OSHA will not enforce Sections 12–15

Section 13, Disposal considerations*
Section 14 Transportation Information

Section 15 Regulatory Information

Section 16 Other Information, date of preparation or last revision, disclaimer, etc.

NOTE: The Company shall ensure SDSs are readily accessible to employees.

Labeling

.1 Stations will ensure all hazardous chemicals received from the manufacturer, supplier or distributor are labeled in accordance with OSHA requirements (29 CFR 1910.1200(f)) including:

- Product identifier;
- Pictogram;
- Signal word(s);
- Hazard statement(s) (warnings that provide workers with the specific information regarding the physical and health hazards of the chemical;
- Precautionary statement(s); and
- Name, address and telephone number (of the chemical manufacturer, importer, or other responsible party).

.2 If possible, supplied manufacturer's labels will not be removed.

.3 Bulk chemicals will be stored in containers equipped with proper labels. If the containers are permanent tanks owned by sPower, permanent labeling will be attached and maintained in good condition. Appropriate NFPA labels will be installed when necessary.

Hazard Communication Standard: Pictograms

The Hazard Communication Standard requires pictograms on labels to alert users of the chemical hazard classification (as of June 1, 2015)

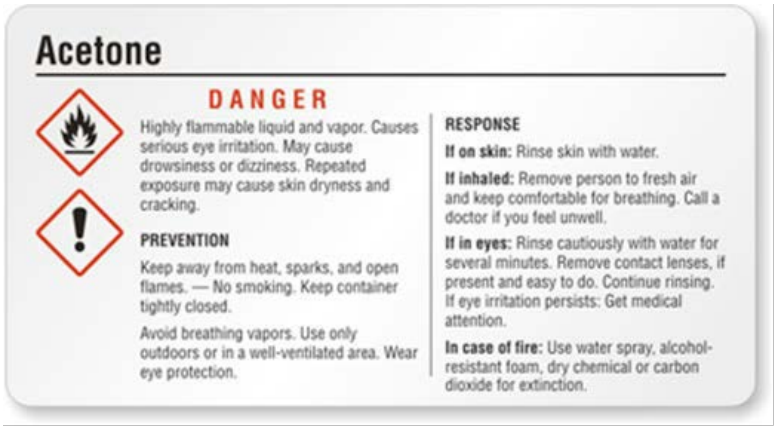
Health Hazard	**Flame**	**Exclamation Mark**
 • **Carcinogen** • **Mutagenicity** • **Reproductive Toxicity**	 • **Flammables** • **Pyrophoric** • **Self-Heating**	 • **Irritant (skin and eye)** • **Skin Sensitizer** • **Acute Toxicity**
Gas Cylinder	**Corrosion**	**Exploding Bomb**
 • **Gases Under Pressure**	 • **Skin Corrosion/Burns**	 • **Explosives** • **Self-Reactive**

Flame Over Circle	Environment (Non-Mandatory)	Skull and Crossbones
		
⸸ **Oxidizers**	⸸ **Aquatic Toxicity**	⸸ **Acute Toxicity (fatal or toxic)**

Sample GHS Product Labels

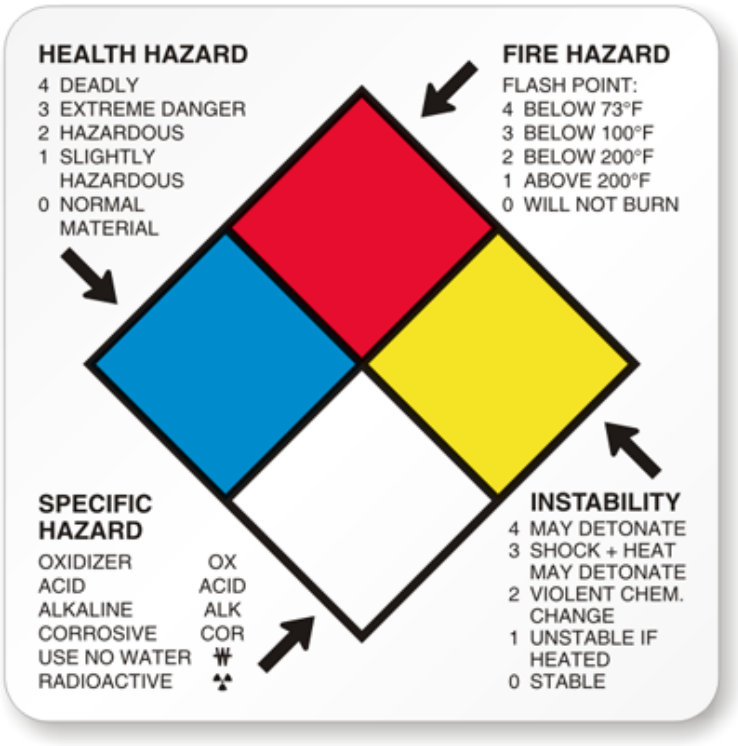
PRODUCT IDENTIFIER **CODE** **Product Name SUPPLIER IDENTIFICATION** **Company Name** Street Address City State Postal Code Emergency Phone Number **PRECAUTIONARY STATEMENTS** Keep container tightly closed. Store in cool, well ventilated place that is locked. Keep away from heat/sparks/open flame. No smoking. Use explosion-proof electrical equipment and tools Take precautionary measure against static discharge. Ground and bond container and receiving equipment. Do not breathe vapors. Wear Protective gloves.	**HAZARD PICTOGRAMS**  **SIGNAL WORD** **Danger HAZARD STATEMENT** **Highly flammable liquid and vapor.** **May cause liver and kidney damage.** **SUPPLEMENTAL INFORMATION** **Directions for use**

Sample GHS Secondary Labels



National Fire Protection Association (NFPA) diamond labels shall be used for bulk tanks; as required by local Fire Marshalls. The NFPA diamond shall contain hazard ratings taken from the manufacturer's SDS; be large enough to read at a distance of 25 feet and placed on all tank sides that are visible from access roadways. The bulk tank shall be labeled with chemical identity (e.g., No. 6 FUEL OIL, SODIUM HYDROXIDE, etc.); and the Hazard Class (e.g., FLAMMABLE, CORROSIVE, etc.) in either words or using a GHS pictogram.

NFPA Diamond Bulk Tank Label Guidance



Per local Fire Marshal, use on all large tanks (i.e., fuels & chemicals). Follow hazard codes on SDS provided by manufacturer/distributor.

NOTE: As required by chemical transport carriers, U.S. Department of Transportation (DOT) labels shall be placed on placards adjacent to tank loading pipe connections. DOT hazard labels are similar, but are not OSHA HazCom conforming, pictograms.

1. **Stationary Process Containers & Tanks:** Require GHS HazCom conforming labels; preferably affixed to the tank or posted in the immediate area.
2. **Non-GHS Waste Labels:** Hazardous waste generated at company workplaces shall have, when and where appropriate, as required by U.S. Environmental Protection Agency (EPA), DOT, and state regulations and company environmental policy, an EPA waste label and a DOT hazard label affixed to shipping containers.

Alternative Labels

Alternate Labels **MAY NOT** be used under any circumstances

Non-Routine Tasks

Periodically, employees may be required to perform non-routine tasks, which involve potential chemical hazards. Prior to starting work, each affected employee shall be provided with information about chemical hazards and potential workplace risks.

This information shall include the following:

1. Review of SDS and specific chemical hazards and protective measures to be used.
2. Preventive measures to effectively mitigate or lessen risks to safe levels, including local exhaust ventilation, PPE, respirators, and emergency procedures.

Training

Employees will receive a copy of this IIPP and Safety Manual to provide information and training regarding hazard communication. The hazard communication portion of the program includes:

1. An overview of the requirements contained in the hazard communication regulation GHS Standard.
2. Physical and health effects of hazardous chemicals.

3. Methods and observation techniques used to determine the presence of or the release of hazardous chemicals in the work area.
4. How to lessen, or prevent, exposure to these hazardous substances through the use of engineering controls, work practices, and/or the use of personal protective equipment.
5. Emergency and first aid procedures to follow if employees are exposed to hazardous substance(s).
6. How to read labels and review an SDS to obtain appropriate hazard information.
7. If new hazardous chemicals are introduced the foreman will review the hazard and relate new information to all employees in a safety meeting.

NOTE: Each employee will be required to sign an acknowledgment form stating he/she has received a copy of the Injury and Illness Prevention Program (IIPP) and Safety Manual. It is critical that all employees understand the training. Contact the superintendent or foreman with any questions.

Access to Information by Other Employers

1. When employees of a subcontractor may be exposed to hazardous chemicals while working on the job site, the general contractor will provide a list of the hazardous chemicals being used at that job site by the appropriate company's superintendent and make available the applicable SDS documents for all required protective measures.
2. Likewise, it will be the responsibility of all subcontractors to provide the appropriate SDS documents to the general contractor for all hazardous chemicals being used by their company at the job site.
3. When exposure to a hazardous chemical exists, each employer is responsible for the appropriate training of his or her employees.
4. If requested, names, addresses and telephone numbers of suppliers or manufacturers of the hazardous chemicals being used will be provided.

Record-Keeping at Stationary Job Sites

1. SDS.
2. Hazardous chemical list.

Additional Information

Further information on the written Hazard Communications Program and applicable SDS documents are available from the division superintendent or corporate safety department.

Asbestos

Asbestos was used in many building materials that were installed prior to 1980.

The potential for a health hazard occurs when the asbestos-containing material is damaged, releasing airborne asbestos fibers that can be inhaled. Asbestos materials are most often damaged by sawing, cutting, or sanding operations.

Exposure to asbestos fibers can lead to life-threatening illnesses such as asbestosis, a scarring of the lungs, mesothelioma, a cancer of the lungs and abdomen, and various other forms of cancer. There is no cure for asbestos-related illnesses, so preventing exposure is critical.

Before Starting Work:

1. When performing demolition or renovation work in existing older buildings, the Project Manager or Superintendent should obtain a copy of the asbestos survey performed by the building or facility owner. If no survey is available, all potentially asbestos-containing materials must be presumed to be asbestos-containing until proven otherwise by laboratory testing or documentation. This includes ceiling tile, floor tile, roofing, tars and coatings, plaster and spackle, spray-on insulation, thermal system insulation, mastic, putty, cement board, cement pipe and cement panels.
2. Never disturb any asbestos containing material. Only trained, authorized individuals should work with asbestos. If you are not sure whether a material contains asbestos, STOP and ask your foreman.

Crystalline Silica

Crystalline silica is a naturally occurring material found in sand, quartz, and granite rock. Crystalline silica dust can be generated during activities such as sandblasting, stone cutting, and drilling, chipping, grinding, or cutting concrete. At high levels, exposure to crystalline silica dust can cause silicosis, a serious and sometimes fatal respiratory disease.

To control crystalline silica exposures:

1. Limit the amount of dust inhaled.
2. Use engineering controls, such as using wet cutting methods, and dust collection systems.
3. Follow safe work practices, such as using wet cleaning methods and good housekeeping to

prevent dust accumulation.

4. Make good hygiene a priority; wash your hands before eating, drinking, or smoking.
5. And finally, use respiratory protection if engineering and administrative

controls are not effective in keeping crystalline silica below safe levels.

NOTE: Contact your foreman or supervisor if you have any concerns about silica exposures in the workplace.

Lead

Lead is toxic if you breathe in or swallow dust containing lead. Large amounts of inhaled or ingested lead can cause severe anemia, harm reproductive function and damage the kidneys, brain and nervous system. In construction, the main sources of lead exposure are torch cutting, abrasive blasting, stripping, sanding, heating and other work that disturbs surfaces coated with lead-based paint. Lead is also found in many electrical applications, including lead sheath, high voltage cable, and lead anchors.

Protect Yourself

1. Wear gloves and wash hands when working with lead cable, lead anchors, or sheathing.
2. If you're working with or near a painted surface that will be disturbed, ask your Foreman if the paint contains lead.
3. Use wet methods, local exhaust ventilation, or respiratory protection if lead containing materials will be worked on.
4. Before you use a torch for cutting, safely remove lead paint. Heating lead paint will produce lead fumes.
5. Never smoke, eat or drink around work with lead surfaces.
6. Always wash your hands and face to remove any lead dust before smoking, eating, drinking or going to the bathroom.
7. Work involving the removal or disturbance of any significant amount of lead-based paint requires awareness training, engineering controls, blood lead testing and air monitoring.

Handling and Disposal of Waste Bulbs

Waste fluorescent light bulbs must be handled properly to prevent health and environmental hazards. Fluorescent bulbs as well as certain other bulb types contain mercury in the form of mercury vapor and powder coating inside the bulb. In addition to fluorescent bulbs, thermostats, telephones, alkaline batteries,

H.I.D. lamps such as metal halide, sodium and mercury vapor lamps all contain hazardous quantities of

mercury.

1. Exposure to mercury can result in central nervous system damage, lung damage and corrosive effects on exposed skin.
2. Mercury vaporizes rapidly at room temperature presenting an inhalation

hazard. It can also be absorbed through the skin.

Packaging Procedures

1. Unbroken bulbs should be evenly spaced in special waste disposal boxes or in the original cartons.
2. Boxes must be kept closed, dry and indoors.
3. When full, boxes should have all seams taped completely shut, along with any holes or weak spots.
4. Containers of unbroken bulbs must be labeled "universal waste- lamps." Other types of waste must be stored and labeled in a similar manner, for example, waste- mercury thermostats.
5. The date that collection was started, and the facility should be marked on the box.
6. Containers of bulbs cannot be stored for more than one year.
7. Any spill or release must be immediately contained.

Disposal

All Universal Wastes must be disposed of by a licensed disposal firm. Coordinate disposal of fluorescent bulbs or any other mercury-containing waste with the Building Owner or the Support Center Manager.

Handling and Disposal of Light Ballasts

Old fluorescent light ballasts manufactured before 1978 may contain Polychlorinated Biphenyls (PCBs) in the form of liquid oil in the small capacitor inside the ballast. The potting compound may also contain PCBs. Ballasts manufactured after 1978 will be marked as "Non-PCB.
"

Packaging Procedures

1. Non-leaking ballasts should be carefully placed in lined, steel waste disposal drums with absorbent material in the bottom.
2. Drums must be kept closed, dry and indoors or in secure areas.
3. Drums must be labeled as containing PCB waste.
4. When full, a licensed hazardous waste disposal service or ballast recycling company must transport the drummed ballasts off-site for landfilling, recycling or incineration.
5. Leaking ballasts must be placed in a drum with absorbent material sufficient to absorb all leaking liquid. Leaking ballasts must be disposed of by incineration or burial in a PCB chemical waste landfill. Wear disposable nitrile gloves when handling these ballasts.

6. The date that collection was started, and the facility must be marked on the drum label.

Spills

Spills of PCB oil from ballasts, switchgear, or transformers must be properly cleaned up. Immediately cordon off the spill area and notify your Superintendent or Project Manager to request assistance with clean-up.

Secondary Containers

.1 Secondary containers will be labeled as follows:

- Product identifier (Identity of the hazardous chemical contained therein);
- Manufacturer information;
- Signal words (either Danger or Warning);
- Hazard pictogram(s);
- Hazards statement (Appropriate wording that provides at least general information regarding the hazards of the chemicals); and
- Precautionary information (which will provide employees with specific information regarding the physical and health hazards of the chemical.

.2 The use of NFPA or HMIS labels is recommended for use when labeling secondary containers.

.3 Alternative labeling systems such as the National Fire Protection Association (NFPA) 704 Hazard Rating and the Hazardous Material Information System (HMIS) are permitted for workplace containers. However, the information supplied on these labels must be consistent with the 2012 HCS, (i.e., no conflicting hazard warnings or pictograms).

Tags and Signs

.1 Tags may be used as labels on containers that will not accept standard labels. If tags are utilized, they shall contain the same information as a standard label.

.2 Signs may also be used as an alternative method for communicating the hazards as long as the appropriate information is contained.

Safety Communication

Communication

.1 All employees are encouraged to discuss health and safety issues or concerns with their immediate supervision, report safety and health issues, or incidents. Managers, Supervisors/Crew Leaders shall adhere to an "open door policy" regarding safety and health related issues andconcerns.

.2 Regularly scheduled safety meetings, safety committee meetings, and training programs shall be established. Information regarding safety items, issues, concerns or good practices will be posted on Safety Bulletin Boards for review by all employees.

Basic Safety Rules

Each employee shall know and practice the following basic safety rules:

a. Conduct a Pre-Job Safety Briefing and a hazard walk of the work area. Review and evaluate the job carefully. Never make assumptions concerning safety.

b. Plan each job carefully before beginningwork.

c. Be alert and aware of what you are doing at alltimes.

d. Consider each step of a job before taking it. Always planahead.

e. Do not change the job while the work is in progress. Stop the job and make sure the changes are communicated to all involved.

f. Work safely and carefully at all times. No job is so urgent that it cannot be done safely.

g. Protect and safeguard yourself and others working with or near you by using approved protective devices and personal protective equipment as required.

h. Apply safe work practices and methods to all types of work.

i. If you are unsure of, or do not fully understand any assignment, ask questions of your Supervisors/Crew Leaders until you fully understand the job and all of its safety requirements.

j.

Safety Meetings

a. A safety meeting shall be held on a regularly scheduled basis (e.g., suggested

at least every month for all personnel.

b. The Safety Manager shall see that a program has been prepared for the meeting. The O&M Manager shall arrange for all assigned employees to attend the scheduled safety meetings.

c. Sites shall maintain documentation of meeting attendance and topics covered.

Field Safety Sub-Committee

A Field Safety Sub- Committee shall be established. Committee shall be made up of both management and front-line personnel from sPower.

The Field Safety Sub- Committee shall meet on the 3rd Monday of every month at the Lancaster Office.

All committee personnel should plan on attending. For committee members unable to attend, a Zoom Meeting invitation will be sent out.

Committee shall elect a Chairman / Co-Chairman who will be responsible for scheduling monthly meetings, creating meeting agendas and facilitating the meetings.

The purpose of this meeting will be to discuss current site safety performance, review site safety events for improvement opportunities, and to provide a forum to bring up site safety concerns or safety suggestions.

A. Meetings shall be documented, and records saved for review by sPower Safety Officer during audits

Visitors

General

Visitors, guests and contractors shall be oriented and/or trained before being granted unescorted access into the project. All required personal protective equipment shall be worn and all applicable station safety rules must be followed.

We value the safety of all persons working at the sPower sites. Along with project employees, visitors and contractors are expected to conduct themselves in a safe, responsible and professional manner while working. It is management's expectation that all workers will follow the same safe work practices that are followed by sPower employees.

If you observe any person on the site working unsafely, whether it is an unsafe act or condition, you are expected to take appropriate action. Whether you remind a plumber to put on his safety glasses, point out a damaged lifting sling to a foreman or notify a project manager about an unsafe piece of equipment; management expects that you take responsibility for your own safety, but also for the safety of those persons working with us in our workplace.

If there is any resistance to your request by the visitor or contractor or you are unsure as to what action to take, notify your supervisor, the O&M Manager or the sPower Safety Manager.

Pre-Task Planning

Purpose

The purpose of this sPower Safety Policy is to specify minimum requirements for Job Safety Analysis / Pre-Task Plans (PTP) and Pre-Job Briefing process. It is to be used by sPower in establishing the minimum requirements for the Job Safety Analysis/PTP and Pre-Job Briefing processes and programs before beginning work.

What is a Pre-Task Plan

A Pre-Task Plan (PTP)is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and

the work environment. Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.

What jobs are appropriate for a Pre-Task Plan (PTP)?

A job hazard analysis can be conducted on many jobs. Priority should go to the following types of jobs:

- Jobs with the highest injury or illnessrates;
- Jobs with the potential to cause severe or disabling injuries or illness, even if there is no history of previous accidents;
- Jobs in which one simple human error could lead to a severe accident or injury;
- Jobs that are new to your operation or have undergone changes in processes and procedures; and
- Jobs complex enough to require written instructions.

Scope

This standard applies to all sPower sites. The standard requirements affect all people performing work activities at sPower including sPower people, contractors and sub-contractors. This standard describes the minimum safety management requirements for Job Safety Analysis/PTP and Pre-Job Briefing before beginning work.

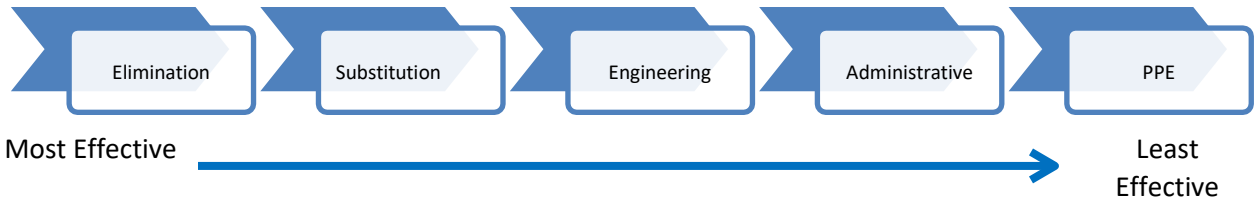
Definitions

sPower Sites - All sPower locations in which sPower has overall management control, regardless of what percentage of equity ownership sPower has in that location, business and/or site. sPower include O&M, construction projects and administrative offices.

sPower Generation – A sPower power generation facility including all equipment and processes associated with the generation of electrical energy up to and including the step-up transformer.

Hazard Control – The method(s) or equipment being implemented or used following the Hierarchy of Hazard Control to eliminate or minimize exposure to the hazard.

Hierarchy of Hazard Control - The systematic approach to identify the most effective method(s) to eliminate or minimize exposure to and/or consequences of hazards. Hierarchy of Hazard Controls methods from most to least effective are:



Elimination – Elimination are hazard control measures that include redesign of work area, modification of work methods or change in a substance so that the hazard is removed from the work or workplace, or the worker is removed from the hazard exposure. For example, using a pole saw instead of using a chain saw to trim a tree to remove the fall hazard due to climbing on to the tree. Elimination is the most effective way to control a risk because the hazard is no longer present or exposure to the hazard will be prevented. Elimination should be the preferred

control measure whenever possible.

Substitution - Replace the material or process with a less hazardous alternative. For example, use a mobile elevated platform to access work at height instead of ladders. Care should be taken to ensure that the alternative is safer than the original.

Engineering – Engineering controls are methods that are built into the design of a plant, equipment or process to minimize the hazard. The basic types of engineering controls include process control, enclosure and/or isolation of the hazard source, ventilation, etc. If a hazard cannot be eliminated or a safer substitute cannot be found, the next best approach is to use engineering controls to prevent exposure to the hazard. Engineering controls are very reliable way to control hazard exposures provided that the controls are designed, utilized and maintained properly.

Administrative – Administrative controls are workplace rules, policies and procedures that limit workers' exposures to the hazard. If engineering controls cannot be implemented, administrative controls will be the next option. Note that administrative control measures have many limitations because the hazard itself is not actually removed or reduced. Examples of administrative controls include, but are not limited to, limited time exposure to hazards, written operating procedures, work practices, safety and health rules for employees, alarms, signs and warnings, training, stretching exercises and break policies, etc.

Note: *Warning sign usage alone instead of using more effective method of correcting a hazard that can and should be corrected is not an acceptable form of Hazard Control.*

Personal Protective Equipment (PPE): The use of personal protective equipment (PPE) is a hazard control measure designed to reduce the severity of consequences after onset of an event by placing protective equipment directly on workers' body parts. The use of PPE is the least desired method of controlling or mitigating hazard exposure. Examples of personal protective equipment include respirators, gloves, protective clothing, hard hats, goggles, and ear plugs.

Personal Protective Equipment must not be used as a control measure when in fact more effective hazard control methods should be used. Personal protective equipment is the least effective method for protecting workers from hazards. PPE should be used only while other more effective controls are being developed or installed, or if other hazard control measures are not reasonably practicable. This is because, PPE:

- Does not eliminate or change the hazard.
- Will not protect the worker if the PPE is inadequate or fails.
- Is not fool proof.

- Can often be uncomfortable or cumbersome and may place an additional physical burden on a person.
- Has the potential to create additional hazards. For example, the use of respirators for long periods of time can put a strain on the heart and lungs.

The Pre-Task planning process is a mechanism for considering the tasks/ hazards that were identified and re-confirming them in the field before each shift.

SPower Safety Manager shall ensure that all personnel are trained on and have the skills necessary to participate effectively in the pre-task planning process.

It is the responsibility of EACH individual in the crew to identify the hazards that are located in the work area; ensure that appropriate measures are identified to abate them; and participate with the implementation of those measures.

- Pre-task plans shall be performed by the crew doing the work at the beginning of each shift, at a minimum;
- Pre-task plans shall be handwritten at the beginning of each shift or as the task changes (typed copies are not acceptable);
- All crew members must participate at the work location in pre-task planning;
- The crew lead reviews the PTP contents to ensure that it is appropriate, complete, and accurate for the subject task;
- Additional pre-task planning shall occur when the tasks change beyond the initial plan;
- After reviewing and agreeing on the contents, all crew members (and foreman) shall sign the completed plan prior to work being performed;
- Pre-Task plans MUST be available in the area where the work is being performed. The work crews shall be knowledgeable of its location at the worksite;
- Personnel that join a crew after the PTP has been developed shall get with the lead person, review the PTP and sign;
- All PTPs and associated permits will be turned in to the sPower Safety Manager weekly for review.

sPower High Risk Activities

	Activity
1	Fall Protection / Working at Heights
2	Excavations
3	Confined Space
4	Falling Objects / Overhead Activities
5	Energized Electrical Work
6	Control of Hazardous Energies (COHE) / LOTO

Job Briefing ("Tailboards")

Job Briefings

.1 Crews shall conduct a job briefing prior to the start of each job. The briefing shall cover the hazards associated with the job, work procedures involved, personal protective equipment requirements, and special precautions.

.2 A Hazard Walk shall be conducted prior to starting eachjob.

.3 The job briefing shall be held before work is performed and each time there is a change in job tasks. The briefing must review the following items:

a. potential hazards and special precautions to do the work safely;

b. proper work procedures;

c. required isolation procedures;

d. required personal protective equipment.

.4 Make sure the necessary safety equipment is available before starting work.

.5 Report any unsafe conditions or equipment.

Hazards Arising on the Job

.1 Unsafe conditions need to be corrected immediately. If corrective action cannot be taken immediately secure the area and notify the person in charge and/or the Safety Manager.

.2 Obey warning signs and signals.

.3 Ensure the job site is safe before leaving a job. Post signs and/or rope off areas that present unsafe condition(s). Refer to section 106 of this handbook for specifics in isolating unsafe areas.

.4 If an employee believes that a condition, device or work practice is unsafe; discuss the issue with the person in charge.

.5 Stay alert, especially when working with unfamiliar operations or at unfamiliar locations.

.6 Do not touch electrical equipment or conductors unless qualified and equipped to do so.

.7 If a downed wire is found:

a. keep everyone away from the wire;

b. have the condition reported to the person in charge; and

c. unless otherwise directed, stay clear and stand guard until the appropriate responders arrive.

.4 If a spill or release of a hazardous material occurs, call the Site Emergency number and provide:

a. your name;

b. location of the incident;

c. pertinent information relating to the incident; and

d. any additional information, if requested.

Post-Job Brief

A post-job briefing is a useful and proactive means of reviewing safety and health concerns with the completed job and/or job turnover to reinforce safety awareness. Depending on the work circumstances (e.g., following an incident resulting in injury), the briefing may be required to determine lessons learned.

Person in Charge Responsibilities

.1 The person in charge may be a supervisor or designee.

.2 The person in charge, within that person's job description and work responsibility shall:

a. know, obey and enforce all safety rules and practices;

b. be aware of all necessary protective devices;

c. assure that all protective devices are available, in good condition and are used properly;

d. require employees to use approved equipment;

e. note possible hazards and explain safe work practices during pre-job briefings;

f. make sure that each employee is fit and qualified to do the job safely before allowing a job to proceed; and

g. ensure employees inspect company tools and their personal equipment prior to and after the completion of each job.

Lighting

General

.1 Maintain lighting fixtures and systems in good repair for proper illumination in all areas.

.2 Where required, keep fixture guards in place.

.3 Ensure bulbs have suitable screens or protective covers installed.

.4 Provide sufficient illumination to perform the work safely. If lighting is not sufficient, provide temporary lighting that is sufficient to ensure employees are able to safely perform their job and see the surrounding workspace.

See illumination guidelines in section below.

Minimum Interior Illumination Requirements Definitions

Lux (Lumens/m^2) – The amount of light generated by a candle on a one square meter surface one meter from the candle.

Foot-candle (Lumens/ft^2) - The amount of light generated by a candle on a one square foot surface one foot from the candle.

Conversion: 1 Foot-candle = 10.764 Lux

Note: The following is provided for illustration and comparison:

Location	Lux	Foot-candles
Outside, Bright Sunny Day	50K-	4.6K-9.2K
Outside, Very Cloudy Day	100-2K	9.2-185
Outside, At Sunset	1-100	0.09-9.2
Inside, Business Office	200-300	18-28
Inside, Corridors	50-100	4.6-9.2

Construction areas, ramps, runways, corridors, offices, shops, and storage areas shall be lighted to not less than the minimum illumination intensities listed in Table below while any work is in progress:

Minimum Illumination Intensities In Foot Candles

Foot-Candles	Area of Operation
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	General construction and area lighting. Cable rooms, rear of switchboard panels.
5	Indoors: warehouses, corridors, hallways, and exit routes. Other: tunnels, shafts, and general underground work areas.
10	General construction plant and shops (e.g., mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, mess halls, and indoor toilets and workrooms.) Telephone, computer and interface (e.g., SCADA) equipment rooms. Main entrances and foyers.
10	Plant auxiliaries, battery rooms, pumps, tanks, compressors, switchgear faces.
30	First aid stations, infirmaries, and offices.

Minimum Exterior Illumination Guidelines

Generating station exterior lighting requirements are less stringent than interior lighting. Refer to applicable building construction standards to determine requirements. Tables found in the National Electrical Safety Codes (NESC) are a good resource.

Additional Requirements

Additional lighting may need to be installed in areas that require better visibility such as process areas and locations requiring more detail critical work. Areas with combustible dust and potentially explosive gases will require an engineering evaluation and classification of the hazards to determine the appropriateness of lighting fixtures and associated wiring.

References:

This sPower O&MEHASP was developed using the following publications as the source of the requirements contained herein:

1. ANSI C2-2002, National Electrical SafetyCode
2. Illuminating Engineering Society of North America (IES) Lighting Handbook (July 2000)

Barriers, Barricades and Warning Systems

Barriers

.1 Barriers, such as railings, toe boards, kick plates, etc. shall be used to guard openings such as floor plates and floor gratings, excavations, open manholes, screen bays, wall openings and where there is a danger from operating machinery, falling material, etc. Place the barriers in a manner that will prevent anyone from entering the area between the barrier and the opening. Authorization must be given BEFORE any handrail; guardrail or other equipment is removed that creates a potential for a person to fall at a distance of 4 feet or greater.

a. If feasible, hard barriers shall be used at unattended openings. It shall be sturdy enough to withstand a load of 200 pounds from any direction;

b. the top rail shall be from 38'' to 45" from floor/grade level. An intermediate rail shall also be provided midway from floor level to the top rail and shall be sturdy enough withstand a load of 150 pounds;

c. a minimum of 3½" kick plate (toe board) shall be provided to prevent tools or parts from falling into the open area below;

d. where persons are required to work or pass under a scaffold or floor opening, barriers shall be provided with a mesh or screen between the toe-board and guardrail.

e. When mesh or screen or equivalent is used as the sole barrier, it shall be sturdy enough to withstand a load of 150 pounds;

f. if safety barricades (e.g., tape, ropes or ribbons) are used in lieu of barriers, they must be placed no closer than six (6) feet from a fall hazard or sufficient distance from all other hazards.

g. Signage or tags describing the hazard shall be attached to barriers and barricades.

.2 Every open hole opening which persons and / or animals can walk / fall into shall be backfilled and / or covered.

.3 Do not cross barriers or enter danger areas without proper authorization.

Safety Barricades (including Safety Tape, Safety Chain, Rope, and Warning Signs.

.1 Red "Danger" tape means DO NOT CROSS under any circumstances without authorization of the person who erected it or the work crew. The tape shall be red with black lettering and include a red Danger Card describing the hazard. Refer to section .03, below, for Danger Cards.

Red Danger Tape is:

A. Used to warn of imminent danger in major hazard situations where hazard presents a threat of death or serious injury to employees.

B. Used to restrict access to plant areas and requires that the Shift Supervisor must be notified before installing.

C. Required to be used to protect landing areas when performing lifts.

- Required when overhead work has the potential for something to fall from above.
- Required to have a Red & White Danger Tag attached to all accessible open sides and at a minimum shall list the hazard, the name of the person who placed the tape and contact information.

- Removed when the hazard is eliminated and disposed of properly.

Yellow "Caution" tape/rope
Radiation Tape:
Warning Signs/Cards (tags)

.1 Display signs such as Danger, Warning, High Voltage, Testing, People Working Overhead, Caution Cards or other appropriate signs as a warning of any unusual or temporary hazards. Signs shall be used in conjunction with safety rope/tape to warn employees of the hazard.

.2 Danger Cards (tags) - "Danger" cards shall be used where an immediate hazard exists, and specific precautions are required to protect personnel or property. The danger cards used with tape shall be white with red lettering. The DANGER Card (tag) should include the following information:

- Name of Employee
- Company
- Date
- Telephone number
- Reason for the barricade

Equipment Start-Up and Shut Down Alarms and Announcements

.1 Where provided, alarms or announcements shall be sounded before operating equipment and moving cranes, conveyors or other similar operations. There are select cases where a shutdown alarm may occur. Be aware that equipment may start up or shut down at any time.

Contaminated Water Warning Signs

.1 Appropriate warning signs shall be posted at locations where there is a danger of employees drinking untreated or contaminated water (e.g., Caution: Non-potable water. Do not drink.).

.2 Cross connections of any kind between the public water supply and other water supplies are prohibited.

.3 Install anti-siphoning devices when using potable water for non-potable purposes, such as steam generators, connecting hoses, siphoning for chemicals or cleaning agents, to prevent siphoning back into the potable water supply.

.4 Ensure the proper equipment for the water supply's pressures are used. Various water supplies operate at different pressures. Environmental Specialist shall be contacted if there is a concern with potable water supply.

Safety Person or Area Monitor

.1 A dedicated safety person or area monitor shall be posted at an unsecured area where an immediate hazard exists to warn people of the danger until sufficient hard barriers can be put in place or until the hazard has been eliminated.

.2 The safety person/area monitor shall:

- Continuously observe the area adjacent to the unsecured area and warn approaching persons of the hazard
- Not perform other tasks that distract them from their duties
- Not be exposed to hazards from which they are intended to protect other employees and
- Not enter the area he/she is controlling.

Personal Protective Equipment (PPE)

Approved personal protective equipment (PPE) is available at the sites and shall be selected based on the hazards associated with each job. If at any time, work activity in these areas presents a hazard that cannot be feasibly mitigated; the appropriate personal protective equipment shall be required. Any other exception areas must be properly evaluated and approved by the Safety Manager or designee. Standard PPE equipment is as follows:

- Hardhat - Company approved hardhats are required for protection against potential head injury and WILL be worn by all personnel with the following exceptions:
    - **The O&M Laydown Yard** is a PPE free zone, however, if you are working / performing a task, ALL required PPE must be worn.
- At minimum, hardhats shall meet the ANSI Z89.1 standard for Type 1 Class E and G. Hard hats shall be properly worn in all areas where the potential for head injury exists (see below).
- HI-VIS Vest - Garments shall be retro-reflective and shall be manufactured in accordance with the requirements of the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 107-2004, High Visibility

Safety Apparel and Headwear. The retro-reflective material shall be visible at a minimum of 1,000 feet.

- High Visibility garments (equipped with reflective striping) shall be worn at all times.

The exceptions are as follows:

The O&M Laydown Yard is a PPE free zone unless you are working / performing a task. If performing a task, ALL required PPE must be worn.

O&M Field Technician PPE Requirements:

- **Employees will wear standard PPE when working outside the project fence.**

Standard PPE is as follows:

□ Hardhat

✓ ***NOTE:*** 29 CFR 1926.100(a) states:
Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.

- HI-VIS vest,
- Safety Glasses, Z87 rated
- Snake Chaps
- The footwear must be sturdy work shoes with a protective toe constructed of steel or equivalent material and with slip resistant soles.

While working inside the project fence line, the PPE Requirements are:

□ Hardhat with reflectivity kit installed. Personnel WILL wear hardhats at all times when inside the project fence line and NOT performing work on the inverter pad.
□ FR rated shirt at all times.
□ FR rated pants with reflective striping.

✓ **NOTE:** If at any time, work activity presents a hazard; the appropriate level of personal protective equipment shall be required.

- ***While working outside the project fence line****, the PPE Requirements are:*
  □ Employees working in locations where there is a risk of receiving head injuries from flying or falling objects and/or electric shock and burns shall wear approved head protection in accordance with the sPower OMEHASP.

- ✓ **NOTE:** If at any time, work activity presents a hazard; the appropriate level of personal protective equipment shall be required.
  - ➢ FR rated shirt at all times.
  - ➢ FR rated pants with reflective striping.
  - ➢ HI-VIS Vest
- ✓ **NOTE:** If FR jeans (without reflective striping) are worn, the employee WILL wear HI-Vis vest at all times.

See Warning below:

WARNING: HI-VIS Vest that are not FR rated will not be worn when the employee is exposed to the following hazards:

- ***The employee is exposed to contact with energized circuit parts operating at more than 600 volts;***
- ***An electric arc could ignite flammable material in the work area that, in turn, could ignite the employee's clothing;***
- ***Molten metal or electric arcs from faulted conductors in the work area could ignite the employee's clothing, or***
- ***The incident heat energy estimate exceeds 2.0 cal/cm2***

- Safety work boots -Appropriate foot protection shall be required for employees who are exposed to foot injuries from electrical hazards, hot, corrosive, poisonous substances, falling objects, crushing or penetrating actions, which may cause injuries or who are required to work in abnormally wet locations.
- Gloves - Employers shall select, provide and require employees to use appropriate hand protection when employee's hands are exposed to hazards such as those from skin absorption of harmful substances, cuts or lacerations, abrasions, punctures, chemical burns, thermal burns, radioactive materials, and harmful temperature extremes.

Head Protection

Company approved hardhats are required for protection against potential head injury. At minimum, hard hats shall meet the ANSI Z89.1 standard for Type 1 Class E and G. Hard hats shall be properly worn at all times.

- ➢ **The O&M Laydown Yard** is a PPE free zone unless you are working/ performing a task. If performing a task, ALL required PPE must be worn.

29 CFR 1926.100(a) states:

Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.

.1 Hard hats:

Hard hats should be worn at all times when inside the fence on any site or doing work in the laydown area around the O&M Office. The exceptions as detailed in the policy are inside an enclosed vehicle (e.g. truck). The policy also allows for "designated areas where no overhead hazards exist." There is not a designated area inside the fence that can consistently be guaranteed to not have overhead hazards and with how fluid the environment is in the field.

Limited exceptions include, but are not limited to:

a. enclosed office areas, meeting rooms and adjacent hallways;
b. enclosed control rooms, computer rooms, locker rooms and lunchrooms;
c. maintenance shops when there is no overhead work or crane operation;
d. while operating enclosed company vehicles and those with equivalent head protection;
e. in locations specifically designated as, "No Hard Hat Area"; and
f. other designated areas where no overhead hazards exist.

.2 Hard hats shall be worn with the brim facing forward. If a job requires the hardhat to be turned around to accommodate accessories (such as welding) or to perform work (e.g., overhead rigging) remember to turn the suspension around so that it faces forward.

.3 Periodically inspect your hardhat. Hardhats and/or suspensions that show signs of excessive wear or deterioration shall be replaced. Suspensions and headbands require periodic cleaning and may need to be replaced prior to the shell.

.4 Never paint or apply unauthorized/conductive decals to hardhats.

.5 Exercise caution and use good judgment when placing clips and other metallic objects (e.g., magnets) onto hardhats to avoid creating an electrical shock hazard.

Eye Protection

Safety Glasses will be worn at all times when inside the fence on any site or doing work in the laydown area around the O&M Office. The exceptions as detailed in the policy are inside an enclosed vehicle (e.g. truck). Any ANSI Z-87 rated glasses are acceptable.

Suitable eye protection shall be used when exposed, but not limited, to hazards from flying particles, molten metal, acids or caustic liquids, chemical liquids, gases, vapors, aerosols, or potentially injurious light radiation.

.1 All employees, visitors, vendors and contractors shall use eye protection when in the plants, process areas, construction sites and any other eye hazard areas. This requirement also includes working outdoors. This requirement does not apply to offices, meeting/conference rooms, control rooms, locker rooms and lunchrooms unless otherwise posted.

.2 Proper eye and/or face protection shall be worn while performing, or while in the vicinity of any of the following operations listed below:

a. Chipping, sanding, grinding, drilling, impact drilling, or breaking concrete or other materials.

b. Operating air tamps, drills, jackhammers, or hydraulic tools.

c. Using or assisting in the use of welding, heating, brazing, cutting, and metalizing equipment.

d. Blowing out machines or equipment with compressed air.

e. Making or breaking an energized circuit, which may result in an electrical flash.

f. Cleaning or working with rusty material, or handling or working on materials that are subject to flaking or scaling.

g. Chopping, cutting or breaking brick, plaster, cable, banding or insulation or other materials.

h. Handling or using hot metals or other hot compounds.

i. When handling acids, caustics, or other harmful liquid chemicals, use chemical goggles in conjunction with a face shield, or use a full-face respirator.

j. Any other areas where dust, particulates, or flying debris may be present. Due to the continually changing work environment and the variety of crafts, operations, and construction activities the need for continual eye protection with side shields is warranted.

k. While working in trees.

l. While working in crawl spaces or attics where conditions exist which may expose the eyes to potential injury.

m. While using chain saws

n. While splicing fiber optic cable

o. A face shield and eye protection shall be worn when handling batteries.

3 The minimum allowable protective eye equipment is ANSI Z-87 rated prescription or non-prescription industrial safety glasses with permanently attached side shields. Normal prescription eyeglasses do not meet the impact requirements for industrial safety glasses and are not acceptable for use.

4 Personnel requiring prescription safety glasses must contact the location's responsible person or designee to have their request for prescription safety glasses processed and to answer questions about the company policy on prescription safety eyewear.

5 If visitors wear non-Z-87 rated personal glasses, they shall be provided with a suitable eye protector to wear over them.

6 Goggles and/or face shields shall be used when there is a hazard from:

a. chemical splash, operating grinding machines, portable grinders, shaft driven wire brushes, buffing heads, high speed saws and paint spraying equipment;

b. chipping concrete, brickwork, tile, metal, paint, rust, scale or any other brittle material by hand or with air or electric powered tools;

c. using compressed air or power blower to blow off equipment;

d. being exposed to hazards where particles or other flying material (e.g., windy conditions, drafts from ventilation, etc.) might enter the eyes; or

e. cutting or trimming weeds outside on plant grounds using a powered weed trimmer / weed eater.

.7 Face shields shall only be worn over primary eye protection (safety glasses or goggles). For employees wearing prescription lenses, eye protectors shall either incorporate the prescription in the design or fit properly over the prescription lenses. Never wear a face shield or welding helmet alone.

.8 Contact lenses may be worn process areas and other areas as long as there are no job-specific limitations in wearing them. However, employees must be made aware of any plant/process procedure or technical instruction, job safety analysis (JSA), chemical Safety Data Sheet, or manufacturer's instructions restricting the use of contact lenses.

NOTE: *Contact lenses do not provide eye protection equivalent to safety eyewear (glasses, goggles, face shields, etc.) for users. Therefore, appropriate personal protective equipment, including safety eyewear, shall be worn as instructed.*

.9 Wearers of contact lenses must wear appropriate eye and face protection devices in hazardous environments and should consult with supervision or the H&S Department when working on tasks that include:

- exposure to chemical fumes and vapors,
- areas where potential for chemical splash exists,
- areas where significant amounts of particulate matter or dust is in the atmosphere,
- exposure to extremes of infrared rays and ultra-violet (e.g., welding),
- intense heat,
- dry atmosphere,
- flying particles, and
- areas where caustic substances are handled, particularly those used or stored under pressure.

.10 Non-approved shaded safety glasses are prohibited when working inside low-light areas. Some tinting on lenses (e.g., amber or light blue) is allowable as long as it is approved for use at the project.

.11 Transition lenses may be worn in the plants as long as there is ample time and lighting available to allow the glasses to go clear.

.12 Glasses/lenses with appropriate optical density and infra-red protection shall be utilized for boiler fire box inspections. Use medium density or darker tinted cutting/welding glass or welding mask equivalent to No. 6 optical density.

.13 Metal frame glasses are not allowed near live electrical conductors and in nearly all areas of the electrical generating sites. Limited exceptions may be made for visitors and persons working in offices.

- **The O&M Laydown Yard** is a PPE free zone unless you are working/ performing a task. If performing a task, ALL required PPE must be worn.

Hearing Protection

The purpose of Hearing Conservation is to help prevent occupationally induced hearing loss and control occupational noise exposure on the job and elevate employee awareness regarding noise exposures off-the-job.

.1 Company-approved hearing protection (e.g., ear plugs, earmuffs, canal caps, etc.) shall be worn at all times in designated or posted areas and in locations where noise levels are at or exceed 85 dBA.

.2 Hearing protection shall be worn anytime when working near or with loud tools, chain saws, machinery or equipment.

.3 Double (Dual) hearing protection (earplugs and earmuffs) shall be worn in areas where continuous noise levels equal to or exceed 105 dBA. Double hearing protection may be required in other posted locations (e.g., fan rooms, near air compressors, etc.). Contact the Health and Safety Specialist or supervision for additional information.

.4 As a general practice, hearing protection should be worn during welding activities to avoid a potential for slag to fall into the ear canal.

.5 Employees should recognize off the job noise levels greater than 85 dBA are encountered but not limited to operation of powerboats and motorcycles, power tools, use of firearms and listening to loud music. Employees are also encouraged to protect their hearing when applicable off the job.

Hand Protection

While working, safety gloves shall be worn at all times and appropriate for the anticipated work to be performed. See local station policy for specific requirements. Situations where specific glove types may be required include, but are not limited to:

- Handling material and equipment that is slippery, abrasive or sharp,
- Handling corrosive and/or oily materials,
- Performing welding, cutting, burning or grinding work,
- Electrical switching, installation, testing or maintenance, and
- Any work that may expose hands to pinch points, heat, cold, and other hazards.

.1 General

a. Employees shall wear proper work gloves suitable for the work being performed.

b. At a minimum, Class O electrical gloves with leather protectors shall be worn when plugging or unplugging 480-volt electrical cords, unless the receptacle has been de-energized or has a protective interlock.

c. Employees shall wear appropriate work gloves when they are handling rope, slings, or rough, irregularly shaped, jagged or harmful materials. **Allowing steel rope or cable to run through the hands is dangerous and forbidden.**

d. Appropriate protective gloves shall be worn when handling cleaning solvents, acids, caustics, or materials that have been coated or treated with sensitizing chemicals.

NOTE: *As a general rule, gloves should not be worn around rotating equipment. There may be task-specific exceptions, and these should be discussed with your supervisor prior to starting work.*

- **The O&M Laydown Yard** is a PPE free zone unless you are working/ performing a task. If performing a task, ALL required PPE must be worn.

Foot Protection

.1 Footwear in the plants, process areas, construction zones and designated areas must comply with ASTM F2413-051, be constructed with a hard toe, and provide electrical hazard (EH) protection. The footwear must be sturdy work shoes with a protective toe constructed of steel or equivalent material and with slip resistant soles.

.2 Approved footwear typically shall be constructed with steel, composite or similar hard toed protective area and made of a sturdy material with leather uppers capable of protecting against lacerations abrasions and protect against penetration hazards with slip resistant soles.

.3 Electrical hazard rated, safety-toe shoes are non-conductive and will prevent the wearers' feet from completing an electrical circuit to the ground.

Note: The insulating protection of electrical hazard, safety-toe shoes may be compromised if the shoes become wet, the soles are worn through, metal particles become embedded in the sole or heel, or workers touch conductive, grounded items.

.4 Approved safety footwear shall be worn where required and for employees working in and around maintenance facilities (except for administrative areas). Foot protection shall comply with OSHA 29 CFR 1910.136, and ANSI Z41, Class 75 for impact and Class 75 for compression, or the updated and replacement standards (ASTM F2412-05).

.5 Footwear having a defined heel is required. Athletic shoes, sandals, flip-flops, moccasins, or footwear with worn soles and heels are not acceptable.

.6 Exceptions, subject to approval by local management, may occur in areas such as parking lots, access roads, control rooms, offices and classrooms where office footwear would be permitted.

.7 Office footwear, when worn, shall be in good repair, attached at the heel, and fit securely. Footwear not suitable for office work includes but is not limited to thongs, "flip-flops" "clogs", athletic "toe" shoes or shower shoes.

- **The O&M Laydown Yard** is a PPE free zone unless you are working/ performing a task. If performing a task, ALL required PPE must be worn.

***NOTE**: As with all protective equipment, safety footwear should be inspected prior to each use. Shoes and leggings should be checked for wear and tear at reasonable intervals. This includes looking for cracks or holes, separation of materials, broken buckles or laces. The soles of shoes should be checked for pieces of metal or other embedded items that could present electrical or tripping hazards.*

Shin and Toe Guards and Snake Chaps.

.1 Shin (metatarsal) and external toe guards are available for the protection of feet and legs. These guards are to be worn whenever such protection is required.

.2 External toe guards or slip-ons may be worn by personnel on a temporary basis when visiting without an approved safety shoe.

Snake chaps will be worn while working in grassy / brushy areas and in areas that have been identified as likely habitats.

.3 The O&M Technicians will be issued FR rated snake chaps.

Work Clothing

Employees in the following job classifications are typically required to wear the Fire Resistant (FR) clothing as their everyday work apparel:

- Equipment Operators
- Instrument / Controls Maintenance Technicians
- Electrical Maintenance Techs
- Mechanical Maintenance
- All Operations Management personnel (e.g., persons routinely in the plant).
- Designated management personnel (e.g., Electrical and Instrument Maintenance Supervisors, Planners, and Specialists)

NOTE: See PPE Table in Section 124 for additional PPE requirements.

Station management may direct that FR apparel shall be worn by other job classifications or personnel not currently listed. For employees not included in the FR work apparel program, normal daily work apparel (i.e., shirts, pants, undergarments, etc.) shall be made of 100% natural fibers.

NOTE: Synthetic fibers increase the severity of burns when exposed to high heat.

All clothing including accessories such as bandanas, liners, etc. worn while working in the plant must be made from 100% natural fibers or flame retardant/resistant (FR) blends. Long sleeve shirts where required must be worn with the sleeves rolled down and buttoned. The only exceptions to this requirement are in office environment settings such as in meeting rooms, training and control rooms, or where an additional hazard is created by the sleeves (i.e. while operating a lathe or drill press). Additional exceptions may be allowed if the activity, location, etc. is properly evaluated. **NOTE:** Where live electrical hazards are present, refer to section 123.

.1 Loose items such as chains, and long hair shall be secured or removed when working around or near rotating machinery.

.2 When the hair length of an employee working around energized electrical apparatus, moving machinery, welding, cutting, or burning, is longer than the shirt or jacket collar it should l be completely covered and restrained above or inside the collar.

.3 Wearing rings, loose chains, necklaces, wrist watches, wrist bracelets *of any material*,

earrings, piercings, exposed keys or key rings, and any unnecessary metallic articles presents a serious injury risk when worn in the production areas of the plants.

.4 Wear appropriate protective clothing when cutting or welding.

Always wear a welder's jacket or coveralls when performing this type of work.

- Wear outerwear (i.e., jackets, coats, hats, etc.) made of 100% natural fiber or approved FR synthetics (e.g., modacrylic).

- Outerwear with a synthetic inner lining is acceptable (unless worn under electrical PPE) as long as the outer lining is the equivalent of or exceeds the 11-ounce weight of cotton.

.5 Outerwear must be FR whenever doing electrical work requiring FR protection. See sections 123 and 124.

.6 When applicable, wear an additional outer garment with full length sleeves to protect arms against burns when working on or in the vicinity of extreme heat sources.

.7 Natural fiber or FR rated short sleeved shirts and shorts may be worn under FR disposable "Tyvek" coveralls as long as it is approved by supervision.

Fire Resistant Clothing

Varying types of fire-resistant clothing is available. Temp-resistant gloves, leather gloves, spats, aprons, fire resistant (FR), e.g., NOMEX hoods and sleeves shall be used whenever exposed to flying sparks. This PPE is required when working on or near welding, cutting or heating operations, whenever handling heated objects or when other similar thermal exposures exist.

sPower shall ensure that the outer layer of clothing worn by an employee, except for certain head, hands and feet items, is flame resistant under any of the following conditions:

- The employee is exposed to contact with energized circuit parts operating at more than 600 volts;
- An electric arc could ignite flammable material in the work area that, in turn, could ignite the employee's clothing;
- Molten metal or electric arcs from faulted conductors in the work area could ignite the employee's clothing, or
- The incident heat energy estimate exceeds 2.0 cal/cm2

Chemical Protective Equipment

Protective equipment such as gloves, aprons, goggles, face shields, etc., are provided for protection when working with chemicals and solvents. Refer to the Safety Data Sheet (SDS), Site Process Chemical Manual and/or site-specific procedures for specific protective clothing requirements.

.1 Aprons and rubber or nitrile gloves are required when handling or maintaining batteries (adding electrolyte, etc.)

.2 Always wear Company approved PPE. Equipment includes rubber gloves, face shield, goggles and rubber apron.

.3 Always clean PPE appropriately before returning it to proper storage.

FR chemically treated cotton clothing will react with concentrated sodium hypochlorite. Persons working with sodium hypochlorite in solutions >12% should wear appropriate over-garments (i.e., apron or chemical suit) or natural fiber clothing if contact isanticipated.

Fire Prevention and Protection

General

Emergency Action (Response) Plans

All workplaces are required to have a written emergency action plan prepared by site management and reviewed by all employees. Employees shall receive training on these plans. The plan shall describe the designated actions employers and employees must take to ensure personnel safety. Personnel responses to any emergency shall only be conducted in accordance with their level of training and the site's emergency action plan.

Fire Prevention

Fire Equipment Inspections

.1 Fire extinguishers shall be inspected at least monthly to ensure they are in operating readiness. Their general condition should be checked along with hoses, nozzles, seals, gauges, inspection cards, weight, location, and mounting brackets.

.2 Stored pressure types and the cartridges of cartridge pressure models shall be weighed at least once each year. At this time, they should also be subjected to a thorough maintenance inspection.

.3 An annual maintenance record indicating the maintenance date for each portable fire extinguisher shall be retained for one year after the last entry or the life of the shell, whichever is less.

.4 Hydrostatic tests shall be made on dry chemical extinguishers every 12 years and on other types every 5 years

Fire Exits

.1 Exits and exit accesses shall be maintained clear and unobstructed at all times and be clearly visible.

.2 Exit doors must be capable of being opened from the occupied side at all times.

.3 Fire doors (without fusible links) are to be kept closed at all times. Employees are not permitted to use wedges, paper, tape, wire, etc., to hold doors open.

Inverter Fires

- Call 911 and treat the injured when a fire is discovered
- Call the sPower control room and notify them about the fire and instruct them to open the circuit with the inverter in it and isolate it from the grid. Call O&M Management and other technicians in the area to converge on the plant with the issue
- First technician onsite; if not onsite when initial calls are made, heads to the skid with the inverter that is on fire and eliminate all potential energy sources feeding inverter.
- Position a technician at the main entrance gate to direct EMS to the area of the plant where the fire is located.
- If other technicians are onsite have them protect the surrounding areas with fire extinguishers looking for falling embers that could ignite near by
- Once EMS is onsite stay a safe distance away from the area of concern and wait for further instructions from the fire fighters and pull any SDS information for the skid.
- Once the fire is out and it is safe to approach the inverter tape off the area and start the warranty process.

Flammable Liquids and Combustible Liquids

.1 Store or handle solvents and flammable liquids only in company-approved, labeled and UL-listed (typically red) safety cans and containers with flame arrestors.

.2 Buildings or structures containing flammable liquids or gases must be constructed of fire-resistant material.

.3 All containers will be labeled in accordance with OSHA's Hazard Communication Standard.

.3 Flammable liquids or gases will be kept away from heat and from welding or any other operation involving flames or sparks.

.4 Highly flammable liquids shall not be used:

a. to start or accelerate fires; or

b. as a cleaning agent.

.5 Use only company-approved solvents for cleaning purposes. Gasoline will not be used as a solvent for cleaning.

.6 Make sure adequate ventilation is available when using flammable liquids and solvents.

.7 Wear appropriate PPE as outlined in the Safety Data Sheet and procedures.

.8 Never wear gloves contaminated with flammable liquids or solvents.

.9 Dispose of solvents and flammable liquids only in company-approved containers.

.10 Flammable liquids shall be stored in an approved flammable storage cabinet when not in use.

.11 The quantity of flammable liquids that may be located outside of an inside storage room or storage cabinet in a building or in any one fire area of a building shall not exceed:

a. 25 gallons of Class IA liquids in containers.
b. 120 gallons of Class IB, IC, or II or III liquids in containers.
c. 660 gallons of Class IB, IC, II or III liquids in a single portable tank.

.12 No more than 60 gallons of flammable liquids will be stored inside an approved safety cabinet.

.13 Combustible liquids will not exceed 120-gallon capacity inside approved safety cabinets.

.14 The number of approved safety cabinets in one room will not exceed three(3).

.15 Flammable gases (e.g., propane, propylene, MAPP) shall not be stored in flammable liquid cabinets. These containers shall be stored in approved flammable gas cabinets/enclosures or a well-ventilated and secure location away from ignition sources and high heat.

.16 Immediately report all solvents and flammable liquid leaks to the person in charge or the station Environmental and/or H&S Specialist. Keep all flames and ignited objects, including matches, cigarettes and live sparks, away from suspected leaks.

Flammable/Combustible Liquid Containers

.1 Flammable liquids, if removed from the original container, shall be put into company-approved safety cans as secondary containers.

.2 **Approved safety cans** or Department of Transportation approved containers shall be used for the handling and use of flammable liquids in quantities of 5 gallons or less. Also, refer to section .04 Liquid Safety Can Classification, below.

.3 An **approved** closed container meets the following criteria: not more than 5 gallons capacity, having a flash arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

NOTE: Many plastic containers do not meet OSHA requirements and may be prohibited by site policies.

.4 Label the secondary container with its contents, as required by the Hazard Communication procedure. Since 2013, labels shall meet the new GHS Hazard Communication standard's requirements. The NFPA diamond or HMIS label is considered alternate labeling and additional labeling may be required.

.5 Take adequate precautions to prevent the ignition of flammable vapors.

.6 Grounding - Flammable liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. Where the metallic floor plate on which the container stands while filling is electrically connected to the fill stem and bonded to the container the provisions of this section shall be deemed to have been met.

.7 Never dispense flammable and combustible liquids near ignition sources.

.8 Never transfer liquids by pressurizing their usual shipping containers with air or other compressed gases.

Liquid Safety Can Classification

Note: Never use any other Class I flammable liquid such as acetone, benzene or naphtha without the permission from the person in charge. See sample chart for applicable safety cans to be used for various flammable liquids, below.

Flammable Liquids' Container Requirements

Liquid Safety Can	
Gasoline	**Red**
Diesel	**Yellow**
Ethyl alcohol	**Class I, II**

Vehicles

.1 Powered industrial trucks (forklifts) shall be equipped with fire extinguishers.

.2 All company vehicles shall be equipped with a dry chemical fire extinguisher.

.3 It shall be the responsibility of the vehicle operator to ensure that the required fire equipment is on the vehicle and is in proper operating condition at all times.

.4 All vehicle engines shall be stopped prior torefueling.

.5 Never park a catalyst-equipped vehicle on a pile of dry leaves or other dry vegetation to include tall grass.

No Smoking Policy

.1 Smoking or open flames are not permitted in areas where dangerous gases (e.g., hydrogen and gasoline dispensing) might be present or where quantities of flammable or combustible materials are kept.

NOTE: Absence of "No Smoking" signs shall not excuse smoking in dangerous places.

Smoking of any tobacco products or electronic cigarettes are prohibited within 100 feet of an operational solar project.

.2 Smoking is prohibited in any building at ANY location with combustible dust, hydrogen cooling systems as well as ALL storagebuildings.

.3 No smoking will be allowed in company vehicles or while operating any piece of equipment.

Fire Fighting

Only personnel trained in the use of fire extinguishers, hose systems, fire suppression equipment or systems should attempt to fight fires. Site personnel are prohibited from fighting any fire beyond the incipient stage.

A fire is considered beyond the incipient stage if personnel have to wear additional PPE, must crouch and/or crawl to avoid the products of combustion and/or heat and is not extinguishable through the use of portable fire extinguishers and hoses (if available).

NOTE: An incipient stage fire is one that is in the beginning or initial stages that can be extinguished or controlled by portable fire extinguishers, Class II standpipe (1 ½ in.) or small hose system without the need for additional protective clothing or self-contained breathing apparatus.

.1 In the event of a fire at a site, the witness or designeeshall:

a. call 911.

i. Nature of the fire (e.g., Size, class, source, etc.),

ii. Location of the fire,

iii. Number of injured employees (if any), and

iv. Your name and phone extension you are calling from.

b. alert others in the area to evacuate the immediate area.

c. sPower personnel should be positioned at main entry point to escort emergency equipment to affected area.

.2 When directing the discharge from a carbon dioxide type extinguisher, use the handle on the discharge horn. Do not touch the horn itself. While discharging, the temperature drops well below freezing and could cause frostbite.

.3 Do not enter areas where large quantities of carbon dioxide have been discharged.

.4 Wait until the area has been checked for oxygen content. (Only trained Emergency Response personnel with the proper PPE are allowed to enter these areas).

.5 If an electrical fire breaks out on or near energized electrical equipment such as a combiner box, remain clear, let it burn itself out.

Inverter Fires

- Call 911 and treat the injured when a fire is discovered
- Call the sPower control room and notify them about the fire and instruct them to open the circuit with the inverter in it and isolate it from the grid. Call O&M Management and other technicians in the area to converge on the plant with the issue
- First technician onsite; if not onsite when initial calls are made, heads to the skid with the inverter that is on fire and eliminate all potential energy sources feeding inverter.
- Position a technician at the main entrance gate to direct EMS to the area of

the plant where the fire is located.

- If other technicians are onsite have them protect the surrounding areas with fire extinguishers looking for falling embers that could ignite nearby
- Once EMS is onsite stay a safe distance away from the area of concern and wait for further instructions from the fire fighters and pull any SDS information for the skid.
- Once the fire is out and it is safe to approach the inverter tape off the area and start the warranty process.

Types/Classes of Fires

Fires are classified according to the material (or fuel) involved. The method used to put out a fire coincides with the fire classification.

CLASS A -Fires involving wood, paper, rubbish. Fight with water or A or ABC extinguisher.

CLASS B- Fires involving flammable liquids such as gasoline, naphtha, oil, grease. Fight with B, BC or ABC extinguisher.

CLASS C - Fires involving electrical equipment. Fight with B or C or ABC extinguisher.

CLASS D -Fires involving combustible metals such as magnesium, titanium, sodium. Fight with dry powder (special compound), dry dirt, sand or D extinguisher. **NEVER USE WATER ON THIS TYPE OF FIRE!**

CLASS K -Fires involving grease and deep fat fryers typical to kitchens and households.

Welding and Hot Work

Purpose

This safety policy is established to protect sPower employees from serious injuries and property from serious damage that could result from the ignition of materials while performing hot work on equipment. This safety policy is based on the best practices and requirements contained in ANSI Z49.1-2005, NFPA 51B-2003, OSHA 29CFR 1910

Subpart Q, and the American Welding Society guidelines. Before any sPower employee performs hot work activities, they must understand the hazards associated with that type of work and the precautionary measures needed to mitigate these hazards. Each sPower operation must develop site specific procedures that, at a minimum, comply with this safety standard and all applicable regional regulations regarding Hot Work**.** sPower Operations may establish safety-related policies or practices that are more stringent than the policies and practice identified in this standard.

Scope

This safety policy applies to all Hot Work activities conducted at power generation facilities, substations, and field transmission and distribution sites.

Definitions

Hot Work – Any work that produces an ignition source such as but not limited to open flames, molten metal, sparks, slag, and heated work surfaces. Hot work can lead to serious burn injuries and property damage and includes the following activities: the use of torches or arc welding and cutting, laser welding, brazing, grinding, and soldering. Hot Work can also produce radiation in the form of visible and non-visible light that can injure eyes and burn skin.

Guiding Principles and Cardinal Rules

1. Failure to comply with the provisions of this sPower Safety policy puts sPower facilities, people, and contractors at risk. It is incumbent upon the O&M Director, O&M Manager and the Safety Manager to ensure that the provisions of this sPower Safety Policy are effectively implemented within their area of responsibility.

2. A Hot Work Program that is compliant OSHA 29 CFR 1910.252 is compliant with this sPower Safety Policy.

Requirements

Each sPower operation must develop and implement a Hot Work Program that, at a minimum, contains the following elements:

Written Program Elements

1. The written program must be legible, readable, and accessible by all business personnel.

2. The written program must identify the position at the operation that who is ultimately responsible for the implementation and maintenance of the operation's Hot Work program.

3. The written program must clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to the performing of Hot Work and the measures to enforce compliance with the program, including:
    a. A specific statement of the intended use of the procedure;
    b. Specific steps for preparing the work area to ensure that the heat generated will not cause ignition of any flammable or combustible materials;
    c. The specific requirements for the selection and use of personal protective equipment to prevent injuries and eye injury; and
    d. The specific requirement to assess the work to be performed before the work begins. The assessment will determine the type and amount of fumes and gases that will be generated and the ventilation and/or respirator requirements to be used.

Procedural Elements

1. **Fire Prevention**: If the object upon which Hot Work is to be performed cannot be moved to a designated Hot Work area, all movable fire hazards shall be moved to a safe location at least 35 feet (10.7m) from the work location. If the object(s) cannot be moved it (they) shall be guarded by the placement of barriers that will contain the heat, sparks, and slag and protect the immovable fire hazards. Conveyors that could carry fire hazards to other areas of the facility such as coal silos/bunkers shall be locked out and protected or guarded to such a degree that fire hazards cannot be conveyed to other areas of the facility. If the fire hazards cannot be moved or guarded, Hot Work will not be performed.

2. **Hot Work Permit:** A hazard assessment must be conducted for hot work activities that are not conducted within a designated hot work area such as a welding booth to ensure a fire safe work environment is maintained. The assessment will be conducted through the completion of a hot work permit. See Appendix A for a sample permit.

3. **Fire Extinguishers:** Based on the nature and quantity of combustible materials that could be exposed to ignition, appropriate fire extinguishing equipment shall be kept at a state of readiness for immediate use. Extinguishing equipment can consist of portable fire extinguishers, fire hoses, pails of water, buckets of sand etc.

Monthly Fire Extinguisher Inspections

4. The Monthly Fire Extinguisher Checklist may be completed by the Site Safety Coordinator or other designated site representative. Completed forms are to be

returned to the Site Safety Coordinator or designated supervisory personnel and remain at the job site for inspection purposes.

5. **Fire Watchers:** Trained personnel will be assigned as firewatchers when Hot Work could result in other than a minor fire; i.e., due to the location of flammable materials, floor openings in proximity to the work, or combustible materials on the opposite side of the surface being worked. Firewatchers shall be trained in the use of appropriate fire extinguishing equipment and the hazards of industrial fires. Firewatchers shall have fire extinguishing equipment readily available and be familiar with the fire alerting system if a fire cannot be controlled. Fire watchers shall continue work area inspections for at least 30 minutes after hot work has finished to ensure the area remains fire safe.

6. **Fire Safe Work Area:** The area located a minimum of 35 feet (10.7 m) in any direction from a hot work location. This area will be maintained fire safe throughout the duration of hot work activities and for a minimum of 30 minutes after the hot work is completed.

7. **Special Hazards:** Special hazards or hazardous locations within the facility shall be identified and precautionary work procedures will be developed to address the special hazards and hazardous locations. Special hazards or hazardous locations may include hydrogen systems, ductwork and vessels lined with or storing combustible materials, acid/caustic systems, coal and fuel handling systems.

8. **Authorization:** Before Hot Work begins; the person authorizing the work shall inspect the area and designate the precautions to be taken before granting permission for the work to begin. See an example of an Authorization Permit for Cutting or Welding in Appendix A.

9. **Prohibited Areas:** Hot Work will not be performed in areas not authorized by management.

10. **Eye Protection:** Appropriate eye protection is required based on the type of Hot Work to be performed. Helmets or hand shields shall be used for arc welding or cutting, goggles for gas welding or oxygen cutting, face shields or goggles for resistance welding or brazing. The shade number of the lenses must be appropriate for the type of Hot Work to be performed and compliant with the most current version of ANSI Z87.1.

11. **Protective Clothing:** Employees performing Hot Work and others in the area shall wear appropriate clothing (including leather aprons and gauntlets) to ensure protection from the potential hazards presented by the Hot Work.

12. **Ventilation:** When Hot Work is performed in a confined space or other areas with limited ventilation, mechanical ventilation is required to reduce to safe levels the

concentration of any potentially hazardous fumes or gases that are present during the Hot Work process.

13. **Respiratory Protection:** If mechanical ventilation is not adequate to maintain fumes or gases at levels below the occupational exposure limits for recognized health hazards such as arsenic, hexavalent chromium, and lead, an appropriate respirator must be used to reduce exposure to within accepted exposure limits.

14. **Securing and Storage of Cylinders and Machines:** When Hot Work is performed in a confined space, the gas cylinders or machines will be secured outside of the space. Cylinders must be secured from accidental movement or tipping during all operations. When not in use, cylinder valves must be shut off and capped and the cylinders stored so as to prevent tipping. Flammable gas cylinders must be stored separate from oxygen and other cylinders in a well-ventilated area.

15. **Hazardous Atmospheres:** Where a flammable or explosive atmosphere may be present, the work area atmosphere shall be tested. Work will be prohibited where the atmosphere is tested at levels equal to or greater than 10% of the Lower Explosive Limit (LEL).

Program Administration

1. **Enforcement:** The operation specific Hot Work Program will list the enforcement policies for this program.

2. **Clearly Defined Roles Responsibilities:** The operation specific Hot Work Program will clearly define the specific roles and responsibilities of each person involved in the process.

3. **Auditing:** The Hot Work Program will specifically identify how the program will be inspected/audited. Management is expected to actively participate in the inspection/auditing process:
    a. The operation supervisors shall conduct periodic inspections of the application of the Hot Work procedures to ensure that the requirements are being effectively implemented.
    b. Inspection records will be maintained that indicate the date of the inspection, the employees included in the inspection, and the person performing the inspection. The inspection records shall identify any deviations or inadequacies and the corrective actions taken.
    c. The operation will conduct an annual audit to assess the effectiveness of the Hot Work program. The audit must be conducted by an authorized person who is knowledgeable in the Hot Work program and who is external to the operation.

4. **Employee Training:** The operation must ensure that all employees involved in Hot Work are trained and knowledgeable in the program elements; i.e. fire prevention techniques, fire extinguisher uses and limitations, radiation hazards, eye protection requirements, clothing requirements, types of fumes and gases, ventilation techniques, and respiratory protection methods.

5. **Contactors:** Contract personnel performing hot work within company facilities must be familiar with the facility's policies and procedures for such work and must either comply with those procedures or implement procedures that are at least as effective and approved by the facility management.

Hot Work Specifics

.1 Frequently inspect all welding, cutting and grinding equipment. Take every precaution when operating welding, grinding, and cutting equipment to protect from arc, sparks, fires and other hazardous conditions.

.2 Use approved protective shielding whenever:

a. welding, grinding or cutting to protect persons and equipment below and nearby;

b. welding or cutting next to concrete to avoid injury due to spalling.

.3 Never carry cigarette lighters or matches when performing grinding, welding, cutting and burning operations.

.4 Take all precautions to protect equipment from the hazards of the work and surrounding conditions of traffic. Beware of hot pipes, undue heat etc.

.5 The immediate area shall be well ventilated. Additional ventilation may be required when welding, grinding or cutting brass or bronze and other alloy metals or zinc, copper, tin, lead and cadmium due to potential toxic fumes.

.6 If the hot work will be performed on a coated (i.e., painted) surface, it must be tested for lead. If lead is present, permit will not be issued until lead has been removed from the affected surface area.

.7 No hot work shall be performed on drums, barrels, tanks, vessels, piping systems or other closed containers that have held combustible material/gases unless they have been properly cleaned & depressurized. Examples of combustibles: Common volatile petroleum products, acids that react with metals to produce hydrogen, non-volatile oils or solids that can release hazards vapors when heated, and solvents or parts cleaners.

.8 Stations may have local line-breaking procedures and practices for process

systems that contain combustibles. Workers performing line-breaking operations and maintenance shall notify supervision prior to starting work and ensure appropriate measures (e.g., draining, flushing, purging, venting and gas monitoring) have been completed.

.9 Verification that piping/equipment internals and adjacent surface areas, such as cable trays, are clean and not flammable shall be completed prior to approving Hot Work Permits.

Hot Work Procedure (Permit System)

.1 Those involved with the cutting, welding, brazing, grinding, heat shrinking, and other burning or hot spark-producing processes must be familiar with the Station's Hot Work Permit procedure and local practices.

.2 The established Hot Work Procedure must always be followed.

.3 A permit must be obtained before starting any hot work process outside of the designated areas specified by site procedure.

.4 A trained fire watch shall be established at the specific hot work site specifically for fire watch. Fire watch shall be stationed throughout the hot work activity and for at least 30 minutes after the last hot work job is completed.

Fire Safety

.1 Empty drums or vessels that contained flammable liquids shall be steam cleaned or filled with carbon dioxide, nitrogen gas or water before welding or cutting on them. Maintain vent during this operation.

.2 Weld on transformers, tanks, oil circuit breakers, etc., ONLY after they are thoroughly ventilated or flooded with carbon dioxide or nitrogen gas.

.3 Avoid cutting or welding near flammable gases or vapors, on/or near any containers or flammable materials.

.4 Before any hot work is performed on acid equipment the equipment must be flushed, neutralized, and/or inert gas blanketed. Saw cutting is preferred over torch cutting whenever possible.

.5 Refer to line breaking practices and procedures prior to working on piping, systems and components containing hazardous liquids or gases. See section 145.05 for more details.

.8 Due to the potential exposure to Hexavalent Chromium fumes all hot work on stainless steel and chromium alloys will be conducted by certified welders using approved respirators. Point of operation exhaust systems will be used whenever possible. See supervisor if you have questions or concerns.

.9 An additional fire extinguisher shall always be with the fire watch.

.10 Hot surfaces left unattended shall be marked HOT.

.11 Properly vent jacketed vessels, tanks, and containers, cored or other hollow parts before performing hot work.

.12 Remove or protect all combustible materials within 35 ft. of hot work.

.13 Protect floor and wall openings within 35 ft. of hot work using fireproof blankets. If this cannot be accomplished, additional fire watches shall be posted on different elevations or in adjacent rooms.

.14 At the conclusion of the 30-minute fire watch the hot work permit can be terminated.

.15 Have a water source readily available when mowing operations are ongoing

.16 No Smoking within 100 ft. of an operational solar project.

.17 Do not park vehicles in tall grass areas. Catalytic converters can be an ignition source for dry grass.

Personal Protection

.1 Welder's clothing shall be of 100% natural fiber. All clothing (including gloves) shall not have turned up cuffs. Pants shall be long enough to cover shoe tops. Clothing shall be as free of oil and grease as possible.

.2 Use company approved welding jackets, spats and/or flame-resistant coveralls to protect your skin and personal apparel.

.3 Safety glasses with side shields shall be worn always under the welding helmet.

.4 To protect the face and body during welding and cutting, the operator shall wear approved welding goggles, a face shield or a helmet to protect the eyes and face from the heat, glare and flying particles of hot metal and scale. A face shield or welding helmet shall be worn in addition to safety goggles or safety glasses.

.5 Hard hats with welding hoods shall be worn when welding, except where the configuration of the workspace prevents the wearing of the hardhat.

.6 Avoid looking at the arc or flame without using a welder's helmet or hand shield.

.7 Helpers or attendants shall wear proper eye protection with the appropriate shaded lenses and proper protective clothing. Other personnel shall not observe welding operations unless they use approved eye protection.

.8 The Fire Watch shall also wear proper protective equipment to protect the eyes and body.

.9 Welding screens/shields shall be used whenever there is anyone nearby who could be exposed to the arc of the welding operation. Welders shall not strike an arc with an electrode whenever there is anyone nearby who might be affected by the arc.

.10 Rules and instructions supplied by the manufacturer or affixed to the welding machine or equipment shall be followed.

.11 Take special precautions to protect against accidental electrical contact when welding in wet places, on a metal floor or on other conducting surfaces.

.12 Always wash your hands after handling coated electrodes.

.13 When welding overhead, wear proper leathers and Nomex faceshield.

Cad Welding (Cadweld®)

.1 Cad welding shall only be performed by trained and authorized personnel. Precautions should be taken while performing such welding to protect personnel and property.

.2 Before beginning to Cadweld®, check the mold and materials to be welded. They must be free of grease and preheated to eliminate any moisture which might cause hot particles to blow out of the mold.

.3 When operating a Cadweld® mold, always wear gloves, safety glasses, face shield, hard hat and company-approved welding jacket, sleeves and/or flame-resistant apparel.

.4 Close the cover of the mold before you ignite the powder charge.

.5 Use an approved striker to ignite a Cadweld® charge.

.6 Proper precautions shall be taken to ensure the safety of other personnel that are not directly involved with the welding process.

Electric Arc Welding

.1 Always ground the frame of the welding machine properly before operating.

.2 Take special care to prevent electric shock.

.3 Do not strike an arc on a cylinder containing compressed gas.

.4 A suitable screen shall be provided around electric arc welding so as to protect people passing by or working in the immediate area.

.5 Approved eye protection shall be worn during electric welding operations.

.6 Welding gloves shall be worn while welding.

.7 When plugging or unplugging welding machines, always follow the Arc Flash Protective Clothing Procedure unless the receptacle has been de-energized.

ALWAYS ensure that the welding machine is in the "off" position before plugging it in.

Oxy-Acetylene Cylinders

.1 Securely fasten all oxygen and acetylene cylinders to prevent tipping or falling.

.2 When cylinders must be handled mechanically a suitable cradle or platform shall be used to house cylinders.

.3 Do not use electro-magnets to handle cylinders.

.4 Wherever it is practical, a suitable truck will be provided to mount and move the oxygen and the acetylene cylinders that comprise the welding outfit.

.5 When the cylinders are not mounted on this type of truck, the regulators must be removed.

.6 Valve protecting caps shall be kept securely in place at all times when cylinders are being transported or are not in use.

.7 When a welding/cutting unit is not in use (for more than 24 hrs.) or when it is being moved from one location to another:

a. close the cylinder valves;

b. bleed the hoses;

c. back off and remove the regulator valve; and

d. Install the protective cylinder cap.

.8 Store acetylene and oxygen tanks in designated areas only. Welding carts may be used to store tanks under the following conditions:

a. No more than a single acetylene cylinder and a single oxygen cylinder are on a cylinder cart. The cylinder cart must be specifically designed to hold/carry oxygen and acetylene cylinders in the upright position. The cylinders must be securely held to the cart (such as by straps, chains or another securing device).
b. The cart is on a firm, level surface.
c. The cart is not in an area where there is a reasonably foreseeable risk of being struck by vehicles, equipment, or materials (such as in a pathway for vehicles on a construction site).
d. Both cylinders must either have valves closed with protection caps on or are connected to a properly functioning and guarded regulator.

.9 Store cylinders in a vertical position and take proper precautions to avoid exposing them to radiators or to other excessive heat or make contact with electrical circuits.

.10 Empty cylinders must be plainly marked EMPTY or MT. Always close the valves on empty cylinders and replace protective cylinder caps.

.11 Under no circumstances are acetylene cylinders to be placed on their sides.

.12 Flash arrestors/check valves must be installed at the gauge to protect employees.

Oxy-Acetylene Welding

.1 Oxygen and acetylene hoses shall be of different colors, or otherwise identified and distinguished from each other. Red is the generally recognized color for fuel gas hose and green is the recognized color for oxygen hose.

.2 Oxygen and fuel gas hoses shall be protected from sparks, sharp edges, hot metals, and wheeled vehicles.

.3 Unnecessarily long hoses shall not be used. They are hard to purge properly.

.4 Direct flame or an electric arc shall never be permitted to contact any part of a compressed gas cylinder.

.5 Unless cylinders are firmly secured on a special carrier intended for this purpose, regulators shall be removed, and valve protective caps put in place before cylinders are moved. Cylinders may be rolled on bottom edge but never

dragged.

.6 Remove oil or grease that is found on valves, cylinders, couplings, regulators, hoses and other equipment. Oil and grease in the presence of oxygen under pressure may ignite violently.

.7 Reduce the pressure through a suitable pressure regulator attached to the cylinder valve.

.8 Backflow protectors shall be used.

.9 Fully release the pressure adjusting screws on the regulators before opening the cylinder.

.10 Always open the valves slowly standing to one side.

.11 Cylinder valves that cannot be opened by hand must be returned to the supplier.

.12 **NEVER use a hammer or wrench to force the valve open.** It may be necessary to close the valve quickly in an emergency.

.13 Valve off the oxygen and acetylene immediately if a flash back occurs.

.14 Cylinders that are not provided with fixed hand wheel valves must have a key or handle on the valve spindle or stem at all times while in use.

.15 Maintain control of the torch before igniting it. Only use a friction lighter or supplier-approved device to light compressed gas torches.

.16 Do not crimp hoses to temporarily stop the flow of gases.

.17 Dispose of any damaged hoses.

.18 Before working in a confined space refer to the Confined Space Entry Procedure.

.19 When using a torch in a confined space, ALWAYS leave the compressed gas cylinders on the outside in an approved storage area or under the attention of another employee.

.20 Keep aware of the potential depletion of oxygen.

.21 Handle and store oxy-acetylene welding equipment according to the rules governing compressed gas cylinders.

.22 Never use the recessed tops of acetylene tanks as a resting place for your tools

.23 Do not let the recessed tops fill with water. This would nullify the protection given by the fuse plugs.

.24 Never use oxygen or acetylene to blow out pipes, to dust off work or clothing

or to enrich the air in confined spaces. These gases speed up the process of burning and can create an unsafe situation and cause serious injury.

.25 If applicable, use portable Presto-O-Lite tanks only when they are equipped with an approved carrying device.

.26 Check valves (anti-flashback preventers) shall be used on all torches and gage sets.

.27 Never attempt to cut on any type of pressurized gas cylinder.

References:

This sPower Safety Policy was developed using the following publications as the source of the requirements contained herein:

1. *Occupational Safety and Health Administration (OSHA) 29 CFR 1910 Subpart Q*
2. *American Welding Society Fact Sheets*
3. *ANSI Z49.1:2005, Safety in Welding, Cutting, and Allied Processes*
4. *ANSI Z87.1:2003, Occupational and Educational Personal Eye and Face Protection Devices*
5. *NFPA 51B-2003, Standard for Fire Prevention During Welding, Cutting and Other Hot Work*

Other Resources:
The follow resources will provide guidance in the development of your operation specific Hot Work Program:

OSHA Standard 1910.252
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9853

American Welding Society Fact Sheets
http://www.aws.org/technical/facts/

ANSI Standard Z49.1:2005, Safety in Welding, Cutting, and Allied Processes

Compressed Gas Equipment

General

.1 Secure all compressed gas cylinders in position while they are in storage, transit or use per site procedures.

.2 Transport compressed gas using the approved handling methods.

.3 Do not use visibly damaged or leaking cylinders. Immediately report them to the person in charge.

.4 When cylinders are not in use, remove regulators and ensure caps are placed on the cylinders. Before removing a regulator from a cylinder, close the cylinder valve and release the gas from the regulator.

.5 Store compressed gas cylinders only in designated approved storage areas.

.6 Compressed gas cylinders shall not be taken into a confined space unless prior approval has been granted by the Safety Manager. At no time will these cylinders be left unattended and must be removed prior to the end of shift.

.7 Use compressed gases for approved purposes only.

.8 Always use approved regulators or flow control devices.

.9 Before using compressed gas equipment, inspect the hose and all connections for defects or loose fittings. Only use LP gas cylinders in a vertical position unless designed for other positions. Example: Exception is when used on forklifts. In these cases, follow manufacturer's instructions.

.10 Always store LP tanks in the vertical position, with LP regulators removed and plug installed. Secure LP tanks in transit.

.11 While transporting compressed gases, comply with DOT regulations, site Compressed Gas (if available) procedures and vendor instructions. If needed, refer to the Emergency Response Guide for other instructions (i.e., manifest, placarding, training, etc.).

.12 Only trained and authorized personnel may operate oxy-acetylene equipment. The person in charge will determine who is authorized.

.13 **NEVER** smoke when working in areas where gas cylinders are used or stored.

.14 All cylinders must be securely fastened at all times to prevent them from being jarred or knocked about while they are beingmoved.

.15 Remove cylinders that show signs of any damage, oil or grease.

a. tag the cylinder Defective Equipment, Do NotUse;

b. never attempt to clean oil or grease from cylinders.

.16 Use chains, straps or other effective means to securely fasten gas cylinders tothe wall or storage rack.

.17 If cylinders contain a flammable gas, or when different cylinders contain gases which have an affinity for one another, separate them from other cylinders by rated fire walls or keep them at least 20 feetapart.

NOTE: This rule applies to gases such as oxygen and hydrogen, oxygen and acetylene, acetylene and chlorine etc.

.18 Store full and empty cylinders separately. Empty cylinders shall be clearlymarked Empty or MT.

Cleaning with Compressed Air

.1 Compressed air shall not be used to clean clothing or hair or be used to clean dust or dirt from personnel.

.2 **The use of compressed air to blow combustible dust from equipment and surfaces is forbidden.** Compressed air shall not be used for cleaning in anyareas with combustible dust. Vacuum combustible dusts using an appropriately rated vacuum cleaner.

.3 Compressed air shall not be used for cleaning purposes except where reduced to less than 30 psi, and then only with effective chip guarding and personal protective equipment.

.4 The use of compressed gases or compressed air to clean off personnel isdangerous. Flying debris can be blown into your eyes and cause injury. Whenever using compressed air, eye protection shall be worn. “Mono-goggles” or equivalents are the minimum eye protection required when using compressed air for cleaning.

.5 **DO NOT** use compressed air to clean equipment or parts which are contaminated by potentially toxic materials unless appropriate PPE including respiratory protection is worn.
NEVER use compressed oxygen to clean off personnel, equipment or areas.
Doing so may create an explosive **atmosphere** and cause serious harm to personnel and damage to facilities.

Storage and Transportation of Compressed Gas Cylinders

.1 Only DOT-approved cylinders shall be accepted for company use.

.2 Cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet from highly combustible materials.

.3 When cylinders are stored inside of buildings, they shall be stored in well protected, well ventilated, and dry locations and at least 20 feet from highly combustible materials such as oil or excelsior.

.4 Cylinders shall be stored in specific assigned places away from elevators, stairs or gangways, or in areas that are subject to tampering by unauthorized persons. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects. Cylinders shall not be kept in unventilated enclosures such as lockers or cabinets.

a. Inside a building, fuel gas cylinders, except those in actual use or attached ready for use, shall be limited to a total gas capacity of 2,000 cubic feet or 300 pounds of liquefied petroleum gas.

b. For storage in excess of 2,000 cubic feet total gas capacity of cylinders or 300 pounds of liquefied petroleum gas, a separate room or compartment meeting OSHA 1910.253(b) shall be provided, or cylinders shall be kept outside or in a special building.

.5 Empty cylinders shall have their valves closed and covered with protective caps.

.6 Acetylene and liquefied fuel gas cylinders shall be stored with valve end up.

.7 Cylinders shall always be adequately secured with a non-combustible binding in an upright position when they are in storage, regardless if they are empty or full and shall be secured about ¾ of the way up the cylinder from the floor.

.8 Empty and full cylinders shall be stored separately, with empty cylinders being plainly identified as such to avoid confusion. Empty cylinders shall be tagged "EMPTY" or "MT".

.9 Oxygen cylinders, when not in use, shall be separated from fuel-gas cylinders or combustible materials (regardless whether full or empty) a minimum distance of 20 feet or with a fire-resistant barrier with a rating of at least ½ hour. Regulators must be removed, and the valve caps properly placed on all cylinders including those cylinders secured on portable carts (**NOTE**: Cylinders are considered to be "in storage" if it is anticipated that gas will not be drawn from the cylinder within 24 hours.)

Contractor Safety

General

.1 In addition to specific safety and health requirements set forth by sPower, contractors are required to have and abide by their own Safety and Health manual.

.2 Contractor employees are expected to conform to the established safety rules and work practices identified in the orientation. At all times, contracted employees are to perform work in accordance with applicable OSHA, state and local laws, standards, rules and procedures. (See section 122 for additional guidance).

.3 Employees are authorized to stop any work that is deemed or perceived to be unsafe per site stop work policies. If any concerns or questions about contractor work practices arise, contact your supervisor.

.4 If an unsafe act or a condition is noted that creates an imminent danger of serious injury, immediate steps shall be taken to stop the unsafe act or condition. Report the situation to the SPower Safety Manager.

.5 Because contractors often perform very specialized and potentially hazardous tasks their work must be controlled and periodically assessed. Some safety procedures and practices that SPower must address with contractors include:

a. Ensuring that employees know the applicable provisions of the emergency action plan including notification alarms, assembly locations and personnel accounting steps.

b. Informing employees of and enforcing safety rules at the facility, particularly those

   implemented to control the hazards during operations in which they are involved.

c. Requiring all subcontractors to abide by the same rules and policies set forth at the station.

d. Compliance with the plant's smoking policy.

e. Communicating any safety and health hazards (particularly non-obvious hazards and hazard communication issues). This includes Confined Space information, descriptions of hazardous processes, chemical information and other dangers that are not reasonably obvious.

f. Periodically evaluating the contract employer's fulfillment of responsibilities under his H&S program.

Portable Maintenance Buildings and Trailers

General

.1 All portable buildings or trailers shall be located in an area that minimizes any hazards to the occupants of the building, the building, or the site, and a safe distance away from overhead power lines ortransformers.

.2 All portable buildings and trailers will be properly secured, tires chocked, or jacks properly installed and leveled, prior to use. Portable buildings shall be grounded before power is connected at a work location.

.3 Properly rated electrical rubber gloves shall be used when plugging or unplugging portable buildings and trailers.

.4 Stairways shall have no step greater than 91/2 inches in height. Steps shall be secured so they do not move when they are being used and solid handrails shall be in place.

.5 Any door on a building or trailer that does not have steps or ramps leading up to the door shall be properly secured so no person may accidentally open the door and fall or step out of the door.

Mobile (Heavy) Equipment Operations

General

.1 Do not over fill or top off the vehicle's fuel tank. The fuel dispenser will shut off automatically when the tank is full.

.2 Use only the hold-open latch provided on the gasoline pump.

.3 Use only an approved safety container.

.4 When dispensing gasoline or fuel oil into a portable can always place the container on the ground and keep the pump nozzle in contact with the container to avoid a static electricity ignition of fuel vapors.

.5 Containers should never be filled inside a vehicle, in the trunk, on the bed of a pickup truck, a flat bed or on the floor of a trailer.

.6 Store gasoline in approved safety containers with approved labels as required by federal or state authorities only.

.7 Fill the container at a slow rate to minimize the chance of static ignition buildup and minimize incidents of spillage or splattering.

.8 Manually control the nozzle valve throughout the filling process.

.9 Use gasoline only in open areas with good ventilation or air movement.

.10 Fill containers to 95 percent of capacity to allow for thermal expansion.

.11 Place cap tightly on the container after filling

.12 If gasoline spills on the container, make sure that it has evaporated before placing the container in a vehicle.

.13 Report spills immediately.

.14 When transporting gasoline in a portable container, ensure the container is secure from tipping and sliding and never leave in the direct sunlight or in the trunk of a car.

Mobile Equipment Operation

.1 Only trained and qualified employees are permitted to operate mobile equipment or to be in areas where said equipment is being operated.

.2 Be aware of coal pile conditions prior to starting a job. Keep mindful of weather conditions, especially heavy rains and lightning.

.3 Avoid entering or exiting heavy equipment during a lightning storm. It is safer to stay put in the cab during lightning.

.4 Backhoes, bulldozers, loaders, graders, scrapers, etc. which have enclosed cabs are generally safe during nearby electrical storms. Shut down the equipment, close the doors, and sit with your hands in lap to wait out the storm. Do not touch anything that may be connected to the outside.

.5 Follow site procedures on equipment check-out before operating.

.6 Always use personal restraint devices (i.e., seatbelts) when operating mobile equipment.

.7 Always use a handrail or steps when getting on or off mobile equipment. Do not jump off mobile equipment.

.8 Only operate mobile equipment in adequate visibility.

.9 Only use established roadways for entering and exiting areas where excavating and earth moving is taking place.

.10 Always follow Site procedures on edge clearances and, if in doubt about a road or slope, contact the person in charge before proceeding.

.11 Bulldozers and tractors must be immobilized, and the blade lowered to the ground before they can be left unattended.

.12 Always be aware of working conditions and look in the direction of travel.

.13 Be aware of electrical transmission equipment when operating mobile equipment.

.14 When operating vacuum trucks, follow established Site procedures.

.15 When fueling equipment,

a. diesel refueling can be done while the engine is running, as long as:

   i. DOT-approved locking nozzles are used, otherwise the equipment must

   ii. be shut off;

b. no smoking is allowed;

c. the person must stay at the fueling station and not in the cab of the equipment.

.16 Do not push hot or smoldering coal in the reclaim hoppers.

.17 Perform daily pre-use checklist on heavy equipment prior to use.

Other Heavy Equipment

.1 The operator of all heavy equipment such as vacuum trucks, water trucks, backhoes, dozers, scrapers, front-end loaders, etc., shall operate the equipment in a safe manner at all times.

Only authorized and qualified personnel shall operate heavy equipment.

.2 All unsafe heavy equipment shall be taken out of service and tagged until repairs are made.

Backhoe Operations

.1 Before operating a backhoe, the estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior digging.

.2 Before a worker operates a backhoe, the operator of the backhoe shall make a pre-operational inspection. The operator shall also walk around the equipment to be sure the working area is clear.

.3 Outriggers on backhoes shall be lowered to the ground to stabilize the backhoe before digging.

Bulldozer and Loader Equipment

.1 Before operating a bulldozer, loader or other similar equipment, the operator of the equipment shall make a pre-use inspection. The operator shall also walk around the equipment to be sure the working area is clear.

.2 Only trained and authorized personnel may operate this equipment.

.3 If equipped, seat belts shall be worn by the operator of the equipment.

Fall Protection / Fall Arrest

Definitions

Anchorage – A secure connecting point or a terminating component of a fall protection

system or rescue system capable of safely supporting the impact forces applied by a fall protection system or anchorage subsystem.

Anchorage Connector - A component or subsystem that functions as the interface between the anchorage and the fall protection, work positioning, rope access, or rescue system for the purpose of coupling the system to the anchor.

Assisted Rescue – A rescue requiring the assistance from other individuals.

Authorized Person – A person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard.

Authorized Rescuer – A person assigned by the employer to perform rescue from fall protection. The Authorized Rescuer is required receive training and to periodically demonstrate the ability to perform rescue from fall protection.

Available Clearance – The distance from a reference point, such as a working platform, to the nearest obstruction that an authorized person might contact during a fall.

Body Belt (Safety Belt) - A strap with a means for securing it about the worker's waist. Body belts are prohibited to use as a body support in the arrest of a worker's fall.

Carabiner - A connector generally comprised of a trapezoidal or oval shaped body with a closed gate or similar arrangement that may be opened to attach another object and, when released, automatically closes to retain the object.

NOTE: *The automatic or self-locking type with a self-closing, self-locking gate that remains closed and locked until intentionally unlocked and opened for connection or disconnection, are the only type to be used.*

Certified Anchorage - An anchorage for fall arrest, positioning, restraint or rescue systems that a qualified person certifies to be capable of supporting the potential fall forces that could be encountered during a fall or that meet the criteria for a certified anchorage prescribed in this standard.

Clearance Requirement – The distance below an authorized person that must remain clear of obstructions in order to ensure that the authorized person does not make contact with any objects that would cause injury in the event of a fall.

Compatible - Capable of orderly, efficient integration and operation with other elements or components in a system, without the need of special modification or conversion, such that the connection will not fail when used in the manner intended.

NOTE: *It is possible for two components to be compatible with each other when properly*

configured and used, but to be incompatible when configured and/or used in a different manner. For example, certain connectors may be compatible with a particular anchorage connector if the anchorage connector is located overhead, but not if the anchorage connector is located at the user's feet.

Competent Person – An individual designated by the employer to be responsible for the immediate supervision, implementation and monitoring of the employer's managed fall protection program who, through training and knowledge, is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has the employer's authority to take prompt corrective action with regard to such hazards.

Connector - A component or element that is used to couple parts of the system together.

NOTE: *A connector may be an independent component (such as a carabiner) of a system or it may be an integral element of a component, hybrid component, subsystem or system (such as a buckle or D-Ring sewn into a body support or a snap hook spliced or sewn into a lanyard or self-retracting lanyard). Connectors are sometimes referred to as hardware.*

Continuous Fall Protection - One or more fall protection systems that provide 100% fall protection without interruption.

NOTE: *Providing continuous fall protection may require more than one fall protection system or a combination of prevention or protection measures.*

Deceleration Distance - The vertical distance between the user's fall arrest attachment at the onset of fall arrest forces during a fall, and after the fall arrest attachment comes to a complete stop.

NOTE: *The deceleration distance is determined by the response and interaction of all of the components of the fall arrest system (including deployment of Personal Energy Absorber, stretching of lanyards and lifelines, sagging of Horizontal Lifeline Systems, etc.). Deceleration distance does not include the dynamic elongation of the system. This dynamic elongation is proportional to the length of the connecting subsystem or lifeline and temporarily reaches maximum elongation when maximum arresting force is applied (Please refer to Appendix-1).*

Electrical Weatherhead: A weatherproof service drop entry point where overhead power or telephone wires enter a building or where wires transition between overhead and underground cables. At a building the wires enter a conduit, a protective metal pipe, and the weatherhead is a waterproof cap on the end of the conduit that allows the wires to enter without letting in water.

Energy (Shock) Absorber (Deceleration Device) - A component whose primary function is to dissipate energy and limit deceleration forces which the system imposes on the body during fall arrest.

Note: *Such devices may employ various principles such as deformation, friction, tearing of materials or breaking of stitches to accomplish energy absorption. An energy absorber causes an increase in the deceleration distance. An energy absorber may be borne by the user (personal) or be a part of a horizontal lifeline subsystem or a vertical lifeline subsystem.*

Energy Absorber, Horizontal lifeline – An Energy Absorber that is attached to one end of the anchorage or anchorage connectors of a horizontal lifeline subsystem.

Energy Absorber, Personal – An Energy Absorber that is attached to a harness.

Energy Absorber, Vertical lifeline - An Energy Absorber that is attached to the anchorage or anchorage connector of a vertical lifeline system.

Fall Arrest - The action or event of stopping a free fall or the instant where the downward free fall has been stopped.

Fall Arrester/Rope Grab - A device that travels on a lifeline and will automatically engage or lock onto the lifeline in the event of a fall.

NOTE: *A fall arrester usually employs the principle of inertial locking, cam lever locking or both. A rope grab is an example of a fall arrester.*

Fall Arrest System - The collection of equipment components that are configured to arrest a free fall.

NOTE: *A fall arrest system is typically comprised of components such as full body harnesses, lanyards, deceleration devices, horizontal lifelines, vertical lifelines, anchorages and anchorage connectors. Configured and used properly, a free fall will be arrested without exceeding the strength requirements of these standards.*

Fall Edge - The unprotected edge of a walking/working surface or an unprotected opening from which a person could fall to a lower surface or into a hazard.

Fall Hazard - Any location where a person is exposed to a potential free fall.

In addition to fall to a lower level, a fall hazard may exist, even on the same level, where the fall results in exposure to a hazard such as contact with a high temperature process, unguarded machinery or a hazardous liquid in an open tank. Such hazards may be eliminated by guardrails or other fall protection techniques. The elevation at which a potential fall becomes a fall hazard is often prescribed by laws or regulations and may depend upon the type of work being performed or the work environment.

Fall Protection- Any equipment, device or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall.

Fall Protection Procedures - A written series of logical steps that describes in detail the

specific practices, equipment and methods to be used to protect authorized persons from falling when exposed to fall hazards.

Fall Restraint System/ Travel Restraint System (TRS) - A combination of anchorage, anchorage connector, lanyard (or other means of connection) and body support that limits travel in such a manner that the user is not exposed to a fall hazard.

Fall Restricting Equipment (FRE) - A component of a fall restrict system (e.g. modified pole strap, rigid but articulated frame, or other such devices) that, when combined with other sub-components and elements, allows the climber of a pole to remain at his or her work position with both hands free and that performs a limited fall arrest function when contact is lost between the climber's spurs and the pole. Additionally, this equipment can be used in conjunction with a full body harness to prevent a worker getting near to the hazard zone,

such as the edge of a platform or other work surface.

Fall Restrict System (FRS) - A combination of a work positioning system (WPS) and Fall Restricting Equipment (FRE).

Floor Opening - An opening measuring 12 inches or more in its least dimension, in any floor, platform, pavement, or yard through which persons may fall; such as a hatchway, stair or ladder opening, pit, or large manhole. Floor openings occupied by elevators, dumb waiters, conveyors, machinery, or containers are excluded from this subpart.

Free Fall - The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free Fall Distance - The vertical distance traveled during a fall, measured from the onset of a fall from a walking/working surface to the point at which the fall protection system begins to arrest the fall.

NOTE: *This distance excludes deceleration distance and the elongation of a lifeline or lanyard but includes any distance that a deceleration device slides before engaging or the distance that a self- retracting lifeline or lanyard extends before fall arrest forces begin to be applied. The distance is measured using a common reference point, typically the fall arrest attachment point of the full body harness (D-Ring). The term free fall distance has applicability beyond just personal fall arrest systems. For example, as used in the context of a positioning system, free fall distance refers to the slack in the system, which will convert to travel distance during a fall event.*

Guardrail System - A passive system of horizontal rails and vertical posts that prevent a person from reaching a fall edge.

Harness, Full Body (Full Body Harness) - A body support designed to contain the torso and distribute the fall arrest forces over at least the upper thighs, pelvis, chest and shoulders.

Harness, Positioning - A body support that encircles and closes around the waist and legs with attachment elements appropriate for positioning.

Hazard Elimination - Changing the task, process, controls, or other means so as to remove the need for an authorized person to be exposed to a fall hazard.

Horizontal Lifeline (HLL) - A component of a horizontal lifeline subsystem, which consists of a flexible line with connectors or other coupling means at both ends for securing it horizontally between two anchorages or anchorage connectors.

Horizontal Lifeline Subsystem - An assembly, including the necessary connectors, comprised of a horizontal lifeline component and, optionally, of: (a) an energy absorber component or, (b) a lifeline
tensioner component, or both. This subsystem is normally attached at each end to an anchorage or anchorage connector and may also contain one or more intermediate anchorages. The end anchorages have the same elevation.

Inspection - An examination of equipment or systems to assess conformance to a particular standard.

Instructions, Manufacturer- Printed informational documents supplied with fall protection equipment.

Ladder Safety Device - A ladder safety device is any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls and which may incorporate such features as life belts, friction brakes, and sliding attachments.

Lanyard - A component consisting of a flexible rope, wire rope or strap, which typically has a connector at each end for connecting to the body support and to a fall arrester, energy absorber, anchorage connector or anchorage.

NOTE: *Lanyards perform a tethering function that restricts movement and can arrest a fall.*

Lifeline - A component of a fall protection system consisting of a flexible line designed to hang either vertically (vertical lifeline), or for connection to anchorages or anchorage connectors at both ends to span horizontally (horizontal lifeline).

Lower Levels - Those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.

Orthostatic Intolerance (Suspension Trauma) - Development of symptoms such as light-headedness, palpitations, tremulousness, poor concentration, fatigue, nausea, dizziness, headache, sweating, weakness and occasionally fainting during upright standing. While in a sedentary position, blood can accumulate in the veins, which are commonly called “venous pooling,” and cause orthostatic intolerance. Orthostatic intolerance also can occur when an individual moves suddenly after being sedentary for a long time.

Personal Fall Arrest System (PFAS) - An assembly of components and subsystems used to arrest a person in a free fall.

NOTE: *A system must always include a full body harness and connecting means between the harness and an anchorage or anchorage connector. Such connecting means may consist of a*

lanyard, energy absorber, fall arrester, lifeline, self-retracting, lanyard or suitable combinations of these.

Positioning Device System (PDS) - A full body harness system or a body belt incorporated into a full body harness or work positioning harness configured to allow an authorized person to be supported on an elevated vertical or inclined surface, such as a wall, power delivery poles, transmission towers, etc. and work with both hands free from body support.

Program Administrator – A person authorized by the AES Business Leader to be responsible for managing the AES Operational Business' Fall Protection Program.

Qualified Person - A person with a recognized degree or professional certificate and with extensive knowledge, training and experience in fall protection and field rescue who is capable of designing, analyzing, evaluating and specifying fall protection and rescue systems to the extent required by the ANSI Z359 standards.

Self-Retracting Device (SRD) - A device that contains a drum wound line that automatically locks at the onset of a fall to arrest the user, but that pays out from and automatically retracts onto the drum during normal movement of the person to whom the line is attached. After onset of a fall, the device automatically locks the drum and arrests the fall. Self-retracting devices include self-retracting lanyards (SRL's), self-retracting lanyards with integral rescue capability (SRL-R's), and self-retracting lanyards with leading edge capability (SRL-LE's) and, hybrid combinations of these.

Snap hook - A connector comprised of a hook-shaped body with a normally closed gate or similar arrangement that may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.

Note: *Only automatic-locking type with a self-closing and self-locking gate which remains closed and locked until intentionally unlocked and opened for connection or disconnection are to be used.*

Swing Fall - A pendulum-like motion that occurs during and/or after a vertical fall. A swing fall results when an authorized person begins a fall from a position that is located horizontally away from a fixed anchorage.

Toe board - A low protective barrier designed to prevent the fall of materials and equipment to lower levels. A standard toe board shall be 4 inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and with not more than ¼-inch clearance above floor level. It may be made of any substantial material either solid or with openings not over 1 inch in greatest dimension.

Total Fall Distance (TFD) - The total vertical distance a person falls, measured from the onset of a fall to the point where the person comes to rest after the fall is stopped. Note: Total fall

distance includes free fall distance and deceleration distance but excludes dynamic elongation. Total fall distance is often determined as the displacement of the dorsal D-Ring on the full body harness and is the sum of the free fall and the deceleration distance. It also includes any applicable swing fall distance. See Appendix A for calculation example.

Wall Opening - An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which persons may fall.

General

.1 Company approved fall arrest equipment shall be worn where there is a potential to fall four feet or more to a lower level from an unprotected height **and** in situations where a fall of any height into moving equipment or any other hazard exists and is unguarded.

.2 Examples include, but are not limited to, the following:

a. edges of hoist areas
b. transformers
c. tanks and containments
d. wells and pits
e. shaft openings and similar excavations
f. floor openings
g. platforms
h. walkways

.3 Personnel shall be trained and certified to use fall arrest equipment. No employee shall use fall protection equipment until they have received proper training.

.4 Inspect fall arrest equipment prior to each use, any defective component such as cuts, tears, abrasions, undue stretching, etc. requires the device to be taken out of service immediately. Any shock-absorbing lanyard that has been involved in a fall shall be removed from service and replaced.

.5 Store the equipment in a manner to keep it clean and away from elements that could cause deterioration.

.6 Do not use any defective equipment, or equipment that does not have a current formal inspection tag.

.7 Only double locking snap hooks shall be used with fall arrest systems.

.8 Anchor points used for fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and shall be capable of supporting at least 5000 pounds per person attached (structural steel is typically adequate for this purpose.

Note: Case-by-case exclusions from this rating may be given for retractable lanyards and other devices if approved by the vendor and/or fall protection competent person.

.9 An evaluation by a fall protection trained competent person shall be performed if the equipment, device or anchor's rating is in question.

.10 Conduct a job brief and complete a JSA and Hurt Search whenever fall arrest systems are required.

.11 Prior to climbing or working at heights, the person in charge of the climbing activities shall conduct a pre-job briefing.

Clarification Points

.1 Fall protection shall be used during the erection and dismantling of scaffolding where the installation and use of fall protection is feasible and does not create a greater hazard, as determined by a scaffold competent person.

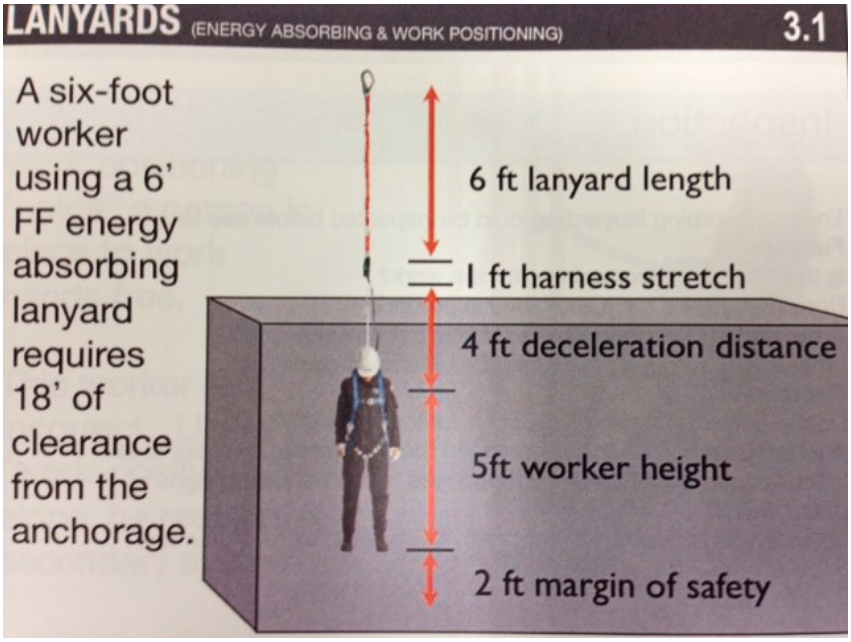
.2 Fall arrest equipment is not required when working on scaffold platforms that have been built from the ground up and have approved fall protection systems installed.

.3 Fall arrest equipment shall be used while climbing a ladder when three-point contact cannot be maintained.

.4 Fall arrest equipment shall be used if working from a ladder at a height greater than four feet and the work being performed is outside the side rails and three-point contact cannot be maintained.

.5 Personnel shall be continuously tied off to a suitable anchorage point.

.6 Fall protection is not required on tractor-trailer trucks, unless employees are working atop equipment that is positioned inside of or contiguous to a building or other structure where the installation of fall protection is feasible.



Aerial Work Platform Fall Protection

General

.1 Fall arrest equipment is required when operating Aerial Work Platforms (AWPs) or Aerial Lifts per the Equipment Operating procedures.

.2 When working from an articulating or boom type aerial work platform, it is required that a full body harness with an adjustable lanyard be used to provide fall restraint. The lanyard should be adjusted to be as short as possible (and may have a shock absorbing section, if permitted by the AWP manufacturer).

.3 Fall arrest equipment is not required when using non-articulating aerial work platforms (such as a scissors lift), provided the platform has an approved fall protection system installed and the manufacturer/supplier instructions do not require it.

.4 Fall arrest equipment (full body harness and lanyard) shall be used and attached to the inside of the bucket when using articulating elevated work platforms (such as a bucket truck).

.5 If special circumstances exist that encourage or require the operator to use fall protection on vertical aerial platform (aka scissors) lifts, Users **must** tie off to a proper anchor point that is not attached to or part of the lift itself **unless it is designed to do so per the manufacturer's instructions**.

Hand & Power Tools

General

.1 Proper training is required for inspecting, operating or using certain tools(e.g., grinders) or equipment (especially pneumatic and hydraulically operated).

.2 Only non-sparking tools and when working on hydrogen systems or any flammable gas (e.g., acetylene, propane and propylene) cylinders or components.

.3 A functional Ground Fault Circuit interrupter (GFCI) is required whenever portable electric tools, equipment, extension cords, portable lights (>50 vAC) or other instruments are used.

.4 GFCI's shall be used with extension cords to insure safety and always testedbefore use to ensure GFCI protection.

.5 For non-GFCI protected circuits, a portable GFCI shall be located as close to the receptacle source as possible.

Hand Tools

.1 Tools shall only be used for the purpose for which they were designed.

.2 Take care in handling and storing tools.

.3 Ensure all tools are in safe condition.

.4 All hand tools shall be inspected prior to each use, if defects are found the tool shall be removed from service immediately.

.5 Wrenches including adjustable, pipe, end, and socket shall not be used when jaws are sprung to the point that slippage occurs.

.6 Impact tools such as drift pins, wedges, and chisels shall be kept free of mushroomed heads.

.7 The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight.

.8 Non-sparking tools must be used in places where flammable or explosive gases may be present.

.9 Scabbards (protective sheath) and/or guards must be used to cover sharp-edged and pointed tools when not in use.

.10 Only use hand tools with proper fitting handle.

.11 Identify (label) hot tools, equipment or materials placed on tables or benches.

.12 Always use proper handles when working with jacks. Always remove handles when they are not being used.

.13 The use of metal-shielded spotlights or flashlights around exposed electrical equipment is strictly prohibited.

.14 Assure knives have a sharp edge. Dull knives are dangerous knives. Always cut away from the body. **NOTE**: Cut resistant gloves are required when using sharp tools.

.15 The use of traditional utility knives and box cutters is generally forbidden. Alternate tools (e.g., ceramic/auto-retracting box cutters) and methods shall be used when feasible.

Extension Cords

.1 All extension cords must be suitable for conditions of use and location and are not a substitute for the fixed wiring of a structure.

.2 Before each day's use, users shall visually inspect each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug.

Ensure there are no visible defects, cuts or missing pins evident. This requirement excludes cord sets and receptacles which are fixed and not exposed to damage.

.3 NEVER use any un-inspected or damaged electrical cords.

.4 Defects such as deformed or missing pins, insulation damage and indications of possible internal damage shall be identified. Equipment found damaged or defective shall not be used until repaired.

.5 Do not use tape (of any kind) for repairs. Use of electrical tape to protect nicks or abrasions impedes the visual inspection of the extension cords.

.6 All extension cords shall be equipped with a three (3) prong grounded attachment plug and shall be energized from an approved receptacle outlet.

.7 Protect extension cords from accidental damage. Sharp corners and projections shall be avoided. Where passing through doorways or other pinch points, extension cord shall be provided with protection to avoid damage.

.8 If possible, do not route extension cords where damage to the outer jacket or insulation could occur.

.9 GFCI's must be used along with extension cords and electric corded tools to insure safety. A portable GFCI shall be located as close to the receptacle source as possible to ensure GFCI protection.

.10 GFCI's shall be field tested before use. Perform a function test by pressing the Test and Reset buttons prior to use. Any GFCI cords failing this test must be taken out of service for disposal or repair by a qualified person.

Portable Lighting/Drop Lights

.1 Portable hand lamps shall be equipped with a handle of molded composition or other material approved for the purpose, and a substantial guard shall be attached to the lamp holder or the handle.

.2 Use only company approved portable hand lamps and suitable for conditions of use and location.

.3 Portable hand lamps used in explosion-hazard atmospheres, such as around coal dust, oil vapor or flammables gases shall be equipped with guards and vapor-proof globes. **Note**: Only hand lamps approved for explosion atmospheres shall be used.

.4 When using a hand lamp around switchboards, switch structures or electrical equipment, it shall have a non-metallic socket and guard.

.5 Portable Hand Lamps used in wet and/or other conductive locations, for example, drums tanks, and vessels, shall be operated at 12 volts or less. However, 110/120- volt hand lamps may be used if protected by a GFCI.

.6 ALWAYS use GFCI's with portable lights and droplights.

Cordless Tools

.1 Following good safety practices when using cordless tools is a must. Make a habit of including safety in all your activities.

.2 Always read and understand the tool's operator's manual, tool markings and the instructions packaged with the accessory before starting any work.

.3 Cordless tools are not intrinsically safe and may create sparks. Do not use them in an explosive atmosphere, near flammable liquids, gases or dust.

.4 To avoid accidental starting, remove batteries or lock the switch when the tool is not being used, when changing accessories, and when adjusting or cleaning tools/attachments.

.5 Keep hands away from rotating or moving parts.

.6 Broken or abused battery packs can leak chemicals that can cause irritation or burns. If you come into contact with these chemicals, flush the area with water. If it contacts the eyes, flush with water and seek medical help.

.7 Batteries may vent gas that can explode near a source of ignition. Never use any cordless tool in the presence of open flame.

.8 Do not place battery packs near fire or heat. The battery packs could explode.

Power Tools

.1 Before using any power tool, the proper PPE shall be required along with:

a. a current tag identifying the tool has been tested.

b. guards are in place;

c. GFCI protected.

d. a safety switch is operational, if applicable.

.2 While a tool/machine is in operation:

a. always use a suitable brush, hook or stick to remove chips or sawdust;

b. always make sure machines are attended while running;

c. secure tools or materials on machines where they can be jarred or pushed into a danger zone

d. use both hands when working with portable power tools.

.3 Unplug power tools when left unattended. Shut off and de-pressurize (bleed down) pneumatic- or hydraulic-operated tools when left unattended.

.4 Keep floor and working area around machines clean and free of oil and debris.

.5 Carefully inspect bench grinders before use. Be sure:

a. to perform a ring test prior to installing a new wheel;

b. the wheel is secure on the driving shaft;

c. the wheel is in good condition; dress or replace the wheel as necessary;

d. the tool rest is adjusted properly; (maximum of 1/8")

e. the eye shield is in good condition

f. the tongue guard maintains ¼" opening or less

g. to never to use the side of the wheel for grinding, unless specifically designed for side grinding.

h. use grinding wheels that are rated for speeds specified by the manufacturer.

i. to hold small objects firmly in place with a suitable tool.

j. to avoid grinding soft metals such as aluminum, brass or lead.

.6 Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

.7 Portable drills, saws, etc. shall be unplugged before attempting to change or adjust the bit or blade.

Drill Presses/Portable Drills

.1 Use the proper sized bit and drill speed.

.2 Properly secure the material prior to drilling.

.3 Ensure the drill is in good working condition

.4 Never force feed the drill.

.5 Use an auxiliary handle, as needed, for high torque jobs and auger work.

Power Saws

.1 Check that the blade is proper for the work.

.2 Keep hands and body out of the line of the cut. Do not force feed power saws.

.3 Use a push stick to push stock between the blade and the fence.

.4 Ensure that the blade has stopped rotating or reciprocating before removing cut pieces of material.

Portable Generators

.1 Portable generators shall only be used in a well-ventilated area.

.2 Always plug electrical appliances directly into the generator using the manufacturer-supplied cords. Use undamaged heavy-duty extension cords that are grounded (3-pronged).

.3 Use ground-fault circuit interrupters (GFCIs) as per the manufacturer's instructions.

.4 Maintain and operate portable generators in accordance with the manufacturer's use and safety instructions.

.5 Inspect portable generators for damage or loose fuel lines that may have occurred during transportation and/or handling.

.6 Keep the generator dry.

.7 Before refueling, shut down the generator. Never store fuel indoors.

.8 **Never attach a generator directly to the electrical system of a structure** (i.e., shed or trailer) unless the generator has a properly installed transfer switch because this creates a risk of electrocution for maintenanceworkers.

.9 Ground the windings of portable generators only in special situations, where the person in charge determines it is safe to do so because of the possibility ofcontact with energized conductors orequipment.

.10 Generators must be ground checkedperiodically.

.11 Do not connect the generator into a circuit that could have a back-feedcondition.

Hydraulic and Pneumatic Equipment

.1 Check the hose and all connections attached to hydraulic and pneumatic equipment for defects or loose connections before using it.

.2 Be aware of equipment movement when disconnecting it from a pneumatic or hydraulic pressuresupply.

.3 Do not place hoses where someone may trip overthem.

.4 Hose pins or clips are required at allconnections.

.5 Due to the possibility of high pressure in hydraulic and pneumatic systems, do not attempt to stop any leak with your hand or any other part of the body.

.6 If hydraulic fluid penetrates any part of the skin, seek medicalattention immediately.

.7 Do not exceed manufacturer-rated pressure for hoses and fittings.

.8 When using compressed air to blow dust from equipment, the compressed air shall be regulated and not to exceed 30 psi. VACUUMING IS THE PREFERRED METHOD TOREMOVE DUST. **Note: Respiratory protection may be required.** Consult station Safety and Health Specialist

.9 Compressed air shall not be directed at or used on oneself or another person for any reason.

.10 Do NOT use compressed air to clean yourself off. This includes clothing you are wearing. Serious injury may result if compressed air is used against your body.

.11 You may use compressed air to blow off clothing **as long as you are not wearing it** and only with hoses equipped with nozzles that reduce pressure to 30 lbs.

.12 Exercise caution in dusty areas when using compressed air. Eye injury may occur, and the formation of suspended dust can cause a potentially explosive condition.

Hose Couplings

.1 Fasten hose couplings securely.

.2 Maintain control of pressurized air hose at all times.

.3 Chicago-style couplings shall have safety pins installed to prevent disconnection.

.4 Higher pressure (>100 psi) water hoses shall have safety cables or equivalent between connections.

Air Hammers

.1 Proper PPE is required when using an air hammer.

.2 Before using an air hammer, survey the area for hidden hazards, such as buried conduit or cable.

.3 Lay air hammer in a position that prevents accidental start up.

Impact Wrenches

.1 Impact sockets, extensions and universal joints should fit tightly on the wrench shaft.

.2 Only tools designed for impact use shall be used in conjunction with impact wrenches.

Special Purpose Tools

.1 Special purpose power tools include but are not limited to hydrolasers, steam jennies, grit blasters, pneumatic nailers, require proper training and authorization before their use.

Abrasive Blasting

.1 Before any abrasive blasting occurs, consult with the station H&S Specialist.

.2 When blasting objects with an abrasive material, special PPE is required Consult with the station's Safety And Health Specialist for assistance in the selection of PPE.

Paint or Solvent Spraying

.1 All air-pressure spray application guns must be equipped with metal paint containers.

.2 Never use spray guns in the vicinity of open flames or sparks. The vapors can be easily ignited. Follow MSDS/SDS precautions.

.3 When using spraying equipment:

a. use extreme care to protect others and yourself from the hazards of the work; and

b. use approved respirators whenever conditions require their use.

.4 Use a power sprayer in a confined space only with proper PPE.

.5 All painting should be done in well ventilated areas. Contact the station H&S specialist or designee prior to painting or solvent spraying.

.6 Examples of potential hazards may include, but are not limited to:

a. low oxygen levels;

b. explosive atmosphere;

c. respiratory hazards.

Defective Tools

.1 All tools found defective must be tagged or marked appropriately and removed from service. Tagged or any defective tools are not to be used until they are repaired.

Industrial Hoses

.1 Hose assemblies must be inspected prior to each use. Worn out fittings, attachment devices, hose and accessory items must be replaced. Retaining devices (safety devices) such as clips, cables or chains must be used.

.2 Clamps must be checked regularly to the specified torque found in the product literature.

.3 Under no circumstance should any coupling be disconnected while under pressure unless the coupling is specifically designed to do so. Disconnecting couplings under pressure could result in serious injury or death, and destruction to property and equipment.

.4 Hose assemblies when used improperly or in the wrong application can be dangerous. The maximum working pressure shown on the hose is not an indication of the working pressure of the assembly. Based on the hose, fittings and attachment method used, all assemblies should be permanently marked with the designed working pressure and the intended media.

.5 The assembly working pressure should be permanently displayed. Hose assemblies must be used for the intended service only. Never alter manufactured product or substitute component parts.

.6 Inspect hose, fittings, clamping devices and safety accessories before each use. Never assume or take for granted that the coupling or attachment devices are properly installed.

.7 Fittings, hose and clamping devices that are worn out or damaged must be removed from service.

.8 Industry practices have established the following guidelines for hose color code and applicable systems to prevent contamination:

Color – Application

Red - Water and Air Blue – Petroleum products Black – Steam

Tool Containers

.1 When working on scaffolds or platforms, keep all tools in toolbox or container when not in use.

.2 Tool bags or buckets should be used to the maximum extent possible when moving tools around the plant. They shall be used for transporting tools and small parts when climbing ladders or scaffolds.

.3 When lifting tool bags or buckets, use properly rated rope with a minimum ½" diameter. Use good rope tying practices and ensure tools are secured in the container prior to lifting.

***Note**: Using a granny knot is unsafe since it is not self- locking and can release under tension. A square knot, bowline or hitch knot are more appropriate in rope lifting applications.*

Portable (Hand-held) Grinders

.1 Portable grinders, angle grinders, "Metabos" and the like are powerful tools that can cause serious injury if not used properly. Most angle grinder injuries are from metal particles lodging in the operator's eye. Kickback, where the disc is thrust away from the object it is grinding, can result in severe cuts to hands, arms, head, torso and legs. Discs can shatter or explode, sending pieces flying across the work area.

.2 Any newly purchased grinders should have safety features including an anti-kickback safety clutch and a braking system to stop the wheel quickly. Existing grinders may continue to be used as long as they pass visual inspection and are safe to operate.

.3 Safe procedures to follow:

a. Ensure the angle grinder is an appropriate tool for the task.

b. Angle grinder attachment must to be appropriate for the task and the materials being worked.

c. Inspect the tool before using. Angle grinders and their attachments need to be in good working condition. Ensure all electrical connections are safe.

d. Don't use if the guard is in the wrong place or not attached at all.

e. All hand-held powered grinders must be equipped with a momentary contact or constant pressure "on/off" control switch that will shut off power when the pressure is released. Trigger locks must be made inoperable.

f. Wear wide vision goggles, or safety glasses and a faceshield.

g. Always use the correct type of disc. Make sure the disc speed limit (rpm) is greater than the angle grinder operating speed.

h. Ensure the guard and handles are secure.

i. Ensure the correct flange and locking nut are used for the type of disc. Otherwise, the disc can shatter at high speed.

j. Ensure the disc is not defective or damaged.

k. Don't use attachments that are worn or damaged

l. Allow the grinder to "run up" to operating speed before applying it to the job.

m. Hold the grinder against the work piece with minimum pressure so the disc doesn't "dig in" and cause it to kick back.

n. Never bump the grinder on to the work, or let the disc hit any other object while grinding.

o. Keep the grinding disc at a 15 to 30-degree angle to the work.

p. Ensure the work piece is held firmly in a bench vice when appropriate.

q. Keep the work at waist height during grinding. When working with an angle grinder, the work should be performed in the best working zone, this is between the worker's shoulders and knees.

r. Stop the grinder regularly to rest your hands and arms.

s. When not in use, disconnect the power and place the grinder on a bench with the disc facing upwards.

t. Never put a grinder down until the disc stops rotating.

u. Disconnect power before changing discs.

v. Never use a cut off wheel for grinding or a grinding disc for cutting.

w. Dispose of any disc that has been dropped. Cracked or weakened discs can shatter in use.

x. Grinders must be stored without disks attached. Disks not attached to grinders shall be stored per manufacturer's requirements and/or specifications.

Portable (Space) Heaters

.1 Office and Similar Locations – When located in these locations, portable space heaters must be:

a. Electrically powered, operate on 110 volts, and use ≤1500 watts to operate. Portable space heaters that burn fossil fuels (natural gas or propane) are NOT acceptable.
b. Tested and approved by FM, UL or any other nationally recognized testing lab.
c. Used in approved areas where the electrical circuit can handle the additional electrical loads caused by space heaters without tripping circuit breakers or affecting communication and IT lines.
d. Inspected by an approved person and tagged or labeled as acceptable for use. Inspections will be performed at least annually - prior to initial use for the season.

.2 At a minimum, any heater eligible for inspection/approval must-have:

a. No known recalls in effect from the Consumer Products Safety Commission,
b. An operable tip-over protection shut-off feature,
c. A working thermostat,
d. Original screens or guarding over the heating element,
e. No visible physical damage that impairs its operation,
f. Original power cord with no obvious damage nicks or cuts. and
g. No visible spliced wire or taped connections.

.3 Operation - all portable heaters shall be used in accordance with the manufacturer's labeling and/or operating instructions. In addition, users shall use following safety practices. Heaters shall be:

a. Plugged directly into a grounded wall receptacle - extension cords, plug strips, and surge protectors must not be used due to potential overheating.
b. Kept at least 36" away from flammable liquids orgases.
c. Maintain adequate clearance between the heater and combustible materials, such as paper or clothing, per operating instructions or labels. Lacking instructions, the minimum adequate clearances between the heater and combustible materials are 36 inches from the front, 18 inches from the sides and back.
d. Located in plain sight and clearly visible.
e. Unplugged or turned off when the area of use is not occupied for more than 15 minutes.
f. Kept in good working condition. At least monthly check the electric cord on your existing unit for damage. The insulation on the heaters will break down eventually. If the cord gets hot, frayed, or cracked, do not use the heater.
g. Cleaned, as needed. A dirty heater can overheat, resulting in bad odors, smoldering, or fire.
h. Placed away from exits, exit pathways, and obstructions that may cause tripping hazards.
i. Used where no articles are placed on top of or touching the heater.
j. Turn off heater and report any unusual buzzing, burning smells, popping sounds, sparks and electrical arcing of any kind.

.4 Inform your supervisor or Health and Safety Specialist, if the office circuit breaker trips, if the heater is damaged or fails to operate properly. This situation can be indicative of an overloaded circuit or other heater or electrical system malfunction.

Portable Industrial Heaters (e.g., Kerosene, LPG, etc.)

.1 General
.2 Industrial heater of this type can be dangerous to operate in plant environments.

Always ensure that the Manufacturer's instructions are followed and familiar to users. Plant, Chemical and Process Areas – When located in these areas, portable heaters (e.g., "Salamanders") shall be approved and appropriate for use in the intended location and environment (e.g., natural gas heaters may not be used in offices or locations with coal/coal dust).

WARNING: Use of any fossil fuel burning portable heating equipment shall always be performed in a well-ventilated area.

a. When filling the fuel tanks of Kerosene equipment, ensure the flame is completely extinguished and ensure the fuel being added is Kerosene.

b. LPG: Make sure all fittings are tight and do not leak before lighting the equipment.

c. Electric: Check electrical cords for wear to ensure they are in safe condition. Ensure you are plugging equipment into the proper voltage source.

d. Never leave portable heaters operating and unattended for long periods of time.

.2 These heaters are used in many industrial settings. Most accidents that occur are fires caused when the units are placed too close to combustible materials (paper, wood, plastics, etc.) or near flammable solvents or paints.

.3 Other concerns are burns to employees and/or the potential for oxygen deficiency and carbon dioxide poisoning in confined areas that do not have adequate cross ventilation.

.4 It is important that common sense precautions be taken to prevent fires or injuries that could result if they are improperly used. Precautions to be followed are:

a. Always maintain a minimum distance of at least 3 feet from any combustible materials and observe an overhead clearance of at least 6 feet to prevent fires. Also, the units shall be kept a minimum of 6 feet away from any spare LP containers.

b. Tarpaulins, canvas, and plastic coverings have been the major fuel source in many fires started with salamanders, so keep these combustibles at least 10 feet away from any open flame heater.

c. Always be alert for hot surfaces on and around the heater. Don't touch metal parts that could become heated. Even though they don't look hot, they can cause serious burns. Keep your employees aware of the hazard.

d. All portable LP Gas heaters should have an approved automatic device to shut off the flow of gas to the main burner and pilot, if used, in the event of flame extinguishment or combustion failure.

e. Salamanders are designed to be used in a horizontal position. They are not to be used in other positions unless permitted by the manufacturers' instructions.

f. Always follow the instructions when lighting the heater or shutting it down. Don't attempt shortcuts.

g. Periodic checks of the units are important just to be sure that it continues to burn properly. A quick inspection takes very little time and may prevent an accident.

h. Be very careful when you place a salamander in a confined place. Some of these heaters use up oxygen quickly and generate carbon monoxide vapors. There should always be an adequate source of fresh air when fuel- air heaters are used.

i. When fueling or changing LP Gas tanks follow the manufacturer's instructions and be sure the unit is cool to the touch. It's also a good time to check for leaks in fuel lines, hoses or connections.

j. If using LP Gas, remember that LP Gas is heavier than air. Leaking vapor from cylinders tend to seek the lower level of a room and could move to other areas easily. Be sure that leaks are reported.

k. LP Gas cylinders not in use should be properly stored and secured outside, away from the building.

l. **DO NOT use these heaters in areas where combustible dust or vapors may be present.** Sweeping of dust should not be performed near these heaters. Purging tanks should not be performed unless it has been verified that the vapors are not combustible/flammable.

Calrod Heaters

.1 In addition to the other listed portable heater practices, follow these precautions **before** using any "Calrod" heater:

a. Annual Inspections must be completed by the maintenance department. The inspection date must be on the cord.

b. Visually inspect the heaters for any damage to the power cord, heating elements, screen, frame etc.

c. Most Calrod heaters do not have an electrical disconnect and must be plugged into a 480-volt outlet. When activating the heater, keep everyone clear of the front of the heating elements in the event of a failure.

d. Do not allow combustible materials (i.e., plastics, wood, aerosol cans etc.) within 15 feet in front of the heating elements.

e. Cannot be used in hazardous areas (Coal handling, hydrogen areas etc.).

Power Lawn Mowers, Powered Trimmers and Chain Saws

.1 Operators shall read and follow the safety instructions in the equipment's Owner's Manual. All power lawn mowers shall be equipped with the guards provided by the manufacturer and shall remain in place while mower is in use.

.2 Operators shall be aware of the potential for exposures to poisonous plants (e.g., poison ivy, poison oak), insects, reptiles, or other animals that could cause injury. Appropriate clothing and footwear shall be worn at all times.

Material Handling Equipment

General

- Ensure adequate ventilation in the areas where using lift trucks or other vehicles that are run by internal combustion engines.
- All internal combustion engines must be refueled in the open or in well ventilated areas.
- While refueling:
    a. always turn off the engine;
    b. do not smoke and,
    c. remain at the fueling station outside of the equipment cab.
- Diesel refueling can be done while the engine is running, as long as DOT-approved locking nozzles are used.
- Internal combustion equipment should only be used in well ventilated areas. Consult your supervisor for any assistance.
- Only approved equipment shall be used in hazardous areas. Consult your supervisor or Safety Manager regarding forklifts in hazardous areas.
- Operators shall be trained on properly operating the equipment to perform the material handling function or activity.
- Do not exceed the load capacity of the lifting equipment.
- Be aware of the material being moved and the potential hazards associated with it.

Powered Industrial Trucks ("Forklifts")

- Only trained and authorized personnel shall operate power industrial trucks (forklifts).
- Before operating a forklift, a Pre-Shift Operational Inspection must be performed by the operator. Equipment that is deemed unsafe to operate shall be tagged out of service using appropriate means.

- Refer to the equipment inspection forms for specific visual and operational inspection requirements. This generally includes:
  - ✓ battery
  - ✓ tires
  - ✓ truck attachments (e.g., masts, fork extensions)
  - ✓ lights
  - ✓ horns/alarms;
  - ✓ steering
  - ✓ brakes
  - ✓ gauges/instruments
  - ✓ dead man pedal or seat
- Properly mounting and dismounting from a forklift is to face the truck and use a three-point stance with two hands and one foot in contact with the floor or unit at all times.
- Use personal restraint device (seat belts) while operating a forklift.
- Keep hands, arms and legs inside the forklift cab at all times.
- Never allow anyone to ride on the forklift
- Pedestrians always have the right-of-way.
- Keep a clear and safe distance/area at all times.
- Watch for pedestrians coming from blind spots. Sound horn when approaching corners and blind spots
- Be aware of any bumps or seams that may jar a load or possibly cause the forklift to shift.
- Changes in the surface area (uneven, unstable ground) requires a slower speed to be maintained.
- Cross railroad tracks promptly and at an angle. As close to perpendicular (90 degrees) is preferred.
- Before entering a trailer, truck, or a railcar, make sure it's been properly secured. Check:
  - ✓ wheel chocks
  - ✓ trailer jacks (if trailer is not coupled to a tractor);
  - ✓ trailer restraint is in use (if station has locking devices).
  - ✓ A forklift truck shall not be used as a personal lifting platform.
  - ✓ Maintain a safe speed at all times. A safe speed is determined by:

- ✓ the type of load;
- ✓ the width and congestion of aisles;
- ✓ space allowed for operation;
- ✓ the number of pedestrians in the area;
- ✓ stopping distance needed in case of an emergency.

- Only properly trained and qualified personnel are authorized to operate a forklift
- Always face the direction of travel; Travel in reverse when forward vision is restricted. Back down ramps and inclines, unless conditions restrict backing down.

  When taking a truck in an elevator:

  - ✓ verify the capacity of the elevator is strong enough to support both the
  - ✓ load, and the weight of the lift truck combined;
  - ✓ turn off the motor;
  - ✓ set the brakes;
- The combined weight of the load and the forklift shall not exceed the floor load rating anywhere (i.e. grating, floor pulls, metal decking) in the path of the truck.
- When leaving a truck unattended:
  - ✓ lower the forks so the skid or forks rest on the floor;
  - ✓ turn engine off;
  - ✓ park lifts in designated spots.

Hand Trucks

- When operating any hand truck, follow the general rules regarding safe loading and operation procedures.

  - ✓ pay particular attention to the size of the load and the safest methods of moving and handling it;
  - ✓ maintain loads that can be safely moved. Do not overload the hand truck.
  - ✓ riding on a hand lift truck is prohibited.
  - ✓ if the truck is unsafe to operate it shall be properly tagged with a defective equipment tag and not used until repairs have been make.

Skids and Pallets

.1 Guard against overloads and unbalanced loads on skids or pallets. Use blocks under skids for additional support when loading or unloading heavyequipment.

.2 Lay empty skids flat.

.3 Store as few empty pallets as possible inside buildings and restrict the stacks inheight to a maximum of six pallets.

Safe Loading

.1 When loading any truck, limit the load to the safe capacity of the truck.

.2 Make sure the material will not slide or roll off.

.3 Be certain that there is a clear line of vision over the top of the load, if not, have someone go first to clear the way and give adequate warnings.

.4 Never haul loads that are not properly stacked.

.5 When unloading material adjacent to railroad tracks, maintain at least five (5) feet clearance at all times from the rails to the material.

.6 When unloading railroad freight cars, follow the approved procedures applicable to each receiving location.

Operation

.1 When operating a powered lift truck, shop mule, or crane, slow down, sound the horn, and proceed cautiously when:

a. going around corners;

b. entering the platform or main aisle;

c. passing through doors;

d. approaching pedestrians;

e. approaching aisle intersections; and

f. approaching wet and slippery floors.

.2 Sounding a warning does not give you the right-of-way. Always proceed cautiously until pedestrians are out of the way.

Crane Operations

EXTREME CAUTION and awareness is required when working in the vicinity of any crane. Failing to keep alert to crane operations or notifying and keeping in contact with the crane operator(s) could result in serious injury or death.

ALWAYS look up and be aware of overhead crane lifts and hoisting.

General

.1 Cranes shall meet applicable OSHA and ANSI requirements.

.2 Periodic (including shift, monthly and annual) crane inspections must be performed per OSHA requirements. These inspections shall be documented.

.3 Crane Operators must conduct visual and operational checks at the beginning of each shift

.4 Check the crane route of travel before operating for clearances and hazards.

.5 Operate cranes, only if qualified and authorized to do so. As of November 2014, crane operators must be certified per OSHA requirements. **Note:** All crane operators (including mobile, overhead, boom and gantry with a rated capacity >2000 lbs.) engaged in a construction activity must be certified. **Per policy, we require that ALL crane operators performing a lift at any time shall be certified in accordance with OSHA's Cranes and Derricks standard.**

.6 All crane operators must be medically and technically certified for crane operations.

.7 Crane operators shall have radio communication while in the cab for emergency use and as an additional option for communication with the signalperson.

.8 Whenever the vision of operation is obstructed, the crane operator must maintain visual or radio contact with signal person before moving the boom, bucket or hook.

.9 Ensure crane operator knows who the signal person is, and both understand the same signals. Refer to section 119 in this handbook for proper signaling methods.

.10 Lifts and routes need to be pre-planned. **ALL crane lifts require a pre-job brief.**

.11 Extreme care shall be taken when loading or unloading materials with a crane. Workers handling slings must stand on the side of the material, opposite the direction in which the boom is to swing.

.12 Know the weight of the load & the capacity of your lifting equipment before starting.

.13 Do not exceed the rated capacity of the crane. Refer to crane specifications for load capacities at all working radiuses. If load exceeds 75% of crane capacity, a critical lift plan is required.

.14 Do not walk or work under loads (material or machinery) that is suspended from cranes or other hoisting equipment unless the work operation absolutely requires this to occur. During such operations, persons shall minimize their time below the load and both the person in charge and the workers must utilize whatever protective measures are necessary to prevent an incident from occurring.

.15 Crane operators shall avoid carrying loads over people. If the work requires an inspection, alignment etc. to be conducted in proximity to a suspended load, additional measures shall be taken to ensure safety is maximized.

.16 While a lift is in progress, landing areas shall be marked with red barricade tape or hard barrier. Hard barricade or tape off (using red danger tape – refer section 106) work areas, load paths, landing/staging zones and places where items may be dropped.

.17 Lift paths must be monitored, and unnecessary persons kept out while the lift is in progress. Warn workers in the path of traveling loads and move workers to a safe area until the load has passed.

.18 Do NOT perform lifts over hydrogen farms or trailers.

.19 Loads should be lifted only to the minimum height to clear obstacles.

.20 Non-conductive tag line(s) shall be utilized to control **ALL** loads, unless the use of a tag line(s) would create a greater hazard to personnel or property.

.21 Be aware of overhead hazards (live lines, etc.) and maintain required clearances. The horizontal/vertical working clearance is a minimum of 20 ft. minimum approach distance when working with mobile cranes near power lines up to 350 KV. See OSHA 1926.1407.

.22 Never leave the crane while the load is suspended,

a. unless the load is over a barricaded area, or

b. unless the load is blocked up or otherwise supported from below.

.23 Immobilize any crane before it is left unattended.

.24 No one is permitted to be outside the cab of a mobile crane, including on the crane hook or bucket.

.25 Climbing on or jumping off a moving crane is prohibited.

.26 The swing radius of all mobile cranes shall be marked off using barriers, barricade tape or cones, as appropriate.

.27 Pedestrians and nearby workers shall avoid walking in the working area (or swing radius) of a mobile crane.

.28 Jobs involving the use of mobile equipment shall be assessed for safe operation whenever there is a potential for immediate adverse weather conditions to occur. If weather conditions change during the job and personal safety is in jeopardy the supervisor shall be consulted for further direction. Typical mobile equipment includes cranes, personal lifting devices, cherry pickers, etc.

.29 Proper precautions shall be taken when wind velocity exceeds 20-mph. Cease all outside crane work when wind or gusts exceed 30-mph.

.30 If wind exceeds 35 miles per hour, land all loads and apply drum brakes, lower boom onto blocking at ground level or restrain it and apply swing and travel brakes and/or locks.

Safe Operating Practices for Mobile and Overhead Cranes

.1 Universal hand signals shall be used in the operation of Mobile and Overhead Cranes. Each lift shall have a designated signal person; however, the operator shall obey the stop signal given by anyone.

.2 On Mobile Cranes all outriggers shall be used when lifting material. The outriggers shall be set on pads on a stable surface.

.3 Personnel shall not be permitted to stand or work under a suspended load, or inside the angle of a winch line. No person shall stand or work near a cable, chain, or rope under tension unless the nature of the work requires it.

.4 Personnel shall not ride on any part of a mechanical lifting device such as a boom, hook, derrick, or crane other than that provided for by the manufacturer and wearing proper PPE.

.5 Loads shall be lifted only when the hook is directly over the center of gravity. If not, the load will shift when airborne until the center of gravity lines up with the hook.

.6 Mobile cranes and gantry cranes shall not be used to make a side pull. Side loading drastically reduces the equipment's capacity.

.7 Never use tipping as a sign of overloading. **Cranes can fail structurally before they tip, and the operator will have no warning before it happens.**

.8 Never allow the boom of a crane to come in contact with any structure. Contacting a structure with a boom under tension could cause the boom to weaken or collapse.

.9 Anti-two-blocking devices shall be checked during inspection for proper operation.

.10 Lifting the load with a crane and then transporting it by driving the carrier (pick and carry) is a task requiring caution and skill. In addition to the manufacturer's instructions the following precautions shall be followed:

a. Boom shall be as short as possible and carried in line with the direction of travel and in line with axis of the crane.

b. Boom shall be as low as possible with the load close to the carrier.

c. Load shall be close to the ground and tied back to the carrier of the crane if possible or controlled with taglines.

d. The crane's tires shall be in good condition and inflated to the proper air pressure. Route shall be smooth, firm, and level as possible. An unleveled route could cause the boom and cables to be shock loaded.

e. Anytime a Mobile Crane is used or moved in close proximity to electrical conductors, a trained and competent person shall be designated as a spotter for the sole purpose of ensuring proper clearances are maintained between the crane equipment and the electrical conductors.

.11 Tilt up operation must be approached with caution. The following precautions shall be observed:

a. Always tilt away from the crane.

b. Ensure that the crane is not side loaded.

c. Whenever anything is raised or lifted from a horizontal position to the vertical position the crane load will be equal to one-half the weight of the object until the object is vertical and clears the ground. At that point the crane's load increases to 100% of the full weight of the object.

.12 For the first lift of each day, the load shall be test-lifted, and the brakes checked (load lifted several inches and then tested). Limit switches on cranes shall be tested at the beginning of each shift but should not be relied upon to stop the motor. Action shall be controlled by the operator at all times.

.13 Gantry cranes on outdoor installations shall be equipped with rail clamps. When the crane is not in use, the circuit breaker shall be open, and both rail clamps and brakes shall be applied.

.14 When leaving cranes unattended, lower the load, place all controls in neutral, shut down engine or open the circuit breaker, set all brakes and locking devices.

a. The cranes hoist rope shall never be lowered so that less than two wraps remain on the drum.

Special Precautions

.1 Cables must be examined for defects. Inspect rigging equipment before each lift.

.2 When in doubt use outriggers.

.3 Properly ground cranes in areas such as switchyards where energized conductors may be present.

.4 Ensure minimum clearances from overhead lines and energized conductors are maintained at all times. The horizontal/vertical working clearance is a minimum of 20 ft. minimum approach distance when working with mobile cranes near power lines up to 350 KV. See OSHA 1926.1407.

.5 **Watch for power lines** - When mobile hoists, cranes or similar lifting devices are used near energized lines or equipment, the lifting device shall be properly grounded. Maintain minimum clearance from energized lines as detailed in **Table 1,** below, for Minimum Required Clearances.

Table 1 Operation / Working Near High Voltage Power Lines

Normal Voltage, (Phase to Phase)	Minimum Required Clearance, ft.
Operation Near High Voltage Power Lines less than 50 kV	10
Over 50 kV, minimum clearance between the lines and any part of the crane or load shall be	10’ feet plus 0.4” inch for each 1kV over 50 kV.

Operation in Transit with No Load and Boom or Mast Lowered	
Up to 50 kV	4’
Over 50 kV to 345 kV Over 345 kV to 750 kV	10’ 16’

Raising/Lowering Loads

General

.1 A "working" suspended load shall be defined as all material beginning with the hook or headache ball, load blocks, shackles and slings and shall be considered suspended when stationary and in motion.

.2 Only qualified signal person (see section 119.04, below) will be allowed to give hand signals using approved hand signals when raising or lowering aloud. Signaling will be his/her only duty while a pick is in motion.

.3 An emergency stop signal may be given by anyone in the area and shall be obeyed.

.4 If voice or other means of communication (i.e., radio, handset, or equivalent) is used for giving signals when hand signals cannot be used, continuous communication is required.

.5 Pre-job briefing including the JSC shall be performed to identify hazards and job responsibilities prior to work beginning that involves suspended working loads.

Hand Signals

Figure 1: **STOP** - Arm extended, palm down, move arm back and forth horizontally.

Figure 2: **EMERGENCY STOP** - Both arms extended, palms down, move arms back and forth horizontally.

Figure 3: **HOIST** - Forearm vertical, forefinger pointing up; move hand in small horizontal circle.

Figure 4: **RAISE BOOM** - Arm extended, fingers closed, and thumb pointing up.

Figure 5: **SWING** - Arm extended, point with finger in direction of swing of boom.

Figure 6: **RETRACT BOOM** - (Two-hand Signal) Both fists in front with thumbs pointing at each other.

Figure 7: **RAISE BOOM & LOWER LOAD** - Arm extended, thumb up; flex fingers in and out as long as load movement is desired.

Figure 8: **DOG EVERYTHING** - Clasp hands in front of body.

Figure 9: **LOWER** - Arm extended down, forefinger pointing down; move hand in small horizontal circle.

Figure 10: **LOWER BOOM** - Arm extended, fingers closed, and thumb pointing down.

Figure 11: **EXTEND BOOM** - (Two-hand Signal) Both fists in front with thumbs pointing out.

Figure 12: **TRAVEL/TOWER TRAVEL –** Arm extended, fingers pointing up; move arm horizontally out and back in pushing motion in direction of travel.

Figure 13: **LOWER BOOM & RAISE LOAD -.** Arm extended, thumb down; flex fingers in and out as long as load movement is desired.

Figure 14: **MOVE SLOWLY** - Use one hand to give (any) motion signal and place other hand motionless in front. (Hoist slowly is shown.)

Figure 15: **USE AUXILIARY HOIST** (whip line) – Arm bent at elbow. Tap elbow with one hand and use regular signal to indicate movement.

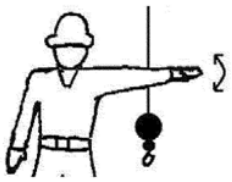
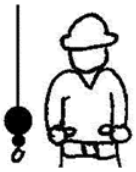
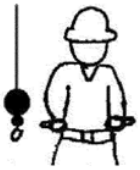
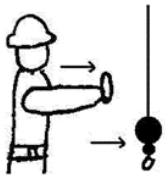
Figure 16: **CRAWLER CRANE TRAVEL -** (Two-hand Signal) Both fists in front of body, moving about each other in circular motion to show desired direction of track travel.

Figure 17: **USE MAIN HOIST** - Tap fist on head. Use regular signal to indicate desired action.

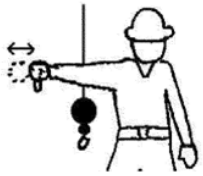
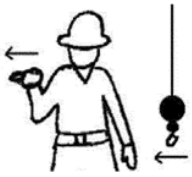
Figure 18: **CRAWLER CRANE TRAVEL (ONE TRACK) -** (Two-hand Signal) Lock track indicated by raised fist. Travel opposite track in direction indicated by other fist moving in circular pattern in front of body.

Figure 19: **TROLLEY TRAVEL -** Palm up, hand in fist with thumb pointing in direction. Jerk hand horizontally in direction trolley is to travel.

OSHA Hand Signals Chart

 **STOP –** With arm extended horizontally to the side, palm down, arm is swung back and forth.	 **EMERGENCY STOP** – With both arms extended horizontally to the side, palms down, arms are swung back and forth.	 **HOIST –** With upper arm extended to the side, forearm and index finger pointing straight up, hand and finger make small circles.
 **RAISE BOOM –** With arm extended horizontally to the side, thumb points up with other fingers closed.	 **SWING –** With arm extended horizontally, index finger points in direction that boom is to swing.	 **RETRACT TELESCOPING BOOM –** With hands to the front at waist level, thumbs point at each other with other fingers closed.
 **RAISE THE BOOM AND LOWER THE LOAD –** With arm extended horizontally to the side and thumb pointing up, fingers open and close while load movement is desired.	 **DOG EVERYTHING –** Hands held together at waist level.	 **LOWER –** With arm and index finger pointing down, hand and finger make small circles.
 **LOWER BOOM –** With arm extended horizontally to the side, thumb points down with other fingers closed.	 **EXTEND TELESCOPING BOOM –** With hands to the front at waist level, thumbs point outward with other fingers closed.	 **TRAVEL/TOWER TRAVEL –** With all fingers pointing up, arm is extended horizontally out and back to make a pushing motion in the direction of travel.

.3 OSHA Hand Signals Chart (cont'd.)

 **LOWER THE BOOM AND RAISE THE LOAD** – With arm extended horizontally to the side and thumb pointing down, fingers open and close while load movement is desired.	 **MOVE SLOWLY** – A hand is placed in front of the hand that is giving the action signal.	 **USE AUXILIARY HOIST** (whipline) – With arm bent at elbow and forearm vertical, elbow is tapped with other hand. Then regular signal is used to indicate desired action.
 **CRAWLER CRANE TRAVEL, BOTH TRACKS** – Rotate fists around each other in front of body; direction of rotation away from body indicates travel forward; rotation towards body indicates travel backward.	 **USE MAIN HOIST** – A hand taps on top of the head. Then regular signal is given to indicate desired action.	 **CRAWLER CRANE TRAVEL, ONE TRACK** – Indicate track to be locked by raising fist on that side. Rotate other fist in front of body in direction that other track is to travel.
 **TROLLEY TRAVEL** – With palm up, fingers closed and thumb pointing in direction of motion, hand is jerked horizontally in direction trolley is to travel.		

Qualified Signal Person(s)

.1 A qualified signal person is required when:

a. The point of operation is not in full view of the operator (1926.1419(a)).

b. The operator's view is obstructed in the direction the equipment is traveling.

c. Either the operator or the person handling the load determines that a signal person is needed because of site-specific safety concerns.

.2 The signal person is considered qualified if he or she:

a. Knows and understands the type of signals used at the worksite.

b. Is competent in using these signals.

c. Understands the operations and limitations of the equipment, including the crane dynamics involved in swinging, raising, lowering and stopping loads and in boom deflection from hoisting loads.

d. Knows and understands the relevant signal person qualification requirements specified in subpart CC (1926.1419-1926.1422; 1926.1428).

e. Passes an oral or written test and a practical test.

Hoisting & Rigging

Purpose

This safety policy is established to protect sPower people and contractors from serious injuries and property damage that could result whenever hoisting and rigging take place.

Scope

This safety policy is applicable to all sPower locations.

Definitions

The definitions below are used to ensure that all readers of this standard understand the expectations contained within the standard.

sPower Business / Projects – All sPower locations which sPower has overall management control, regardless of what percentage of equity control sPower has in that location, business and/or site. This includes all sPower operational sites (Generation Businesses and Transmission and Distribution Businesses), construction projects and offices.

Anti-two block - A device which automatically prevents damage and load failure from contact between the load block, overhaul ball, or similar component, and the boom tip, or fixed upper block or similar component.

Blocking - (also referred to as "cribbing") is wood or other material used to support equipment, or a component (outrigger) that distribute loads to the ground. It may be used to support lattice boom sections during assembly/disassembly, under outriggers or stabilizer floats.

Boom (equipment other than tower crane) - An inclined spar, strut, or other long structural member which supports the upper hoisting tackle on a crane or derrick. Typically, the length and vertical angle of the boom can be varied to achieve increased height and reach when lifting loads. Booms can usually be grouped into general categories of hydraulically extendible, cantilevered type, latticed section, cable supported type or articulating type.

Boom Angle Indicator - A device which measures the angle of the boom relative to horizontal.

Bridge - Part of a crane consisting of girders, trucks, end ties, foot walks, and drive mechanism that carries the trolley(s).

Cab - The operator's compartment on a crane.

Center of Gravity - The center of gravity of any object is the point in the object around which its weight is evenly distributed. If you could put a support under that point, you could balance the object on the support.

Clearance - The distance from any part of the crane to a point of the nearest obstruction.
Crane – A machine for lifting and lowering a load and moving it horizontally with the hoisting mechanism as an integral part of the machine. Cranes whether fixed or mobile are driven manually or by power.

> **Cab-Operated Crane –** A crane controlled by an operator in a cab located on the bridge or trolley.
>
> **Floor-operated crane** – A crane that has a pendant or nonconductive rope controlled by an operator on the floor or an independent platform.
>
> **Gantry Crane** - A crane similar to an overhead crane except that the bridge for carrying the trolley or trolleys is rigidly supported on two or more legs running on fixed rails or other runway.

Mobile Crane - For the purposes of this standard, mobile cranes are defined as wheel-mounted cranes, truck cranes, digger derrick, easement rig and crawler cranes.

Overhead Crane – A crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed runway structure.

Locomotive crane – A crane mounted on a base or car equipped for travel on a railroad track

Dedicated Spotter (power lines) - A Qualified Signal Person designated with sole responsibility to watch the separation between the power line and the equipment, load line and load (including rigging, taglines and lifting accessories), and ensure through communication with the operator that the applicable minimum approach distance (MAD) is not breached.

Designated - Selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

Design Factor – May also be referred to as: Factor of Safety, Safe Workload (SWL) or Working Load Limit (WLL). The ratio of the maximum strength of a piece of material or a partto the probable maximum load to be applied to it. Normal rigging equipment has a design factor of 5:1 (20% of the equipment's rated breaking strength) when used for material and 10:1 (10% of the equipment's rated breaking strength) when used for personnel. Cranes, hoists, digger derricks have other design factors based on the engineered design of the equipment.

Drum - The cylindrical member that ropes are wound on for raising or lowering the load.

Emergency Stop Switch - A manually or automatically operated electric switch to cut off electric power independently of the regular operating controls.

Equalizer - A device that compensates for unequal length or stretch of a rope.

Equalizing Slings - Slings composed of wire rope and equalizing fittings.

Exposed - Capable of being inadvertently contacted. Applies to hazardous objects not adequately guarded or isolated.
Eye or Eye Splice - A loop with or without a thimble formed in the end of a wire or fiber rope.

Hoist - An apparatus that may or may not be a part of a crane, exerting a force for lifting or lowering.

Auxiliary Hoist - A supplemental hoisting unit of lighter capacity and usually higher speed than provided for the main hoist.

Lever Operated Hoist - A lever operated manual device used to lift, lower, or pull a load and to apply or release tension.

Capstan Hoist – An independent hoist with a self-contained motor drive of gas, hydraulic, or electric power, which is anchored to a pole, tower or vehicle using designed attachments. The drive operates a drum that has a lifting rope applied and used to raise or lower loads. The drive is operated by foot pedal activator or truck mounted lever.

Hook Load - The total live weight supported by the hook of a crane, derrick, or other hoisting equipment, including the load, slings, spreader bars, and other tackle not part of the load, but supported by the hook and required for the handling of the load.

Lift, Critical (Critical Lift) – A lift shall be classified critical if any of the following conditions are met:

1. The lift exceeds 75 percent of the Rated Capacity (under specific working conditions such as equipment configuration, radii, boom length, and other parameters of use) of the crane or derrick.

2. The lift requires simultaneous use of more than one piece of lifting equipment including crane, derrick or forklifts.

3. Lift requires movement of load or crane boom over energized and exposed conductors.

4. Unintended movement of a crane part or load could encroach the Unqualified Minimum Approach Distance of an energized equipment (Refer to sPower EHASP , section 118)

5. If loss of control of the item being lifted would likely result in the declaration of an emergency as defined by the sPower Business.

6. The load item is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility or project operation.

7. 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 business budgets to the extent that it would affect program commitments.

8. Raising, lowering, or transporting of personnel using hoisting equipment.

9. Using extension jibs for lifts.

Lift, Ordinary (Ordinary Lift) – A lift not designated as a Critical Lift or a Pre-engineered Production Lift.

Lift, Personnel (Personnel Lift) - The raising, lowering, or transporting of personnel using hoisting equipment

Lift, Pre-Engineered Production (Pre-Engineered Production Lift) - A repetitive lift that is performed by production line personnel in the assembly or disassembly of components or systems

where detailed lift planning, equipment selection, and lift-specific training may substitute for the qualifications prescribed in this standard. In order for a lift to be designated a pre-engineered production lift, the following criteria shall apply:

a. The group of items to be lifted is identical in terms of dimensions, weight, center of gravity, load path, method of attachment to the lifting equipment, and selection of lifting equipment.

b. All items can be lifted in adherence to a specific step-by-step procedure that eliminates rigging decisions or calculations by lift personnel. The lifting procedure shall address details of the specific operation including the attachment and detachment of all lifting equipment, fixtures and accessories.

Limit Switch - A switch which is operated by some part or motion of a power-driven machine or equipment to alter the electric circuit associated with the machine or equipment.

LMI (Load Moment Indicator) - An electro-mechanical sensing and alarm system that provides vital lift data to the operator. The system senses current boom length, boom angle, and degree of rotation, as well as load boom weight. This data is displayed on a control panel mounted above the instrument panel in the cab or operating platform. When an impending overload condition is sensed, the system provides the operator with visual and audible warnings. It locks out the control levers to prevent lowering the boom, extending the boom or raising the main/auxiliary hoist cables. Anti-two-block devices prevent the hook block from coming into contact with the boom nose. This condition will also cause a lockout of the above-mentioned control functions.

Load - The total superimposed weight on the load block or hook.

Load Block - The assembly of hook or shackle, swivel, bearing, sheaves, pins, and frame suspended by the hoisting rope.

Person-In-Charge (PIC) - The manager or other responsible person (other than the equipment operator) known to be qualified and appointed to be responsible for the safe handling of critical loads and hoisting operations.

Qualified Person - A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

Qualified Operator - One who has had appropriate and approved training, including satisfactory completion of both written and operational tests to demonstrate knowledge, competence, and skill to operate a particular piece of equipment and certified by an accredited crane operator testing organization following locally applicable regulatory requirements and standards for the type and capacity of equipment or for higher-capacity equipment of that type. If no accredited testing agency offers certification examinations for a particular type and/or capacity of equipment, an operator will be deemed qualified to operate that equipment if the operator has been certified for

the type/capacity that is most similar to that equipment and for which a certification examination is available. The operator's certificate must state the type/capacity of equipment for which the operator is certified.

Qualified Inspector - One whose competence is recognized by the responsible manager and whose qualification to perform specific inspection activities has been determined, verified, and attested to in writing.

Qualified Rigger – A qualified rigger is a person that possesses a recognized degree, certificate, or professional standing, or has extensive knowledge, training, and experience, and can successfully demonstrate the ability to solve problems related to rigging loads. The person designated as the qualified rigger must have the ability to properly rig the load for a particular job. It does not mean that a rigger must be qualified to do every type of rigging job.

Qualified Signal Person – A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the Hoisting and Rigging signals. A signal Person must:

- Know and understand the type of signals used at the worksite.
- Be competent in using these signals.
- Understand the operations and limitations of the equipment, including the crane dynamics involved in swinging, raising, lowering and stopping loads and in boom deflection from hoisting loads.
- Demonstrate that he/she meets the requirements through an oral or written test, and through a practical test

Rated Breaking Strength – (RBS) The threshold or point that equipment or material fails during lab testing. The thresholds may be identified in weight or force measurements.

Rated Capacity - The maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use**.**

NOTE: At the option of the user, a rated capacity can be assigned that is less than the design-rated capacity.

Rated Load - The maximum load for which a crane or individual hoist is designed and built by the manufacturer and shown on the equipment nameplate(s).

Rigging - The hardware or equipment used to safely attach a load to a lifting device. The process of safely attaching a load to a hook by means of adequately rated and properly applied slings and related hardware.

Side Pull - That portion of the hoist pull acting horizontally when the hoist lines are not operated vertically.

Slings - Wire ropes, chains, synthetic web, and metal mesh made into forms, and with or without fittings, for handling loads.

Tagline – A line or rope attached to a load being raised to control the load and prevent from twisting or contacting objects.

Thimble - grooved metal fitting to protect the eye of a wire rope.

Working Load Limit – (WLL) See Design Factor.

Guiding Principle

4.0 Failure to comply with the provisions of the sPower OMEHASP puts sPower, its people, and contractors at risk. It is incumbent upon each sPower Business / site to ensure that the provisions of the sPower OMEHASP are effectively implemented within their area of responsibility.

4.1 Only those employees or contractors that have been specifically authorized and trained by a competent person must be allowed to participate in hoisting and rigging operations.

4.2 Before an sPower person or contractor performs work activities associated with hoisting or rigging, they must understand the hazards associated with that type of work and the precautionary measures needed to mitigate these hazards.

4.3 A qualified operator must determine the weight of the load to be lifted, type of lift and selection of hoisting and rigging equipment within the WLL of the load to be lifted.

4.4 A Person-In-Charge (PIC) must supervise hoisting and rigging operations.

Requirements

Written Program Elements

5.0.1 sPower must develop site-specific procedures that, at a minimum, comply with this safety standard and other applicable regulations regarding hoisting and rigging. sPower may establish safety-related policies or practices that are more stringent than the policies and practice identified in this standard.

5.0.2 The written program must be legible, readable, and accessible by all personnel involved in the Hoisting and Rigging Program.

5.0.3 The written program must identify the position at the sPower Business / site that is ultimately responsible for the implementation and maintenance of the

sPower's Hoisting and Rigging Program. This person will be responsible to ensure:

5.0.3.1 The development, implementation and monitoring of the Hoisting and Rigging Program.

5.0.3.2 Advising and providing guidance to managers, employees, contractors and other departments such as purchasing, engineering, and human resources on all matters pertaining to the Hoisting and Rigging Program.

5.0.3.3 Establishing and assigning all duties and responsibilities outlined in this standard to individuals who are trained and qualified to perform them.

5.0.3.4 Providing or verifying that these personnel are provided with the necessary resources to accomplish those duties and responsibilities

5.0.4 The written program must clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to the performing of Hoisting and Rigging work and the measures to enforce compliance with the program, including specific requirements for:

5.0.4.1 Assessing lifts to identify potential hazards and required safety controls.

5.0.4.2 The hoisting and rigging system selected and use of equipment to control load lifts and prevent injuries.

5.0.4.3 Assessing each lift before the work begin and determine the type of lifting equipment and system to be used.

5.0.4.4 Hoisting and rigging in a live electrical environment.

5.0.4.5 Training and/or certification of Competent/Qualified persons i.e.: qualified operator, Qualified Inspector, Qualified Rigger, Competent Person.

5.0.4.6 Inspecting and testing lifting equipment and associated components according to this safety standard and locally applicable regulatory or other requirements.

5.0.5 The written program must clearly identify the roles and responsibilities of the following key functions/positions within the Hoisting and Rigging Program (see Definitions):

a. Person–In-Charge
b. Qualified Inspectors
c. Qualified Operators
d. Qualified Riggers
e. Qualified Signal Persons

Procedural Elements

Lift Assessment

A documented lift assessment must be conducted for each lift to determine the hoisting and rigging equipment and system that will be used. Lifts will be categorized as Ordinary, Critical, Personnel or Pre-Engineered Production. Each lift assessment should include the following:

5.0.5.1 Determine the weight of the load from markings/labels, by weighing, from drawings or documentation, or by calculation.

5.0.5.2 Determine the center of gravity of the load from drawings or other documentation, markings/labels on the load, or by calculation and test lifts.

5.0.5.3 Determine the best method for attaching the load and select appropriate lifting devices (ropes, chains, slings, etc.).

5.0.5.4 Determine the safe WLL ratings of the devices and apparatus to be used including number of sling legs, angle of the sling leg from the horizontal surface of the load, and equipment strength reduction due to positioning of the shackle/load hooks or sling configuration.

5.0.5.5 Review the equipment load charts and ratings to determine the safest boom angle, load radius and unit position if applicable.

5.0.5.6 Identification of ground conditions and ensure proper stability factors are met when setting up the lifting device.

5.0.5.7 Ensure the crane and/or the load travel paths are free of obstructions.

5.0.5.8 Review weather forecast to ensure the weather conditions such as wind speed will be within the allowed limit.

5.0.5.9 Identify exposure to electrical hazards, voltage ratings, appropriate MAD to be maintained, and additional electrical safe work practices

as required, i.e. equal potential grounding, appropriate live line cover up, etc.

5.0.5.10 Establishing communication and emergency response plans.

5.0.5.11 All other task and working condition specific hazards and required controls.

Critical Lifts Approval:

5.0.5.12 If a lift is determined to be critical, that lift shall require an authorization from the appropriate Manager. Such authorization requests shall be documented using a Critical Lift Authorization form. Critical lift authorization must include detailed Critical Lift plans. See Attachment A for an example of a Critical Lift Authorization Request and Critical Lift approval form.

5.0.5.13 A Critical Lift Authorization Request must be approved by the designated Person-in-charge (PIC) and applicable manager prior to commencement of the lift.

5.0.5.14 Individuals required to approve a critical lift shall review the Authorization Request, Critical Lift and other supporting documentation to determine the need for further review and/or "walking down" the lift.

5.0.5.15 Following the approval by the PIC and applicable manager, the PIC shall monitor the lift throughout its duration.

Critical Lifts, Additional Requirements

5.0.5.16 Wire rope slings will have an initial proof load test, or it shall be proof tested prior to a critical lift.

5.0.5.17 Wire rope sling eyes with thimbles will have a thimble diameter to rope diameter ratio of 3 or greater.

5.0.5.18 Do not use wedge socket or wire rope clips on wire rope slings.

5.0.5.19 Working loads of wire rope slings will not exceed rated capacities.

5.0.5.20 Do not splice wire rope slings together.

5.0.5.21 Use thimble eyes when wire rope slings need to be joined end-to-end.

5.0.5.22 Steel chain, metal mesh, synthetic web, and synthetic round slings shall have an initial proof load test of 200 percent of the vertical rated capacity or it shall be proof tested prior to the lift. Each leg of multiple-leg bridle slings will be proof tested separately and master links shall be proof loaded to 200 percent times the force applied by the combined legs.

5.0.5.23 Shackles, eyebolts, turnbuckles, links and rings, and swivel hoist rings shall have an initial proof load test of 200 percent of the rated capacity with test weights accurate to within –5 to 0% of stipulated value.

5.0.5.24 Load indicating devices shall have a design factor of 3:1.

5.0.5.25 Precision load positioners shall have an initial proof load test confirming the load rating or the device can be proof tested before a lift.

Slings

General Requirements

1. Rigging shall be configured so that slings do not reeve or slip through the hook.

2. Sling selection for rigging will consider load weight, center of gravity, load angle factor, and rated sling capacity.

3. Slings will be protected from sharp edges or bends by means of corner saddles, padding or wood blocking.

4. Users will visually inspect slings before each day's use and immediately following a significant lift.

5. Overloading must be avoided.

6. Slings must be stored as per manufacturer's recommendation in locations free of mechanical damage, corrosives, moisture, extreme heat, and kinking.

7. Slings must periodically inspected and maintained as recommended by the manufacturer.

8. A qualified inspector must formally inspect slings at least annually (more frequent for high-use or heavy lifts) making a

record of the inspection. See Attachment B for a sample inspection forms.

9. Each sling shall be marked with identification of manufacturer, rated capacity (for the type of hitches), diameter or size, and evidence of periodic inspection. Slings without markings must not be used.

10. Before each use, users must perform a complete and thorough inspection of slings and their components to ensure they are free of any visual damage. Remove sling from service any kind of defect is observed.

Wire Rope

11. The design factor or WLL shall be a minimum of 5:1 based upon breaking strength.

12. When used in a choker hitch, the angle formed as the rope passes through the eye is 120º angle.

13. Store ropes to avoid damage or deterioration and, unless prohibited by other considerations, keep rope in a well-lubricated condition.

Alloy Steel Chain

14. Avoid use in extremely hot (>600º F, 315º C) or cold (<0ºF, -18º C).

15. Design factor or WLL shall be a minimum of 4:1 based upon breaking strength.

Metal Mesh

16. Slings may be used as rated in temperatures ranging from –20 º F (-29 º C) to 550 º F (288 ºº C)
17. Design factor shall be a minimum of 5:1 based upon breaking strength.

Synthetic Web and Synthetic Round

18. Slings shall have uniform thickness and width, have selvage edges and not be split from the woven width.

19. Synthetic round sling core yarn shall be a synthetic fiber wound for even load distribution.

20. Stitching material shall be of the same material as the web and stitching shall be of sufficient strength to sustain twice the rated capacity without deformation.

21. Slings shall not contact on contact with objects or at temperatures in excess of 194º F (90º C) or below –40º F (-40º C). The temperature range for polypropylene slings is 150 º F (66º C) to – 40 º F (-40º C).

22. Slings must be protected from cuts and abrasions during lifts through the use of pads (such as leather) sewn on to the sling or sleeves or tubes placed over the slings.

23. Design factor or WLL shall be a minimum of 5:1 based upon breaking strength.

Rigging Accessories

Rigging accessories include hooks, shackles, eyebolts, turnbuckles, links and rings, swivel hoist rings, load indicating devices, and load positioners.

General Requirements

24. Metallic rigging accessories must be in compliance with applicable ASTM (or an equivalent internationally recognized) standards, forged and quench tempered to eliminate the hazard of shearing under load.

25. All inspections must be in compliance with manufacturer instructions.

26. Defective accessories must be rendered unusable before discarding.

27. After performing a lift assessment, determine the best method for attaching the load and select the lifting devices (e.g. eyebolts or shackles).

28. Prior to use, users must visually check each item for wear (>10% of original dimensions), corrosion, cracks, nicks, gouges,

distortion (>15% of new condition), or heat damage. Defective items must be discarded.

29. A Qualified Person must inspect accessory items at intervals appropriate for the device but at least annually. All inspections shall be recorded.

    a. Normal service (use at <85% of capacity) - Yearly

    b. Heavy service (use at 85 to 100% of capacity) - Semiannually

    c. Severe service (heavy service and abnormal conditions) – Quarterly

30. All unsatisfactory or failed accessories shall be removed from service and destroyed.

31. Multi-leg assemblies must be proof tested based on any two legs sharing the entire load with legs not being tested attached so as not to effect load stability.

32. Dynamometers and load cells shall be calibrated at least once a year (or if not used for 6 months) unless a more frequent interval is specified elsewhere in this standard such as for critical lifts. Devices will be tagged indicating calibration date, name of calibrator, and date of next inspection.

33. Lifting accessories must have a rated capacity equal to or greater than the associated chain, rope, etc. to which it is attached.

34. Lifting accessories must not be loaded beyond the rated capacity (except for certain test requirements).

Rigging Hooks

35. Hook design shall meet ASME B30.10 (or an equivalent internationally recognized) standard.

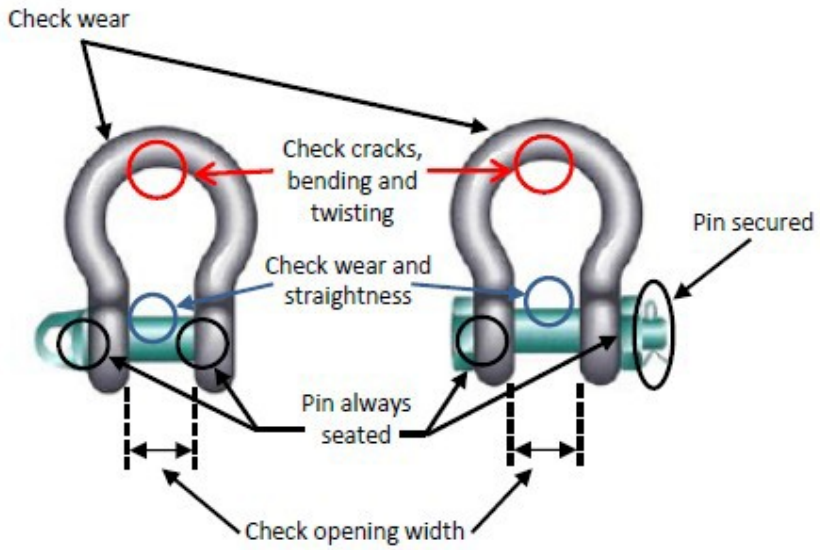
36. Hooks must be equipped with a latch (unless lift makes latch impractical where upon mousing shall be provided to bridge the throat opening of the hook to retain slings, chains, or other similar parts under slack conditions).

37. Forged, cast, or die-stamped marking will identify the manufacturer.

Shackles

38. Shackles shall be of dropped forged steel and marked with manufacturer's name or trademark, size, and rated capacity.

39. Pins must fit freely without binding and, when used at a load angle, the rating shall be reduced accordingly.



Eyebolts

40. Eyebolts shall be fabricated from forged carbon or alloy steel and marked in raised characters with manufacturer's name or trademark and an "A" for alloy steel.

Turnbuckles

41. Turnbuckles shall be fabricated from forged alloy steel with a minimum design factor of 5:1.

42. Turnbuckles that have been engineered, designed, and approved only must be used as part of a sling system.

43. They shall be marked for and used in that sling set and will be load tested as part of the sling set.

44. Jamb nuts or locking devices shall be tightened or locked before lifts.

Links and Rings

45. Links and Rings must be designed and manufactured as part of other lifting hardware such as the peak link on multiple-leg slings and requirements are the same as for the associated system.

Swivel Hoist Rings

46. Swivel Hoist Rings must be fabricated from forged carbon or alloy steel with a design factor of 5:1 and the load limit forged, stamped, or inscribed into each ring.

47. Install hoist ring to recommended torque with a calibrated torque wrench and never use spacers between bushing flange and mounting surface.

48. Hoist ring must be able to swing or rotate freely under load.

Load Indicating Devices

49. Load Indicating Devices shall be used with loads of uncertain weights that could be within 90-100% of the rated capacity of the equipment or any part of the tackle.

Precision Load Positioners

50. Devices in the load path shall have a design factor of 5:1 and shall be operated, maintained, calibrated, and tested according to the manufacturer's instructions.

51. Prior to initial use, new, repaired, and altered devices shall be load tested with a written report confirming the load rating.

Load Hooks

52. Hook design shall meet ASME B30.10 **(**or an equivalent internationally recognized) standard and shall be equipped with a latch to retain items such as slings under slack conditions.

53. A qualified inspector will formally inspect all new or repaired hooks prior to use and then at intervals determined by the level of service. If inspection reveals that further testing is required, Non-

Destructive Testing (NDT) will be done in accordance with ASTM E-709 (or an equivalent internationally recognized), Standard Practice for Magnetic Particle Examination, and ASTM E165 (or an equivalent internationally recognized) Standard Practice for Liquid Penetration Inspection Method.

54. Each new or replacement hook of 150-ton capacity or greater and prototypes of hooks less than 150 tons capacity shall be proof tested by the manufacturer.

55. Proof tested hooks shall be inspected by the magnetic-particle method in accordance with ASTM E-709 (or an equivalent internationally recognized) and shall show no cracks, inclusions or other discrepancies.

Forklifts

5.0.5.26 Forklifts shall only be operated by trained and qualified personnel and only within their rated lift capacity including the effects of any lift attachments that are used.

5.0.5.27 The sPower program requirements shall be in compliance with OSHA 1910.178 Powered Industrial Trucks (or an equivalent internationally recognized standard).

5.0.5.28 Appropriate power option for the work environment.

5.0.5.29 A durable nameplate must be attached to each unit indicating truck model and serial number, truck weight, rated capacity, designation of compliance with ASME B56.1 (or an equivalent internationally recognized) standard, and battery weight (if applicable).

5.0.5.30 Each fork shall be clearly and visibly stamped with its rated capacity.

5.0.5.31 Lifting attachments shall have a durable nameplate indicating the attachments model number, serial number and maximum pressure (on hydraulically actuated units), weight, capacity, and a warning that the truck/attachment capacity will be less than the truck capacity alone.

5.0.5.32 Operators shall conduct pre-operational inspections of forklifts as required by the manufacturer.

5.0.5.33 Newly acquired forklifts shall be load tested and inspected by a qualified inspector as required by the manufacturer. A sample Pre-

Operational Inspection Report is provided in Attachment C-1 and Attachment C-2.

5.0.5.34 Only qualified personnel shall perform rigging of suspended loads from the tines of a forklift.

5.0.5.35 A Signalman must be always available while operating a forklift to assist the operator and control other vehicle and people within the movement area or path of the forklift.

5.0.5.36 In addition to the normally required inspection and maintenance requirements for forklift trucks, lifting attachments shall be included in scheduled inspections (at least annually) meeting the following requirements:

1. Load bearing components will be examined for deformation and welds examined for cracks.

2. Hooks that are a part of the attached lift system will be inspected in accordance with the requirements contained in the Load Hooks section of this Standard.

3. Each fork (normally two) shall have a rated capacity at least half of the truck capacity.

4. A Qualified Inspector will examine forks at least annually or when any defect is suspected with a focus on surface cracks, tine angle and wear, positioning lock function, fork hooks wear (if used), and fork markings.

5. Load tests will be conducted under the direction of a qualified person after major repairs or modifications to load carrying components.

Mobile Cranes

5.0.5.37 Includes commercial truck mounted cranes, crawler cranes, locomotive cranes, and wheel-mounted cranes. These cranes have a superstructure mounted on a carrier and are capable of rotating 360° with boom raising and lowering capabilities.

5.0.5.38 The AES business program shall comply with the OSHA 1926 Subpart cc (or an equivalent internationally recognized standard) requirements for cranes.

5.0.5.39 Manufacturer's load ratings must not be exceeded.

5.0.5.40 A durable, legible load-rating chart developed in language understandable to the operator shall be attached in a location visible to the operator.

5.0.5.41 A competent person must perform a visual inspection each day or prior to use with attention to items required by the manufacturer. A sample pre-operation inspection report is in Attachment D.

5.0.5.42 A qualified inspector must perform an initial inspection and a rated load test prior to the initial use of a new or modified mobile crane.

5.0.5.43 A qualified inspector must conduct frequent (at least monthly) and periodic (at least annually) inspections as required by manufacturers and records kept on file. Any unit that has been out of service for 6 months or more must receive a complete inspection prior to being placed in service.

5.0.5.44 A preventative maintenance program must be established for mobile cranes based on the manufacturer's recommendations. Components of the lifting system must be maintained and inspected as required elsewhere in this standard.

5.0.5.45 At a minimum one Signalman must always be available while operating a Mobile Crane to assist the operator and control other vehicle and people within the movement area or path of the Mobile Crane.

5.0.5.46 Dedicated Spotter (Power lines) must be available while operating or moving a Mobile Crane in the vicinity of power lines.

5.0.5.47 Outriggers must be used (if the crane is equipped with outriggers) as per the manufacturer's recommendation.

5.0.5.48 The outriggers must be either fully extended or, if manufacturer procedures permit, deployed as specified in the load chart.

5.0.5.49 Each outrigger must be visible to the operator or to a signal person during extension, setting and retraction.

Hoists, Overhead and Gantry Cranes

5.0.5.50 Hoists include hand-powered, air-powered, and electric powered hoists that are not permanently mounted on overhead cranes including overhead hoists (underhung), jib cranes/hoists (floor or wall mounted), monorail systems, and manual-lever-operated hoists (wire rope, chain, and web-strap types).

5.0.5.51 Overhead and Gantry Cranes Includes top-running single or multiple girder bridge with top-running trolley hoists, top-running single girder bridge with underhung trolley hoists, and monorails/underhung hoists.

5.0.5.52 The sPower program shall comply with the OSHA 1926 Subpart cc (or an equivalent internationally recognized standard) requirements for hoist, Overhead and Gantry Cranes operation.

5.0.5.53 Name of manufacturer, model or serial number, and rated capacity shall be permanently marked on the hoist.

5.0.5.54 Markings on electric hoists must include operating voltage, frequency, and ampacity. Air-powered hoist markings will include rated air pressure.

5.0.5.55 Rated capacity shall be marked on each side of the crane. If there is more than one hoisting unit, each shall have its capacity marked on it.

5.0.5.56 Powered hoists shall have a design factor of 5:1 and manually operated hoists a design factor of 4:1.

5.0.5.57 Upon loss of power or removal of the actuating force, hoists shall automatically stop and hold a test load up to 125% or the rated load.

5.0.5.58 Supporting structures shall have a rated capacity at least equal to that of the hoist.

5.0.5.59 A competent person shall perform a visual inspection each day or prior to use with attention to controls, operating mechanisms, upper-limit switches (if applicable), air system for leaks (if applicable), and hooks, ropes, chain, web straps as required elsewhere in this standard. A sample Pre-Operational Inspection Report is provided in Attachment E and F.

5.0.5.60 A qualified inspector shall perform an initial inspection, operational test and a rated load test prior to the initial use of a new or modified hoist and cranes or a hoist and cranes that has not been in service within the past 12 months and cranes according to manufacturer's requirements.

5.0.5.61 A qualified inspector will perform documented inspection of hoists and cranes according to the manufacturer's recommendation at the following frequency.

5.0.5.62 Normal service (use at <85% of capacity) - Yearly

1. Heavy service (use at 85 to 100% of capacity) - Semiannually

2. Severe service (heavy service and abnormal conditions) – Quarterly

5.0.5.63 Cab-operated cranes shall have at least two separate means of egress from the crane and arranged to allow departure in an emergency.

5.0.5.64 System components (ropes, chains, hooks, etc.) will be inspected and tested as per the requirements for those items noted elsewhere in this Standard.

Live Electrical Environments:

5.0.5.65 sPower policies that provide direction for working in live electrical environments shall be adhered to.

5.0.5.66 Minimum approach distances for applicable voltage levels must be identified and maintained.

5.0.5.67 Vehicle grounding requirements shall followed to ensure an equal potential work environment.

5.0.5.68 Distances to approved live line cover up when used.

5.0.5.69 Warnings and barriers required for staff on the ground and in the vicinity of the hoisting unit must be implemented.

5.0.5.70 A Dedicated Spotter to assist operator must be available and positioned at a safe location.

5.0.5.71 Non-conductive or insulated tag lines shall be used while controlling load near exposed energized conductors.

Program Administration

Enforcement

The operation specific Hoisting and Rigging Program must list the enforcement policies for this program. The enforcement policies must include:

5.0.5.72 A monitoring process to make sure the Hoisting and Rigging program is being implemented as defined in the program and people follow the program without deviation.

5.0.5.73 Method for ensuring that sPower people and contractors are held accountable for meeting the sPower Hoisting and Rigging program related performance expectations.

Clearly Defined Roles Responsibilities

The operation specific Hoisting and Rigging Program must clearly define specific roles and responsibilities of each person/position involved in the process.

Auditing

The Hoisting and Rigging Program shall be audited regularly to ensure standards are current.

Employee Qualification and Training

5.0.5.74 sPower must ensure that all employees involved in Hoisting and Rigging operations have been qualified and are trained and knowledgeable in the program elements.

5.0.5.75 sPower shall verify all employee training has been completed and is current. The certification shall contain each employee's name and date(s) of training.

5.0.5.76 Crane and hoist operators, riggers, signal persons, inspectors, maintenance personnel, trainers, person(s)-in-charge, designated leaders, and first line supervisors must be trained and be qualified in hoisting and rigging operations and related activities. In some jurisdictions, licensing may be required by local ordinance or regulation.

5.0.5.77 sPower shall ensure that each person has demonstrated proficiency in the safe work practices as necessary, before that person is considered as having completed the training and being certified as a qualified or competent person to involve in Hoisting and Rigging related activities.

5.0.5.78 Retraining shall be provided whenever:

1. There is a change in the Hoisting and Rigging program.

2. A periodic audit, the work observation program or any other safety management program reveals that there are deviations from or

inadequacies in an employee's knowledge on Hoisting and Rigging Procedure.

5.0.5.79 sPower shall determine, through regular supervision and inspections that sPower People and Contractors comply with the Hoisting and Rigging program requirements..

Contractors

Contractor personnel performing Hoisting and Rigging work covered by this Standard must be familiar and comply with the sPower's Hoisting Program.

References:

This sPower policy was developed using the following publications as the source of the requirements contained herein and will provide guidance in the development of your operation specific Hoisting and Rigging Program:

1. *U.S. Department of Energy (DOE) Hoisting and Rigging Standard (DOE-STD-1090-2011)*
2. *OSHA 29CFR 1910.178, Powered Industrial Trucks.*
3. *OSHA 29CFR 1910.179, Overhead and Gantry Cranes.*
4. *OSHA 29CFR 1910.269 (p) Digger Derrick*
5. *OSHA 29 CFR 1910.184 Slings*
6. *OSHA 29CFR 1926.952 Mechanical Equipment*
7. *OSHA 29CR 1926.953 Material Handling*
8. *OSHA 29CFR 1926 Subpart cc Cranes and Derricks in Construction*
9. *IPL SA CO 125 Hoisting and Rigging program.*
10. *Construction Safety Association of Ontario (CSAO) – Hoisting and Rigging Safety Manual (March 2012)*

Attachment A Critical Lift & Plan Approval Form / Authorization Request

Preparation Date	**Print Name:**
Date of Lift	
Lift Location:	
PERSON-IN-CHARGE:	
SUPERVISOR:	
SAFETY:	
Contractor (If applicable)	

REASON FOR AUTHORIZATION REQUEST	
	The lift exceeds 75 percent of the Rated Capacity of the crane or derrick.
	The lift requires simultaneous use of more than one piece of lifting equipment including crane, derrick or forklifts
	Lift requires movement of load or crane boom over energized and exposed conductors.
	Unintended movement of a crane part or load could encroach the Unqualified Minimum Approach Distance of an energized equipment (Refer to Electrical Qualification Standard (AES-STD-S11) or Electrical Safety Standard (AES-STD-S14) for Unqualified Minimum Approach Distance).
	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.
	The load item is unique and, if damaged, would be irreplaceable or not repairable and is vital to a system, facility or project operation
	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 business budgets to the extent that it would affect program commitments.
	Raising, lowering, or transporting of personnel using hoisting equipment.
	Using extension jibs for lifts. OTHER – SPECIFY:

DESCRIPTION OF OBJECT TO BE RAISED / MOVED
TOTAL WEIGHT OF LOAD: Lbs. **OBTAINED BY: Label Calculation**

❑ ❑

Boom Extension Weight
lbs.

Jib Weight
lbs.

Auxiliary Boom Head Weight
lbs.

Load Block Weight _____
lbs.

Overhaul Ball Weight
lbs.

Hoist Line Weight
lbs.

Rigging Weight
lbs.

Total Lift WEIGHT ----------
-------lbs.

CENTER OF GRAVITY LOCATION:

CRANE IDENTIFICATION

Manufacturer: **Model Number:**
_____

Serial Number or ID Number:

OPERATING ENVIRONMENT

CRANE CONFIGURATION

Counterweight: **Crawlers: Extended** **Retracted**

Outriggers: Fully Extended **Mid-Point** **Retracted**

Hoisting from: Boom _ **Manual Section** **Ext/Jib**

Over the Front	**Over the Side**	**Over the Rear**
Minimum Parts of Line Required **parts.** **Maximum Load Radius** **feet.** **Corresponding Boom Angle** **deg.** **Rated Capacity** **lbs.** **(as per the crane chart considering part lines, load radius and boomangle)** **Percent of Rated Capacity** **%.**		
Lifting Beam Capacity _____ lbs. **Tension on Lift Points** **lbs.** **Sling Size(s)** **Shackle Size(s)** _____ **Eye Bolt Size(s)** **Other Size(s)** _____		
SPECIAL PRECAUTIONS REQUIRED		
REQUIRED EQUIPMENT		
RIGGING SKETCH (Lift points, Attachment methods, Sling angles, Special rigging, Accessories used)		

LOAD-PATH SKETCH (Load path, Height at key points, Designated checkpoints, Lifting and travel speed, Surrounding obstructions)	
SIGNATURES	
PERSON-IN-CHARGE: DATE:	PERSON-IN-CHARGE: DATE:
MAINTENANCE SUPERVISOR: DATE:	SAFETY COORDINATOR: DATE:
Critical Lift Request and plan approved by (Name, Signature and Date):	

Only trained and qualified employees shall perform rigging operations. Proper planning, inspection, job briefing, and safe practices are important factors to consider when the task requires the use of rigging equipment. **(Refer to the Manufacturer's Rigging Handbook.)**

- Planning should include determining the weight and center of gravity of the object being moved or lifted, calculating sling loading requirements and selecting the correct capacity equipment for the job.
- Inspections shall be performed prior to each use on all rigging equipment selected for any job. This will include inspection of eyebolts, shackles, turnbuckles, slings, blocks, hoist, hooks, lifting beams, or any apparatus used forklifting.

General

.1 Perform a pre-plan on any lift.

.2 Employees performing the lift must:

a. be fully qualified and trained;

b. know the weight of the load;

c. balance the load;

d. use the proper size rigging; and

e. ensure that the access to the lift area is controlled by a watchperson, barriers or both.

.3 Inspect all rigging equipment such as wire ropes and slings, fiber rope, chain-falls, shackles, etc., before starting each job. Defective rigging must be reported to the person in charge for replacement or repair. Do not attempt make-shift or temporary repairs.

.4 Avoid crossing or twisting a sling.

.5 Avoid putting kinks or knots in a sling.

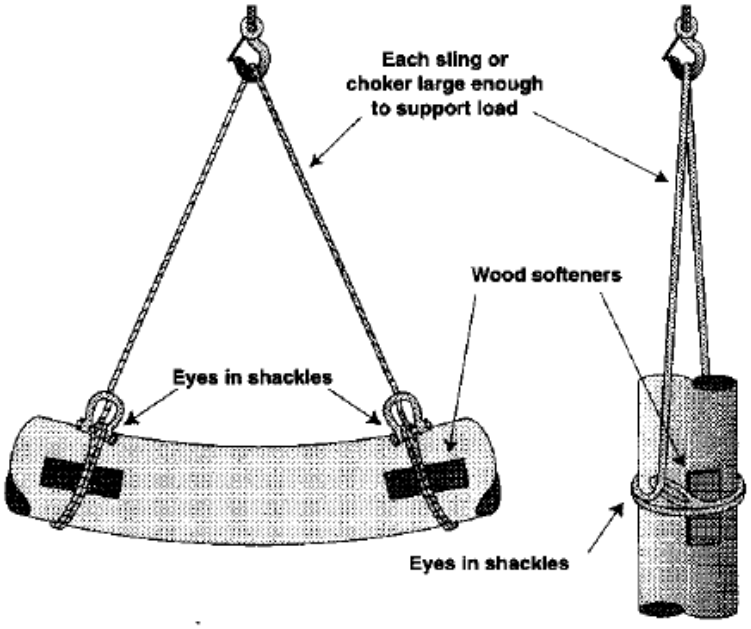
.6 Never bolt a sling to make it shorter or longer.

.7 Use a safe hold and keep fingers clear when lifting a load with a sling. Grasp slings where fingers cannot be pinched.

.8 Slings shall be maintained in good condition and stored in the space provided.

.9 **DO NOT** rig off of plant equipment or grating.

FIGURE .01A Good Pipe Rigging Practices



Horizontal Pipe Lift	Vertical Pipe Lift
Each choker wrapped around pipe twice over a wood softener on each side pipe	Each choker wrapped around twice over a wood softener on each side of pipe

Ropes and Slings

.1 Protect ropes and slings from damage.

.2 Use softeners, “chafing”, padding such as wood, rubber belting, etc. to protect ropes and slings from sharp corners.

.3 Remove all slings and ropes from the crane hooks when not in use.

.4 Remove dangling cables.

.5 All damaged ropes and slings shall be destroyed and discarded

.6 Never drag wire rope on ground. Refer to Midwest Generation Standard Rigging Manual.

Loads

.1 Use of non-shouldered eye bolts shall be strictly limited to specialized vertical lift applications where the design of load attachment points prohibit safe use of shouldered type.

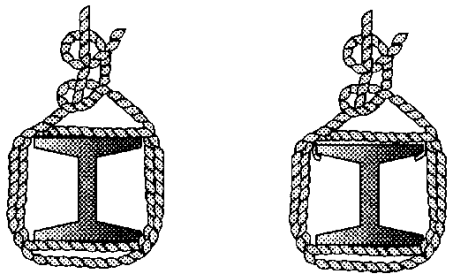
.2 If using eye bolts take care to avoid angular loading. Eye bolts provide the most strength when used for straight pulls.

.3 **Do not** use shoulder less eye bolts for angular loading.

.4 At least two slings must be used, each terminating at the lifting hook and at the load when hoisting or rigging horizontal loads such as bars, beams, etc.

NOTE: Never use a single sling "riding" over the hook in this type operation.

Figure .03A Good and Bad Rigging Practices



Bad Practice	**Good Practice**
Steel can cut manila	Sharp corners padded

Use of Chokers

Bad Practice	Good Practice
Running line can loosen shackle bolt line and be cut by eye splice bolt.	No cutting action on running or loosening of shackle.

Blocking & Cribbing

.1 Only use solid and square-cornered pieces of wood for blocking and cribbing.

.2 Ensure blocking is secure before resting the entire weight of the load omit.

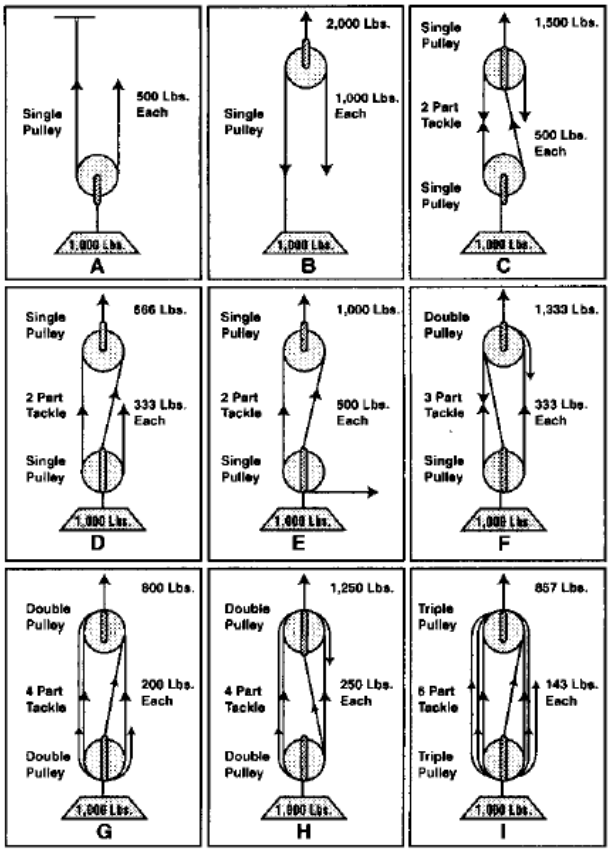
Special Precautions

.1 All rigging points must be properly evaluated before a lift is made.

.2 Conduct an evaluation of pipes, beams, grating or other equipment before using as a rigging point.

.3 Never rig from conduit or other electrical equipment.

Figure .05A Distribution of Loads on Block and Tackle



NOTE: This figure excludes friction. The effort required on the fall line is equal to the load divided by the number of ropes from the moveable pulley.

Safe Rigging Practices

The safety of all personnel involved in rigging and hoisting operations is dependent upon proper training, planning and the use of safe practices. (Refer to the Manufacturer's Rigging Handbooks.) Remember these safe practices when rigging a load to be lifted:

.1 Use gloves and other protective equipment when handling and inspecting rigging equipment. Keep hands out of pinch points when hooking, coupling, or hitching.

.2 Hands shall not be used to guide any cable, wire, rope, or winchline.

.3 All rigging equipment shall be inspected frequently (daily when used). Report any defective components to the Supervisors/ Crew Leaders.

.4 Commercially manufactured hooks, links, eyebolts or other attachments designed for lifting purposes shall be used. (Job made items shall not be used unless rated and authorized.

.5 Know the safe working capacity of the equipment being used. NEVER EXCEED THIS LIMIT. Safe working loads are based on ideal conditions. Conditions of extreme cold can impact the strength of steel.

.6 A tagline shall be used to control loads.

.7 Never run a single-leg sling through a pair of eyebolts.

.8 All hooks so designed shall have safety latches and the latches shall be operable.

.9 Never allow wire rope or slings to lie on the ground for any length of time or on damp or wet surfaces, rusty steel or near corrosive substances.

.10 Using handrails and conduit as attachment points is prohibited.

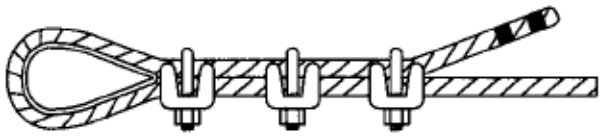
.11 Personnel shall stand clear of loads being lifted or landed.

.12 No employee shall be permitted under a suspended load or inside the angle of a winch line.

.13 No person shall stand or work near a cable, chain or rope under tension unless the nature of the work requires it.

.14 Employees shall not stand between objects or obstructions and the load being handled to avoid being caught if load swings.

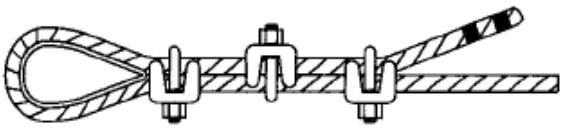
Figure .06B Application of Wire Rope U-Bolt Clips Crosby Type



1. **CORRECT METHOD -** U-Bolt of clips on short end of rope. (No distortion on live end of rope.) Shown above.

   After rope is in service, and is under tension, tighten clips to take up decrease in rope diameter.

2. **WRONG METHOD -**U-Bolt on live end of rope. (This will cause mashed spots on live end of rope.) Shown above.



3. **WRONG METHOD-** Staggered clips: two correct and one wrong. (This will cause a mashed spot in live end of rope due to wrong position of center clip.) Shown above.

Elevated Working Positions

General

.1 When employees are working at an elevated position above four feet, use fall arrest equipment (e.g., safety harness, lanyard, etc.), unless fall protection system or other engineering controls are provided. Refer to section 114; Fall Protection/Arrest Systems.

.2 Guard floor and wall openings.

.3 Personnel must be trained and qualified to operate/erect (climbers, spiders, etc.) any elevated working position equipment.

.4 Always use approved rigging to raise and lower tools and material from elevated work positions.

.5 Inspect ladders and scaffolds before using them. **Tag defective equipment immediately for repair or replacement.**

.6 Anchor points being used for fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and shall be capable of supporting at least 5000 pounds per person attached. Make sure anchorage points for fall protection systems are capable of withstanding the forces of a fall.

.7 Consult with the station's Health and Safety Specialist/Lead or trained fall protection competent person with any questions.

.8 Body belts may not be used as work positioning devices (i.e. to position the worker in place). Full body harnesses must be used in fall protection systems.

.9 Clean mud or grease from shoes before climbing.

Portable Ladders

.1 All ladders shall be inspected prior to use and used only for the purpose for which they were designed.

.2 Do not place ladders on sloping or slippery surfaces.

.3 Always face the ladder and use both hands when climbing (ascending and descending) the ladder. Maintain free use of both hands.

.4 Maintain 3 points of contact while climbing (up or down) and working past the side rails of the ladder. Do not attempt to reach more than your arm's length to either side when working from a ladder.

.5 There is no requirement for fall protection when working on a ladder. While not required, it is advisable, if feasible, however, to have fall protection when the worker doesn't have at least one hand available to hold on to the ladder or if conditions require its use.

.6 Open doors or place guarding to protect ladders that must be placed in front of doors, openings or other traffic lanes.

.7 Only one person shall work, climb or descend a portable ladder unless it is designed for more than one person.

.8 The use of portable metal ladders is prohibited unless their use has been evaluated and approved by the Safety & Health Specialist or Lead. **Never use a metal ladder where a person or the ladder may come in contact with energized equipment.** Always evaluate the hazards before erecting a metal ladder.

.9 Single and extension ladders shall be placed so that the bottom of the ladder is one-fourth (4:1 rule) of the ladder's length away from the structure it is rested against.

.10 Single and extension ladders shall be tied to adjacent supports, so they cannot change position while work is being done. If the ladder cannot be tied in position, another person must hold it.

.11 The top of a single or extension ladder used to gain access to an elevated work position shall extend at least three feet above the point of contact.

.12 Stand or work from below the top two steps of a step ladder. Stand or work from below the top three rungs of a single or extension ladder.

.13 Never stand with one foot on the ladder and the other foot on another support unless the ladder is securely fastened, and the support is solid.

.14 A-frame ladders must be used in the open "A" position with the cross-bracing extended.

.15 In selecting an extension ladder, the usable length of a ladder is 3 to 10 feet less than the overall length of its sections because of the necessity for overlapping the sections and maintaining the proper angle for stability. (See table below for

minimum overlap requirements.) Short ladders shall not be spliced together to make a long ladder.

Size of ladder (feet)	Overlap
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

.16 Stepladders shall be fully opened before being used. The spreaders shall be completely locked to hold the ladder in fully open position. The top of the ladders shall not be used as a work platform.

.17 Stepladders shall not be used as straight ladders unless they are designed as combination ladders.

Fixed Ladders

.1 Fixed ladders, safety cages and ladder safety devices (if installed) shall be inspected prior to use by the user to ensure they are free from obvious defects and are not removed from service.

.2 Check to ensure that the rungs and side rails are free from oil and grease. Check exterior ladders are not iced over or loaded with snow.

.3 Always face the ladder and use both hands when ascending and descending the ladder. Maintain free use of both hands.

.4 Maintain 3 points of contact while climbing (up or down) and working past the side rails of the ladder. Do not attempt to reach more than your arm's length to either side when working from a ladder.

.5 There is no requirement for fall protection when working on a ladder. While not required, it is advisable, if feasible, however, to have fall protection when the worker doesn't have at least one hand available to hold on to the ladder or if conditions require its use

.6 Only one person shall work, climb or descend a fixed ladder between landings or support platforms unless it is designed for more than one person.

.7 Unless instructed otherwise, platform hatches (where installed) shall be closed if stepping off of the ladder and when accessing or working on the level on which they are installed.

.8 Access gates and chains installed at fixed ladder access points shall be closed/secured when persons are working on an elevated platform or catwalk.

.9 For dedicated platforms and catwalks used for accessing equipment that are not walking galleries or paths, protective chains may be left open if there is no one is standing on the elevated platform.

Scaffolds

.1 Only trained and qualified personnel (Competent Person) are to erect, inspect, modify and dismantle any type of scaffold.

.2 Scaffolding must be identified with a tag identifying it is or is not safe to use. Consult the station's scaffold tagging system for specifics. Each scaffold must have a fully completed scaffold inspection tag attached near the access point(s) and be signed off prior to the scaffold being used before each shift during which the scaffold will be used.

.3 Before each work shift and after any event that may have jeopardized the scaffolds integrity a competent inspector shall inspect scaffolds and scaffold components for visible defects and scaffold integrity. The inspection tag shall be used to verify inspection and indicate whether the scaffold is SAFE or UNSAFE to access.

.4 Employees who perform work while on a scaffold must have scaffold user training and be able to recognize hazards associated with the type of scaffold being used. This shall include the following areas as applicable:

a. the nature of any electrical hazards fall hazards and falling object hazards;

b. the proper use of the scaffold, and the proper handling of materials on the scaffold;

c. the maximum intended load and the load carrying capacities of the scaffolds used.

.5 Scaffolds shall be designed to support at least four times the intended maximum load. All elevated working platform areas shall be guarded on all exposed sides.

.6 Scaffolds more than 4 feet above the ground, floor or lower level shall be provided with guardrails and toe boards on all open sides and ends. Guardrails shall be 2 x 4

inches, or equivalent, and installed no less than 42 inches high with an intermediate rail. The top rail shall be made to withstand 200 lbs. of pressure. When working on scaffolding greater than 4 feet in height and circumstances prevent the erection of a complete guardrail system, a personal fall arrest system must be used. Toe boards shall be a minimum of 4 inches high.

.7 Scaffold planking shall be made from lumber, which has been cut for and designated as scaffold planking, or a recognized equivalent planking shall be used.

.8 Decking boards shall have an overhang of not less than 6 inches and no more than 18 inches on each end and shall be properly secured so as to prevent sliding, kicking up, or turning over.

.9 Securely fasten all scaffold flooring.

.10 Scaffolds should be rigidly secured every 20 feet or less for scaffolds 3 feet wide or less, and every 26 feet or less for scaffolds greater than 3 feet wide.

.11 If scaffolds are erected above walks or work areas, the space between the toe board and railing shall be screened with at least No. 18 gauge U.S. standard one- half inch mesh wire or the equivalent.

.12 Whenever work is being done over employees who are working on a scaffold, adequate overhead protection shall be provided on the scaffold.

.13 An access ladder with a swing gate or other equivalent safe access shall be provided.

.14 While working above others, warn them before raising or lowering tools, materials and equipment.

.15 Stand clear when items are raised and lowered.

.16 If fall arrest equipment is required on the scaffold (i.e. scaffold is not complete or performing job tasks outside of scaffolding), do not tie off to scaffolding. Follow requirements in section 115 of this handbook for specifics on fall arrest equipment.

.17 Scaffolding shall never be moved while occupied.

Falling Object Protection

.1 In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toe boards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects.

.2 When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, the work crew shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

.3 Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

a. The area below the scaffold to which objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area;

b. toe board shall be erected along the edge of platforms more than 10 feet above lower levels for a distance sufficient to protect employees below.

c. Where tools, materials, or equipment are piled to a height higher than the top edge of the toe board, paneling or screening extending from the toe board or platform to the top of the guardrail shall be erected for a distance sufficient to protect employees below;

d. A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or

e. A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.

f. Canopies, when used for falling object protection, shall comply with the following criteria:

i. Canopies shall be installed between the falling object hazard and the employees;

ii. When canopies are used on suspension scaffolds for falling object protection, the scaffold shall be equipped with additional independent support lines equal in number to the number of points

supported, and equivalent in strength to the strength of the suspension ropes; and

iii. Independent support lines and suspension ropes shall not be attached to the same points of anchorage.

g. Where used, toe boards shall be:

i. Capable of withstanding without failure a force of at least 50 pounds applied in any downward or horizontal direction at any point along the toe board; and

ii. At least three and one-half inches high from the top edge of the toe board to the level of the walking/working surface. Toe boards shall be securely fastened in place at the outermost edge of the platform and have not more than 1/4-inch clearance above the walking/working surface. Toe boards shall be solid or with openings not over one inch in the greatest dimension.

Aerial Work Platforms

Aerial work platforms (AWPs) include aerial lifts, one-man lifts, scissor lifts, "JLGs", boom trucks, cherry pickers, bucket trucks, elevated platforms, etc.

.1 Only properly trained employees ("authorized users") are permitted to operate AWPs. Refer to the equipment's Operations Manual for specific operating instructions.

***NOTE**: After initial training an evaluation of each operator's performance must be conducted once every three years and after an incident occurs.*

.2 The User must have determined that the purpose for which the aerial platform is to be used is within the scope of the intended applications defined by the manufacturer. They have also understood by reading or having a qualified person explain all decals, warnings and instructions displayed on the aerial platform.

.3 Users (Operators) shall abide by all manufacturers' operating instructions and must be familiar with all emergency controls and emergency operation prior to operating the aerial lift device.

.4 Authorized Users shall perform a pre-use inspection of the aerial work platform before each shift in which the equipment is used. The inspection needs to be documented using an inspection form or equivalent.

.5 Maintenance inspections must be performed at the frequency identified by the manufacturer.

.6 Maintain safe load limits of the equipment. The load limitations of the machine shall never be exceeded, and the boom shall not be used for any purpose other than lifting and positioning personnel and their equipment.

.7 Aerial lift devices shall not be altered in any way without written authorization from the manufacturer.

.8 Follow the manufacturer's recommendations and requirements for using fall arrest equipment when using an AWP.

.5 When working from an articulating or boom type aerial work platform, **it is required that a full body harness with an adjustable lanyard be used to provide fall restraint**. The lanyard should be adjusted to be as short as possible (and may have a shock absorbing section, if permitted by the AWP manufacturer).

.6 If special circumstances exist that encourage or require the operator to use fall protection on vertical aerial platform (aka scissors) lifts, Users must tie off to a proper anchor point that is not attached to or part of the lift itself unless it is designed to do so per the manufacturer's instructions.

.7 Follow all rules for working on or near energized equipment. This includes rules on safe body clearances and the use of rubber gloves and protective devices (see section 123 of this handbook). These rules also apply when occupying an aerial work platform.

.8 Always extend outriggers and vertical jacks before raising the AWP. Place pads under outriggers and vertical jacks when conditions require it.

.9 Jobs involving the use of aerial work platforms shall be assessed for safe operation whenever there is a potential for immediate adverse weather conditions to occur. If weather conditions change during the job and personal safety is in jeopardy the supervisor shall be consulted for further direction. Typical mobile equipment would include cranes, personal lifting devices, cherry pickers, etc.

.10 Exit an aerial work platform only when it's been lowered. If exiting an elevated AWP is necessary, use company approved fall arrest equipment.

.11 Always stand firmly on the floor of the basket or bucket. Do not sit or stand on the edge of the basket or platform. Do not use planks, ladders or other devices for work position.

.12 When riding in or working from a basket or platform, the occupant's feet shall be firmly positioned on the floor. Personnel shall not leave the basket or platform while elevated, unless it is equipped with a gate and proper fall arrest equipment is continuously used.

.13 Before raising the boom or work platform, the machine shall be positioned on firm stable ground, outriggers (when provided) set and the machine leveled according to the manufacturer's instructions.

.14 Elevated work platforms (e.g., Mitie-Lift, Genie-Boom, JLG, etc.) may be repositioned vertically with the device elevated. Horizontal travel shall be done in the retracted position.

.15 All vertical and horizontal (rotating) clearances shall be checked before operation.

.16 Aerial lift devices shall be properly grounded, and minimum clearance distances shall be maintained from energized conductors:

a. Up to 50 kV, the clearance shall be 10 feet.

b. Over 50 kV, the clearance shall be 10 feet plus 4 inches for every 10 kV over 50 kV.

Excavations and Trenching

Purpose

This safety standard sets minimum safety requirements for protecting sPower people and contractors from injury that could result from excavating activities or work in excavations.

Scope

This safety policy is applicable to all excavating activities or work in excavations performed by sPower people or contractors at all sPower sites.

Definitions

The definitions below are used to ensure that all readers of this policy understand the expectations contained within the standard.

Bell-bottom pier hole: A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a bell shape.

Benching system: A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

Cave-in: Separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

Competent Person: A person who is capable of identifying existing and predictable excavation-related hazards, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization and skills to take prompt corrective measures to eliminate them.

Cross braces: The horizontal members of a shoring system installed from side to side of the excavation. The cross braces bear against either uprights or wales.

Excavation: Any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

Faces or sides: The vertical or inclined earth surfaces formed as a result of excavation work.

Failure: Breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

Hazardous atmosphere: An atmosphere that is explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, that may cause death, illness, or injury.

Hydraulic shoring system: A pre-engineered shoring system comprised of metallic hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.

Kickout: Accidental movement or Failure of a Cross Brace.

Protective system: A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

Ramp: An inclined walking or working surface that is used to gain access to one point from another and is constructed from earth or from structural materials such as steel or wood.

Sheeting: The members of a shoring system that retain the earth in position (solid planks, panels, etc.) and in turn are supported by other members of the shoring system (uprights, cross braces and wales).

Shield system: A structure used in an excavation to withstand cave-ins and which will protect employees working within the shield system. Shields can be permanent structures or portable units moved along as work progresses. Shields used in trenches are usually referred to as trench boxes or trench shields.

Shoring system: A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Sloping system: A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and surface or near surface loads that may affect the soil in the area of the trench (such as adjacent buildings, vehicles near the edge of the trench, soil being removed to create the excavation and stored near excavation surface, etc.).

Stable rock: Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

Structural ramp: A ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

Support system: A structure used as underpinning, bracing or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

Trench: A narrow excavation (in relation to its height) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

Trench box or trench shield: See Shield System.

Underpinning: A solid foundation laid below ground level to support or strengthen a structure.

Uprights: The vertical members of a trench shoring system placed in contact with the earth and usually positioned so the individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called sheeting.

Wales: Horizontal members of a shoring system placed in the direction of the excavation face whose sides bear against the vertical members of the shoring system or earth (the uprights or sheeting).

Guiding Principles

4.0 Only those people who are specifically authorized by the Competent Person must enter an excavation greater than 4 feet (1.2 feet) in-depth.

4.1 An inspection of the excavation greater than 4 feet (1.2 feet) in depth and surrounding area shall be made by the Competent Person prior to the start of any work activity to ensure necessary controls are implemented to mitigate hazards and their continuing effectiveness.

4.2 Protective Systems/Benching and Sloping for excavations in excess of 20 feet (6.0 meters) in depth must be designed by a registered professional engineer (or an equivalent qualified person).

Requirements

sPower must develop site-specific Excavation Safety program that at a minimum, complies with this safety policy and all applicable local/regional regulations. sPower may establish safety related policies or practices that are more stringent than in this standard.

Written Program Elements

5.0.1 The Excavation Safety program must clearly outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied working in
and near an excavation and the measures to enforce compliance with the program.

5.0.2 The Excavation Safety program must be legible, readable and accessible by all people involved in the Excavation Safetyprogram.

5.0.3 The Excavation Safety program must identify the position in sPower that is ultimately responsible for the implementation and maintenance of the sPower Excavation Safety program.

5.0.4 The Excavation Safety program must include a documented Excavation authorization process such as an excavation permits. The Excavation authorization process will include but are not limited to establishing specific requirements for atmospheric testing, securing open Excavations via protective hard barriers or covers when left unattended, water accumulation, access and egress points, locating and protecting underground utilities and structures.

5.0.5 The Excavation Safety program must define the training and experience needed to qualify a worker for excavation work and to be designated as a Competent Person as defined by this Standard.

5.0.6 The Excavation Safety program must describe the requirements for establishing an emergency action plan to address worker rescue in the event of a cave-in, a hazardous atmosphere, or other condition that endangers personnel.

Procedural Elements

Risk Assessment and Hazard Control

5.0.6.1 A documented risk assessment must be completed to identify all actual and potential hazards involved in the specific excavation activity and necessary control measures.

5.0.6.2 All excavations greater than 4 feet (1.2 feet) in depth must be supervised by a Competent Person as defined by this standard. The Competent Person is responsible for:

a. Conducting test for soil classification and recognizing and reclassifying soil after changes in worksite conditions.

b. Performing a Job Safety Analysis and Pre-Job Briefing.

c. Identifying and establishing necessary safety work practices and controls.

d. Understanding the requirements contained in this standard, local and national regulations regarding excavation safety, and data provided including engineering and manufacturer data for shield systems.

e. Conducting tests for hazardous atmospheres.

f. Locating underground installations and utilities.

g. Protecting against water intrusion.

h. Performing daily inspections of the excavation and protective systems.

Site Preparation

5.0.6.3 Equipment, materials, buildings, roadways, trees, boulders at the surface that could present a hazard to employees working in the excavation must be removed or supported.

5.0.6.4 Where there is a potential that the excavation work could affect the stability of adjoining buildings, walls, or other structures, a registered professional engineer (or an equivalent qualified person) is required to determine the type of shoring, bracing, or underpinning that may be needed.

5.0.6.5 The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to the start of an excavation.

5.0.6.6 Utility companies and/or property owners must be contacted within established or customary local response times and asked to establish the exact location of the underground utility installations prior to the start of actual excavation. When utility companies or property owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local statute), or cannot establish the exact location of existing installations, sPower may direct the work to proceed, provided effort is made to do so with caution, and detection equipment or other acceptable means to locate utility installations are used.

5.0.6.7 If there is knowledge of existing underground utilities in the area and their exact/estimated locations are known, excavation within 2 feet of the exact/estimated location must be conducted by a safe and acceptable means identified by the risk assessment.

5.0.6.8 If there is knowledge of existing underground utilities in the area, but their exact/estimated location is unknown, the underground utilities must be located by a safe and acceptable means identified by the risk assessment.

5.0.6.9 When it is reasonably practical to locate and isolate energy sources, identified and/or suspected underground utilities must be de-energized, locked and/or tagged and prior to commencing excavation work.

5.0.6.10 When electrical exposure of 50 volts and greater is possible, tools and equipment must be grounded, and people must be insulated using appropriately rated gloves, hot boots, rubber mats, etc.

Access and Egress to Excavations

5.0.6.11 A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet (1.2 m) or more in depth so as to require no more than 25 feet (7.5 m) of lateral travel for employees.

5.0.6.12 Structural Ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a Competent Person.

5.0.6.13 Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent displacement.

5.0.6.14 Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with OSHA 29 CFR 1926.502(b) or an equally protective standard shall be provided where walkways are 6 feet (1.8 m) or more above the bottom of the Excavation or immediate lower levels.

Traffic and Vehicular Hazard Controls

5.0.6.15 When excavations carried out on or adjacent to public roadways, traffic controls must be established as required in the AES Global

Safety Standard for Work Zone Traffic Control and applicable regional/national regulatory requirements.

5.0.6.16 Excavations that are on or adjacent to public roadways must be visibly marked and barricaded to prevent accidental fall into the excavation.

5.0.6.17 Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

5.0.6.18 When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs.

5.0.6.19 When the excavation is made with mobile heavy equipment, such as backhoe excavator, hazardous equipment operation area must be secured by barricading and/or observed by a dedicated observer to prevent unauthorized entry of people. People must not be allowed to enter or work within the restricted equipment operation area while the equipment is in operation and without notifying the operator.

Protection from Cave-ins

Excavations that are greater than 4 feet (1.2 m) in depth require a protective system that employs combinations of sloping, benching, or shielding to protect people from Cave-ins. The Excavation Safety Program must include, at a minimum, following requirements to protect sPower people and contractors from cave-ins.

5.0.6.20 The Competent Person must evaluate and determine the appropriate Protective System.

5.0.6.21 Protective systems must be designed according to applicable local/regional/national regulatory requirements or standards and must have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

5.0.6.22 sPower's' Excavation Safety written program must define the specific regulatory and sPower policy to be followed for designing and constructing protective systems. If a local/regional/national regulations or standards are not applicable, at minimum

protective systems are to be designed and constructed according to OSHA 29 CFR 1926 Subpart P Section 652.

5.0.6.23 The Protective Systems for Excavations of up to 20 feet (6 meter) depth must be designed by the Competent Person.

5.0.6.24 A registered professional engineer (or equivalent qualified person) must design the required Protective system for Excavations that are 20 feet (6 meters) or more depth.

5.0.6.25 The design must include access ramps installation and removal procedures.

5.0.6.26 Excavations more than ten feet (3 m) in depth, undermining sidewalks/pavement or adjacent to structures or walls must have written specifications prepared by a registered professional engineer (or equivalent qualified person).

5.0.6.27 Sidewalks, pavements, and structures shall not be undermined unless an engineered support system or other method of protection is provided to protect employees from a collapse of such structures.

5.0.6.28 Keep excavated material (spoils) and work equipment at least 2 ft. (0.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary to prevent overloading and stress cracks.

5.0.6.29 Excavating equipment not actively engaged in the operational progress of the excavation must shut-off to minimize ground vibrations that may adversely influence soil stability.

5.0.6.30 When sloping and benching protection is used, the slope must be designed as shown in OSHA CFR 1926 Subpart P Appendix B - Sloping and Benching, with reference to OSHA CFR 1926 Subpart P Appendix A –**Soil Classification.**

5.0.6.31 Shield systems must be installed in accordance with the specifications, recommendations, and limitations issued by the manufacturer.

5.0.6.32 Employees are not permitted in trenches when shields are being installed, removed, or moved vertically.

5.0.6.33 Excavation of material to a level no greater than 2 feet (.61 m) below the bottom of the members of a support system shall be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no

indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

5.0.6.34 Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.

Hazardous atmosphere

5.0.6.35 Atmosphere in excavations over 4 feet (1.2 meters) deep where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist must be tested before allowing people to enter into the excavation. Potential conditions that could reasonably be expected to create hazardous atmosphere include but are not limited to:

1. Excavations in landfill areas.
2. Excavations in areas where hazardous substances are stored nearby.
3. Excavations nearby gas or sewer lines.
4. Use of fossil fuel powered equipment for excavation or other activities.
5. Coatings, hot work, chemical bonding (plastic pipe welding), repair of lines that contain hazardous chemicals.

5.0.6.36 Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres.

5.0.6.37 When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the controls are preventing the accumulation of a contaminant and the atmosphere remains safe.

5.0.6.38 If there is a possibility for accumulation of hazardous atmospheric conditions during work in an excavation, continuous atmosphere monitoring and alerting system must be established before people enter into the excavation and during the work.

5.0.6.39 Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.

Protection from hazards associated with water accumulation

5.0.6.40 Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.

5.0.6.41 If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a Competent Person to ensure proper operation.

5.0.6.42 If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a Competent Person at a minimum before entering into the excavation.

Other excavating Hazard controls

5.0.6.43 No one is permitted underneath loads being handled by lifting or digging equipment. Workers must stay clear from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials and equipment.

5.0.6.44 While an excavation is open, all exposed underground installations must be protected, supported, or removed, as necessary, to safeguard workers and adequately protect the installation from damage

5.0.6.45 If underground utilities are encountered that are not properly documented or suspected, work must be stopped immediately and reported to the person supervising the excavation work. Work must not be proceeded without reviewing the Job Safety Analysis and implementing required additional controls.

5.0.6.46 Fall protection controls must be established to prevent falls into excavations more than 6 feet (1.8 meter)

5.0.6.47 Employees entering bell-bottom pier holes or other similar deep and confined footing excavations shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

5.0.6.48 All Excavations must be visibly marked and barricaded to prevent accidental fall of pedestrians into the excavation.

Inspections

Daily inspections of Excavations, the adjacent areas, and Protective Systems shall be made by a Competent Person for evidence of a situation that could result in possible Cave-ins, indications of failure of Protective Systems, Hazardous Atmospheres, or other hazardous conditions. An inspection shall be conducted by the Competent Person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated. Where the Competent Person finds evidence of a situation that could result in a possible cave-in, indications of failure of Protective Systems, Hazardous Atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Program Administration

Enforcement

sPower Excavation Safety Program must list the enforcement policies for this program. The enforcement policies must include:

5.0.6.49 A monitoring process to make sure the Excavation Safety Program is being implemented as defined in the program and people follow the program without deviation.

5.0.6.50 Method for ensuring that sPower people and contractors are held accountable for meeting sPower Excavation Safety Program related performance expectations.

Clearly Defined Roles Responsibilities

The sPower Excavation Safety Program must clearly define the specific roles and responsibilities of each position involved in excavation work.

Auditing

The Excavation Safety Program must be audited according to the sPower Internal EHS Audit Standard requirements and schedule.

Training

sPower will provide training to ensure people involved in the Excavation Safety Program have the knowledge and skills required to fulfill their assigned responsibilities. Training must include initial training and periodic refresher sessions at a minimum of once every two years.

5.0.6.51 Training shall be conducted by or under the direction of a qualified instructor recognized/credentialed in instructing trenching and excavation safety.

5.0.6.52 Business shall certify in writing that involved people training has been completed and is being kept current. The certification shall contain each person's name and date(s) of training.

5.0.6.53 sPower shall ensure that each involved person has demonstrated proficiency in the safe work practices as necessary, before that person is considered as having completed the training and certifying as a Qualified or Competent Person to involve in the Excavation Safety Program.

5.0.6.54 Retraining shall be provided when the work observation program reveals, or any other safety management program reveals that there are deviations from or inadequacies in an employee's knowledge on Excavation Safety Program.

5.0.6.55 sPower shall determine, through regular supervision and inspections that sPower People and Contractors involved in Excavation Safety Program are complying with the safety related work practices required by this standard.

References:

This sPower safety policy was developed using the following publications as the source of the requirements contained herein:

6.1.1 Occupational Safety and Health Administration (OSHA) 29 CFR 1926, Subpart P

6.1.2 Occupational Safety and Health Administration (OSHA) Soil Classification - 1926 Subpart P App A.

6.1.3 Occupational Safety and Health Administration (OSHA) Sloping and Benching - 1926 Subpart P App B

6.1.4 Occupational Safety and Health Administration (OSHA) Timber Shoring for Trenches - 1926 Subpart P App C

Required Protection When Working On Electrical Equipment

General

.1 Personnel working on or exposed to equipment where portions can be energized or potentially energized at 50 volts or above shall be insulated from the hazard and shall be alert at all times and not impaired in any manner.

See Section 124 for specific personal protective equipment requirements.

.2 Remove or completely cover all conductive articles prior to performing operations or maintenance on or near equipment normally energized at/or above 50 volts. Such items include, but are not limited to:

a. rings;
b. watches;
c. necklaces;
d. keys;
e. metal rulers;
f. flashlights;
g. metal wrist bracelets
h. earrings
i. piercings
j. metal safety glasses
k. Chicago fitting connection pins (on hard hat)

l. magnetic or metallic hard hat adornments

m. any other exposed metal articles

Note: *Steel-toed safety shoes must be EH rated and cannot have steel guard exposed.*

3 Whenever another person is present during switching, testing, or maintenance operations, either to assist or instruct, that person is required to wear the same items of protective gear as the person performing the work. Otherwise, the person must move out of the limited approach boundary away from the work or switching area. (See PPE Table under Section 124)

4 Be prepared to de-energize equipment if an employee accidentally comes in contact with live energy.

5 See Section 125.04 Safe Body Clearances for additional requirements.

6 See Section 125 .02 for details on safety watch personnel when working on or near live electrical equipment.

7 **Blind Reaching -** Employees shall not reach blindly into areas that might contain exposed energized electrical conductors or circuit parts where an electrical hazard exists.

8 **Illumination -** Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Refer to Section 105, Lighting for more details and information.

9 **Occasional Use of Flammable Materials -** Where flammable materials are present occasionally or infrequently, electric equipment capable of igniting them shall not be permitted to be used, unless measures are taken to prevent hazardous conditions from developing. Such materials include, but are not limited to, flammable gases, vapors, or liquids; combustible dust; and ignitable fibers, shavings or filings.

Care of Protective Gear

.1 Keep all protective gear clean and properly stored when not in use

.2 Always inspect protective gear and devices immediately before and after each use.

.3 Look for tears, rips, excessive wear, rotting and unsanitary conditions.

.4 Promptly replace all defective protective gear and devices.

.5 Wash protective gear with mild soap and water.

.6 High- and low-voltage gloves shall, as a minimum, be tested every 6 months. See OSHA 1910.137 for details.

Selection, Maintenance and Use of Rubber Goods/Electrical Protective Equipment

.1 **Selection of Rubber Insulating Goods**

Where there is a potential electrical hazard to employees who are working on electrical equipment, appropriate class voltage rubber insulating gloves and rubber insulating sleeves shall be worn**.** In addition, other potential electrical hazards must be considered to ensure that other parts of the body other than the hands cannot come in contact with the live or grounded parts. Refer to the Table below for classification of rubber gloves:

Table Classification of Rubber Gloves

Class of Equipment	Maximum use Voltage Rating(AC, rms)
00	500
0	1,000
1	7,500
2	17,000
3	26,500
4	36,000

Use of Rubber Gloves

Employees whose work requires the use of rubber insulating gloves as described in this section shall be trained in and familiar with the use of rubber gloves.

a. Rubber insulating gloves shall be manually air tested before use at each job by rolling it up tightly beginning at the gauntlet end. The employee shall observe whether or not any air escapes through the glove. Gloves that show weak spots or air leakage shall not be used.

b. Gloves and protectors shall not be removed until the employee is entirely out of falling or reaching distance of energized circuits or equipment.

c. Gloves shall be worn when installing or removing grounding devices.

d. Gloves shall be worn while working on any energized lighting or receptacle circuit.

e. Gloves shall be worn when using a voltmeter or three phase rotation meter on energized bus or cable.

f. Rubber insulated gloves shall be used when approved insulated sticks, fuse tongs, or pullers are used to operate single blade disconnect switches, fuse cutouts, etc.

g. Employees shall not wear two pair of rubber gloves at a time (one pair inside the other) for extra insulation.

h. Rubber gloves shall not be worn wrong side out or left in that condition.

i. Rubber gloves shall not be used without the leather protectors. However, Class 0 gloves may be used without protectors in limited use conditions, where small equipment requires unusually good finger dexterity.

j. Rubber sleeves shall be inspected each time before using. Sleeves that show cuts or weak spots shall not be used.

k. Rubber insulating gloves shall be electrically tested before first issue and every six months thereafter. Rubber insulating sleeves shall be electrically tested before first issue and every twelve months thereafter.

l. Employees shall not wear rings while using rubber gloves when the size or shape of the ring could result in stress or damage to the rubber gloves

Care of Rubber Goods

Each employee shall properly care for assigned rubber protective equipment.

Rubber Goods Testing

Rubber goods shall be electrically tested before first issue and then in accordance with the following table:

Item	Frequency (months)
Gloves	6
Blankets	12
Sleeves	12
Hot Sticks (line tools)	24

Note: Switch sticks, test sticks and other live line insulated tools shall be properly transported, stored, inspected, tested and maintained.

Glove Care

.1 Air Testing

AIR INFLATION TEST (Gloves only)

The gloves shall be maintained in a safe, reliable condition". This requires that gloves be inspected for any damage before each day's use. Gloves must also be inspected immediately following any incident that may have caused damage.

Before each use, gloves and boots shall be inspected for holes, rips or tears, ozone cutting (the cutting action produced by ozone on rubber under mechanical stress cracks), UV checking, and signs of chemical deterioration.

In order to maintain the highest level of insulating protection and ensure long life, it is essential that gloves and boots are properly cared for and stored.

sPower requires that insulating gloves be given an air test along with the inspection. The glove is filled with air, either manually or by an inflator, and then checked for leakage. The leakage is detected by listening for escaping air and holding the glove

against the tester's cheek to feel air releasing. An example of a glove inflator test kit is attached.

As stated in ASTM specifications for In-Service Care and Use of Rubber Gloves and Sleeves, gloves and sleeves should be expanded no more than 1.5 times their normal size for type I, and 1.25 times normal for type II during the air test. The procedure should then be repeated with the glove turned inside out.

Manual Air Test

Glove Inflator Test

Electrical Test(Gloves Only)

In addition to this daily testing, Electrical protective equipment shall be subjected to periodic electrical tests. ASTM F 496 states that gloves being used in the field must be electrically retested every six months.

Gloves that have not been placed into service after an electrical test shall not be placed into service unless they have been electrically tested within the previous 12 months.

Cracking & Cutting
Shown above is the damage caused by prolonged folding or compressing.

Chemical Attack
This photo shows swelling caused by oils and other petroleum compounds.

Gloves and boots should also be examined to determine if they show any damage as a result of chemical contamination, particularly from petroleum products. The first sign of exposure is swelling in the area of contamination. Should any rubber equipment be exposed to chemical contaminants or be suspect of any other physical damage, it should be turned in for inspection, cleaning and electrical testing.

Do not confuse antistatic and conductive footwear with electric shock-resistant footwear. It is the electrically insulating properties that protect workers. Antistatic footwear and conductive footwear do the opposite (they conduct electricity)

Washing

a. Wash rubber gloves frequently with mild soap and water.
b. After washing the inside of rubber gloves, dry them thoroughly and turn them right side out.
c. Never leave them turned inside out. Never wear rubber gloves inside out.

Storage

d. Store rubber gloves in clean, dry, locations, away from sunlight.

Protectors

e. Wear leather protectors over rubber gloves to protect against punctures or tears;

f. Damaged leather protectors that expose the rubber must be immediately disposed of and replaced.

g. Keep protectors clean and free of oil, dust and chemicals.

Low Voltage Gloves

.1 Wear only company-approved and tested low voltage gloves of Class 0 only on conductors or equipment energized between 50- and 600-Volts phase to phase. Never use low voltage rubber gloves on conductors or equipment energized above 600 Volts phase to phase.

.2 The means of insulation protection needed for low voltage work shall be determined from the table in Section 124 prior to the start of work. Additionally,

a. where high finger dexterity is needed for small equipment and parts manipulation then low voltage gloves without protectors may be worn with the prior approval of your supervisor.

b. if low voltage rubber gloves are worn without protectors, then air testing and visual inspections must be performed frequently during the course of the job.

High Voltage Gloves

.1 For work on equipment energized above 600 Volts and up to 20 kV phase to phase wear Class 1 gloves that are company-approved and tested at 20kV.

.2 Wear approved leather protectors over rubber gloves at all times. Never wear leather protectors as work gloves.

.3 Inspect and air test rubber gloves before using them. Inspect and test as necessary while on the job.

Personal Protective Equipment Required Around Energized Electrical Equipment

Electrical equipment shall be de-energized whenever possible. Because equipment cannot always be de-energized infeasibility due to equipment design or operational limitations include testing of electric circuits that can only be performed with the circuit energized or work on circuits that form an integral part of a continuous process, etc.) proper PPE shall be worn.

After an arc flash study has been completed, follow the PPE requirements indicated by the

study's labeling. Labels will indicate, where applicable, all work and racking operations that must be done with the switch in maintenance mode. **Note:** Arc rating is defined in NFPA 70E, Article 100 and can be either ATPV or EBT. ATPV is defined in ASTM F1599-99 as the incident energy on a fabric or material resulting in sufficient heat transfer to cause the onset of a 2nd degree burn on Stoll Curve.

All Racking in and out of Circuit Breakers Requires Level 4 PPE. No Exceptions. If no label is present, follow the PPE table below.

Equipment Identification

All electrical equipment including disconnect switches, switchboard controls, relays, knife switches, and all equipment in company facilities must be plainly designated by name, number, or other suitable means to properly identify such equipment

Energized Electrical Equipment PPE

The table below is provided as a reference only. The contents establish the minimum PPE requirements, assumes equipment is energized and work is within flash boundary. For any tasks not described in the table, supervision shall refer to NFPA 70E, table 130.7 (c)(9)(a). Hazards associated with task should be evaluated and discussed during pre-job briefing

As a reference, it is intended to provide personal protective equipment requirements based on current requirements and is provided for reference purposes based on the standards available at the time of this Handbook's publication. As such subsequent changes made to applicable standards may not be reflected in the information contained therein.

Should applicable standards change, the changes will be evaluated by a competent person and updates may be provided on a case-by-case basis.

ENERGIZED ELECTRICAL EQUIPMENT PPE TABLE[1]				
TASK	PPE KEY	REQUIRED PPE		
		VOLTAGE RANGE	VOLTAGE RANGE	VOLTAGE RANGE
		50 -240 VAC	241-599 VAC	600 VAC and above
VOLTAGE TESTING ENERGIZED POWER CIRCUIT / PARTS	APPAREL	2	2	4
	GLOVES	LVG	LVG	HVG
	TOOLS	R	R	R
WORK ON ENERGIZED POWER CIRCUIT/ PARTS	APPAREL	2	4	4
	GLOVES	LVG	LVG	HVG
	TOOLS	R	R	R
REMOVE OR INSTALL (RACKING) – CIRCUIT BREAKERS & FUSED SWITCHES OR STARTERS WITH ENCLOSURE	APPAREL	2	4	4
	GLOVES	LVG	LVG	HVG
	TOOLS	R	N	N
REMOVE OR INSTALL (RACKING) - CIRCUIT BREAKERS & FUSED SWITCHES OR STARTERS WITH ENCLOSURE DOORS OPEN	APPAREL	2	4	4
	GLOVES	LVG	LVG	HVG
	TOOLS	R	N	N
WORK ON CONTROL CIRCUITS AND NOT EXPOSED TO ENERGIZED POWER SOURCE	APPAREL	0	0	0
	GLOVES	LVG	LVG	LVG
	TOOLS	R	R	R
WORK ON CONTROL CIRCUITS AND EXPOSED TO ENERGIZED POWER	APPAREL	2	4	4
	GLOVES	LVG	LVG	HVG

[1] The table is representative of the worst-case hazard - Refer to NFPA 70E table 130.7 (C)

	TOOLS	**R**	**R**	**R**
APPLICATION OF ISOLATION GROUNDS AFTER VOLTAGE TESTING	**APPAREL**	**2**	**4**	**4**
	GLOVES	**LVG**	**LVG**	**HVG**
	TOOLS	**N**	**N**	**N**
APPLICATION OF PERSONAL GROUNDS	**APPAREL**	**2**	**2**	**2**
	GLOVES	**LVG**	**LVG**	**HVG**
	TOOLS	**N**	**N**	**N**
OPERATE POWER CIRCUIT BREAKER, FUSED SWITCH, CONTACTOR OR STARTER OPERATION **WITH COVERS ON AND ENCLOSURE DOORS CLOSED & LATCHED**	**APPAREL**	**0**	**0**	**2**
	GLOVES	**N**	**L**	**L**
	TOOLS	**N**	**N**	**N**
OPERATE CIRCUIT BREAKER, FUSED SWITCH, CONTACTOR OR STARTER OPERATION **WITH COVERS OFF OR ENCLOSURE DOORS OPEN**	**APPAREL**	**0**	**2**	**4**
	GLOVES	**N**	**LVG**	**HVG**
	TOOLS	**N**	**N**	**N**
OPENING HINGED COVERS TO EXPOSE BARE ENERGIZED PARTS "NOTE: DO NOT BREAK THE PLANE WITH HANDS OR TOOLS. VERIFY HINGES ARE IN GOOD SHAPE SO THAT THEY CANNOT FALL & CONTACT EXPOSED CONDUCTORS	**APPAREL**	**0**	**0**	**4**
	GLOVES	**L**	**L**	**L**
	TOOLS	**N**	**N**	**N**
READING A PANEL METER WHILE OPERATING A PANEL SWITCH	**APPAREL**	**0**	**0**	**0**
	GLOVES	**N**	**N**	**N**
	TOOLS	**N**	**N**	**N**
REMOVAL OR REPLACEMENT OF BOLTED COVERS TO EXPOSE BARE ENERGIZED PARTS	**APPAREL**	**2**	**2**	**4**
	GLOVES	**N**	**LVG**	**HVG**
	TOOLS	**N**	**N**	**N**
OPENING/OPERATING VOLTAGE TRANSFORMER OR CONTROL POWER TRANSFORMER COMPARTMENTS, OR INSTALLING OR REMOVING FUSES, **1KV AND ABOVE**	**APPAREL**	**N/A**	**N/A**	**4**
	GLOVES	**N/A**	**N/A**	**HVG**

	TOOLS	**N/A**	**N/A**	**N**
VOLTAGE TEST OR WORK ON DC CIRCUIT BREAKER, FUSED SWITCH CONTACTOR OR STARTER Refer to NFPA 70E table 130.7 (C)(15)(b).	**APPAREL**	**2**	**2**	**N/A**
	GLOVES	**LVG**	**LVG**	**N/A**
	TOOLS	**R**	**R**	**N/A**
INDOOR OR OUTDOOR DISCONNECT SWITCH OPERATION, HOOKSTICK OPERATED OR INDOOR GANG OPERATED, 1KV AND ABOVE (WHEN BODY IS WITHIN FLASH BOUNDARY OF 10 FEET)	**APPAREL**	**N/A**	**N/A**	**4**
	GLOVES	**N/A**	**N/A**	**HVG**
	TOOLS	**N/A**	**N/A**	**R**
OUTDOOR DISCONNECT SWITCH OPERATION, GANG OPERATED FROM GRADE LEVEL, 1KV AND ABOVE (WHEN BODY IS WITHIN FLASH BOUNDARY OF 10 FEET)	**APPAREL**	**N/A**	**N/A**	**2**
	GLOVES	**N/A**	**N/A**	**HVG**
	TOOLS	**N/A**	**N/A**	**N**
600 V CLASS MOTOR CONTROL CENTERS (MCCS) - WORK ON CONTROL CIRCUITS WITH ENERGIZED ELECTRICAL CONDUCTORS AND CIRCUIT PARTS 120 V OR BELOW, EXPOSED	**APPAREL**	**0**	**N/A**	**N/A**
	GLOVES	**LVG**	**N/A**	**N/A**
	TOOLS	**R**	**N/A**	**N/A**
600 V CLASS SWITCHGEAR (WITH POWER CIRCUIT BREAKERS OR FUSED SWITCHES) AND 600 V CLASS SWITCHBOARDS - WORK ON CONTROL CIRCUITS WITH ENERGIZED ELECTRICAL CONDUCTORS AND CIRCUIT PARTS 120 V O R BELOW, EXPOSED	**APPAREL**	**0**	**N/A**	**N/A**
	GLOVES	**LVG**	**N/A**	**N/A**
	TOOLS	**R**	**N/A**	**N/A**
TASKS NOT COVERED ABOVE (See Note below)	**APPAREL**	**2**	**2**	**4**
	GLOVES	**L**	**LVG**	**HVG**
	TOOLS	**R**	**R**	**R**
NOTE: Refer to NFPA table 130.7 (c)(9)(a). Hazards associated with task should be evaluated and discussed during pre-job briefing				

Electrical Work Apparel Requirements

(Refer to NFPA 70E table 130.7 (C) (16))

NOTE: ALL LEVELS REQUIRE - HARD HAT, SAFETY GLASSES, HEARING PROTECTION, AND SERVICEABLE LEATHER WORK SHOES

APPAREL REQUIRED FOR INDICATED LEVEL

LEVEL 1 - FR SHIRT AND PANT/JEAN or FR COVERALLS (**Must be worn when entering switchyards)**

LEVEL 2 - FR COVERALLS (min. 8 cal) AND SWITCHING FACESHIELD.

A BALACLAVA (MIN 8 CAL COVERING NOSE, NECK, EARS) IS TO BE WORN UNDER SWITCHING FACE SHIELD OR LEVEL 2 FACESHIELD IS REPLACED WITH LEVEL 4 HOOD/FACESHIELD

OVER UNTREATED NATURAL FIBER SHORT SLEEVED SHIRT, SHORTS/UNDER GARMENTS

OR FR SHIRT AND PANT/JEAN AND SWITCHING FACESHIELD.

A BALACLAVA (MIN 8 CAL COVERING NOSE, NECK, EARS) IS TO BE WORN UNDER SWITCHING FACE SHIELD OR LEVEL 2 FACESHIELD IS REPLACED WITH LEVEL 4 HOOD/FACESHIELD OVER UNTREATED NATURAL

FIBER SHORT SLEEVED SHIRT, SHORTS/UNDER GARMENTS

LEVEL 4 - DOUBLE LAYER FLASH SUIT (min. 40 cal) WITH SWITCHING HOOD

OVER LEVEL 2 COVERALLS OR LEVEL 2 SHIRTS AND PANTS

GLOVES REQUIRED AS INDICATED

N - NOT REQUIRED, BUT MAY BE WORN

L- LEATHER GLOVES

LVG - LOW VOLTAGE CLASS 0 RATED GLOVES

HVG - HIGH VOLTAGE CLASS 2 RATED GLOVES

TOOLS REQUIRED AS INDICATED

N - NOT REQUIRED, BUT MAY BE USED

R - VOLTAGE RATED TOOLS REQUIRED

Flash Boundary For Qualified Workers2

Voltage Between Phases and performing work as outlined in the table above.	Required Minimum Distances From Uncovered Conductors or Equipment that electrical PPE (Flash Protection Apparel) is required.
479V AND BELOW	4 ft.
480V AND GREATER	10 ft.

Energized Equipment

General

.1 Always treat electrical equipment as energized until approved testing methods prove that it is de-energized and grounded, if necessary.

.2 A job briefing must be conducted and must review the following items:

a. proper arrangements are made with operating personnel;

b. identify the work area to all workers;

c. identify which parts are energized and which parts are out of service to all workers;

Qualified Workers include those who have been trained to work on energized conductors or circuit parts. Qualified workers can escort unqualified across the Limited approach boundary.

d. identify potential hazards and special precautions to do the work safely;

e. required isolation procedures; and

f. required personal protective equipment.

.3 After the job briefing, each worker must demonstrate an understanding of which parts are energized and which equipment is to be worked on.

.4 Never remove compartment doors on energized equipment unless authorized to do so for inspections or switching.

.5 Identify the Access Permit number for any equipment taken out of service.

Warnings

.1 When required, approved ropes, nets, danger flags or warning signs shall be used to guard the area in which employees are working.

.2 Only authorized persons are permitted to step over or pass under these barriers.

.3 Whenever necessary, erect suitable barriers to isolate from adjacent energized equipment or conductors.

.4 An additional safeguard for reaching into energized equipment is suitable nets or other barriers between the equipment being are working on and the energized equipment.

At least two employees shall be present while the following types of work are being performed:

a. installation, removal, or repair of lines that are energized at more than 600 volts,

b. installation, removal, or repair of de-energized lines if an employee is exposed to contact with other parts energized at more than 600 volts,

c. installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts,

d. work involving the use of mechanical equipment, other than insulated aerial

lifts, near parts energized at more than 600 volts, and

e. other work that exposes an employee to electrical hazards greater than or equal to those posed by operations above.

f. both employees shall wear the proper PPE per the PPE Table.

Two employees are not required while performing:

g. routine switching of circuits, if the employer can demonstrate that conditions

at the site allow this work to be performed safely,

h. work performed with live-line tools if the employee is positioned outside the

reach of or otherwise exposed to contact with energized parts, and

i. emergency repairs to the extent necessary to safeguard the general public.

Additional guidelines for task requiring "at least two employees" .

All employees will adhere to the **OSHA 1926.960** standard laid out below, which addresses the cases for "*at least two employees.*". The nature of Solar O&M work results in very rare instances that two people are needed according to these standards below due to the fact that all things can be de-energized before being repaired. However, there are tasks that management has identified that require a "safety second" that go beyond those standards. And, the employees always have the option for a safety second if new situations arise.

Management has conducted an extensive review of whether or not that "safety second" has to be a qualified electrical worker or only has to be trained on how to act as a first responder in case of an emergency. When the intent of the "safety second" is only to act as a first responder, that person is not required to be a fully qualified electrical worker. The "safety second" would have to:

- Be trained on what to do in the event of an emergency. (specific duties can be reviewed during the pre-job task plan briefing.)
- **Be trained in First Aid / CPR / AED**
- **Be familiar with the site-specific Emergency Response Plan procedures.**

In these instances, Land Maintenance crew members are able to be “safety seconds”. Although they cannot perform any of the work, all sPower employees are required to be certified in First Aid/CPR/AED All employees are briefed on emergency contact procedures during the sPower EHS onboarding orientation.
All employees will have immediate access to the sPower Emergency Response Plan for the site.

References:

This sPower Safety Policy was developed using the following publications as the source of the requirements contained herein:

1926.960(a)
Application. This section applies to work on exposed live parts, or near enough to them to expose the employee to any hazard they present.
1926.960(b)
General.
1926.960(b)(1)
Qualified employees only.
1926.960(b)(1)(i)
Only qualified employees may work on or with exposed energized lines or parts of equipment.
1926.960(b)(1)(ii)
Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more.
1926.960(b)(2)
*Treat as energized. Electric lines and equipment shall be considered and treated as energized unless they have been deenergized in accordance with **§ 1926.961**.*
1926.960(b)(3)
At least two employees.
1926.960(b)(3)(i)
*Except as provided in paragraph **(b)(3)(ii)** of this section, at least two employees shall be present while any employees perform the following types of work:*
1926.960(b)(3)(i)(A)
Installation, removal, or repair of lines energized at more than 600 volts,
1926.960(b)(3)(i)(B)
Installation, removal, or repair of deenergized lines if an employee is exposed to contact with other parts energized at more than 600 volts,
1926.960(b)(3)(i)(C)
Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts,
1926.960(b)(3)(i)(D)
Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts, and

1926.960(b)(3)(i)(E)

*Other work that exposes an employee to electrical hazards greater than, or equal to, the electrical hazards posed by operations listed specifically in paragraphs **(b)(3)(i)(A)** through **(b)(3)(i)(D)** of this section.*

1926.960(b)(3)(ii)

*Paragraph **(b)(3)(i)** of this section does not apply to the following operations:*

1926.960(b)(3)(ii)(A)

Routine circuit switching, when the employer can demonstrate that conditions at the site allow safe performance of this work,

1926.960(b)(3)(ii)(B)

*Work performed with live-line tools when the position of the employee is such that he or she is neither within reach of, nor otherwise exposed to contact with, energized parts, and **1926.960(b)(3)(ii)(C)***

Emergency repairs to the extent necessary to safeguard the general public.

Uncovered Conductors and Equipment

.1 Maintain safe clearance when working between any energized conductor that does not have a grounded sheath or metallic shielding. See table, “Safe Body Clearances AC (Shock) For Qualified Workers”,below.

.2 Maintain safe body clearance (which includes any conductive tools used) from any electrical equipment not covered by a barrier or protective device and use proper PPE.

.3 The outer jacket on conductors must not be depended upon as insulation to avoid the use of protective equipment.

.4 Never touch or wipe resistance grids, motor and generator leads or windings which are in service.

.5 Where access to the exciter and the field rings is limited, the brushes should be checked and renewed per recommended guidelines whenever the equipment is shut down and out of service. When it becomes necessary to change exciter brushes in service, the load shall be transferred to reserve exciters, where possible, and ground indicating equipment shall be disconnected and taken out of

service. Use approved tools, equipment and work practices required to perform the job safely.

.6 Exposed moving or rotating equipment shall not be cleaned while Inservice.

Safe Body Clearances

.1 Maintain safe body clearances when approaching a working position near any energized conductors or equipment (whether by climbing, moving in an aerial lift, walking, or any other means), and at all times while in a working position. Maintain the following minimum body clearance of any energized conductors or equipment which does not have a grounded sheath, a grounded metallic shielding or, which is not covered by a barrier or protective device

Safe Body Clearances for Alternating Current (AC) Shock For Qualified Workers

Voltage Between Phases	**Restricted Approach Boundary (Required Minimum Clearance) From Uncovered Conductors or Equipment**
50 V – 300 V	Avoid Contact
301 V – 750 V	1 foot 0 inch
751 V – 15 kV	2 feet 2 inches
15.1 kV – 36 kV	2 feet 7 inches
36.1 kV – 46 kV	2 feet 9 inches
46.1 kV – 72.5 kV	3 feet 3 inches
72.6 kV – 121 kV	3 feet 4 inches
138 kV – 145 kV	3 feet 10 inches
161 kV – 169 kV	4 feet 2 inches
230 kV – 242 kV	5 feet 8 inches
345 kV – 362 kV	9 feet 2 inches

500 kV – 550 kV	11 feet 10 inches
765 kV – 800 kV	15 feet 11 inches

(Based NFPA 70E, table 130.4 (C)(a) Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection for Alternating-Current Systems (All dimensions are distance from energized electrical conductor or circuit part to employee.)

Safe Body Clearances (DC) Shock For Qualified Workers

DC Nominal Potential Difference	Required Minimum Clearances From Uncovered Conductors or Equipment
< 100 V	Avoid Contact
100 V – 300 V	Avoid Contact
301 V – kV	1 foot 0 inch

(Based NFPA 70E Table 130.4(C)(b) Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection, Direct-Current Voltage Systems

.2 When the work is such that a safe body clearances cannot be maintained, the conductors or equipment must be covered, moved or de-energized before the work is started.

Clearances When Using ProtectiveDevices

.1 When approved protective devices have been installed so they provide adequate coverage on energized conductors or equipment and are securely fastened to prevent them from being unintentionally moved, the following distances must be maintained:

a. six inches clearance from the protective devices when working on or equipment energized between 5 kV and 15 kV; or

b. 12 inches clearance from the protective devices working on or equipment energized at 34 kV.

Working Equipment Clearances

.1 Working equipment includes such equipment as trucks, aerial lifts, bucket trucks, diggers, cranes, booms and winch lines.

.2 Maintain the following clearances when using working equipment near energized conductors or equipment. If clearances cannot be maintained, take the special precautions indicated.

.3 When working equipment cannot maintain the minimum clearance and is required to be grounded:

a. employees standing on the ground shall not contact the vehicle or mechanical equipment or any of its attachments, unless the employee is using protective equipment rated for the voltage.

b. a warning barrier shall be erected at a distance of not less than 10 feet around such equipment including the ground cable and its attachment to ground.

Working Equipment Minimum Clearances

Energized Conductors Phase to Phase Voltage	**Horizontal / Vertical**	**In Transit (with its structure lowered)**	**Restricted[3] (Qualified employee)**	**Special Precautions if minimum clearances can't be maintained**
50 V to 300V	10 ft. See notes	3 ft. 6 inches	Avoid Contact	Install approved protective devices Install approved
301V to 750V	10 ft. See notes	3 ft. 6 inches	1 ft. 0 in.	

Restricted clearances - if the working equipment is insulated for the voltage involved the clearances between any un-insulated portion of the aerial lift equipment and the energized conductors may be reduced.

				protective devices
751V to 15 kV	10 ft. See notes	5 ft.	2 ft. 2 in.	Install approved protective devices and ground working equipment
15.1 to 36 kV	10 ft. See notes	6 ft.	2 ft. 7 in.	
36.1 to 72.5 kV 72.6 – 121 kV 138 – 145 kV 161 – 169 kV 230 – 242 kV 345 – 362 kV	10 ft. 10 ft. 8 in. 11 ft. 11 ft. 8 in. 13 ft. 15 ft. 4 in. See notes	8 ft. 8 ft. 10 ft. 11 ft. 8 in. 13 ft. 15 ft. 4 in.	3 ft. 3 in. 3 ft. 4 in. 3 ft. 10in. 4 ft. 3 in. 5 ft. 8 in. 9 ft. 2in.	De-energize and ground the line

Notes:

1) The horizontal/vertical working clearance must be increased to 20 ft. minimum approach distance when working with mobile cranes near power lines up to 350 KV. See OSHA 1926.1407.

2) Based NFPA 70E 130.4 (C)(a): Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection for Alternating-Current Systems (All dimensions are distance from energized electrical conductor or circuit part to employee.)

Clearances for Tools

.1 Safe body clearances apply to large metal tools like jacks and hoists used near energized conductors. Cover, relocate or take other approved precautions to prevent accidental contact with the conductors if safe body clearance is not possible.

.2 Approved insulated handles are required on tools and connector presses with spreading handles used on or near energized conductors. Use voltage rated gloves and protective devices.

.3 Tools used on energized equipment must be tested annually.

Using Rigid Barriers

.1 No minimum clearance is required from a rigid barrier made of approved insulating material provided the barrier is an integral part of the equipment or has been designed for a particular job. The construction and installation of rigid barriers must accomplish the following:

a. provide adequate protection from all energized equipment or conductors that can be reached from the working position;

b. maintain a minimum air gap of one inch between the barrier and any equipment or conductors between 5 kV to 15 kV; and

c. maintain a minimum air gap of eight inches between the barrier and any equipment or conductors energized at 34 kV.

Substation Safety

1.0 Purpose

This safety policy is established to protect sPower People and Contractors from serious injuries that could result from exposure to potential hazards within electric power substations. This safety policy is based on the best practices and requirements contained in ANSI/IEEE C2-2012 (The National Electrical Safety Code [NESC]) and OSHA 29 CFR 1910.269(u). Before any person enters or performs work activities within a substation, they must understand the potential hazards associated with those installations and the

precautionary measures needed to mitigate these hazards. sPower sites must develop procedures that, at a minimum, comply with this safety policy and all applicable regional regulations regarding such installations. **sPower may establish safety-related policies or practices that are more stringent than the policies and practices identified in this standard.**

Scope

This safety policy applies to all sPower People or Contractors to work in substation facilities.

WARNING: Any personnel entering a substation that is under EPC control must have the EPC escorting persons present.
If the substation has been turned over to sPower then the person entering must call and get permission from sPower control room to enter and leave

Please remember a substation is a very hazardous place including the control building proper PPE must be worn and only experienced personnel should enter.

If any personnel require entry , the person requesting entry WILL contact the one of the following:

- **sPower Control Room**
- **sPower O&M Manager**
- **sPower Director of O&M**

Definitions

sPower sites – Any sPower location in which sPower has overall management control, regardless of what percentage of equity control sPower has in that location, business and/or site.

Barrier - A physical obstruction which is intended to prevent contact with energized lines or equipment or to prevent unauthorized access to a work area.

Bond - The electrical interconnection of conductive parts designed to maintain a common electrical potential.

Continuity - Uninterrupted connection, succession, or union of a conductor, cable or material.

Clearance (between objects) - The clear distance between two objects measured surface to surface.

Clearance (for work) - Authorization to perform specified work or permission to enter a restricted area.

Exposed - Not isolated or guarded

Ground - A conducting connection, whether intentional or accidental, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

Grounded - Connected to earth or to some conducting body that serves in place of the earth.

Guarded - Covered, fenced, enclosed, or otherwise protected, by means of suitable covers or casings, barrier rails or screens, mats, or platforms, designed to minimize the possibility, under normal conditions, of dangerous approach or accidental contact by persons or objects.

Qualified Substation Worker –A person who is trained and has demonstrated proficiency in identifying potential hazards inside a substation. At a minimum, a Qualified Substation Worker must:

- Have the ability to distinguish exposed live parts from other parts of electric equipment,
- Possess the skills and techniques necessary to determine the operating voltage of the exposed live parts,
- Know the Minimum Approach Distances (defined in the sPower OMEHASP) to which the employee could be exposed, and
- Understand the proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment.

Guiding Principles

7. Failure to comply with the provisions of this sPower Safety Policy puts sPower people, the public, and contractors at risk. It is incumbent upon sPower O&M Management to ensure that the provisions of this sPower Safety Policy are effectively implemented within their area of responsibility.

Requirements

sPower must develop and implement a Substation Safety Procedure that, at a minimum, contains the following elements:

Written Program Elements

1. The written program must be legible, readable, and accessible by all relevant personnel.

2. The written program must identify the position at the operation that is ultimately responsible for the implementation and maintenance of sPower's' Substation Safety Program.

3. The written program must clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to substation facilities and the work practices used therein and the measures to enforce compliance with the program, including:

   d. A specific statement of the intended use of the procedure;

   e. Specific requirements for securing substation facilities;

   f. Limiting access to substation area to only Qualified Substation Workers;

   g. Posting appropriate warning signs to warn the potential hazards;

   h. Specific requirements for entering and exiting the substation facilities with regard to controlling authority notification.

   i. The specific requirements for the selection and use of personal protective equipment to prevent injuries; and

   j. The specific requirements to assess the area and work to be performed before the work begin. The assessment will determine that sufficient working space is available, that access and egress are not hindered, and the selection and use of required personal protective equipment to be utilized for the given task.

Procedural Elements

Substation Enclosures: To prevent entry by unqualified persons, both the substation property and any rooms and spaces within the substations containing electrical supply equipment shall be enclosed using fences, screens, partitions, walls and locked doors.

5.2.1 Substation Fences: Conductive fences around substations shall be grounded. When a substation fence is expanded, or a section is removed, fence section shall be isolated, grounded, or bonded as necessary to protect employees from hazardous difference in electrical potential.

5.2.2 Signage: Signs warning unqualified persons to keep out shall be displayed at entrances to substations, and the rooms and spaces containing electrical supply equipment within substations. Warning and no access signs must also be placed on fences that surround a substation site at approximately 30 feet (10 meter) intervals.

5.2.3 Access and Working Space: Sufficient access and working space shall be provided and maintained to permit ready and safe operation and maintenance of electric equipment in substations. An unobstructed exit will be kept available during all work operations.

5.2.4 Security: Entrances to substations, rooms, and spaces that are not under the observation of a qualified attendant shall be kept locked or otherwise effectively safeguarded.

5.2.5 Joint Use Substations: Substations that are jointly owned by sPower and other parties or utilities shall require a procedure that identifies the communication process, access and operational protocols to ensure the safety of the workers.

5.2.6 Draw-out-type Circuit Breakers: When draw-out-type circuit breakers are removed or inserted, the breaker shall be in the open position. The control circuit shall also be rendered inoperative, if the design of the equipment permits.

5.2.7 Guarding Live Parts: Guards shall be provided around all live parts operating at more than 50 Volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical clearances to minimize the possibility of accidental employee contact. Sufficient clearance is 2.5 m (8 feet) for up to 600 Volts, 3 m (10 feet) for 601 Volts to 50 kV, and 3 m (10 feet) plus 10 cm (4 in) for each 10 kV over 50 kV.

5.2.8 Guarding During Work Activities: Except for necessary access by Qualified Substation Workers to perform work, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts. When guards are removed from energized equipment, barriers shall be installed around the work area to prevent people who are not working on the equipment, but who are in the area, from contacting the exposed live parts. Metallic poles, ladders and other metallic objects which could come in contact with energized equipment or bus works are prohibited within energized areas.

5.2.9 Rooms and Spaces within Substations: Rooms and spaces containing electrical supply equipment shall be kept free of combustible materials and shall not be used for storage of supplies and equipment.

5.2.10 Identification of the Work Area: Appropriate permanent signage for each switch, jumper or opening device shall be in place. Barrier tape, flags, tags or other means shall be used to clearly designate the boundaries of the temporary safe work area.

Entering Substations:

5.02.11.1.1 Only Qualified Substation Workers shall be allowed to enter inside a substation facility.

5.2.11.2 Unqualified workers and the public shall not be allowed to enter the substation property, rooms or spaces unless they are under the direct and continuous supervision of a Qualified Substation Worker.

5.2.11.3 When entering an attended substation, each person other than those regularly working in the substation shall report his or her presence to the employee in charge in order to receive information on special system conditions affecting employee safety.

5.2.12 **Pre-Task Planning and Pre-Job Briefing**: The required Pre-Task Plan and Pre-Job Briefing shall cover such additional subjects as the location of energized equipment in or near the work area and the boundary limits of any de-energized work area. A clear identification of the established safe work area shall be part of the Pre-Task Plan and Pre-Job Briefing. If needed, due to the complexity of the station, a crew walk through identifying the safe work area shall be conducted prior to work commencing.

5.2.13 **Operation and Maintenance Activities**: Only appropriately qualified people as

per the Electrical Safety Qualification shall perform operation and maintenance activities on substation systems and equipment. Unqualified people may only enter otherwise restricted areas if they have a needed skill (such as medical personnel needed to care for an injured employee) and must be under the constant direction of a Qualified Substation Worker who is responsible for ensuring that no one is exposed to energized equipment.

5.2.14 **Grounding or Earthing:** Temporary protective grounds shall be placed at such locations and arranged in such a manner that affected employees are protected from hazardous differences in electrical potential. All grounding of bus equipment and lines shall comply with the O&MEHASP Personal Protective Grounding Standard.

5.2.15 **Vehicle Entry Clearance:** Before driving a vehicle into a substation, the driver shall verify that the overhead clearance of the vehicle (including antennae, booms, attachments, etc.) is adequate to prevent contact with energized equipment or apparatus. Underground cable tray areas shall be identified, and their structural stability assessed before vehicles or equipment is allowed to drive over them. Vehicles must be grounded while parked inside the substation area according to the grounding requirements defined in sPower's' procedure.

5.2.16 **Fall Protection:** Any work at or above 6 feet (1.8 meters) within the substation must comply with sPower Fall Protection Policy.

5.2.17 **Confined Space/ Enclosed Space Work:** Any work that requires entry into a confined or enclosed space must comply with the sPower Confined Space Policy and sPower Confined Space Entry Policy as applicable.

5.2.18 **Battery Room Requirements:** Fixed or portable ventilation systems must be provided and be operating in battery rooms. Smoking, welding and open flames are prohibited in battery rooms. "No Smoking" signs shall be posted on all battery room doors. Eye wash stations shall be available within close proximity to the battery room.

5.2.19 **Substation Ground Gradients** – At no time shall substation ground gradients be interrupted, broken or removed without the appropriate use of jumpers or temporary grounds to ensure an equipotential zone is maintained. Ground gradient systems shall be inspected and any breaks in the network shall be repaired.

Program Administration

5.3.1 Enforcement: The operation specific Substation Safety Procedure will list the enforcement policies for this program.

5.3.2 Clearly Defined Roles Responsibilities: The operation specific Substation Safety Procedure will clearly define the specific roles and responsibilities of each person involved.

5.3.3 Auditing: The Substation Safety Procedure shall be audited according to the sPower Internal EHS Audit requirements and schedule.

5.3.4 Employee Training: The operation must ensure that all sPower People and Contractors involved in substation work are trained and knowledgeable in the Substation Safety Program elements; i.e. enclosures, signage, security, access, and guarding.

1. All people that are involved in planning, monitoring and performing Substation work must be trained and knowledgeable on:

    a. Identification of live exposed high voltage areas.

    b. Hazards associated with Substation work, and the safety controls required eliminating or controlling the hazards.

    c. The requirement for and the preparation of proper isolation of electrical equipment to create a safe work area within the Substation environment.

    d. The safe operation of vehicles or equipment in a Substation work environment.

    e. The appropriate PPE requirements for Substation work.

    f. Entering and exiting practices for both attended and unattended substations.

g. Communication practices for emergency response and for notification of equipment failures or damage.

h. Roles and responsibilities of supervisors, observers, qualified and unqualified workers.

2. sPower shall certify in writing that involved people training has been completed and is being kept current. The certification shall contain each person's name and date(s) of training.

3. sPower shall ensure that each person has demonstrated proficiency in the safe work practices as necessary, before that person is considered as having completed the training and certifying as a Qualified Substation Worker.

4. sPower and Contractor person shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole-top and manhole rescue), that are not specifically addressed by this standard but that are related to his or her work and are necessary for his or her safety.

5. Retraining shall be provided by sPower, when the work observation program or any other safety management system program reveals that there are deviations from or inadequacies in a qualified person's knowledge on working safely in an electrical environment.

6. sPower shall determine, through regular supervision and through inspections conducted on at least an annual basis that each Qualified Substation Worker is complying with the safety related work practices required by this standard.

7. Qualification records (resumes, job applications, on-the-job training records, etc.) shall be kept on file for a period in accordance with sPower record retention policies.

5. Contactors: Contractors performing work within the sPower substation facilities and covered by this policy must be familiar and comply with the sPower Substation Safety Procedure.

References:

This sPower Safety Policy was developed using the following publications as the source of the requirements contained herein:

3. ANSI/IEEE C2-2012 (The National Electrical Safety Code[NESC])
4. Occupational Safety and Health Administration (OSHA) 29 CFR 1910.269(u)

De-energizing and Grounding Conductors and Equipment

Purposes for Grounding

.1 The purpose of grounding is to make a metallic connection from ground to the terminals of the equipment to be worked on. This will drain off static and induced voltage, but most importantly, protect the worker should the equipment become energized.

.2 Electrical charges can be induced on conductors or equipment. This is due to the characteristics of the equipment or from energized parallel conductors.

.3 Grounds must be applied prior to performing work on conductors or equipment.

General

.1 Before grounds are attached the cable, bus or equipment must be de-energized and taken out of service. It must be definitely established by approved test methods that the equipment to be grounded is de-energized.

.2 Whenever grounds are applied, the ground end must be connected first and disconnected last.

.3 Use only a grip type hot stick for the installation and removal of grounding clusters.

.4 Cables, buses and equipment that are not suited for or provided with grounding devices must be grounded with portable ground devices.

.5 When equipment has been removed or conductors have been separated during repair or replacement operations, make certain that lines, feeders, circuits and other equipment are still grounded. Use approved testing devices or verify by performing visual inspections to determine that the grounds have not been accidentally removed.

.6 Before grounds are applied, ALWAYS test the equipment to be grounded. Use only approved high voltage detectors and testing procedures. Make sure that the equipment to be grounded is de-energized.

.7 Check high voltage (>599 volts) detector test device before and after use to make certain it is functional. Follow the manufacturer's instructions for checking the high voltage.

Care and Testing of Grounds and Hot Sticks

.1 Always test grounds for continuity before use, and visually inspect for defects.

.2 Visually inspect Hot Sticks for cracks and contaminants, such as water or dirt, before use.

.3 Wipe Hot Sticks clean before each use with a Hot Stick silicone wiping cloth or other clean and dry cloth.

.4 Hot sticks shall be tested, at a minimum, every 2 yrs.

Grounding Operations

.1 When doing work on equipment normally energized at or below 600 Volts phase to phase, grounding is not required. NOTE: There may be cases or circumstances

where it may be necessary to ground such equipment, such as feed cables to MCCs.

.2 When doing work on equipment normally energized above 600 Volts phase to phase, place grounds on each side of the work location. If this is not possible, then do one of the following:

a. maintain two air gaps on each side of the work;

b. maintain one air gap and one oil gap on each side of the work; or

c. maintain one air gap on each side of the work and place a solid barrier of approved insulating material in the gaps.

.3 Personal grounds should be located in between the work location and any possible sources of inadvertent energy. Where there is the possibility of induced voltages from neighboring energized conductors or circuits, the grounds must be located in the general proximity of the employee to prevent a voltage rise at that location, if short circuit currents flow in the adjacent energized circuits.

.4 Make a final check. Remove all grounds before putting grounded equipment back in service.

Testing and Handling Cables and Conductors

.1 Treat all cables and insulated wires without grounded conducting sheaths or shielding as bare conductors. Treat them as energized until approved testing methods indicate they are de-energized and grounded.

.2 Before working on a cable found with a bare conductor, use approved testing methods to prove the cable is not energized.

.3 When moving any cables which terminate in a junction box, watch the terminal connections. Make sure they aren't disturbed.

.4 Barricade or cover with protective equipment or devices all non-metallic covered

conductors and equipment energized above 600 Volts phase to phase. This applies to conductors and equipment within normal reach from a working position.

.5 Before moving or working on an energized cable, examine the exposed surface or covering. Look for defects that might cause trouble if disturbed. If defects exist, de-energize the cable before moving or working on it.

.6 Get approval or authorization from a competent engineer or specialist to do the following:

a. move or work on excessively overheated cables; or

b. move cables energized above 600 Volts phase to phase.

.7 When working on or within normal reach of conductors energized at 120 Volts and above phase to ground, never work on more than one uncovered conductor at time.

.8 De-energize cables normally energized at 120 Volts and above phase to ground before doing any work which involves cutting the cable or making an opening in the cable sheath or joint sleeve.

.9 Use caution before cutting cable without the use of signal for identification where direct current or foreign cables are present. Wear approved PPE and use approved live line tools.

.10 Before cutting any cables, take all necessary precautions to prevent accidental contact with adjacent grounded or energized conductors or equipment.

.11 When connecting equipment ground wire or ground busbar, make the ground connection first. Never open the ground connection at the ground end unless it is disconnected at the contact point with the equipment it is intended to ground.

.12 Before a cable normally energized above 600 Volts is energized for the first time after work is completed, all personnel must leave the immediate work area. Do not return until the cable is energized.

Back-feed

General

.1 Back feed occurs if voltage is present on a conductor or associated equipment after it has been disconnected from its normal energy source. Potential back feed situations can occur during normal work assignments. Never assume that a conductor is de-energized unless it is properly grounded. Always test conductors and equipment for back feed before beginning any job. Use company-approved equipment and procedures.

Sources

.1 There are many sources or situations which may produce back feed. An overlooked source may produce back feed. Check for all alternates. Sources can be:

a. primary or secondary voltage sources feeding through facilities such as transformers, secondary systems, metering, potential transformers, capacitors or connected loads may produce back feed.

b. three-phase banked transformers and three--phase transformers installed on wye and delta primary distribution systems

c. floating or open neutrals

d. other sources of back feed can include power or site transformers, control panels, and temporary feeds and auxiliary power generators.

Precautions

.1 Exercise extreme care in all potential back feed situations.

.2 Test conductors or equipment. Make sure they are de-energized. Ground when required. Never assume the equipment is dead.

.3 Be alert! If back feed is possible, recognize and appraise the condition. Ignoring or failing to recognize a potential back feed condition could result in serious injury or fatality.

.4 Determine the voltage source. Take adequate precautions.

.5 If possible, eliminate the source of back feed by:

a. de-energizing all transformers and/or equipment involved;

b. removing secondary phase leads from transformers or equipment;

c. opening line or tap fuses. Disconnect line if practical.

.6 Maintain safe body and equipment clearances. Use protective equipment and/or live line tools where required.

Cleaning Cable Pans and Trenches

General

.1 Proper training and instructions are required in the use and limitations of protective equipment used to clean cable pans and trenches.

Cautions

.1 If signs of arcing or burning wire are discovered, leave the immediate area and report this information to the person in charge.

.2 Beware of asbestos type cables.

.3 Avoid climbing or walking on cables in the cable pans. Insulate using appropriate voltage rated blankets, if walking on cables is required.

.4 Do not disturb insulation on the cables.

Required Personnel ProtectiveEquipment

.1 Go to section 124.01 - containing 70E PPE table,

Procedures

.1 Obtain and inspect the required PPE beforedonning.

.2 If the cable pan has an access cover, remove any large debris and vacuum before removal.

.3 Once the cables are exposed, a visual inspection of the work area must be made. If damaged, arcing or burning wires are discovered during the inspection, leave the immediate work area and report findings to the person incharge.

.4 If arcing, burning and damaged wires are discovered during cable pan cleaning,

discontinue work in the immediate area until the wires have been de-energized, or repairs have been made.

.5 Remove all large debris from the cable pan.

.6 Vacuum the cable pan with non-metallic vacuum extension.

.7 Replace cable pan access covers after housekeeping iscompleted.

.8 Clean and return all equipment to its storage locations.

Transformers

General

.1 Use only approved devices for testing transformers.

.2 Do not connect or disconnect a transformer case ground when the transformer is energized.

.3 The transformer neutral lead, between the transformer and the point of connection to the neutral or ground wire could be energized at primary voltage.

When working on or handling a transformer neutral lead, treat the lead as energized.

.4 Take precautions to avoid body contact with an ungrounded transformer case. It may become energized at any time.

.5 Always treat a grounded transformer case the same as other grounded equipment.

Current Transformers

.1 Never open the secondary side of a current transformer while the primary side is energized.

.2 Never energize the primary side of a current transformer unless the secondary side is connected or short circuited.

.3 Observe proper clearance distances from exposed energized conductors at all time.

.4 DO NOT bring in any conductive items or material that can be brought into contact with exposed conductors.

Potential Transformers

.1 When working on or within reach of potential transformers that are out of service, apply grounds to the primary side and remove secondary fuses, if applicable. This is to protect against back feed. If the primary grounds must be removed during the work, disconnect or short-circuit the secondary side of potential transformers.

.2 Observe proper clearance distances from exposed energized conductors at all time.

.3 DO NOT bring in any conductive items or material that can be brought into contact with exposed conductors.

Site Transformer Neutral

.1 Before working on transformers, check the transformer neutral connections. If any of the following situations exist, do as instructed. If the transformer neutral is:

a. connected solidly to the ground grid, then do not disconnect the transformer neutral;

b. connected to a common neutral bus with disconnects and the bus is connected directly to ground without a neutral inductor or resistor, then check the transformer neutral disconnects. It must be opened. Place grounds on the transformer side of the disconnect;

c. connected to a common neutral bus with disconnects and the bus is connected to ground through an inductor or resistor, then check the transformer neutral disconnect. It must be opened. Place grounds on the transformer side of the disconnect;

d. connected solidly to a common neutral bus and the bus is connected to ground through an inductor and/or resistor, then by-pass the inductor and/or resistor to ground and open the neutral link from the transformer. Make sure the transformer neutral is grounded on the transformer side of the link. The inductor and/or resistor may be put back in service, but it must be by-passed to ground before restoring the neutral connection.

Transformer Maintenance Precautions

.1 Before work begins, walk down all isolation points and assure grounds are installed where applicable. At the beginning of each shift a pre-job briefing should be conducted. This may include isolation points, Danger Cards placed, grounding points, signing on to the permit and any tests which may have to be performed.

.2 It may be necessary isolate the deluge system.

.3 Use caution around radiator cooling fans. They may start automatically.

.4 Beware of both equipment and body clearances. Nearby lines and equipment may still be energized.

.5 Before any type of work is done on a transformer, the Sudden Pressure Relay(SPR)

should be taken out of service. This is especially true when the transformer is still in service and nitrogen needs to be added. Follow proper procedure to take SPR out of service.

.6 Always follow proper grounding procedures. Insure that both the primary and secondary windings are isolated. Don't overlook the possibility of a backfeed.

.7 Be aware of changing work conditions. This may include tests being done or temporary clearances by another department.

.8 If entry to a transformer is required, follow confined space procedures.

.9 **Caution**: Some transformers may contain oil with PCBs. If so, refer to company procedures for proper handling.

.10 If any type of welding or burning is required to be done on a transformer, always follow station procedures to prevent transformer damage or personnel injury.

.11 On transformers equipped with oil pumps, never work on transformer bushings or other live parts with pumps running.

Capacitors

General

.1 Use only approved testing devices to test capacitors.

.2 Treat all capacitors as fully energized until they have been discharged and grounded properly.

.3 Personnel shall wear appropriate rubber gloves and arc flash protection clothing as per the Arc Flash Protective Clothing Procedure and use a hot stick while shorting and grounding terminals.

.4 To begin work on a disconnected capacitor:

a. wait sufficient time (at least 5 minutes) to allow the charge to drain off the capacitor;

b. ground the equipment using current approved methods; and

c. short-circuiting of large capacitors may be necessary by using a temporary jumper. Leave all such capacitors short-circuited after removing from the system. This should remove any residual charge.

.5 If a capacitor is energized, treat all capacitor neutrals between the point of connection to a neutral wire and the capacitor itself, as energized at primary voltage.

.6 If an energized capacitor is within reach of the work area, do one of the following before starting work:

a. cover the capacitor with insulating protective equipment; if not possible, use appropriate barriers to isolate the capacitor from the work area; or

b. de-energize and short circuit the capacitor. Disconnect the case ground.

.7 Personnel shall not come in contact with an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals shorted.

.8 Always treat the grounded case of a capacitor the same as other grounded equipment.

.9 Do not disconnect a capacitor case ground if the capacitor is energized.

.10 Some capacitors may contain oil with PCB content. Refer to site procedures for proper handling and safety precautions. For more information contact the Safety Manager.

.11 Do not handle capacitors that have been removed from the system until they have bled down or been short-circuited. They shall be left short-circuited to be sure that there is no residual charge left in them. All capacitors that are not in their original carton or crates shall also be left short-circuited.

Circuit Breakers

General

.1 Circuit breakers can retain stored energy, even though the control power is removed. An example of this could be the closing springs.

.2 Make sure the circuit breaker is open and the springs are discharged before performing any maintenance on the breaker.

.3 Before closing a breaker to the bus, make sure the door on the breaker enclosure is securely fastened closed. Stand to the side of the breaker when possible.

.4 Never leave a breaker unattended with the springs charged or in the closed position.

Batteries

General

.1 Battery Rooms shall be entered by authorized personnel only.

.2 Smoking is prohibited in battery rooms.

.3 Do not use an open flame or create sparks or electric arcs in the vicinity of a battery.

.4 If work of this nature is required, adequate ventilation must be provided, and the room checked for explosive gas.

.5 Batteries shall be stored in well-ventilated areas. If the storage location is not well-ventilated, gas monitoring should be performed to verify that explosive vapors are not confined. Properly rated ventilation fans shall be installed in locations that have the potential for build-up of hydrogen gas.

.6 Ensure that an approved and operational emergency eyewash is available within 10 seconds of the battery room.

.7 Avoid battery (sulfuric) acid contact with skin. If contact occurs, flush with water and immediately seek medical attention.

.8 If acid is spilled on clothing or materials, a baking soda (bicarbonate of soda) solution should be applied until bubbling stops. Refer to MSDS/SDS sheet for additional information.

.9 Batteries shall only be maintained by properly trained personnel.

.10 Company approved PPE shall be worn when maintaining batteries which includes low voltage gloves, face shield, goggles and rubber apron.

.11 Use fully insulated, non-sparking tools when maintaining batteries.

.12 Remove all jewelry that could cause a short circuit.

.13 Use only dry chemical extinguishers on battery fires. CO^2 fire extinguishers shall not be used on batteries.

Operating External Controls of Power Operated Equipment

General

.1 When operating the external controls on grounded trucks with power equipment, stand on a metal platform that is connected by metal to the truck.

.2 Remain on the platform if there is any chance the truck may become energized. Never use a portable metal platform as a substitute for the truck ground connection.

.3 Treat equipment as live when using it on or near energized conductors that are not shielded or bonded. Continue to treat the equipment as live even after taking

all necessary precautions.

.4 Keep hands and clothing clear of rotating drums, capstans and shafts.

.5 Never operate any site equipment without proper training and authorization.

.6 Never climb onto or over exposed moving machinery.

Vehicle Operations Safety

Purpose

The purpose of this standard is to specify the requirements to drive sPower motorized vehicles. The standard is to be used to assist sPower Operations in determining the minimum requirements for driving motorized vehicles under conditions dictated by their environment.

Each sPower Operation must develop site specific procedures that at a minimum, comply with this safety standard and all applicable regional regulations regarding the driving motorized vehicles. SPower Operations may establish safety related policies or practices that are more stringent than in this standard.

Scope

The Defensive Driving Standard applies to all Operations where sPower people drive on Company business. Any sPower person who drives in excess of 800 kilometers/500 miles per year on company business are required to participate in a defensive driving program.

Definitions

Defensive Driving - is driving safely in spite of the mistakes of other drivers/pedestrians or adverse conditions.

Motor Vehicle - means any self-propelled vehicle, including motorcycles, tractor and other off-road vehicles

Off-road vehicle - is any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain;

1. Class 1 ATV – motor vehicle that weighs 800 lb. (360kg) or less and has three or more low pressure tires, a seat or saddle and designed as an off-road recreational vehicle.
2. Class 2 ATV – motor vehicle that weighs more than 800 lb. (360 kg) and less than 8000 lb. (3600 kg) and designed for operating off-road.
3. Class 3 ATV– an off-road motor vehicle designed to travel with not more than two wheels in contact with the ground (motorcycle)

Preventable Accident – is an accident where a driver failed to do everything reasonable to prevent the accident.

Rollover Protective Structure (ROPS) – a structure designed to reduce the risk of injury to an operator of an industrial truck, tractor or off-road equipment in the event of a rollover or upset.

Two Second Rule - the minimum following distance that should be kept from the vehicle ahead. When the vehicle ahead passes a road marker or sign, the car behind it should pass the same marker or sign a minimum of two seconds later.

Tractor- trailer - a combination of road tractor pulling a trailer without a front axle (semi-trailer).

Guiding Principles and Cardinal Rules

1. The risk of driving is reduced by anticipating risky situations, despite adverse conditions or the mistakes of others.
2. Turn on headlights at all times, even during the day, if the vehicle is not equipped with Daylight Running Lights (DRL's)
3. When traveling on high speed roadways or in moderate or heavy traffic do not make or answer a cell phone call.
4. All drivers and passengers must wear seat belts, except when on motorcycles or off-road vehicles that do not have roll over protection (ROP).
5. sPower motor vehicle operator's qualifications must be verified must be certified as qualified before operating a vehicle.
6. An orientation must be held for drivers of new types of motor vehicles.

Requirements

Each sPower Operation must develop and implement a Defensive Driving – Vehicle Safety Program that at a minimum contains the following elements:

Written Program Elements

4. The Defensive Driving – Vehicle Safety Program must clearly outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to Defensive Driving and the measures to enforce compliance with the program.
5. The Defensive Driving – Vehicle Safety Program must be easily understood and accessible by all operations personnel.
6. The Defensive Driving – Vehicle Safety Program must identify the position in the operation that is ultimately responsible for the implementation and maintenance of the program and each element of the program.
7. The sPower Operation must establish written criteria for qualifying, retraining and recertification of drivers for each type of motorized vehicle. Annually carry out a search to verify all drivers have a valid license and where applicable a valid commercial driver's license (CDL).
8. sPower Operations may adopt and implement a 3rd party Defensive Driving program, e.g. Smith System, if it meets the minimum requirements of this standard.

Procedural Elements

The defensive driving safety procedures and vehicle safety procedures described below focus on the prevention of high probability and high consequence accidents and are in addition to information included in a certified defensive driving training course.

1 **Driving in Traffic:** The Defensive Driving – Vehicle Safety Program shall:

i. Require that sPower vehicles use the 2 second following distance rule (3 seconds in a truck, or more in adverse weather) when driving in traffic.

ii. Require that sPower vehicles drive in the right lane (in right-hand traffic) on multilane highways and streets unless passing or turning left. In an emergency there is an escape to the right shoulder without having to cross a lane of traffic.

iii. Specify that if being tailgated, change lanes or increase the following distance to 3 or 4 seconds to maintain extra distance to the vehicle in front so that more time is available to stop in an emergency.

iv. Require that at traffic signals, when starting on a green light the operator must check intersecting streets before entering the intersection and if view is block by a large vehicle in the adjacent lane, wait until the large vehicle moves forward.

v. Require that sPower vehicles be in the correct lower gear before starting down a steep hill. Over reliance on the brakes to slow down a truck will cause the brakes to overheat and become ineffective.

2 **Pulling a Trailer:** The Defensive Driving – Vehicle Safety Program shall:

a. Require that trailer brakes are adjusted before each trip so that they will not lock up when the truck/tractor brakes are applied. Locked brakes on a trailer can cause the trailer to slide sideways into other traffic.

b. Forbid the use the of a hand valve that applies brakes to the trailer only, when moving in traffic. Locked brakes on a trailer can cause the trailer to slide sideways into other traffic.

c. Specify that when extra space is needed to make a turn with a truck and trailer, the driver shall take the extra space from the street you are entering, not from the street you are leaving.

d. Specify that unless the vehicle is a tractor-trailer, the towing vehicle must be heavier than the combined weight of the trailer and load.

e. Require that pole trailers that have the telescopic tongues be retracted when empty.

3 **Driving Off- Road Vehicles:** The Defensive Driving – Vehicle Safety Program shall:

a. Require the use of seat belts for all off-road vehicles equipped with roll over protection (ROP).

b. Require that approved helmets be worn while riding on all off-road vehicles without roll over protection.

c. Require that to reduce the risk of a roll over, operators shall drive straight up or down a steep terrain. Driving diagonally across a steep slope may lead to a rollover. Traveling over a rock, stump or rut may cause a tip over while traversing a hill.

d. Specify safety rules to prevent the leading causes of fatalities with Class 1 ATV's (including snowmobiles) which are collisions with vehicles when crossing a road and braking through ice.

e. Specify local safety rules for travel over ice or water.

4 **Adverse Conditions:** The Defensive Driving – Vehicle Safety Program shall:

a. Specify that the statement "Adverse road conditions caused the accident" is not an acceptable cause of an accident, based on the definition of defensive driving, "Driving in spite of the action of others or *adverse conditions*."

b. Specify local safety rules for high risk conditions such as when vision is suddenly impaired by a fog bank, drifting snow or sand while driving at normal speed. Other vehicles stopped in these blinding conditions lead to the multi vehicle accidents and fatalities. Local knowledge is required to anticipate the weather conditions and locations where this occurs.

c. Specify local safety rules for driving on slippery roads, such as black ice patches. The risk is reduced through recognition of the hazard, speed to match the conditions, proper tires and/or chains.

5 **Backing Vehicles:** The Defensive Driving – Vehicle Safety Program shall:

a. Specify that backing accidents must be prevented by use of a signal person behind the vehicle every time one is available. Vehicles equipped with backing assist technology, such as cameras or sensors are exempt from the requirement for a signal person when backing short distances, e.g. backing from a parking space. While the consequence of a backing accident is generally property damage, the probability of a backing accident is high with about one third of all utility vehicle accidents being backing accidents. The consequence of a backing accident is highest in residential areas with children at play. When alone, before backing, the driver must walk around the vehicle, sound the horn with two quick beeps (unless vehicle is equipped with backup alarms), check rear and side view mirrors, watch side clearances and then back slowly.

Program Administration

1. Enforcement: The sPower Operation specific Defensive Driving – Vehicle Safety Program will list the enforcement policies for this program. Corrective measures for non-compliance need to be defined.

2. Clearly Defined Roles Responsibilities: The sPower Operation specific Defensive Driving – Vehicle Safety Program must clearly define the specific roles and responsibilities of each position involved in the program.

3 Auditing: The Defensive Driving – Vehicle Safety Program will specifically identify how the program will be inspected/audited. Management is expected to actively participate in the inspection/audit process:

- The sPower Operation supervisors shall conduct periodic audits of the application of the Defensive Driving – Vehicle Safety Program to ensure that the requirements are being effectively implemented;
- Audit records will be maintained that indicate the date of the inspection, the employees included in the inspection, and the person performing the inspection. The inspection records shall identify any deviations or inadequacies and the corrective actions taken; and
- The sPower Operation will conduct an annual audit to assess the effectiveness of the Defensive Driving – Vehicle Safety Program.

4. **Training:** The sPower Operation shall certify in writing that defensive driving training has been completed and is being kept up to date. The certification shall contain each employee's name and dates of training.

   Retraining shall be provided by the employer when the work observation program reveals or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee's knowledge of the Defensive Driving – Vehicle Safety program.

Vehicle Operation Specifics

1. Only authorized employees who possess an appropriate valid driver's license or permit for the equipment being used shall operate company-owned motor vehicles or personally owned vehicles on company business.
2. A valid driver's license and adherence to any conditions or restrictions listed on the license is required whenever driving a company vehicle regardless of location.
3. Employees shall familiarize themselves with and obey all motor vehicle laws.
4. No driver shall operate a motor vehicle while the driver's ability or alertness is so

impaired, or so likely to become impaired, through fatigue, illness or any other cause, as to make it unsafe to begin or continue to operate the motor vehicle.

5. Only employees or people engaged in company business are authorized to ride in company vehicles.
6. Seat belts shall be worn by all occupants of vehicles and all occupants shall be inside the passenger compartment while the vehicle is moving. Keep all body parts inside the vehicle at all times.
7. Passengers are only allowed to ride in passenger areas and are prohibited from riding in any areas that are not designed for passenger occupancy (e.g., bed of pick-up trucks or cargo vans).
8. Riders are not permitted in or on vehicles except when there is an approved passenger seat and seat belt provided.
9. Personnel SHALL NOT ride on the sideboards or fenders of vehicles and heavy equipment.
10. Be familiar with the vehicle and inspect it to ensure that it is safe to operate. Refer to any vehicle-specific checklists. At a minimum, if none are available, check:
    a. signals;
    b. lights;
    c. brakes; and
    d. report any vehicle defects.
11. Observe and follow all posted traffic regulations. All drivers shall practice defensive driver techniques while driving.

All vehicles on the project site shall adhere to internal road directional flow and not exceed 15 mph on project perimeter roads. Vehicles will not exceed 5 mph while operating on roads inside the arrays Seat belts must be worn. Vehicle on project access roadways shall not exceed 25 mph.

12. Drivers shall not text or use computers, (i.e., iPhones, Blackberry's, or PDA's while driving, and shall not use cell phones unless the cell phone is in the hands-free operation mode.

Cell phones are prohibited from use while driving on company grounds at any time unless using hands-free devices.

13. Any persons issued company cell phones may not use them while driving AT ANY TIME on or off the site unless a hands-free device is used. (See company policy for details on use of hands-free communication devices)
14. To mitigate the chances of carbon monoxide fumes from accumulating, vehicles

shall be turned off when inside a building or enclosed quarters. If they need to run, they shall have an emission extraction hose attached to the exhaust leading outside the building or enclosed area.

Company Vehicles / Equipment Used OnSite

.1 All over the road vehicles shall be maintained in a safe operating condition.

.2 Audible back up alarms are required on all trucks and vehicles. If vehicle does not have a backup alarm, use alternative safety measures such as horn signaling or a spotter when backing up. Every driver shall use an assistant to back out when one is available.

.3 No person shall drive a motor vehicle unless the vehicle's cargo is properly distributed and adequately secured.

.4 The driver shall inspect the vehicle before and after use to ensure that all parts, equipment, and accessories that affect safe operation are in proper operating condition and free from defects. A documented daily or weekly inspection using the appropriate sPower equipment inspection form is required to be performed. All defects that affect safe operation shall be corrected before the vehicle is placed in service.

.5 If a vehicle has any extended devices above the roof (i.e., antennas, ladders, etc.) the operator shall ensure proper clearance of the vehicle regarding energized equipment, or obstructions.

.6 The driver shall not operate the engine in any garage except when driving in and out, and then the motor shall be operated as little as practical so as to minimize carbon monoxide build up in the garage.

.7 When company vehicles are stopped at a work location or left unattended, the vehicle shall be placed in a safe condition, the engine shall be turned off and the emergency brake shall be applied.

.8 When possible, park so the vehicle in a manner that will not require the vehicle to be backed out. " First Move Forward" parking policy will be adhered to.

.9 After vehicle is parked , employee will position safety cones in a manner to facilitate the employee walking around vehicle to ensure proper clearances of obstacles.

NOTE: Safety cones will be positioned as follows: Place cones at the left front corner as well as the right rear corner of the vehicle.

.10 Prior to moving the vehicle , the employee will conduct a vehicle walk-around to pick up cones and ensure area is clear of obstacles.

When Refueling a Vehicle

5.3.3.1 Stop the engine;

5.3.3.2 Do not smoke around gas pumps or in any company vehicle;

5.3.3.3 Equipment such as but not limited to cell phones, pagers, beepers, or any equipment using radio waves shall be turned off while refueling;

5.3.3.4 Take precautions to minimize the buildup of static electricity while fueling a vehicle. Touch the vehicle's body prior to grasping the fuel nozzle to minimize dangerous static buildup. When exiting the vehicle, discharge any static electricity buildup by touching the roof of the vehicle prior to approaching the refueling nozzle.

5.3.3.5 Do not transport gasoline cans other highly flammable liquids or gases in the passenger compartment or cab of motorvehicles.

Accident Reporting [Refer to OSH-0904; Incident & Injury Reporting Process

.1 If an accident occurs involving personal injury or property damage regardless of the degree of damage, the driver is responsible for promptly reporting the event to site management.

.2 Information regarding vehicle accidents must be reported promptly to the employee's Supervisors/Crew Leaders. (Refer to the section on Reporting Vehicle Accidents.)

.3 Refer to OSH-0704; Incident and Injury Reporting Process for more details and Motor Vehicle Accident Report form.

Transportation of Hazardous Materials

.1 Hazardous materials shall only be transported on public roads in accordance with current site procedure.

.2 Proper vehicle placards are always required.

.3 Do not transport cans of gasoline or other highly flammable liquids in the passenger compartment or cab of motor vehicles.

.4 Where approved, gas shall only be placed into a DOT approved Type I and/or Type II containers designed for gasoline, with flame arrestors.

.5 Gas cans shall be removed from the vehicle and placed properly on the ground during filling of the can. Gas cans transported in vehicles shall be secured. Gas cans shall be closed, vent caps closed, and not transported with funnels or pour spouts connected.

References:

This sPower Safety Policy was developed using the following publications as the source of the requirements contained herein:

Federal Motor Carrier Safety Administration's (FMCSA)
ATV Safety Institute, 2 Jenner St., Suite 150 Irvine, CA 92618-3806

Material Storage

Storeroom

.1 Store all materials or tools in a safe and carefulmanner:

a. Place materials and tools in positions where they cannot fall, get knocked down or interfere with an isle ways, exits and emergency doors.

b. Place heavy articles so that when they are handled there will be no danger of strain or injury.

c. When storing round objects above the floor, place them where they cannot roll or fall.

.2 Long, unstable or unbalanced material stored in an upright position shall be guarded against potential falling Consider storing unsecured and unstable material flat on the floor away from pedestriantraffic.

.3 Frequently used tools or equipment should be stored towards the front of shelves and bins.

Sharp Materials

.1 Store sharp or pointed tools and materials with their points and cutting edges down. Place them where they will not be dangerous to people passing the area of storage.

.2 Personnel shall wear cut-resistant gloves when handling or working with sharp tool, cutters, banding straps, etc.

Glass

.1 Keep glass and glassware where it can be handled safely.

Liquids

.1 Keep all liquid containers clean, properly marked and neatlystored.

.2 Secondary containers bearing chemicals shall be labeled in accordance with OSHA labeling requirements. Use NFPA or HMIS labeling.

Barrels & Drums

.1 To upend a full drum:

a. Two workers should stand on opposite sides of the drum, facing the middle of the drum.

b. Grasp both top and bottom edges near the high point, and while lifting one end, press down the other.

c. Release your grip on the bottom and straighten up with the drum as the drum comes to a balance on the bottom edge.

Note: An empty drum may be upended by one worker in this manner.

.2 To overturn a full drum standing near a wall or other drums two workers should:

a. grasp the edge at its farthest point from them and brace one hand against the wall or another drum, and pull toward them until the drum is balanced on the lowest edge;

b. step to one side, grip the top edge with both hands and lower the drum

c. use great care to keep feet, legs and hands in theclear.

.3 Drums In The Open

- If the drum stands in the open, it may be best to grip the nearest edge with both hands and push the drum over to a balance, then lower it in the same manner.

.4 Drums On Barrel Skids

a. when moving a drum down a barrel skid, slide itend-first;

b. to pull a drum up a barrel skid, two workers should stand at opposite sides of the barrel skid and at no time put their legs between the rails of the barrel skid.

.5 When opening a drum, use an approved bung wrench to open the bonnet.

.6 Always visually inspect the drum for signs of damage, rusting or pressurization. STOP and contact supervisor if any issues are found.

.6 Replace the bung when finished using or accessing the drums contents.

.7 Keep barrels and drums stored upright in designated storage area. Use racks or chocks

for barrels stored on their side.

Cable & Wire Reels

.1 Cable and wire reels shall be handled according to the methods approved for the handling of materials by forklift trucks and cranes.

.2 Reels stored in yards shall be placed on "sleepers" and blocked securely.

.3 Reels stored on their sides shall have dunnage placed between them to facilitate handling.

.4 Block reels stored in warehouse locations when blocking is required.

Chemicals/Oils

.1 Chemicals should be stored only in designated areas.

.2 Do not store incompatible chemicals together.

.3 Liquid chemicals should be stored in an area where spills can be adequately contained and safely handled.

.4 The tops of drums shall be clean and free of residue.

.5 Bungs shall be closed when not in use.

Chemicals and Solvents

Only chemicals and solvents for which an approved Safety Data Sheet (Material Safety Data Sheet (MSDS)) is available shall be used. Employees shall read and follow warning labels, instructions and the manufacturer's instructions when using chemicals, and must comply with the Hazard Communication Program. Employees shall wear personal protective equipment as required by the SDS.

.1 When transferring chemicals into a smaller container, that container must be labeled with the name of the product, hazardous ingredients, precautions and appropriate hazard warnings such as the National Fire Protection Association (NFPA) hazard warning symbol.

.2 Employees using or handling acids, caustics (or other corrosives), or toxic chemicals, shall take precautions to prevent personal injury, including wearing approved gloves, eye and face protection, and an apron or a full chemical suit as required for the task. Respiratory protection shall be worn as required by the SDS (MSDS).

.3 Employees shall not handle acids or caustics unless there is access to an adequate water drenching system with an adequate supply of water (fixed or portable meeting ANSI Z358.1) for quick drenching and flushing of the eyes and body.

.4 Should any acid, caustic or other chemical come in contact with the eyes, the eyes shall be thoroughly washed with large amounts of running water and a physician shall be seen as soon as possible.

- Do not rub the eyes – Do not contaminate the good eye. Flush from the good eye to the affected eye for a minimum of 15 minutes.

.5 When mixing acid or caustic with water, the acid or caustic shall be poured into the water, not the water into the acid or caustic, except when adding distilled water to batteries.

.6 Open flames and smoking are prohibited when working with or near acid.

.7 Acids and caustics stored on shelves shall not be stored higher than waist level.

Packing and Unpacking(Shipping/Receiving)

.1 Always remove or bend all nails or other sharp fasteners that protrude from crates and boards. Remove all projecting splinters.

.2 When cutting wire or metal banding from bales or other materials:

a. stand away from the band to avoid being struck when band is cut;

b. ensure others are clear of the area;

c. safety glasses and cut resistant gloves must be worn.

d. dispose of the wire and metal banding immediately.

.3 When packing outgoing shipments, make sure that the container is built to meet all requirements for safe handling. Be sure that wire and hand straps are pulled up tight, and that no sharp ends are left exposed.

Stacking/Piling Materials

.1 Always stack materials in a neat and orderly manner. This will keep piles from slipping or shifting and falling.

.2 Do not let dunnage or the ends of material, especially bar stock and other sharp materials protrude beyond the face of the pile.

.3 Fire Prevention

a. do not stack any material where it will block firefighting equipment or fire doors.

b. do not stack material in a horizontal plane within 18 inches of a fire sprinkler head or suppression system nozzle.

.4 Safe Base

a. maintain a safe, solid, smooth, level surface when you pile materials. If the floor or ground is not level, use wooden dunnage or bearing strips to secure the pile and to make sure that it will not slip.

.5 Safe Piling Limits

a. do not pile material above a safe height;

b. not too high--so that the pile will be steady;

c. not too heavy--do not exceed the floor limit;

d. allow 18 inches to remain between the pile and sprinkler heads.

.6 Lock-in Material

a. use lock-in materials. Cross-tie or use dunnage between layers of material, so that there will not be any unsteady stacks within the pile.

b. step back the piles to insure stability.

.7 Bagged Material

a. whenever possible, cross-tie or block bags of material.

.8 When lumber is piled:

a. be sure that the foundation is firm and level.

b. cross-tie the boards with spacers of uniform size.

c. do not let the spacers project beyond the edge of the pile.

d. Stack lumber no more than 16 feet high if handled manually and no more than 20 feet high if using a forklift.

e. Remove the tiers evenly.

Working on Piled or Stacked Material

.1 Contact your supervisor prior to working on top of piled material. Watch for uneven surfaces and, do not work too close to the edge of the pile.

Proper Lifting Methods

It's important to know and to follow the proper lifting methods. This includes the weight and size of the object; its shape and the circumstances under which the lift will be made. Therefore, size up each load to determine the easiest and safest way to lift it.

NOTE: If not already done, use the pre-shift stretching process to warm up before lifting.

Back Injury Prevention

.1 Avoid manual lifting and bending. Use mechanical means when possible.

.2 Place objects up off the floor.

.3 Raise/lower shelving to a suitable height.

.4 Test the weight of an object before lifting by picking up a corner.

.5 Avoid twisting or turning when lifting or carrying objects.

.6 Ensure that you have a clear path ahead of you prior to lifting your load.

.7 Get help or using lifting equipment if the object is too heavy.

Use Proper Lifting Procedures

.1 Inspect the object that you are going to lift to determine its size and weight, and to see if there are nails or splinters, sharp edges or other items that might cause injury.

.2 Get help before you handle large, awkwardly shaped, or very heavy objects. When two or more carry a load, they should decide beforehand how it is to be handled. They should check the route and the clearances. One person should act as leader and assume a position to watch and coach the other. If the workers are carrying a long object, each should place it on the same side of the body and keep in step with each other.

.3 Work gloves shall be worn when handling materials and using tools as required by the nature of the work.

.4 When you are ready to lift, lift with your legs. (See Figure, below) Follow these steps:

a. Take a balanced stance with feet shoulder-width apart.
b. Avoid an awkward lifting position. Shift your body until you can make a straight lift.
c. Squat down to lift and get as close to the object as possible.
d. Get a secure grip and hug the load. Use gloves to protect your hands if there are any sharp edges and to provide extra grip, if needed.
e. Keep your feet apart and bend your knees.

f. Lift slowly by straightening your legs. Keep your back relatively straight. Your leg muscles, not your back should do the work. Do not lift with your back. (See Figure 8.2.)
g. Keep load close to the body with the back and neck straight.
h. Once standing, change directions by pointing your feet and turn your whole body.
i. Avoid twisting at the waist.
j. If you must lift the object higher than your waist, first lift the load waist high, then rest it on a support, if available, while you change your grip. Bend your knees again to give added leg-muscle power for the final lift. When carrying an object, do not try to change its position or adjust your grip while you are in motion. Stop and rest the object on a support, then make the change.
k. When changing direction of travel, don't twist the body, but turn the entire body, including the feet
l. To set the load down, bend your legs, not your back. Follow the lifting procedure (See Figure), but in reverse order. Always set one corner down first, and then slide your hands out so they do not get pinched.

Figure 1 Lifting Techniques

Proper Lifting Technique

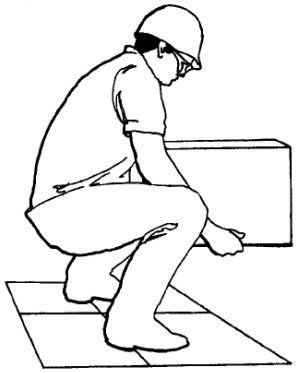
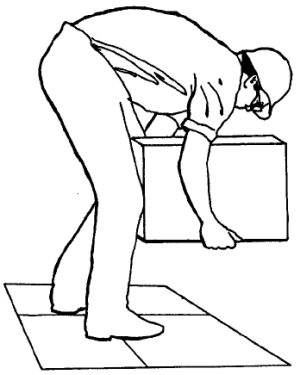


Figure 2

Improper Lifting



Technique

Housekeeping

All work areas shall be kept as clean as conditions permit to eliminate the risk of injury. Everyone is responsible for good housekeeping and for following good housekeeping practices.

Purpose

This safety standard is established to protect sPower employees from hazards created by inadequate housekeeping. Good safety housekeeping reduces the risk of incidents involving slip, trip, fall, fire, sickness due to unsanitary conditions and promotes a safe work culture.

sPower must develop site specific housekeeping program that at a minimum, comply with this safety standard and all applicable regional regulations. sPower may establish safety-related policies or practices that are more stringent than the policies and practice identified in this standard.

This safety standard meets or exceeds utility industry best practices and requirements contained in Occupational Safety and Health Administration (OSHA) – 1903.1 which states “every employer covered under the Act furnish to his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees,” OSHA General Requirements, Walking-Working Surfaces, – 1910.22 which includes the statement that "all places of employment, passageways, storerooms, and service rooms should be kept clean and orderly and in a sanitary condition" and OSHA General Environmental Controls - Sanitation 29 CFR 1910.141.

Scope

This safety standard applies to all sPower facilities, vehicles and operations.

Definitions

1. **Bloodborne Pathogens** - pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
2. **Decontamination** - the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal
3. **Potable Water** - water which meets the quality standards prescribed in the U.S. Public Health Service Drinking Water Standards, published in 42 CFR Part 72, or water which is approved for drinking purposes by the local authority having jurisdiction
4. **Other Potentially Infectious Materials** - (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.
5. **Regulated Waste** - liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.
6. **Universal precautions (or body substance isolation)** - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

Guiding Principles and Cardinal Rules

1. sPower must furnish to their employee's employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to their employees.
2. A housekeeping program, including appropriate cleaning, maintenance procedures and employee training, must be implemented to maintain a safe and sanitary working environment.
3. Good housekeeping conditions shall be maintained at all work locations and in all vehicles.

4. Effective housekeeping can eliminate workplace health and safety hazards and help facilitate completion of site worktasks.

Requirements

sPower must develop and implement a written Housekeeping Program to standardize and manage housekeeping at their facilities and that, at a minimum, contains the following elements:

Written Program Elements

1. The written plan must be legible, readable, and accessible by all personnel.

2. The written plan must identify the position in the operation that is ultimately responsible for the implementation and maintenance of the operation's housekeeping requirements.

3. The written plan must clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to conduct housekeeping and the measures to enforce compliance with the program,including.

Housekeeping Procedural Elements

Slip, Trip and Falls: The Housekeeping Program must define the followingstandards for prevention of slips, trips andfalls:

a. Work surfaces and walking surfaces are to be kept dry and clean as practicable. Spills of grease, oil, liquids or other materials must be cleaned up as soon as feasible or measures taken to ensure employeesafety;
b. Evacuation routes, aisles, hallways, stair ways and exit doors must remain clear of obstructions;
c. Stairs must be kept clear of any stored material ordebris;

d. Oil and grease must be wiped away from ladders or stairs;
e. Extension cords, welding leads, hoses and shall not be placed so as to not obstruct walkways or exits; and
f. Work and walking areas shall be maintained free as practicable of environmental hazards such as ice, rain or snow.

Sanitation: The Housekeeping Program must define the followingsanitation requirements:

g. A written cleaning and decontamination schedule shall be developed and implemented.
h. Areas designated for eating and drinking shall be maintained clean and sanitary. Appropriate containers shall be provided for waste and trash.
i. Toilets, showers and washing facilities shall be maintained clean and sanitary. Shower and change rooms shall be clean and free of mold growth or other biological hazards and without accumulated dirty clothes and trash.
j. Washing areas with soap and water shall be readily available. When hand washing facilities are not feasible, ensure an appropriate antiseptic hand cleanser, cloth/paper towels or antiseptic towelettes areavailable;
k. An adequate supply of potable water shall be available and dispensed from clearly marked containers. All pipes and containers for non-potable water must belabeled.
l. Methods shall be established to ensure employee protection from blood and other potentially infectious materials such as through the practice of universal precautions or body substance isolation.
m. Methods shall be used to effectively handle and disposal of waste. Any spilled hazardous materials or liquids, including blood and other potentially infectious materials must be cleaned up immediately and appropriate decontamination procedures used where blood or other potentially infectious materials have contaminated a work surface or equipment. Regulated wastes and other defined hazardous materials must be discarded according jurisdictional regulations.

Storage: The Housekeeping Program must define the following storage requirements:

n. All piled or stacked material to be stable with allowing adequate space to move material off a pile or stack. Materials are to be piled on surfaces that will hold its weight;
o. Materials on elevated surfaces are piled, stacked or racked in a manner to prevent it from tipping, falling, collapsing, rolling or spreading;
p. Specify that leftover hazardous products and waste are properly stored, labeled, and disposed;
q. Aisles and passageways shall be kept clear and in good repair with no obstruction across or in aisles that could create a hazard;
r. Where mechanical handling equipment is used, aisles shall be sufficiently wide; and
s. Storage shall not obstruct or adversely affect means of exit or access to emergency equipment.

Chemical Safety: The Housekeeping Program must define the following requirements for handling of chemicals:

t. Chemicals are put in the proper containers and that those containers are appropriately labeled, in good condition and closed when not in use;
u. Chemical spills to be cleaned up immediately; and
v. Leftover chemical products and waste shall be properly stored, labeled, and disposed of according to the instructions on the product's Safety Data Sheet (SDS).

Vehicle: The Housekeeping Program must define the following requirements for housekeeping in vehicles:

w. Daily and monthly vehicle inspections of vehicle critical operational and safety equipment, e.g. seat belts, lights, brakes, first aid kits, fire extinguishers;
x. Windows and lights are kept clean, floors free of bottles or material that can interfere with vehicle operation and any unnecessary materials are removed;
y. Loose materials on the deck and in the driving, compartment is secured or removed; and
z. Fluid leaks shall be managed and contained until repaired.

Program Administration

- Enforcement: The operation specific Housekeeping Safety Plan will list theenforcement policies for this program. Corrective measures for non-compliance need to be defined.

- Clearly Defined Roles Responsibilities: The operation specific Housekeeping Safety Plan will clearly define the specific roles and responsibilities of each position involved in housekeeping safety.

- Auditing: The Housekeeping Safety Plan will specifically identify how the program will be inspected and audited. Management is expected to actively participate in the inspection process:

    4. The sPower supervisors shall conduct periodic inspections of the application of the housekeeping safety process to ensure that the requirements are being effectively implemented;
    5. Inspection records will be maintained that indicate the date of the inspection, the employees included in the inspection, and the person performing the inspection. The inspection records shall identify any deviations or inadequacies and the corrective actions taken; and
    6. sPower will conduct an annual audit to assess the effectiveness of the Housekeeping Safety Plan. The audit must be conducted by an authorized person who is knowledgeable of Housekeeping SafetyPlan.

- Training: sPower shall document in writing that employee training has been accomplished and updated as needed. The certification shall contain each employee's name and dates of training. All employees must be trained and knowledgeable on applicable housekeeping duties.

  Retraining shall be provided by the employer when the work observation program reveals or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee's knowledge on Housekeeping Safetyprocess.

References:

This sPower safety policy was developed using the following publications as the source of the requirements contained herein:

i. Occupational Safety and Health Administration (OSHA): Walking-Working Surfaces, General Requirements – 29 CFR 1910.22

ii. Occupational Safety and Health Administration (OSHA): General Environmental Controls Sanitation – Sanitation – 29 CFR1910.141

iii. Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens. - 1910.1030.

iv. The ANSI Standard for the Provision for the Slip Resistance on Walking/Working Surfaces (ANSI A1264.2-2001) applies to industrial and workplace situations and sets forth common and accepted practices for providing reasonably safe walking surfaces.

Housekeeping Specifics

5.4.1 All locations shall be kept clean and orderly. Poor housekeeping is a basic cause of accidents and fires. Improperly stored and piled materials create tripping, falling and fire hazards, and are difficult to work with safely.

5.4.2 Stairways, aisles, roadways, walkways and material storage areas in yards shall be kept clear and free from obstructions, potholes and debris.

5.4.3 All tools, equipment, materials and company vehicles shall be kept orderly and in good working condition and safely stored when not in use.

5.4.4 Every floor and work area shall be kept free from protruding nails, splinters, holes, or loose boards.

5.4.5 Before handling packing cases, lumber, scrap metal and waste material, remove protruding nails or staples or bend to remove the hazard. When unpacking containers, remove staples, nails, etc., or bend them over and bury the points below the surface.

5.4.6 Materials and supplies shall be stored in an orderly manner to prevent their falling or spreading and to eliminate tripping and slipping hazards.

5.4.7 No material shall be stored within electrical control cabinet enclosures.

5.4.8 Cleaning should be performed only with chemicals labeled for the purpose used and consistent with the Safety Data Sheet (Material Safety Data Sheet(MSDS)). Never use flammable liquids such as gasoline or lacquer thinners for cleaning purposes.

5.4.9 Disposing of waste, such as but not limited to, oily material, waste oil, hazardous or toxic chemicals, insulation, asbestos, etc., must be done in accordance with approved site instructions. If unsure of the proper method for waste disposal, contact the site Environmental Specialist for disposal information.

5.4.10 Materials soaked with flammable or combustible liquids, such as rags, waste and shavings shall be kept in approved metal containers with metal lids. Containers shall be emptied daily.

5.4.11 Floors must be maintained as clean and dry as possible.

5.4.12 Where there is water present on the floor, an appropriate warning sign must be displayed alerting people of the hazard.

5.4.13 Remove snow and treat icy or slippery spots in work areas to reduce slip or fall hazards.

5.4.14 Work areas shall be cleaned up at the end of every shift and at the completion of work and as necessary while work is in progress.

5.4.15 Each job location shall be left in a safe and orderly condition. A good rule of thumb is to leave it cleaner than you found it.

First Aid

First Aid Kits

First aid kits shall be maintained, readily available for use and inspected monthly to ensure that expended items are replaced.

Maintaining the AED Plus Inspect frequently, as necessary. At a minimum monthly inspection are required. • Check for the green check (✓) in the status indicator window showing that the AED Plus is ready to use. • Verify that electrodes pads are within their expiration date. • Verify that batteries are within their expiration date. Typically, 5 years from date of installation. ◦ Note: there is not an expiration date printed on the batteries. Only an install by date. • Verify that electrodes are pre- connected to the input connector. • Verify that supplies are available for use (razor, mask, gloves, extra batteries.) Document your ZOLL AED Plus inspection on a AED Inspection tag or separate document

Check the following	Pass	Fail
Is the unit clean, undamaged, free of excessive wear?	☐	☐
Are there any cracks or loose parts in the housing?	☐	☐
Verify electrodes are connected to the AED Plus and sealed in their package. Replace if expired.	☐	☐
Are all cables free of cracks, cuts and exposed or broken wires?	☐	☐
Turn the AED Plus on and off and verify the green check indicates ready for use.	☐	☐
Batteries within expiration date. Replace if expired.	☐	☐
Check for adequate supplies.	☐	☐

Cleaning the ZOLL AED Plus After each use, clean and disinfect the AED Plus with a soft, damp cloth using 90% isopropyl alcohol, or soap and water, or chlorine bleach and water mixture (30 ml/liter water). Do not immerse any part of the AED Plus in water. Do not use ketones (MEK, acetone, etc.) to clean the AED Plus. Avoid using abrasives (e.g., paper towel) on the display window or IrDa port. Do not sterilize the AED Plus.

First Aid Training

When a medical facility for treatment of injured employees is not available in near proximity to the workplace, a person or persons shall be trained to render first aid. First aid responders shall be trained in first aid and CPR with refresher training as appropriate. Where Automatic External Defibrillators (AEDs) are available, employees shall receive initial and recurrent AED training as appropriate.

NOTE: Any site where employees are performing work on or associated with exposed lines or equipment energized at 50 volts or more shall have at least one AED available. Best management practices recommend that an adequate number of AEDs are made available to support the four (4) minute first aid response (see below).

When employees are performing work on or associated with exposed lines or equipment energized at 50 volts or more, persons trained in first aid including CPR shall be available for all shifts as follows:

a. For fixed work location, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. However, where the existing number of employees is insufficient to meet this requirement, all employees at the fixed work location shall be trained.

b. For all other facilities an adequate number of employees shall be trained in first aid.

Cold Exposures

General

.1 The extent of injury caused by exposure to abnormally low temperatures generally depends on such factors as wind velocity, temperature, humidity and duration of exposure.

.2 Exposure to cold air while wearing wet clothing will intensify the harmful effects of

cold exposures. Smoking, drinking of alcoholic beverages, emotional stress, and the presence of wounds or fractures will also intensify the harmful effects of cold exposures.

.3 All personnel exposed to extremely cold outdoor conditions shall take extra precaution to dress warmly.

.4 In cold temperature conditions, dress in several layers of light clothing with an outer jacket of windproof material.

Heat Stress

The power plant environment presents a hot work environment that is difficult to control. In addition, many of our locations are located in desert and sub-tropical locations where heat stress is a regular hazard. The following guidelines should be followed to assist in avoiding heat-related illness.

General

.1 Gradual exposure gives the body time to become accustomed (acclimatize) to higher environmental temperatures. This adjustment, under normal circumstances, usually takes several days, during which time the body will undergo a series of changes that will make continued exposure to the heat more endurable.

.2 All employees working in hot environments are expected to self-regulate and take breaks as needed.

.3 Workers should know the signs and symptoms associated with heat stress and should watch each other for early detection.

.4 Drink plenty of cool water, Gatorade or juice. Because so many heat disorders involve excessive dehydration of the body, it is essential to drink plenty of cool water, Gatorade or juice throughout the work shift to avoid dehydration.

.5 Avoid caffeinated, “energy” and carbonated beverages. Do not depend on thirst to signal when and how much to drink.

Types of heat related ailments

Heat Rash

Heat rash (or “prickly heat”) is caused by a combination of heat, perspiration and the individual’s response to the environment. Heat rash develops when some of your sweat ducts become clogged. Instead of evaporating, perspiration remains trapped beneath the skin, causing inflammation and rash.

Symptoms may include:

- Reddening skin,
- Itching or burning sensation in the affected areas and/or
- Pimple-like lesions

Treatment is simple:

- Relocate to a cooler area
- Remove constricting or rubbing clothing
- Change work positioning and reduce time in the heat until healed.
- Over-the-counter ointments may be of some relief

Fainting

Fainting (or “heat syncope”) occurs when blood pressure is lowered as the body dilates (widens) small blood vessels in the skin to radiate heat. Also, water is evaporated from the blood, reducing the blood's volume and therefore lowering blood pressure further. The result is less blood to the brain, causing light-headedness and fainting. The condition is exacerbated by fatigue and lack of sleep.

Symptoms may include:

- Momentary blackout or fatigue
- Self-regulated, may not pass out
- Nausea, yawning, sighing, restlessness

Treatment:

- Relocate to a cooler area
- Rest until symptoms subside
- If person is “out” more than a few seconds, seek medical attention.

Heat Cramps

Heat Cramps are painful, brief muscle cramps. Muscles may spasm or jerk involuntarily and can occur during exercise or work in a hot environment or begin a few hours later. They usually involve muscles that are fatigued by heavy work such as calves, thighs, and shoulders. Often, they are caused by the loss of electrolytes through sweating or inadequate dietary salt in a hot, humid environment.

Symptoms:

- Muscle cramps
- sweating
- normal body temperature.

Treatment:

- Rest in a cool, shady place.
- Re-hydrate by drinking cool (not ice cold) water AND Gatorade or other sports type drinks to replace electrolytes.

Heat Exhaustion

Heat Exhaustion is caused by the loss of electrolytes and water or inadequate water intake in a hot, humid environment. Heat exhaustion occurs when a person exercises and works in a hot environment and the body cannot cool itself adequately. Dehydration occurs with water loss from excessive sweating, which causes muscle cramps, weakness, and nausea and vomiting. This makes it difficult to drink enough fluid to replenish the body's water supply, and the lack of body water impairs further sweating, evaporation and cooling.

Symptoms:

- Headache, dizziness or light headedness, weakness, mood changes, upset stomach, vomiting, decreased or colored urine, fainting or passing out.
- Victim has *pale, clammy skin*. Body temperature is normal or only slightly elevated.
- Is victim awake and alert. Can the victim understand and respond to questions?

Treatment:

- Act immediately. If not treated, heat exhaustion may advance to heat stroke or death. Move the person to a cool shaded area to rest, do not leave person alone.
- If person is dizzy or lightheaded, lay them on their back and raise their legs about 6-8 inches. If symptoms include nausea or upset stomach, lay them on their side.
- Loosen and remove any heavy clothing. Have person drink cool water (about a cup every 15 minutes) unless sick to the stomach.
- Cool the person’s body by fanning and spraying with a cool mist of water or applying a wet cloth to the person’s skin.
- Call for emergency help if person does not feel better in a few minutes.
- If Heat Exhaustion is not treated, the illness may advance to Heatstroke.

Heat Stroke

Heat Stroke is caused by the loss of the body's defenses against overheating because of prolonged heat exposure.

Heat Stroke is a life-threatening medical emergency. If Heat stroke is suspected, call 911 / get help immediately.

Symptoms:
Red, hot and dry skin,

- rising body temperature of 102 or higher.
- Possible convulsions, rapid weak pulse.
- Sweating is NOT present.
- Victim will be confused and will probably not be able to respond appropriately to your questions.

Treatment:
Heat Stroke is a life-threatening medical emergency. If Heat Stroke is suspected, call for emergency help immediately.

The following actions should also be started, as indicated:

- Move the person to a cool shaded area (air conditioned if possible), don't leave the person alone.
- Lay the person on their back. Move any nearby objects away from the person if symptoms include seizures.
- If symptoms include nausea or upset stomach, lay them on their side.
- Loosen and remove any heavy clothing.

- Have the person drink cool water (about a cup every 15 minutes) if they are alert enough to drink something, and they are not sick to their stomach.
- Cool the person's body by fanning and spraying with a cool mist of water or wiping victim with a wet cloth or covering them with a wet sheet.
- If ice is available, place ice packs under the armpits and groin area.

- NOTE: Heat Illness Prevention Plan (HIPP) is located in the Addendum to this manual.

Adverse weather / Lightning Protocols

Lightning Safety Requirements

Due to the hazards associated with of lighting, work activities on site will be adjusted per instructions below based on activity in the area of the site. All site personnel shall adhere to these instructions.

Lightning Safety Requirements:

The Safety Manager and / or O&M Manager are responsible for lightning monitoring. Lighting monitoring shall be documented on a "lighting log" to ensure adequate monitoring and response to site activity.

When lightning activity threatens the site, the following incremental steps will be taken to minimize personnel exposure:

Criteria: Lightning detected at 30miles.

Actions:

- Notify site personnel of increased lightning hazard.
- Prepare to cease outdoor activity.

Criteria: Lightning detected at 10miles.

Actions:

- Cease outdoor activity other than securing equipment.
- Personnel not occupied with securing equipment will move to designated shelters.

Criteria: Lightning detected at 7miles.

Actions:

- Immediate cessation of all outdoor activity. Abandon efforts to secure equipment if not completed.

- All personnel take cover in designated shelter.

A Stand-down will last for 30 minutes from the last lightning within the 10-mile radius.
NOTE: If a crane is on site, lower the crane boom if possible and safe to do so. If the storm is moving fast towards the Project Site, make sure there is enough time to lower the boom safely.

Reference: National Safety Institute

High Wind Conditions

- All employees will cease working inside the solar array rows when steady wind speed of 35 MPH or greater is observed for 5 minutes. Wind speed may be obtained using an Anemometer or by downloading a weather app onto your mobile phone.

Lightning Log – Example

DATE:

PROJECT NAME:

TIME	AM/PM	FIRST STRIKE RANGE	SECOND STRIKE RANGE	COMMENTS
ALL CLEAR TIME - COMMENTS -				

Lockout/Tagout Program

LOCKOUT PROCEDURE

PROCEDURES FOR SHUT DOWN TO ZERO ENERGY STATE

- LOCK, TAG, TRY SYSTEM -

Working with and around electricity is an inherently dangerous business. Therefore, a comprehensive Lockout/Tagout program is a necessity on all job sites. sPower has developed this program to help protect all employees from possible harm.

Remember, if you lock something out, you may be responsible for that equipment or power source, even after you remove your lock, up and until it is re-energized and approved.

If you are not doing work on a piece of equipment and if it is outside your scope of responsibility **DO NOT LOCK IT OUT**! If you ever are unsure about your requirements, stop and ask your Supervisor or Safety Representative for clarification. When your lock is on, you may be liable for that equipment even if you are not working on it or associated with it.

If you are responsible for an area or piece of equipment that needs to be locked out, make sure you follow **ALL** the Safety Requirements for a safe shutdown and start-up of that equipment per the following Lockout Standards. If you ever are unsure or have questions, **STOP AND SEEK CLARIFICATION**.

NOTE:

No LOTO Documentation Required

With LOTO Authority permission, a LOTO need not be documented when ALL of the following elements exist:

- The machine or equipment has a single energy source which can be readily identified and isolated.
- The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger individuals.
- The isolation and locking out of that energy source will completely de-energize and deactivate the machine orequipment.
- The machine or equipment is isolated from that energy source and locked out during servicing ormaintenance.
- A single Lockout device will achieve a locked-outcondition.
- The Lockout device is under the exclusive control of the individual performing the servicing ormaintenance.
- The servicing or maintenance does not create hazards for other individuals.
- Each facility utilizing this exception has had no accidentsinvolving the unexpected activation or re-energization of the machine or

Definitions

The term lockout shall mean tagging and locking or disconnecting equipment in such a way that it cannot be energized without the lock being removed.

1. **Electrical Lockout** will mean the breaking of the circuit by locking the circuit breaker, disconnect switch or receptacle plug-in type disconnect on the electrical supply line.

   Disconnecting, taping and danger-tagging the main lead wires at the breaker by a qualified electrician will be considered a lockout.

2. **A Nonelectrical Lockout** will be made on equipment that is powered by energizing sources—such as water, air, steam and so forth—by chaining off the source valve, placing a lock and tag on it, and bleeding off any pressure before working on it.

3. **Safety Lock** is a Master lock. Each lock will be supplied with only one key.

5. **Lockout Box** is a box designated to hold safety lockout keys from specific designated equipment locked out by an operator or operators for the purpose of multiple lockouts with a check sheet.

6. **"AFFECTED EMPLOYEE"** - An employee who performs the duties of his or her job in an area in which the energy control procedure is implemented and servicing or maintenance operations are performed.

7. **"AUTHORIZED EMPLOYEE"** - an employee who attaches Lock Out and/or Tag Out Devices on equipment to perform servicing or maintenance on that equipment. An Affected Employee may also be an Authorized Employee. This occurs when the Affected Employee's duties include doing maintenance or servicing on equipment that must be isolated using LOTO.

8. **"AUTHORIZED REQUESTOR"** - is a person who can actually asked the locks be placed in a certain place. He / She has proven their knowledge of the Lockout/Tagout Procedure has Knowledge of the equipment or system to which they are to work on and shall work within the confines of the Lockout/Tagout procedure

Purpose

A lockout places equipment and systems in a **ZERO ENERGY STATE** whenever a person could be exposed to harm from that energy source. A lockout provides maximum protection to all equipment and to all people who are working on or about equipment powered by an energizing source such as electricity, water, air or steam.

This procedure meets the requirements of 29 CFR 1910.269(d), and 29 CFR 1910.147.

Responsibilities

1. **Authorized Employee:** Every Authorized Employee, who works on or about equipment that can be energized by any means, and has exposed parts that can be activated, is responsible for logging where their lock is placed daily; tag that lock with employee's name and contact number and locking out the source of energy. At the end of the shift their lock must be removed. In no case will the lockout by one individual suffice or be considered a lockout for another person. Only qualified electrical workers are allowed to work on electrical equipment that is energized (hot). if an apprentice electrician is assisting a qualified electrical worker, then that apprentice must have their own lock on the energy source as well. All persons working on equipment must have a lock and tag in place.

One person =1 lock and tag Two persons = 2 locks and tags NOEXCEPTIONS!!

2. **Management:** The lockout procedure must be thoroughly reviewed with each new employee by his supervisor before he or she starts to work. The supervisor will demonstrate the procedure to the employee. The employee will then demonstrate tothe supervisor how to perform the lockout. Periodically (at least every six months), the supervisor will review with employees the lockout procedure.

Each authorized employee will be issued a safety lock and tags by his or her supervisor and these locks will be recorded in a personnel logbook to be held in the safety office. Replacement or additional locks and tags are available from the supervisor.

3. **Safety Department**: will provide guidance when questions or unusual conditions arise. Additionally, the Safety Department will monitor forcible lockout removal to prevent its misuse. Audit the LOTO program quarterly

4. **Project Manager** is responsible for ensuring that outside contractors' employees shall be advised of, and complies with, plant safety procedures.

Any unauthorized person who removes a safety lock and/or danger tag from a piece of equipment or piping and operates or attempts to operate is subject to disciplinary action.

Absolute compliance to this procedure is a must. Failure to comply could result in severe injury or death to someone. Those who DO NOT comply WILL BE TERMINATED!

Procedure

1. This procedure establishes a lockout practice for securing machinery and equipment during periods of construction, maintenance or repair. It is essential that all contractors are consistent with their lockout procedures to ensure the safety of all employees. A lockout procedure renders inoperative electrical systems, pumps, pipelines, valves and all other such energy systems that may accidentally be energized or started up while employees are exposed to injury.

2. Contractors and subcontractors will administer their own lockout program and will

coordinate with others. All locks and applicable tags will be issued by contractor or sub-contractor's supervisors to their own employees, and a log will be kept. sPower shall keep a lockout log on each project site (per the form in this section) for all work we perform. Thus, project supervisors are kept informed of locks put in place and their removal.

3. **EACH PERSON SHALL HAVE HIS OR HER OWN LOCK ON ANY SYSTEM AND AT ANY TIME THAT PERSON FEELS THE NEED TO BE IN CONTROL OF THE LOCKOUT. NO ONE MAY REMOVE SOMEONE ELSE'S LOCK** except in rare, exceptional and well-documented instances. Approval for removal of another person's lock is granted by the O&M Management or the Safety Department only. Each person should mark his or her own locks, so they can be retrieved after removal.

4. For energy systems being worked on by multiple persons, multiple crafts or multiple contractors, a **MULTILOCKOUT CLAMP OR LOCKBOX SYSTEM** is to be used. Each craft or subcontractor shall put its own system tag and lock on the bar also. When a group LOTO Box is used the following procedure must be followed.
   - The Foreman will place their locks on all the required energy isolation points.
   - Those keys will be place in a numbered lockbox identifying all of the isolated energy points (the lock box will remain in the General Foreman's office)
   - All employees working on equipment controlled by these energy isolation points will place their personal locks on the lockbox.
   - With each lock box a log will be kept and maintained daily with all the names and phone # of the employees whose locks are on the box, Date and time the lock was placed and removed from the box.
   - All personal locks will be removed at the end of their shift

5. The required procedure is to **LOG IT IN, ISOLATE THE SYSTEM, LOCK IT OUT, TAG IT OUT, TRY IT OUT.**

LOG IT IN Put all the information in the log to identify the system to be locked out, the name of the company and person locking the system out, and the method to contact the person or company affixing the lockout.

ISOLATE IT Shut off all energy sources including electrical, air, pneumatic, gravity, chemical, light, hot, cold, valves, breakers and so forth. When possible, disconnect any possible contact between the machine and the energy source. Many systems or machines may have a main power source and additional control systems on separate circuits. Be sure you lock out all power sources.

LOCK IT OUT Put a lock directly on the disconnect or if necessary on a chain or another external mechanical device to assure it cannot be activated. Each person who will work on the equipment must place his or her own lock and tag on each energizing source. Multiple locking adapters are available when the number of locks needed for proper lockout exceeds the amount

that the breaker or disconnect switch can accommodate. Different equipment in the plant may require as many as four or five disconnects to de-energize the equipment. All sources must be locked out; additional locks are available from the supervisor. The individual who attached the lock must have on his or her person the only key. The key is not to be passed to another individual. (Exception is during shift change lockout transfer)

TAG IT OUT All locks must have a tag with the lock using the tag assigned from the log, complete the information required on tag and attach to the lock or multilock clamp or to the device. The tag must have employee's name and contact number

TRY IT OUT The most important step to your lockout procedure is to try to turn on the machine or system when you believe it is locked out. Locking out the breaker or disconnect switch will not be considered adequate assurance that equipment is isolated. After the lock(s) and tag(s) have been attached, each person must check for proper lockout by attempting to start the equipment. All persons involved in locking out the equipment will be informed when the attempt is made to start the equipment. Be certain all persons are clearly out of the danger areas before testing the lockout. If there is no movement or other indication of residual energy, then you know you have zero energy state. Use the Live Dead Live System to verify the zero state of energy. Remember gravity energy and neutralize it by blocking moving parts, bleeding lines and so forth.

Customer or Owner's Equipment Interface

Live electrical systems will be locked out whenever any service work is performed. This requirement will remain in effect anytime any contractor is performing any type of work on the system. Any time repairs or modifications are made to electrical systems, either temporary or permanent, they shall be locked out. Locks shall be applied to the main disconnect switch whenever possible. All locks must be accompanied with a tag.

Tests and Repairs

1. **Whenever testing of locked out equipment is required all tools and employees should be cleared away from the equipment.** Locks will be temporarily removed by the foreman and then after testing the above lockout procedures must be done again and documented.

2. Electrical systems and similar systems that provide power to equipment, such as pumps and electrical motors, shall be locked out any time work is performed on the system.

Procedure for Shift-Change Lockout Transfer

There may be occasions when a person's work shift ends prior to completion of work on equipment he or she has locked out. If someone else is expected to finish the work during the interim period before the person's next scheduled work shift, then he/she will be responsible for a lockout transfer. The lockout transfer will be accomplished in the following manner.

1. Coordinate with O&M Management and request a lockout transfer.

3. The person who has the equipment locked out to the site of the lockout and place his own lockout lock and danger tag on the equipment requiring lockout.

3. After, and only after, all applicable employees have verified their lock and tag are in place, the person who requested the lockout transfer may remove his lock and tag.

4. The **employee** will maintain his or her lock and tag on the breaker or disconnect switch until the person who will complete the work has placed his lock and tag and completes the remainder of the requirements of the lockout procedure.

5. The subsequent shift **employee** has accepted the lockout transfer by receiving the key for the lockout lock from the technician he or she is relieving. The receiving shift

technician must verify proper lockout and sign the danger tag as soon as possible after the key transfer.

Procedure for Removal of Lock

When an individual has completed work and is prepared to remove their lock, they

- Will inspect the area and check the work is complete
- Visual inspection of terminations, removal of grounds
- The lock and tags should then be removed and logged backing.
- No individual shall remove another's lock and tag. The only exception for lock and tag removal is noted below.

Forcible Removal of Lock

There may be occasions when a person who has lockout equipment has left the plant. In the event the lock must be removed, the following will be required:

1. Every effort shall be made to contact this person to obtain permission to remove the lock.

2. If he or she cannot be located, the O&M Management shall be responsible for taking whatever action is necessary to assure that personnel will not be endangered, or equipment damaged before the lock is removed. He or she will, in any case, thoroughly inspect the equipment and assure there are no workers in the danger area.

3. The O&M Management will consult a member of the Safety Department before any safety lock is forcibly removed.

4. The O&M Management may be present when the lock is removed. If a multiple locking adapter is used, cut the portion of the adapter containing the lock. The lock and adapter can then be used again.

5. The O&M Management will sign the **Forcible Removal Of A Lock** form indicating that all of these precautionary measures were taken before forcibly removing of the lock and submit to SafetyManager.

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Training

NO ONE IS ALLOWED TO WORK ON ENERGIZED EQUIPMENT WITHOUT HAVING COMPLETED THE LOTO TRAINING!

sPower will provide training to ensure that the purpose and function of the energy control program are understood by affected employees and that the knowledge and skills required for the safe application, use and removal of energy controls are acquired by the employees.

Training shall include the purpose and correct use of lockout, recognition of hazardous energy sources, and the means and methods of controlling the hazards. Other employees in the area should be aware the equipment is locked out and should not attempt to start the equipment or system. Nor should they tamper with tags and or locks.

Employees should be instructed to use locks whenever possible. They should also learn the limitations of tags, which do not assure the system is secured. Employees will be instructed that lockout/tagout shall never be ignored or bypassed and never to remove it without authorization.

Each training class will be job specific and made sure to include review of all procedures required for safe lock out of energized systems.

Training records shall be kept and will include employee's names and dates of training. Re-training will be provided when procedures or work is changed, updated, or moved. Re- training will also be provided in the case of incident.

Working on Energized Electrical Equipment

There will be special cases where the Electrician, Electrical Engineer and Instrument personnel must work on the equipment "hot" (not locked out). Only these people are authorized to do so. Contact the Safety Department before this work is started for an Electrical Hot Work Permit to be issued.

Any deviation from this procedure will be noted in a separate department procedure and approved by the Safety Department.

REMINDER: The success of this procedure is based on ONE PERSON — ONE LOCK — ONE KEY AND DANGER TAGS. PROTECT YOURSELF AND YOUR FELLOW EMPLOYEES.

See section 1910.147 of the OSHA standards for additional precautions and information

Radiation Protection

General

Potential sources of radiation at the stations are portable x-ray and radiography equipment (used to check welds on critical plant equipment), portable lead paint analyzers and plant or fire control instrumentation. These sources are labeled with a distinctive label usually yellow and magenta colored with a “tri-foil” propeller-like symbol.

Persons working on these items are trained and usually qualified to do so by the vendor or outside contractors. For our employees’ information, please be aware of the following:

.1 Areas where radiation work will be conducted will be marked or barricaded off with radiation warning symbols and yellow and magenta barriers with attached signs.

.2 Unauthorized employees without prior permission of the vendor shall stay clear and will not cross or enter designated areas or access equipment with radiation labeling,

.3 Contact the sPower Safety Manager for questions about radiation signs/barriers or about working in an adjacent area.

.4 Some sites may also use a LPA-1 Lead Paint Analyzer "XRF Tester" that contains a radiation source. All employees that use the instrument are trained in its use and the associated safety precautions.

Confined Spaces

This safety policy is established to protect sPower employees from serious injuries while performing work in confined spaces. This safety standard is based on the best practices and requirements contained in OSHA 29CFR 1910.146.

Confined spaces may be located throughout the project. Entries may only be made by trained and approved entrants who have been briefed by the Entry Supervisor and are knowledgeable of the hazards in the confined space. Confined Space Entries are governed by the SPower OMEHASP which outlines procedures and controls that must be adhered to

Definitions:

.1 **Confined Space** – means that a space is:

a. large enough and so configured that an employee can bodily enter and perform assigned work; AND

b. has limited or restricted means for entry or exit; AND

c. is not designed for continuous employee occupancy.

.2 **Permit-Required Confined Space** (Attendant Required) – means a confined space that has one or more of the following characteristics:

a. contains or has the potential to contain a hazardous atmosphere; OR

b. contains a material with the potential to engulf someone; OR

c. has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section; OR

d. contains any other recognized serious safety and health hazards.

.3 **Alternate Entry Confined Space (Ventilation Controlled)** – means a space which, by configuration, meets the definition of a confined space and the only hazard posed by the permit space is an actual or potentially hazardous atmospheric condition released by work, which is controllable by continuous forced air ventilation.

NOTE: Also, does not contain any other recognized serious safety and health hazards.

.4 **Non-Permit Confined Space** (low hazard) – means a confined space that does not contain, or have the potential to contain, any atmospheric hazard capable of causing death or serious physical harm. A space which by configuration meets the definition of a confined space, but which after evaluation contains no hazardous atmosphere or the hazard(s) have been eliminated by engineering controls (e.g., installed platforms, enlarged access openings, etc.).

IMPORTANT: Confined Spaces shall be re-evaluated and re-classified if conditions or the nature of the work changes in the space. When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants all personnel located within the space shall leave the space until the final classification is made.

General

.1 Sites shall implement the Corporate Confined Space Entry procedure and associated forms. These documents and their instructions will be followed for entry into any confined space.

.2 All confined spaces shall be identified and labeled with the appropriate signage at each entrance.

.3 sPower shall provide training to station employees to acquire the understanding, knowledge, and skills necessary for the safe performance of any and all assigned duties for working in and around confined spaces.

.4 Contractors are expected to follow their own confined space entry programs. Refer to section .05, below.

Air Sampling and Monitoring

.1 Before any employee enters a confined space; the internal atmosphere shall be tested with a multi-gas direct reading instrument, calibrated to the manufacturer's instructions and bump tested prior to each use by the person performing the atmospheric monitoring.

.2 Atmospheric hazards that have the potential to exist inside of a confined space can be placed into three (3) categories AND shall be tested for in the following order:

a. Oxygen Deficient/Enrichment: Normal air contains 20.9%oxygen.

i. Acceptable levels for oxygen content within a confined space shallbe

ii. above 19.5% but below 23.5%.

b. Flammable Gases/Vapors: Normal air contains 0.0% LEL Acceptable

i. levels for the Lower Explosive Level (LEL) shall be less than 10%. Be aware that a LEL measuring above 0% may represent a toxic (something other than CO or H2S) atmosphere.

c. Toxic Air Contaminants: Normal air contains 0.0 parts per million(PPM)

i. of H2S or CO. Acceptable levels for Hydrogen Sulfide (H2S) content within a confined space shall be LESS THAN 5 parts per million (PPM). Acceptable levels for Carbon Monoxide (CO) content within a confined space shall be LESS THAN 25 parts per million(PPM).

d. At no time shall an employee break the plane of a confined space opening to obtain an

i. atmospheric test;

e. If an entry is needed to perform atmospheric testing, the space will be entered as a
    i. Permit Required Confined Space until conditions are verified as safe.
f. Always investigate atmospheric test results when they are different from normal air.

3 Refer to the corporate Confined Space Entry Procedure and TI for specific requirements in dealing with confined spaces.

4 Acceptable atmospheric conditions for entry are:

MEASUREMENT	NORMAL	ACCEPTABLE VALUE	COMMENTS
Oxygen	20.9%	19.5 - 23.5%	
Flammability	0%	<10% of LEL	Flammability levels <10% may still present a toxic hazard and need to be investigated prior to entry.
Carbon Monoxide	0 ppm	25 ppm or less	
Hydrogen Sulfide	0 ppm	5 ppm or less	
Sulfur Dioxide	0 ppm	2 ppm or less	
Ozone	0 ppm	0.1 ppm or less	
Other Toxics		See Station H&S Specialist	Station shall contact Corporate H&S for guidance in establishing acceptable entry values for any other toxic materials.

5 Entry shall not be initiated if the acceptable atmospheric conditions are not met. Entry should not be made if atmospheric conditions are anything other than "normal" as listed above, in the setpoints on the air monitoring equipment or on the Confined Space Entry "Permit"). If atmospheric conditions are other than "normal", the H&S Department shall be contacted to review the entry and determine if additional controls are needed to proceed with the entry,

NOTE: Whenever possible the source of the "other than normal" concentrations of atmospheric hazards should be identified and eliminated prior to entry, even if they are within acceptable ranges.

Confined Space Entry Procedure

.1 Confined Space Entries are governed by standardized corporate procedures and controls that must be adhered to. sPower employees are required to follow the most current Confined Space Entry procedure.

.2 Confined space entries may only be made by trained and approved entrants who have been briefed by the Entry Supervisor and are knowledgeable of the hazards in the confined space.

.3 All entrants must be signed in and out of the entry log and wear appropriate.

.4 Appropriate testing and documentation is required before entrant access to the space is authorized.

.5 Applicable Lockout/Tagout (LOTO) and hot work permit requirements must also be met prior to any person(s) entering a confined space.

.6 Permit required confined spaces (PRCS's) may require additional controls such as rescue planning and am emergency response capability. The Safety Department must be contacted prior to any entry into a permit required confined space.

.7 Rescue plans will be in place for each entry into a **Permit Required Confined Space.** The hierarchy of rescue is:

1. Self-Rescue
2. Non-entry Rescue
3. Entry Rescue

.8 Self-Rescue is always preferred. In the event an entrant cannot self-rescue, a plan needs to be in place to ensure rescue in case of an emergency. If the configuration of the space and entry supports a non-entry rescue, that is the next preferable rescue method. If a non-entry rescue is not feasible, emergency rescue services MUST be used to affect the rescue.

NOTE: Entry rescues are NOT performed by sPower personnel. No sPower employee is allowed to attempt a confined space rescue unless appropriately trained and approved by site management.

.9 In the event of an emergency, personnel are required to make the proper notifications to summon help. In no case shall a rescue be attempted without proper training and authorization.

.10 Per procedure, confined space entry records (permits) shall be removed and closed out by the Entry Supervisor or authorized designee.

.11 Confined Space Entry Records and associated documentation shall be turned in to the site's Program Administrator or designee for review and retention.

Contractors

When sPower arranges to have employees of another employer (contractor) perform work that involves confined space entry, the sPower Point of Contact (sPower O&M Manager) shall:

.1 Inform each contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a confined space permit program meeting the OSHA requirements.

.2 All Contractors and their employees shall follow their own company's confined space program.

.3 Apprise the Contractor of the program elements, including the hazards identified and experiences with the space that make the space in question a permit space.

.4 If available, a Notification Letter will be forwarded to the Program administrator.

.5 Apprise the Contractor of any precautions or procedures that sPower has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.

.6 Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces.

Occupational Health Hazards

Occupational health hazards may include general exposures to a myriad of chemicals, gases, materials that are found at the sites and hazards created or encountered while performing work.

A **hazardous material** is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

OSHA's definition includes any substance or chemical which is a "health hazard" or "physical hazard," including: chemicals which are carcinogens, toxic agents, irritants, corrosives, sensitizers; agents which damage the lungs, skin, eyes, or mucous membranes; chemicals which are combustible, explosive, flammable, oxidizers, unstable-reactive or water-reactive; and chemicals which in the course of normal handling, use, or storage may produce or release dusts, gases, fumes, vapors, mists or smoke which may have any of the previously mentioned characteristics. (Full definitions can be found in the 29 Code of Federal Regulations (CFR) 1910.1200.)

EPA incorporates the OSHA definition and adds any item or chemical which can cause harm to people, plants, or animals when released by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment. (40 CFR 355 contains a list of over 350 hazardous and extremely hazardous substances.)

DOT defines a hazardous material as any item or chemical which, when being transported or moved, is a risk to public safety or the environment, and is regulated as such under the: Hazardous Materials Regulations (49 CFR 100-180) and other regulations unrelated to our industry.

General

Any employee working with or using hazardous materials or chemicals shall review the chemical’s or gas’ Safety Data Sheet (SDS) prior to exposure and /or specific site procedures for safe handling instructions.

.1 Employees must:

a. use personal protective equipment (PPE)

b. follow instructions, procedures and site practices given to ensure health and safety

c. not willfully misuse any chemical, material or protective equipment.

.2 Extreme care shall be taken when handling hazardous materials containers (drums, totes, cylinders, etc.)

.3 Use appropriate handling equipment to transport containers.

Personal Protection

.1 Personal Protective Equipment (PPE) must be worn when handling chemicals and dangerous materials. Consult the MSDS/SDS for specific PPE requirements.

Labeling

.1 All containers shall be labeled with the name of the chemical and the hazard it presents. The original manufacturers' labels are sufficient and preferred. If the labels are missing or illegible, then use an alternate labeling system such as the NFPA or HMIS labeling system. See section 101 of this OMEHASP for general information.

Eye Wash & Safety Shower

.1 ALWAYS refer to the SDS and any manufacturer instructions PRIOR to starting work.

.2 If harmful chemicals contact your skin or eyes, call for emergency assistance right away, rinse affected locations with clean fresh water for at least 15 minutes, notify your supervision as soon as possible and seek immediate medical attention.

.3 Follow the 1st Aid instructions on the SDS and container label until EMS arrives.

.4 Remove clothing that has been soaked with the chemicals and if eye splash occurs, remove contact lenses if possible prior to using the eye wash station.

Liquid Chemical Products

.1 Transformer Oils (*e.g., Mineral oil, Askarel, and possiblyPCB's*)

a. Special instructions are issued to guide in handling insulating liquids for transformers. Contact the station Environmental Specialist before handling any transformer oil due to the potential forPCB's.

.2 Gasoline and Other Flammable Liquids *(i.e., any liquid that has a flash point below 100°F)*

a. Handle gasoline or other flammable liquids with the utmost care to prevent fire, explosion and injury;

b. Use the proper practices when unloading gasoline or other flammable liquids from containers, vehicles, etc.

c. Use appropriate bonding and grounding measures when transferring flammable chemicals.

d. Do not fill, pump or transfer gasoline to a portable container in the bed or cab of motor vehicles. Place the container on theground.

.3 Diesel and other combustible liquids *(Class II Liquid — Any liquid that has a flash point at or above 100°F and below 140°F, Class III Liquid — Any liquid that has a flash point at or above 140°F)*

a. Handle diesel fuel and other combustible liquids with the utmost care to prevent fire, explosion and injury;

b. Use the proper procedures when handling theseliquids.

.4 Chemicals/Oils

a. Chemicals should be stored only in designatedareas.

b. Do not store incompatible chemicals or gases together (e.g., flammable with oxidizers).

c. Liquid chemicals should be stored in an area where spills can be adequately contained and safely handled.

d. The tops of drums shall be clean and free of residue.

Note: Always visually inspect containers for signs of damage, rusting or pressurization. STOP and contact supervisor if any issues are found.

Sulfuric Acid

.1 Health Hazards

Sulfuric acid is extremely irritating, corrosive, and toxic to human tissue causing rapid destruction and severe burns. The vapors or mists of sulfuric acid cause coughing and irritation of the mucous membranes of the eyes and upper respiratory tract. Severe exposure may cause pneumonitis.

.2 Requirements for Working with Sulfuric Acid:

a. Individuals mixing water and concentrated sulfuric acid must wear appropriate eye and face protection, acid-proof rubber gloves, and a chemical resistant suit.

b. The mixing process must be done in a well-ventilatedarea.

c. Nonmetallic, acid-resistant funnels and containers shall be used.

d. Never pour the water into the acid. Slowly pour the acid into the water while gently stirring the solution.

e. Skin contact with sulfuric acid requires flushing with large amounts of water for at least 15 minutes and medical attention.

f. Eye contact with sulfuric acid requires continuous flushing with water at least 15 minutes and continuing until medical attention isreceived.

g. Inhalation of gases caused by batteries being charged requires fresh air and respiratory observation.

Herbicides and Insecticides

.1 The manufacturer's instructions SDS (Safety Data Sheet) for handling, use, and storage shall be followed. Certified licensed handlers may be required.

.2 Avoid inhalation or skin contact when handling, mixing, or applying any poisonous dust, powder, or liquid. Use proper personal protective equipment.

Mercury

.1 Health Hazards

Acute and chronic exposure to mercury vapor causes toxic effects including, but not limited to fever, nausea, vomiting, and metallic taste. Symptoms may resolve or progress to bronchiolitis, pneumonitis, or pulmonary edema. Mercury is also absorbed through the skin. Exposure to the eyes and/or skin will cause irritation and redness.

.2 Requirements for Working with Mercury:

a. Employees shall wear appropriate (e.g., rubber or polyvinyl chloride) gloves to protect against skin contamination when working with mercury. Hands shall be washed thoroughly after handling mercury.

b. When mercury is strained or cleaned, all mercury-contaminated debris shall be disposed of as hazardous waste.

c. Containers of mercury shall have a covering layer of 1/8" to 1/4" of water to protect against mercury vapors.

d. Spill clean-up kits and respirators shall be readily available.

e. Mercury spills shall be cleaned up according to the directions on the Mercury Spill Clean-Up Kit or as instructed by the sPower Safety Manager.

f. Contact the Safety Manager as soon as possible following a significant spill (approximately one pound or more) in order to evaluate the spill.

g. Appropriate respirators shall be worn until cleaning is completed.

h. Ventilation is essential after a mercury spill. If local ventilation is not adequate, employ the use of fans to exhaust vapors.

i. All equipment used to clean up the mercury, as well as the mercury itself, shall be stored in properly labeled, sealed containers. Containers shall be stored in a designated Hazardous Waste Storage Area until disposal.

Polychlorinated Biphenyl (PCB) Handling and Disposal

.1 The handling of PCB materials shall be in accordance with the following procedures to ensure that allowable exposure limits are not exceeded, and environmental contamination does not occur.

.2 Requirements for Working with PCBs

a. Employees shall wear appropriate protective clothing when contact with PCB is unavoidable. Protective clothing shall consist of safety goggles and face shield, nonabsorbent gloves, nonabsorbent boots, and nonabsorbent coveralls.

b. A respirator with organic vapor/acid gas/high-efficiency particulate, air (HEPA/P-100) combination cartridges shall be worn when handling PCB in an unventilated confined area or under such conditions as the Supervisors/Crew Leaders in charge deem necessary.

c. If PCB contacts the skin, waterless cleaner shall be used to cleanse the skin prior to washing with ordinary soap and water. This procedure shall be followed before eating, drinking, smoking, or using toilet facilities. Wipe towels or cloths used to remove the cleaner shall be discarded in an approved disposal container.

d. If liquid PCB contacts the eyes, they shall be immediately irrigated with water for a minimum of 15 minutes. After the eyes are irrigated, seek medical attention.

Lead Containing Material

.1 Lead is a common element that is toxic and presents a hazard if not handled properly.

.2 Materials that may contain lead include, but are not limited to paint, electrical components such as splices and connectors, cable sheathing, solder, lead-acid storage batteries, metallic lead sheets, pigs, weights, and water pipe solder.

.3 For affected (older) facilities, the most common source of lead is paint and coatings on structures, equipment and other items.

.3 Prior to disturbing any suspected lead containing material it must be tested to determine

the presence of lead. Suspected material is assumed to contain lead until appropriate

testing proves otherwise. Only approved contractors may work on or abate possible lead containing materials.

.4 All lead abatement or handling of lead containing materials will follow the practices outlined in the Lead Handling Procedures and related Technical Instructions.

.5 All employees performing work involving lead exposure shall be trained initially and annually.

Asbestos; Asbestos Handling

.1 The primary hazard of asbestos, a naturally occurring mined mineral is that it can be inhaled or ingested into the body and cause cancer. To minimize personal hazard at work:

a. All insulation shall be deemed as containing asbestos unless marked as non-asbestos.

b. Do not disturb any suspected asbestos insulation.

c. Do not enter asbestos regulated areas (demarcated with Danger: Asbestos signs and red barricade tape).

d. Dumpsters labeled as containing asbestos shall ONLY be used for asbestos disposal.

e. Immediately report any debris or disturbed material that is suspected to contain asbestos to the station Supervisor.

f. Report any exposure to asbestos to the station's H&S Specialist/Lead.

g. All asbestos abatement shall be done by a company approved licensed abatement contractor.

h. All bulk or any other sampling will be accomplished by a licensed building inspector or abatement contractor.

.1 May be present in materials such as asphalt roofing systems, cement board products (e.g., transite), ebony board, electric arc chutes and shields, electrical cable inner friable insulation, electrical cable woven outer jacket insulation, fireproofing, gaskets, insulation, packing, refractory, vinyl floor tile, welding drop cloth, and woven cloth insulation coverings.

.2 Requirements for Working with Asbestos:

a. All Presumed Asbestos-Containing Material (PACM) shall be treated as asbestos-containing unless known to be asbestos-free.

b. Employees should be aware of the types of materials in buildings that could contain asbestos.

c. Avoid touching or disturbing asbestos materials on walls, ceilings, pipes, or boilers. If you have any questions about whether a material may contain asbestos, ask your Supervisors/Crew Leaders or call the Safety and Health Department.

d. Performing projects that disturb or have the potential to disturb asbestos containing material (ACM) requires special procedures and training.

e. Only authorized employees who are currently trained and licensed according to state and local regulations are permitted to work with, handle, remove or collect samples of asbestos material.

Gases, Vapors, Dusts, Mists, and Fumes

.1 Employees using products or performing jobs where there may be gases, vapors, dusts, mists, and fumes present shall be trained in the hazards and measures employees could take to protect themselves from the hazards. Safety Data Sheets (SDSs) or MSDS shall be available. Employees shall be familiar with the hazards and the safe work practices for using the products.

.2 All exposures shall be controlled below OSHA Permissible Exposure Limits through the use of engineering controls, such as ventilation and spray systems, work practices, and personal protection. Supervisors/Crew Leaders and employees shall ensure exposures are controlled, with assistance from Safety and Health, as needed.

.3 Employees shall follow warning labels, SDS and manufacturer's instructions when using products.

.4 Employees shall wear personal protective equipment as required by the SDS (MSDS), as appropriate for the application.

Hot Work on Stainless Steel and Chrome Alloy Steel

Hexavalent chromium (Cr(VI)) is a toxic form of the element chromium. Hexavalent chromium is rarely found in nature and is generally man-made. Hexavalent chromium may be present in fumes generated during the welding of chrome alloys. Chromium metal is often alloyed with other metals or plated on metal and plastic substrates to improve corrosion resistance and provide protective coatings.

.1 Due to the potential exposure to Hexavalent Chromium all hot work on stainless steel will be conducted by certified welders using appropriate control measures such as approved respirators and local exhaust ventilation systems. Refer to your stations specific hot work procedures.

.2 OSHA's Cr(VI) rule establishes an 8-hour TWA permissible exposure limit (PEL) of 5 µg/m3 measured as Cr(VI). This means that over the course of any 8-hour work shift, the average exposure to Cr(VI) cannot exceed 5µg/m3.

.3 The Action Level is set at 2.5 µg/m3 of Cr(VI) calculated as an 8-hour TWA. Exposures above the Action Level trigger specific requirements, and exposures above the PEL trigger additional requirements.

.4 Each employer who has a workplace or work operation covered by the Cr(VI) standards must determine the 8-hour TWA exposure for each worker exposed to Cr(VI).

.5 To protect workers from Cr(VI) hazards, whenever exposures exceed the PEL, stations must use engineering and work practice controls to reduce and maintain Cr(VI) exposures to or below the PEL.

.6 Stations with Cr(VI) exposures are required to provide workers with respirators when feasible engineering and work practice controls are unable to reduce worker exposure to Cr(VI) to levels at or below the PEL.

.7 Respirators are required during:

a. Work operations such as maintenance and repair activities for which engineering, and work practice controls are not feasible;

b. Emergencies (i.e., any occurrence that results or is likely to result in an uncontrolled release of Cr(VI) that is not an incidental release that can be controlled by workers in the immediate area or by maintenance personnel);

c. Where workers are exposed above the PEL for fewer than 30 days per year and the site has opted not to implement engineering/work practice controls to achieve the PEL;

d. Periods necessary to install or implement feasible engineering and work practice controls; or

e. Operations where all feasible engineering and work practice controls have been implemented but are not sufficient to reduce exposures to or below the PEL.

.8 Surfaces contaminated with Cr(VI) must be cleaned by HEPA filtered vacuuming or other methods that minimize exposure to Cr(VI), including wet methods such as wet sweeping or wet scrubbing. Dry methods (e.g., dry shoveling, dry sweeping and dry brushing) are only allowed in cases where HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure to Cr(VI) have been tried and found not to be effective.

.9 The use of compressed air for cleaning surfaces is only allowed in very limited areas (that do not contain coal dust) when used in conjunction with a ventilation system designed to capture the dust cloud or when no alternative method is feasible.

Spill Prevention & Response

Introduction

This plan outlines general procedures to follow during construction to prevent the release of hazardous materials to the environment, to identify and respond to incidents involving such releases, and to demonstrate compliance with applicable environmental best management practices. A stand-alone spill prevention and control plan may also be present onsite if quantities of hazardous materials exceed local, state or Federal thresholds, or if there are other factors that require the initiation of a detailed plan (such as sensitive species, nearby waterways, etc.).

Spill Prevention Procedure

Fueling

- Fuel release can be a major source of soil or water contamination. Vehicle fueling shall occur in areas where the potential for contamination is minimized in accordance with this plan, and as approved by the SPower Construction Manager and / or the O&M Manager.

- Equipment that remains stationary while in use for considerable periods of time, such as rigs and cranes, must adhere to strict fueling procedures, and appropriate spill containment devices shall be used.

Spill Kits

- Spill kits complete with soaker pads, oil-absorbing materials and containment booms shall be required by all contractors and their subs. Absorbent mats, sand, clay or other absorbent materials shall be readily available for deployment to control or contain spilled material. Spill Containment Kits for work activities will be located in convenient areas and available for use with specific work activities.

Hazardous Materials Storage

- To prevent accidental spills from reaching the environment, all temporary hazardous material storage areas shall be located at least 100 feet away from surface waters and buffer areas or have structural controls that would prevent the migration of a spill into a drainage area. It is appropriate to provide temporary secondary containment when hazardous materials are going to be transferred to smaller containers or the likelihood for a release exists. The temporary secondary containment can be constructed of a concrete slab with curbs, a soil berm with a plastic liner, or a manufactured secondary containment system. In addition, the project will maintain an adequate number of spill kits around the site.

Spill Response Procedures

- In the event a spill does occur employees will immediately notify their supervisor and will take immediate steps to stop the leak if possible. The exact actions taken to stop, reduce and contain the release are influenced by the severity of the spill, the quantity of material released, the circumstances of the release, the type of material and the spill location.
- All supervisors shall be responsible for dealing with spills and advise construction site personnel of any special or necessary actions that need to be taken as dictated by the situation.
- COMPANY and contractors and subcontractors must remain committed to resolving any substandard process or condition that may have contributed to any spills or releases. All spills, regardless of volume, will be recorded in a “Spill Log”, and EHS staff will take measures to ensure and document the cleanup, and identify corrective measures to prevent reoccurrence.
- All wastes generated by the projects spill response and cleanup shall be properly contained and labeled and documented on the Waste Removal Log. The completed log must be attached to the project incident investigationreport.

Spill Reporting

- All spills will be reported internally to the Construction Manager and / or the O&M Manager in accordance with the Incident Reporting. Immediately following a spill, initial reports to these individuals should identify the type and amount of material spilled and immediate actions taken to contain and respond to the incident.
- SPower Project Manager, SPower Safety Manager will be notified and will make notifications to Regulatory authorities depending on the type material and quantity spilled. Therefore, it is critical that this information be immediately reported to the Construction Manager and / or the O&M Manger responsible for notifying COMPANY management and the Safety Department of the incident.

Training

- Employees involved with hazardous spill response and major cleanup will be trained appropriately.

Table 3-1 – Activities For Spill Response

ACTIONS	**RESPONSIBILITY**
Take immediate action to stop or reduce the spill and contain it, without endangering the health and safety of the workers or local population (e.g. right tipped or fallen containers, plug holes or leaks, replace stoppers or lids, etc.).	Workers and/or supervisor
Immediately notify supervisor.	Workers
Initiate chain of notification as per EMP (Emergency management Portal), “Incident Management”.	Supervisor
Take any actions necessary to prevent the spill from contaminating ground water or offsite surface water (e.g. construct dirt berms) or from becoming airborne (e.g. cover with plastic sheeting).	Supervisor, after consultation with Environmental Specialist

Barricade the area until corrective action is completed.	Supervisor
Identify the spilled material.	Supervisor or Environmental Specialist
Clean up the spill. Remove the spilled material, including any contaminated soil. Remove any free liquid through adsorption, baling, vacuuming, pumping, etc.	Supervisor, after consultation with Environmental Specialist
Contain and dispose of the waste as determined by the Environmental Specialist	COMPANY, Contractor
Complete an Incident Investigation Report.	Supervisor

Notes:

1. ***Specialized contractors may be required in the event of a large spill.***
2. ***Clean up of spills and disposal of the waste resulting from a spill due to a Contractor's activities is the responsibility of thatContractor.***

Blood borne Pathogens

The OSHA Standard for Blood borne Pathogens outlines compliance requirements including the development of a written exposure control plan which is available at the station.

General

.1 *TREAT ALL BLOOD AND BODY FLUIDS AS POTENTIALLY INFECTIOUS.* Bodily fluids
may contain pathogens such as Hepatitis (A, B or C) HIV and or other blood borne pathogens.

.2 First Responders shall use universal precautions and wear appropriate personal protective equipment (Latex or preferred Nitrile gloves and safety glasses while

performing CPR and First Aid on injured or sick personnel. **Note**: Latex may cause allergic reactions to some persons.

.3 Additionally, gowns and masks, if needed, may be utilized while rendering first aid or cleaning and decontaminating surfaces. The additional PPE may be used to prevent contact with skin, eyes, mouth or other mucous membranes.

.4 Only trained "first responders" and custodial personnel shall attempt to clean up any blood or bodily fluids.

.5 If available on site, it is recommended that employees perform cleanup using approved Blood borne Pathogen Infection Control kit to clean and disinfect the area. In any case, appropriate PPE (at a minimum, nitrile or latex gloves and safety glasses) shall be worn.

.6 First Responders and other employees who may be or may have been occupationally exposed to blood or other potentially infectious materials shall be offered a Hepatitis B vaccination.

.7 Any employees who are involved in exposure incident with blood or other potentially infectious materials shall report the exposure immediately and shall be provided with a medical evaluation and vaccinations, as necessary. Exposure incidents shall be investigated and documented.

.8 Potentially exposed employees are required to fill out a Report of Injury, Illness form.

Personal Protective Equipment

.1 All protective equipment (body substance isolation) must be maintained in a sanitary condition and ready for us.

Definitions

Local expressions may not always conform to the wording used in this manual. To clarify the intent and meaning of the wording used in this Handbook, the following definitions are provided:

a. ACCIDENT is an unforeseen and/or unplanned event or circumstance that results in any of the following: personal injury, personal illness, or property/equipment damage.

b. BARRICADE is a physical obstruction such as tapes, cones, or A-frame type wood, metal, plastic, or fiberglass structure intended to provide a warning and to limit access to a hazardous area.

c. COMPETENT PERSON means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

d. EXPOSED LIVE PARTS refers to any device having an energy potential which is not suitably guarded, isolated, or relieved.

e. GROUND is a conducting connection between an electric conductor or equipment and earth, or to some other conducting medium that serves in the place of earth.

f. HAZARD is any unsafe act or condition that may lead to injury/illness of persons, or damage to property/equipment.

g. HURT SEARCH – A physical inspection for hazards or deficiencies within a 20-foot sphere of the immediate vicinity where the task is being performed.

h. INJURY – Harm or damage to a person as a result of an accident.

i. IDLH (Immediately dangerous to life or health) means an atmospheric concentration of any toxic, corrosive or asphyxiate substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

j. JOB BRIEFING/TAILBOARD – A work conference, held by the individuals assigned to perform a specific job or task, that reviews the job plan and clearance requirements, coordinates efforts to accomplish the job safely and efficiently, contributes to recognition of any unusual conditions or associated hazards, assures that each individual involved understands their assignments and the personal protective equipment requirements, and provides mental preparation of the workers by focusing their attention on the job or task.

k. LOCKOUT/TAGOUT – The process to ensure before any person performs maintenance service or inspection on equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the

machine or equipment is isolated (locked/tagged out) from all hazardous energy sources and rendered inoperative, making it safe for personnel.

l. Machine Shop Equipment – generally means all stationary machine shop equipment. including but not limited to. radial arm drill press, chop saw. engine lathe, vertical milling machine. surface grinder. hydraulic press, power metal shear. ironworker. band saw, metal brake, horizontal boring mill, vertical turret lathe/vertical boring mill, pedestal grinder. and drill press.

m. QUALIFIED EMPLOYEE (electrical) is summarized as one who is knowledgeable in the construction and operation of the electric power generation, transmission, and distribution equipment involved, along with the associated hazards.

n. QUALIFIED PERSON is one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

o. RECLAIMED WATER is water from a municipal wastewater treatment facility that is treated and reused to supplement non-potable water supplies.

p. SAFETY MEETING – An organized gathering designed to communicate safety and health related information; conducted in a manner that is conducive to enhancing the awareness, knowledge, and education levels of our employees.

q. SDS (Safety Data Sheet) – Document that identifies information regarding the hazards, proper handling, and emergency response to a chemical or substance.

r. UNIVERSAL PRECAUTIONS is an approach to infection control in which all human blood, certain human body fluids and other potentially infectious materials are treated as if known to be infectious for Hepatitis B Virus (HBV), Human Immunodeficiency Virus (HIV), and other blood borne pathogens.

s. WARNING DEVICE is an appliance (i.e., flagging, barrier tape, ribbon, cones or other devices) used only to warn employees or public of a hazard.

Forms

Attachment P Waste Management Plan

Note: A detailed hazardous materials/waste management plan is provided as a separate document.

Introduction

COMPANY and contractors are responsible for managing and disposing of their waste generated during the Project. All wastes generated will be classified as either non-hazardous or hazardous.

COMPANY and contractors are responsible for determining what wastes they will generate during the performance of their scope of work and classifying the wastes prior to storage, recycling, or disposal in accordance with this plan. An Environmental specialist will assist contractors on solid waste characterization, if requested.

Large trash bins will be provided for general construction waste material. They will be identified, and all contractors will segregate all wastes accordingly. All contractors will provide garbage cans for their work areas to maintain housekeeping.

All special wastes removed from the site by waste contractors will be documented prior to leaving site. Appropriate records of the waste removed will be kept for future reporting requirements.

COMPANY and the contractors will implement and actively practice waste minimization/recycling to reduce the volume of all wastes generated during construction activities.

Waste Types

1.1. Sanitary Waste

Sanitary waste will be generated at the Project management offices, at the contractor offices, and at the jobsite. Sanitary waste will be collected in storage tanks will be hauled away by a licensed vendor.

Project Refuse (Non-hazardous Waste)

During the life of the Project, various non-hazardous wastes (e.g., trash, rubbish, packing materials, spent PPE) will be generated as part of the construction process. This waste does not pose a hazard to workers. Wind can blow this refuse around the jobsite and beyond the jobsite perimeter. Therefore, effective housekeeping actions must be employed throughout the life of the Project. Trash receptacles will be deployed at various locations to accommodate proper disposal.

Project Dunnage

At the receiving areas and in the Project Laydown Areas, dunnage (i.e., wooden crating, packing materials, plastic shrink wrap, metal straps) will be generated. Often, this waste consists of cardboard box attached to a wood pallet. The size varies from small pieces of scrap wood to full sheets of plywood and other lumber. In addition, there will be a large volume of metal "tie-straps" that are used to hold the dunnage together and to hold bundles of materials together. When not properly stacked and managed, the dunnage can become a safety hazard and a housekeeping mess. Crews working in the laydown areas and the receiving areas are responsible for maintaining housekeeping in those areas. Trash receptacles will be deployed at various locations to accommodate proper disposal.

Attachment R Bloodborne Pathogens

The purpose of this Safety Manual Procedure is to establish the Blood borne Pathogens Exposure and Control procedures to be followed at this facility.

- Discussion
  - Under the OSHA ruling contained in 29 CFR 1910.1030, all workers that are potentially exposed to blood borne pathogens in their work must be protected from exposure. This protection must be documented in a written Exposure Control Plan. The requirements for the control plan for the plant are contained in this procedure. (29 CFR 1910.1030(a) & (b))
  - Exposure Determination
  - This Facility requires that its plant employees be trained in first aid and cardiopulmonary resuscitation (CPR). All first aid and CPR trained members of the plant staff must be trained in the prevention of occupational exposure to blood borne pathogens.
  - Engineering, Work Practice Controls, and PPE
  - Any potential hazard associated with a job task can be minimized or eliminated by using the appropriate combination of engineering controls, work practices, and personal protective equipment (PPE). Engineering and work practices controls should be used whenever possible to eliminate or minimize employee exposures to blood borne pathogens. Personal protective equipment will be worn when the potential for occupational exposures remain after these controls have been implemented.
  - Included in this section are the specific safe work practices and Universal Precautions, which must be followed by every employee who may be exposed to blood borne pathogens while performing first aid or CPR. The principle of Universal Precautions is a conservative approach to infection control. (29 CFR 1910.1030(d)) Simply stated, the concept behind Universal Precautions is that:
  - All human blood and body fluids are to be treated as if they are known to contain hepatitis B virus, human immunodeficiency virus, or other blood borne pathogens.

- Engineering Controls
- Engineering controls used to prevent the spread of blood borne pathogen include items such as puncture proof containers, washing facilities equipped with soap or antiseptic hand cleanser, alcohol/antiseptic towelettes contained in first aid kits, and emergency showers/eyewash stations.
- Work Practice Controls
- Work practices are defined as those procedures that have been developed to reduce or eliminate employee exposures to blood borne pathogens. (29 CFR 1910.1030(d)

- Basic Hygiene
- All procedures involving blood or other potentially infectious materials shall be performed in such a manner to prevent or minimize splashing, spraying, spattering, and generation of droplets of these substances.
- If skin contamination occurs, the area should be washed with antiseptic cleanser or copious amounts of soap and water for 15 minutes. If the eyes or mucous membranes are accidentally contaminated, they should be flushed with water for at least 15 minutes.
- Employees must wash their hands with gloves on and then again immediately after removal of gloves (or as soon as feasibly possible).
- Employees who have open cuts or sores shall not perform first aid/CPR until the areas are healed except in life threatening instances where no other first aid responder is available and only after the area has been covered to minimize the possibility of exposure.
- Housekeeping and Cleanliness
- All equipment and working surfaces will be decontaminated after contact with blood or other potentially infectious materials. Work surfaces will be washed with disinfectant (or a mixture of nine parts water to one-part household bleach) after being contaminated.
- Employees, who clean or have contact with contaminated first aid equipment, laundry, or uniforms, must wear gloves and other appropriate personal protective equipment.
- Personnel Protective Equipment
- As manager and operator of this facility, SPower provides, at no cost to its employees, appropriate personal protective equipment for personnel who may be exposed to blood borne pathogens. Personal protective equipment includes any item that may prevent the passage of pathogens from one person to another. This includes items such as disposable gloves, disposable resuscitators equipped with one-way valves, and safety glasses or goggles. Disposable gloves, resuscitators, and antiseptic/alcohol towelettes

are included in all first aid kits at the plant. Safety glasses are issued to each employee. (29 CFR 1910.1030(d) (3))

- All first aid responders will use appropriate barrier precautions to prevent skin and mucous membrane exposure when contact with blood or body fluids is anticipated.
- Gloves must be worn when touching blood, bodily fluids, or items or surfaces contaminated with blood or body fluids.
- Gloves must be changed after contact with any first aidpatient.
- Resuscitation mouthpieces with one-way valves or other ventilation devices should be used when CPR is performed at the plant.
- Protective eye wear or face shields should be worn during procedures that are likely to generate droplets of blood or other bodily fluids.
- If personal protective equipment is contaminated by blood or potentially infectious materials, these items must be removed immediately (or as soon as feasible) and placed in an appropriate container. Laundering, disposal, repair, and replacement of this equipment will be done at no cost to the employee. Replacement of disposable and contaminated personal protective equipment will be done as soon as feasible.
- Handling and Disposal of Contaminated Materials
- Methods should be employed to avoid the direct contact with contaminated materials, especially contaminated sharps (broken glass, etc.). This includes using personnel protective equipment and using items such as tongs or a broom and dustpan to dispose of contaminated items.
- Containers for potentially infectious wastes at the plant must be closeable, able to prevent leakage during handling or transport, puncture resistant, and labeled/color coded according to the paragraph statedbelow.
- Warning labels will be affixed to containers of contaminated waste. Labels must include the universal biohazard symbol (as shown in OSHA standard section 29 CFR 1910.1030(g)) and be fluorescent orange or orange red, with lettering or symbols in a contrasting color. Each first aid kit should contain at least one copy of the universal biohazard symbol for labeling waste.
- First aid equipment such as stretchers and any other plant equipment that becomes contaminated with blood or other potentially infectious materials shall be thoroughly cleaned. First aid materials that cannot be cleaned, such as rescue blankets and other equipment shall be disposed of as contaminated waste in accordance with all applicable Federal, State and Local regulations. All contaminated items shall be placed in the containers provided and sealed. The Plant Manager shall contact a local biohazard waste disposal firm or a medical facility to make arrangements for disposal of any contaminated materials.

- Steps to Take in the Event of an Exposure
- Immediate Actions to Take in Case of Exposure
- The safety and health of employees and visitors are of primary concern. Supervisors must ensure exposed employees receive the medical attention appropriate to the exposure they received.

Appendix A Mandatory Hepatitis B Vaccination Declination Statement

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring the Hepatitis B Virus infection. I have been given the opportunity to be vaccinated with Hepatitis B vaccine, at no charge to myself. However, I decline Hepatitis B vaccination at this time. I understand that by declining this vaccination, I continue to be at risk of acquiring Hepatitis B, a serious disease. If, in the future, I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with Hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee Signature

_____

Appendix B - Blood borne Pathogen Exposure Report

Date:	Time:
Location:	
Injured Employee/Person:	
Assisting Employee/Person:	

Brief Description of Injury and Exposure:

_____

_____

_____

_____

_____

_____

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_____

_____

_____

_____

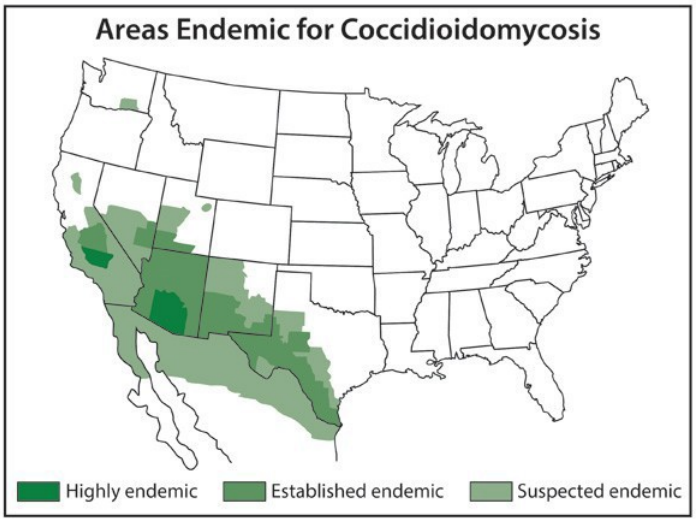
_____

Employee Signature:	**Date:**

Attachment S Valley Fever & Fugitive Dust Mitigation Plan

INTRODUCTION (following information is from the Center for Disease Control (CDC) website Valley fever, also called coccidioidomycosis, is an infection caused by the fungus *Coccidioides.*
People can get Valley Fever by breathing in the microscopic fungal spores from the air, although most people who breathe in the spores don't get sick.

The Center for Disease Control (CDC) has identified that the fungus that causes valley fever lives in the soil and dust in the southwestern United States (including Arizona, California, Nevada, New Mexico, Utah, and Texas.



Valley fever is not contagious and does not generally spread between people.

Anyone who lives in, works in, or visits an area where the fungus, Coccidioides lives can be infected. Although people of any age can get valley fever, it is most common among older adults, particularly those ages 60 and older.

Approximately 40% of people who get the fungal infection do not show any symptoms. In the other 60%, valley fever can cause flu-like symptoms. These symptoms typically appear between one and three weeks after inhaling the fungal spores. In many cases, the symptoms will disappear in a few weeks.

The best way to reduce your risk of exposure to the fungus that causes valley fever is to avoid or limit your exposure to dust and avoid breathing in dust particles, whether at home or at work.

Plan Overview

1.0 Determine if the project is in a valley fever endemic area by checking the Centers for Disease Control (CDC) Valley Fever website at http://www.cdc.gov/fungal/diseases/coccidioidomycosis/index.html.

2.0 For projects that are located in an identified endemic area, SPower will notify each sub-contractor as to the potential hazards associated with Valley Fever and the requirements of this plan. Each sub-contractor is expected to comply with plan requirements.

3.0 In general, the Valley Fever management plan includes, but is not limited to the following to mitigate dust creation and protect site workers from the inhalation of dust:

- Valley Fever Awareness Training
- Application of water
- Application of soil stabilizers or binders
- Covering of spoil piles
- Movement/placement of workers in a position that keeps them clear of job created dust
- Plan for work stoppage and worker sheltering during weather events that create dust being blown onto project site.
- Use of HEPA filtering devices on closed cab earth moving equipment
- Respiratory Protection Program for workers. Requirement for use of respirators for activities identified in the job hazard assessment (JHA) where workers will be exposed to visible levels of dust while performing their job.

Plan Requirements

1.0 "Valley Fever Awareness" training shall be included in the Site Safety Orientation that is provided to all site workers and visitors at applicable jobsites. Valley Fever informational pamphlets will also be distributed during orientation.

2.0 Each project sub-contractor will have procedures and communication plans in place to move workers out of the path of evolving dust conditions and/or provide additional employee PPE (i.e., respirator) to protect from dust inhalation.

3.0 Each project sub-contractor is required to provide its workers clean eating areas with washing stations within close proximity such that employees can wash their hands prior to eating.

4.0 Each project sub-contractor is required to evaluate work area conditions and adopt means to reduce dust generation and worker dust exposure. This may include means such as covering spoil piles, use of portable type water tank (such as Water Buffalo) or application of soil binders or palliatives.

5.0 Regular water trucks will be made available to ensure roadways are sprayed regularly to keep road wetted to keep dust to a minimum. Project will maintain a 15MPH speed limit throughout the site, however direction will be provided to drivers to reduce speeds as necessary to maintain minimal dust creation. All site vehicle traffic will be monitor and immediate corrective measures will be taken when excess dust is being generated by vehicle operations.

6.0 Each project sub-contractor shall have HEPA-Filtered air-conditioned enclosed cabs for all heavy earth moving equipment on site. Verify that cabs have HEPA filters on air inlets and that employees remain inside the cabs with the windows closed and implement a regular (at least weekly) cleaning schedule for cleaning dust from inside equipment cabs. To minimize exposure to dust, use a wet mop, wet-wipe, or HEPA filtered vacuum.

7.0 According to the Center for Disease Control (CDC) and California Department of Public Health (CDPH) literature, appropriate respiratory protection choices for protection from valley fever include respiratory protection listed under the National Institute for Occupational Safety and Health (NIOSH) Respirators as being equipped with particulate filters which are designated N95, N100, P100, or HEPA. All work requires that a Job Hazard Analysis (JHA) and Pre-job Briefing be conducted prior to the start each job performed on site. Part of the JHA process is to evaluate potential hazards associated with the job and to identify measures needed to eliminate or mitigate them. Work that includes soil disturbance activities have JHA's that identify the dust hazard along with the need for dust control measures (such as watering) and/or the need for personal protective equipment (PPE) such as respiratory protection (N-95/N100 respirators), eye protection and disposable coveralls.

Each project sub-contractor is responsibility to comply with Federal/State OSHA respiratory protection programs as applicable. Each sub-contractor shall have a fully compliant respiratory protection program in place. The plan shall include the capacity to provide approved respiratory protection to any employee who work in any area in which the Job Hazard Analysis (JHA) has identified dust generation as a risk requiring mitigation (unless they always remain inside a HEPA filtered, air conditioned, enclosed cab with windows closed).

8.0 Each project sub-contractor shall comply with all governing law/regulations and project permit conditions and to provide their employees the necessary PPE required for any given task along with all associated training, testing, and maintenance requirements.

9.0 Each project sub-contractors must identify a local contracted medical provider that is capable of testing and evaluation of Valley Fever cases. All reported and confirmed cases of valley fever shall be immediately reported to SPower site management.

10.0 SPower will conduct periodic audits of this plan to ensure compliance by sub-contractors. Work may be stopped for non-compliance until sub-contractor takes corrective actions to comply and SPower approves thoseactions.

Attachment T Initial Incident Notification Forms (Example)

Incident Notification Report Form				
Site Name:		**Reported By:**		
Company Involved:		**Applicable Organization:**	EPC	O&M
Incident Location:		**Date /Time of Event:**		
Summary Title:		**Investigated by:**		

Incident Type Classification (check one)								
	Accident (Check one below) – Incident that resulted in personal injury, vehicle or property/equipment damage							
		Injury/Illness (check one) **Complete Appendix A**			Vehicle Damage **Complete Appendix B**		Property/Equipment Damage **Complete Appendix B**	
			First Aid Only		Damage description:		Damage description:	
			OSHA Recordable Medical					
			OSHA Recordable Lost Time		$ estimate		$ estimate	
	Near Miss – Actions occurring which had the potential, but did not result in personal injury, vehicle or property/equipment damage (**complete App C**)							
	Deficient Condition – Undesirable condition found prior to any unwanted or unexpected actions taking place that has the potential to cause an accident or near miss. Typically found during site inspections/audit. (**complete App C**)							
	Environmental – Actions that resulted in a conflict with environmental policy/procedure or regulations.							

Incident Description (initial information summary)

Immediate Actions Taken	
Actions taken:	**Person responsible:**

Personnel Notified (notify SPower Project Manager and SPower Safety Manger)		
Name	**Job Title**	**Date/Time**

This form is used for initial incident notification and shall be submitted to Safety as soon as incident information is available (typically within one hour of incident). Follow-up incident investigation report is required within 24 hours of incident.

Incident Investigation Report
Investigation Findings Provide a bulleted list of the facts obtained during the collection of evidence and from interviews
•

Incident Photos Provide photos of incident scene if applicable	
Photo Date:	
Time of Day:	
Location:	
Brief Description:	

Photo Date:	
Time of Day:	
Location:	
Brief Description:	

Causal Factor Checklist

This checklist is a tool to help in the incident analysis. It does **NOT** need to be included in the submitted report.

Check the potential causal factors (s) listed below. Determine the cause(s) by asking "WHY" to the findings identified during the incident investigation.

	PROCEDURES		**COMMUNICATION**		**MANAGEMENT SYSTEM**		**MANAGEMENT SYSTEM**
	Not available or inconvenient for use		Verbal communication		No standard policy or control		Complex System
	Difficult to use				Policy or control not strict enough		Knowledge-based decision required
	Use of the procedure was		Standard terminology not used		Confusing/incomplete policy or control		Monitoring > 3 items at once
	not required but should be		Repeat back not used		Technical error in the policy or control		Extreme judgment/decision demands
	Followed Incorrectly		Written communication		Conflicting SOPs		Non-Fault tolerant system
	Change in Work found out in the field required a revised approach		Communication not accurate		Lack of policy/Enforcement		Errors not detectable
	Excess references in procedure		No Communication or Untimely				Error not recoverable
	Details less than adequate				No way to implement the policy or		
	Sequence wrong		**EQUIPMENT**		Standard		**HUMAN ENGINEERING**
	Facts wrong		Design specifications less than		No accountability		Labels less than adequate
	Situation not covered		Adequate		No method of implementing the		Arrangement/ placement of

Wrong revision used	Design not to specifications	Policy or standard	Protective covers
	Problem not anticipated	Infrequent audits & evaluations	Controls less than adequate
WORK ENVIRONMENT	Independent review less than	Inadequate Supervision	Monitoring less than adequate
Housekeeping poor	Adequate	No employee feedback	
Hot/Cold	Inadequate evaluation of change	Unclear assignment of responsibilities	**TRAINING**
Lighting	Not disconnected properly	No reinforcement	Training was not provided
Noise	No Preventive Maintenance (PM)	Corrective Actions less than	Did not attend provided training
Air	PM not being conducted	adequate or not yet implemented	Did not understand requirements
Cramped quarters	Defective equipment/parts		Training less than adequate

Causal Factors: list the causal factor(s) selected above along with summary of why the factor was selected
Causal Factors: List identified causal factors below. Factors should be based on incident findings. *1.* List factor here –

Corrective Actions Plan – Corrective Actions should be associated with identified causal to prevent reoccurrence			
Corrective Action To Be Taken (include Work Order Number if applicable):	**Responsible Person**	**Due Date**	**Date Completed**
•			

Report Review and Approval *This investigation form is intended to ensure the employee is cared for properly, all steps are followed, causal factors are determined, and actions are identified to prevent recurrence. When complete please return to the EHS Department*.			
Supervisor (Print/Sign): (for subcontractor reports)		**Date:**	
Site Manager (Print/Sign):		**Date:**	
Safety (Print/Sign):		**Date:**	

Appendix A – Injury Information Form

IF Personal Injury occurred, THEN complete next section.			
Name of Injured Employee(s)	**Job Title**	**Company Name**	**Activity being performed**

Drug and Alcohol Screen				
Is a post incident Drug and Alcohol (DA) Screen required?	YES	NO	Date:	
Note: If DA screen is required, the employee is not to return to work until a non-positive result is received.				

Exposure – How the event occurred				**Source –** Object, substance, person or exposure that directly produced the event or inflicted the injury			
	Animal Exposure		Bodily Reaction		Animal		Chemical
	Caught In		Contact with Skin		Container		Door
	Electrical Contact		Environmental Exposure		Electrical AC		Electrical DC
	Explosion		Fall		Food		Furniture
	Fire		Inhalation		Insect		Knife
	Insect Exposure		Noise Exposure		Ladder		Motor Vehicle
	N/A		Object Struck Vehicle		N/A		Noise

	Other-		Overexertion		Other -		Person
	Oxygen Deficiency		Repetitive Motion/Ergo		Plant/Vegetation		Repetitive Motion
	Struck Against		Struck By		Solar Panel		Tool – Hand
	Temperature Extremes		Vehicle Struck Object		Tool – Power		Trencher
	Vehicle Struck Vehicle				Walking Surface		Weather
Body Part – Identify the part of the body affected by the injury or illness				**Nature of Injury –** Identify the physical characteristics of injury or illness			
	Ankle		Back		Abrasion/Scratch		Amputation
	Buttock		Calf		Animal Bite		Arc Flash Burn
	Chest		Ear		Blister		Bruise/Contusion
	Elbow		Eye		Chemical Burn		Cold-Related
	Face		Finger		Crushing		Dermatitis
	Foot		Forearm		Dislocation		Electrical Contact/Shock
	Groin		Hand		Fracture		Heart Attack
	Head		Hip		Heat-Related		Inflammation
	Jaw		Knee		Insect Sting or Bite		Laceration
	Leg		Mouth		N/A		Poisoning
	Neck		N/A		Puncture		Splinter/Foreign Body
	Nose		Shoulder		Sprain/Strain		Stroke
	Stomach		Teeth		Thermal Burn		Other -
	Thigh		Toes				
	Throat		Wrist				

Appendix B – Vehicle/Property/Equipment Damage Information

IF Incident Involved Vehicle/Property/Equipment Damage, THEN complete next section.				
Vehicle Information (if applicable)				
Vehicle Type	**Driver's Name**	**Driver's Employer**	**Vehicle ID or Plate Number**	**Driver's License or certification current?**

Property/Equipment Information (if applicable)	
Description of damage:	
How did damage occur?	
Damage cost estimate:	

Drug and Alcohol Screen				
Is a post incident Drug and Alcohol (DA) Screen required?	YES	NO	Date:	
Note: If DA screen is required, the employee is not to return to work until a non-positive result is received.				

Sketch the Accident Scene – Provide an illustration showing location of damaged vehicle/equipment in relation to surroundings.

Appendix C – Near Miss / Deficient Condition Information

IF Near Miss or Deficient Condition, THEN complete next section.					
SPower Risk Register Matrix (Circle the appropriate letter in the matrix below)					
L = Likelihood **C = Consequences** **R = Risk Level** **How severely could it hurt someone or how ill could it make someone?**	Severity - How severe could the incident have been?	Likelihood - How likely is it to be that bad?			
		Very likely Could happen at any time	**Likely** Could happen sometime	**Unlikely** Could happen, but very rarely	**Very unlikely** Could happen, but probably never will
	Kill or cause permanent or ill health	H	H	H	M
Guide to Risk Score **H** Urgent/High Priority – act now **M** Medium Priority – action required this week **M/L** Low to Medium Priority – Hazard may not need immediate action **L** Low priority if hazard increases risk action is required	Long term illness or serious injury	H	H	M	M/L
	Medical attention and several days off work	H	M	M/L	L
	First aid needed	M	M/L	L	L

What are the risks and potential consequences of the Near Miss or Deficient Condition Identified?

Heat Illness Prevention Plan Disclaimer

- This Heat Illness Prevention Plan (HIPP) is designed to comply with the Heat Illness Prevention Standard T8 CCR 3395.
- These procedures are not intended to supersede or replace the application of any other Title 8 regulation, particularly T8 3203 Injury and Illness Prevention Program (IIPP).
- The employer must also be aware that other standards apply to Heat Illness Prevention such as the requirement to provide for drinking water, first aid and emergency response.

Scope and Application

These procedures provide steps applicable to most outdoor work settings and are essential to reducing the incidence of heat related illnesses. In working environments with a higher risk for heat illness (e.g., during a heat wave, hot summer months exceeding 95 degrees Fahrenheit, or other severe working or environmental conditions), it is the company's duty to exercise greater caution and ensure these procedures are implemented, including additional protective measures beyond what is listed in this document, as needed to protect employees affected by high heat conditions.

When the temperature exceeds 95 degrees, high heat procedures begin, the foreman / crew lead will hold short 'tailgate meetings to review the weather report, reinforce heat illness prevention with all workers and provide reminders to drink water frequently, to be on the lookout for signs and symptoms of heat illness and inform them that shade can be made available upon request.

NOTE: When temperature reached 95 degrees, The High Heat Procedures go into effect.

Definitions

"Acclimatization" means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

"Heat Illness" means a serious medical condition resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

"Environmental risk factors for heat illness" means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

"**Personal risk factors for heat illness"** means factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.

"Shade" means blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions, and that does not deter or discourage access or use.

"Temperature" means the temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area with full sunlight, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct contact by sunlight.

"Provision of water" Employees shall have access to potable drinking water. The water will be fresh, pure, suitably cool, and provided to employees free of charge. The water shall be located as close as practicable to the areas where employees are working. Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water shall be encouraged.

Provisions of water (water distribution plan)

Bottled water is provided on site to employee's working for SPower employees. All SPower Sub-contractors are required to provide a written Heat Illness and Water Distribution Plan, as well as the required potable water and ice for their personnel on site daily.

If Temperatures reach 80 degrees, shade structures shall be provided on site so that any employee can take a cool off break, sit down and consume water with a place to sit in a posture as to allow the body temp to cool down.

Means and Methods for Providing Drinking Water to All Employees

1. The supervisor will ensure that there is a minimum of two quarts per employee per hour in the work area at all times during the shift. This can be achieved by having bottled water chilled in coolers or using 5

to 10-gallon jugs.

2. If water jugs or bottled water is unavailable, all employees will be furnished a camelback for drinking water purposes prior to going to work.

When the temperature exceeds 95 degrees the foreman will carry a separate ice chest with block ice to cool ice water as needed.

3. ***The supervisor will inspect the immediate work area at a minimum once per hour to make sure that the water is placed as close as possible to the work and that all water jugs stay at least 50 percent full at all times.***

4. The supervisor must insure that the drinking water moves as the work does.

5. The supervisor is responsible for properly cleaning water jugs at a minimum every shift. Cleaning must be in accordance with the water jug cleaning procedure. If camelbacks are in use, the employee is responsible for care and cleaning.

- The supervisor will announce all drinking water locations in the daily toolbox meeting.
- When the temperature is expected to be over 90 degrees the supervisor will discuss signs and symptoms, hydration, and other pertinent heat illness topics.

When the temperature is 95 degrees or more the supervisor or designee will increase the number of mandatory water drinking breaks.

6. During the site-specific safety orientation, the importance of frequently drinking water will be stressed.

7. The general foreman shall ensure that the following procedures are provided for and implemented in the field when temperatures equal or exceed 80 degrees Fahrenheit. The general foreman shall ensure that effective communication by voice, observation, or electronic means (i.e. 2-way radio, cell phone) is maintained so that employees on the project can contact a supervisor when necessary. Radio and cell phone reception capability shall be confirmed periodically (no less than every 15 minutes) to ensure communication is possible.

Procedure to Access Shade

When the ambient temperature is 80 degrees or greater shaded areas are required in the work area.

1. Each supervisor will be given enough shade tents to cover 75 percent of their employees at the same time.

2. The supervisor will also be given picnic tables, chairs, or benches so the employees will have a place to sit under the shade tent.

3. The interior of a vehicle may only be considered a shaded area if the air conditioning is both on and works properly.

4. The supervisor will make the employees aware of the shaded locations in the daily toolbox meeting. They will also make sure that the shade areas move with the workforce.

Procedures for Monitoring Weather

1. The Safety Manager will supply the weather forecast one day prior to the team reporting for work so the team can plan the necessary HIPP mitigation techniques.
2. The Safety Department will monitor the weather throughout the day via internet, weather channel or other weather app.
3. Our California Dial a forecast phone number is 916-979-3051.
4. Prior to each workday the team will use the forecast to dictate work schedules based upon human health risk with regards to performing work in direct sunlight.

If the site reaches temperatures of 95 degrees or greater the supervisor and / or O&M Manager must ensure that all High Heat Procedures are implemented

Handling a Heat Wave

1. If the work can't be completed at a later date or at night the O&M Manager will hold a tailgate meeting to inform all employees of the heat conditions, emergency response procedures, and mitigation techniques (more frequent breaks, shade, increase water consumption, etc.…

Alternate High Heat Work Schedule

When ambient temperatures remain at and exceed 95 degrees the O&M Manager shall discuss revisions to the work schedule (start time, end-of-shift time, multiple shifts with varying start times). When the alternate high heat schedule is in effect, personnel will meet each morning to go over the following items:

Heat Index 1 Heavy physical work acclimated worker	Response	Heat Index 2 Moderate physical work, OR Light physical work, unacclimated worker.
89-95 F 25-29 C	• Supply water to workers on an "as needed basis"	77-84 F 25-29 C
97-102 F 36-39 C	• Post Heat Stress Alert notice • Encourage workers to drink extra water • Start recording hourly temperature and relative humidity	85-93 F 30-33 C
104-108 F 40-42 C	• High Heat Procedures in effect notice • Notify workers to consume more water • Ensure workers are trained to recognize symptoms	95-99 F 34-37 C
109-111 F 43-44 C	• Provide 15 minutes' relief per hour • Provide adequate cool (50-59 F / 10 C) water • At least 1 cup (240 mL) water every 20 minutes • Workers with symptoms should seek medical attention	101-102 F 38-39 C
113-115 F 45-46 C	• Provide 30 minutes' relief per hour in addition to the provisions listed previously	104-108 F 40-42 C
117-120 F 47-49 C	• If feasible provide 45 minutes' relief per hour in addition to provisions listed above • If a 75% relief period is not feasible then stop work until the Heat Index is 107 F / 42 C or less	109-111 F 43-44 C
122 F and above 50 C and above	• Stop work until Heat index is 107 F / 42 C or less	113 F and above 49 C

High Heat Procedures

1. The O&M Management will ensure effective communication by voice, observation, or electronic means is maintained so that employees can contact a supervisor when necessary.

2 The supervisor will observe employees for alertness and signs and symptoms of heat illness.

3 All employees will remind the fellow worker to drink water frequently throughout the shift. The supervisor will closely supervise new employee or assign a "buddy" or experienced coworker for the first 14 days of the employment.

Acclimatization

Acclimatization is the temporary and gradual physiological change in the body that occurs when the environmentally induced heat load to which the body is accustomed is significantly and suddenly exceeded by sudden environmental changes. In more common terms, the body needs time to adapt when temperatures rise suddenly, and an employee risks heat illness by not taking it easy when a heat wave strikes or when starting a new job that exposes the employee to heat to which the employee's body hasn't yet adjusted.

Inadequate acclimatization can imperil anyone exposed to conditions of heat and physical stress significantly more intense than what they are used to. Employers are responsible for the working conditions of their employees, and they must act effectively when conditions result in sudden exposure to heat their employees are not used to.

1. Safety Manager will monitor the weather and in particular be on the lookout for sudden heat wave(s) or increases in temperatures to which employees haven't been exposed to for several weeks or longer.

2. During the hot summer months, the work shift will start at first light.

3. For new employees, supervisors will try to find ways to lessen the intensity of the employees work during a two-week break-in period (such as scheduling slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day (early-morning or evening)). Steps taken to

4. lessen the intensity of the workload for new employees will be documented

5. The supervisor will be extra-vigilant with new employees and stay alert to the presence of heat related symptoms.

6. The supervisor will assign new employees a "buddy" or experienced coworker to watch each other closely for discomfort or symptoms of heat illness.

7. During a heat wave, the supervisor will observe all employees closely (or maintain frequent communication via phone or radio) and be on the lookout for possible symptoms of heat illness.

8. SPower site orientation for employees and supervisors will include the importance of acclimatization, how it is developed and how these company procedures address it.

Procedures for Emergency Response

1. Prior to assigning a crew to a particular worksite, the O&M Manager will ensure that a qualified, appropriately trained and equipped person will be available at the site, to render first aid if necessary.
2. All supervisors will carry cell phones or other means of communication, to ensure that emergency medical services can be called and check that these are functional at the worksite prior to each shift.
3. When an employee is showing symptoms of possible heat illness, the supervisor will take immediate steps to keep the stricken employee cool and comfortable once emergency service responders have been called (to reduce the progression to more serious illness).
4. During a heat wave or hot temperatures, workers will be reminded and encouraged to immediately report to their supervisor any signs or symptoms they are experiencing.
5. SPower site specific orientation for employees and supervisors will include every detail of these written emergency procedures

Handling a Sick Employee

1. When an employee displays possible signs or symptoms of heat illness, the O&M Management will be notified. An employee trained in first aid will check the sick employee and determine whether resting in the shade and drinking cool water will suffice or if emergency service providers will need to be called.

WARNING -Do not leave a sick worker alone in the shade, as he or she can take a turn for the worse!

2. Call emergency service providers immediately if an employee displays signs or symptoms of heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), does not look OK or does not get better after drinking cool water and resting in the shade.
3. While the ambulance is in route, initiate first aid (cool the worker: place in the shade, remove excess layers of clothing, place ice pack in the armpits and join area and fan the victim).
4. Do not let a sick worker leave the site, as they can get lost or die (when not being transported by ambulance and treatment has not been started by paramedics) before reaching a hospital!
5. If an employee does not look OK and displays signs or symptoms of severe heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), and the worksite is located more than 20 min away from a hospital, call emergency service providers, communicate the signs and symptoms of the victim and request Air Ambulance.

Procedures for Employee and Supervisory Training

1. SPower will ensure that all supervisors are trained prior to being assigned to supervise other workers. Training will include the company's written procedures and what steps supervisors will follow when employees' exhibit symptoms consistent with heat illness.

2. SPower will ensure that all employees and supervisors are trained prior to working outside. Training will include the site-specific orientations, lunch and learns, and toolbox topics.
3. SPower Safety Manager will train employees on the steps that will be followed for contacting emergency medical services, including how they are to proceed when there are non-English speaking workers, how clear and precise directions to the site will be provided as well as stress the need to make visual contact

with emergency responders at the nearest road or landmark to direct them to the worksite.

When the temperature exceeds 85 degrees, the supervisor will hold short 'tailgate meetings to review the weather report, reinforce heat illness prevention with all workers and provide reminders to drink water frequently, to be on the lookout for signs and symptoms of heat illness and inform them that shade can be made available upon request.

4. The supervisor will assign new employees a "buddy" or experienced coworker to ensure that they understood the training and follow company procedures.

The Amendments to the Heat Illness Prevention Plan as per CALOSHA

On February 20, 2015, the California Occupational Safety and Health Standards Board voted on latest changes to the Heat Illness Prevention regulation. The Standards Board voted 5-1 to approve the proposed amended statute. Marley Heart, Executive Director of the Standards Board, requested the Office of Administrative Review to allow for an early effective date. The Office of Administrative Law is responsible for reviewing administrative regulations proposed by the Standards Board to ensure that they are compliant with the California's Administrative Procedure Act. The Office will transmit this amendment to the Secretary of State for publishing in the California Code of Regulations. We expect that the new regulation will be rolled out at the beginning of the heat season, in May of this year.

Employers should promptly update their heat illness prevention plans and train their employees for compliance with the new regulations. What follows below is a quick summary of the amendment to help you revise your plan and get ready for this year's heat season.

Potable Water Requirements

The heat illness regulation previously stated that employers had to provide employees with access to potable drinking water that was clean and maintained through individual dispensers, faucets, or drinking fountains. The Division of Occupational Safety and Health previously cited employers for not providing continuous water to employees and for failing to ensure that the employees have properly marked dispensable cups or bottles to obtain clean water. The regulation also provided that where the employer cannot otherwise continuously supply or replenish employees' water (e.g. with a mobile crew that is located off-site), that it shall provide water in sufficient quantity at the beginning of the shift. The employer must provide each employee with a minimum of one quart of water per hour for the entire shift. The amendment now also states that the water must be fresh, pure, suitably cool, and provided free of charge to employees. Additionally, the water must be located as close as practicable to the areas where employees are working, unless the employer can demonstrate infeasibility.

Shade Requirements

Prior to the amendment, employers were obligated to provide shade to at least 25% of the employees on shade only when the temperature exceeded 80 degrees.

Now the amendment requires that the employer provide shade when the temperature exceeds 80 degrees and so that it can accommodate the total number of employees on recovery or rest periods. The employer must provide enough shade during meal breaks to accommodate the total number of employees that remain outside. In addition, the shaded area has to be located as close as practicable to the areas that employees are working.

Preventative Cool-Down Rest Periods

The heat illness regulation requires employers to allow and encourage employees to take a minimum of five-minutes for a cool-down rest period if they feel they needed to protect themselves from overheating. Now in addition to allowing and encouraging employees to take cool-down rest periods, employers are required to monitor and ask employees taking rest periods whether he or she is experiencing symptoms of heat illness. Employers are to encourage employees taking a rest period to remain in the shade. Employers are prohibited from ordering employees to work until signs or symptoms of heat illness have been abated.

High-Heat Procedures

Employers have to implement high-heat procedures when the temperature equals or exceeds 95 degrees Fahrenheit. Employers have to ensure that there is effective communication between supervisors and employees. Employers are also obligated to observe employees for alertness and signs or symptoms of heat illness.

In addition to these procedures, the amendment requires that employers assertively monitor employees by instituting: a one supervisor to twenty or fewer employee ratio, a mandatory buddy system, a regular communication through electronic device routine with each employee, or another effective means of communication. Employers are also obligated to designate one or more employees on each worksite as authorized individuals for emergency medical services. If there is no designee on shift, employers must instruct other employees to call for emergency services when required.

The amendment requires pre-shift meetings that must take place before the commencement of work on each shift during high heat conditions. The shift meetings should: review high heat procedures, encourage employees to drink plenty of water, and remind employees of their right to take a cool- down rest break when needed.

Alternate High Heat Work Schedule

When ambient temperatures remain at and exceed 95 degrees the project management shall discuss revisions to the work schedule (start time, end-of-shift time, multiple shifts with varying start times). When the alternate high heat schedule is in effect, personnel will meet each morning to go over the following items:

Review of the high heat plan: Who will be the person who is going to call for help in the event of an emergency the importance of taking preventative cool down breaks in the shade and hydrating at the recommended levels. The recommended levels of hydration should be talked about during the PreTask Plan meeting. The employees must be aware they have the right to ask for a preventative cool down period if it is needed.

These items must be added to each crews Pre-Task Plan and covered during the morning Pre-Task Plan meeting by each crew daily.

Emergency Preparedness Requirements

High-Heat emergency response preparedness requirements now must include:

(1) An effective communication with employees by voice, observation, or electronic means;

(2) An effective response with first aid measures; and

(3) Procedures for contacting emergency responders to help stricken workers.

Acclimatization

Employers are to assign supervisors to closely observe and monitor employees during a heat wave. A heat wave is defined as temperatures over 80 degrees Fahrenheit or anytime the temperature is ten degrees higher than the average high daily temperature in the preceding five days. Employers must closely monitor a new employee for the first 14 days of his or her employment in a high heat area.

Training

In addition to all of the previous training requirements, the amendment now specifically requires employers to train employees in: (1) the employer's responsibility to provide water, shade, cool-down rests, and access to first aid; (2) the employees' right to exercise their rights under this standard without retaliation; (3) first aid and emergency response procedures; and (4) concepts and methods of acclimatization.

Cooling equipment

All personnel shall be encouraged to dress in light colors and use long sleeved cotton shirts and sunscreen as a precaution while working in the field. This is encouraged only and not a requirement.

Heat Illness Prevention Plan

This amendment increased the requirements of heat illness prevention plans. The employer must establish, implement, and maintain an effective heat illness prevention plan in both English and in any language understood by the majority of the employees. The plan must be made available to employees at the worksite and to representatives of the Division upon request. The Heat Illness Prevention Plan may be included as part of the employer's Illness and Injury Prevention Program but must specifically include procedures for the provision of water and access to shade, high heat procedures, emergency response procedures, and acclimatization methods and procedures.

Appendix A: Forms (Located on ShareFile / sPower Safety Folder)

Document Number	Document Title
SPF AA	TAKE FIELD FORM
SPF1	INITIAL INCIDENT NOTIFICATION
SPF1A	INCIDENT NOTIFICATION / INVESTIGATION
SPF1B	OFFICE INCIDENT-INVESTIGATION REPORT
SPF1C	CONSTRUCTION INCIDENT ANALYSIS
SPF2	EMPLOYEE STATEMENT
SPF2A	WITNESS STATEMENT FORM
SPF3	NEAR MISS-GOOD CATCH REPORT
SPF4	LIFT PLAN RISK ASSESSMENT
SPF4A	LIFT PLAN-NON-CRITICAL
SPF4B	CRITICAL LIFT PLAN
SPF5	OFFICE INSPECTION REPORT
SPF6	SPOWER MONTHLY INCIDENT SUMMARY
SPF6A	PROJECT MONTLY INCIDENT SUMMARY
SPF6B	SUBCONTRACTOR'S WEEKLY INCIDENT SUMMARY
SPF7	PERSONAL SAFETY NON-CONFORMANCE
SPF8	SAFETY WALK OBSERVATION FORM
SPF9	SPOWER EHS AUDIT SCORE CARD
SPF10	WEEKLY CONTRACTOR SAFETY SUMMARY
SPF11	HAZARDOUS CHEMICAL & MATERIAL
SPF12	DMV TRAFFIC ACCIDENT
SPF13	MEWP PRE-USE INSPECTION CHECKLIST
SPF13A	FORKLIFT PRE-USE INSPECTION CHECKLIST
SPF13B	RIDE ON MOWER PRE-START CHECKLIST
SPF13C	TRACTOR PRE-USE INSPECTION CHECKLIST
SPF13D	COMPANY PICKUP WEEKLY INSPECTION
SPF14	TWO PERSON DAILY INSPECTION HIGH RISK ACTIVITY
SPF15	ATTENDANCE SIGN IN SHEET
SPF16	CONTRACTOR PRE-QUAL FORM
SPF16A	ON SITE LIABILITY WAVIER & CODE OF CONDUCT
SPF17	CONTRACTOR'S SITE CONTACTS
SPF18	ENVIORNMENTAL AUDIT CHECKLIST
SPF19	HOT WORK PERMIT
SPF20	EEW REQUEST/PLAN
SPF20A	EEW PERMIT LOG
SPF21	PRE-TASK PLANNING WORKSHEET
SPF22	RADIATION LASER APPROVAL
SPF23	SDS AUDIT FORM
SPF24	CONFINED SPACE ENTRY PERMIT
SPF25	*FUTURE USE*
SPF26	SPILL NOTIFICATION
SPF26A	ENVIORNMENTAL INCIDENT REPORT
SPF27	FIRE EXTINGUISHER LOG

SPF28	**SAFE BEHAVIOR OBSERVATION**
SPF29	**WATER TRUCK ACTIVITY APPLICATION LOG**
SPF30	**SAFETY APPRAISAL DISCREPENCY**
SPF30A	**SAFETY AUDIT**
SPF31	**PROJECT EMERGENCY PHONE NUMBERS**
SPF32	**PRE-TRENCH & PRE-EXCAVATION CHECKLIST**
SPF33	**EXCAVATION TRENCH PERMIT**
SPF33A	**DAILY TRENCH INSPECTION**
SPF34	***FUTURE USE***
SPF35	**GENERAL LOTO COORDINATION FORM**
SPF35A	**GENERAL LOTO LOG**
SPF35B	**COMBINER BOX LOCK OUT-TAG OUT**
SPF35C	**EQUIPMENT CLEARANCE LOCK OUT- TAG OUT**
SPF35D	**EMPLOYEE LOTO TRAINING RECORD**
SPF35E	**LOTO OBSERVATION AUDIT**
SPF36	**SUBCONTRACTOR SITE CONTACTS**
SPF37	**OIL SAMPLING**
SPF48	**SUMMER SOLAR COMBINED LOTO PROCEDURE (ZIP FOLDER)**
SPF48-1A	**SUMMER INVERTER 1A BLOCK 1 COMBINER AND RE-COMBINER LOTO**
SPF48-1B	**SUMMER INVERTER 1B BLOCK 1 COMBINER AND RE-COMBINER LOTO**
SPF48-2A	**SUMMER INVERTER 2A BLOCK 2 COMBINER AND RE-COMBINER LOTO**
SPF48-2B	**SUMMER INVERTER 2B BLOCK 2 COMBINER AND RE-COMBINER LOTO**
SPF48-3A	**SUMMER INVERTER 3A BLOCK 3 COMBINER AND RE-COMBINER LOTO**
SPF48-3B	**SUMMER INVERTER 3B BLOCK 3 COMBINER AND RE-COMBINER LOTO**
SPF48-4A	**SUMMER INVERTER 4A BLOCK 4 COMBINER AND RE-COMBINER LOTO**
SPF48-4B	**SUMMER INVERTER 4B BLOCK 4 COMBINER AND RE-COMBINER LOTO**
SPF48-5A	**SUMMER INVERTER 5A BLOCK 5 COMBINER AND RE-COMBINER LOTO**
SPF48-5B	**SUMMER INVERTER 5B BLOCK 5 COMBINER AND RE-COMBINER LOTO**
SPF48-6A	**SUMMER INVERTER 6A BLOCK 6 COMBINER AND RE-COMBINER LOTO**