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POLICY AND PRINCIPLES

PURPOSE: To provide the foundation for the management of Environmental, Health and Safety (EH&S) in The Saxon Group, Inc.

1.0 POLICY AND PRINCIPLES

Respect for people and commitment to world-class Environmental, Health and Safety (EH&S) performance are core Saxon values. We demonstrate these values by providing our employees with a safe and healthy workplace, and by conducting our operations in an environmentally responsible manner. It is management’s responsibility to establish EH&S policy and procedures, and to ensure effective training programs are utilized to provide our employees with the skills needed to accomplish our EH&S objectives.

Workplace safety is a key measure of EH&S performance, and an important indicator of management effectiveness for each project and facility. Every occupational injury and illness represents waste that is preventable, and our vision is to eliminate such waste. Every supervisor will be held accountable for the EH&S performance of operations under his/her supervision.

World-class EH&S performance will provide Saxon with a quantifiable competitive advantage. Our customers demand superior safety performance. Award of future work depends on maintaining a superior EH&S track record. By implementing aggressive occupational injury and illness prevention processes, we will increase productivity, reduce costs, and grow our business.

Each of us needs to actively and continuously demonstrate our EH&S commitment to all employees within our organizations. EH&S excellence must become a way of life at Saxon. It’s a winning proposition for our employees, our customers and our future. Remember: “Do not perform a task if you don’t believe you can do it safely.”

2.0 ENVIRONMENTAL, HEALTH & SAFETY PRINCIPLES

1. All occupational injuries and illnesses and environmental incidents can be prevented.
2. Each employee is responsible and accountable for their behavior and compliance with company procedures as a condition of employment.
3. Each employee has the right and duty to question the adequacy of environmental, health and safety provisions.
4. The line organization is responsible and accountable for preventing injuries, illnesses and incidents.
5. Management shall provide the necessary resources and training to meet our Environmental, Health, and Safety objectives.
6. We shall proactively identify workplace deficiencies and take prompt corrective action.
7. We shall employ contractors and suppliers who are committed to Environmental, Health and Safety excellence and will hold them to the same standards as ourselves.
8. We shall investigate accidents and incidents, then share and institutionalize the key learning experience.
9. Our goal of “zero accidents” is good business, and demonstrates our shared concern for one another.
10. Off-the-job safety is as important as on-the-job safety.
Environmental, Health & Safety Commitment

August 2010

We are committed to the highest standards for the safe operation of our facilities and the protection of our environment. We will comply with all applicable laws and regulations. We will integrate environmental, health and safety into all aspects of our business. There is a quantifiable competitive advantage to be achieved through world-class environmental, health and safety performance.

Goal of Zero Injuries and Incidents
We believe that all occupational injuries, illnesses and environmental incidents are preventable. Injuries and incidents are not mere chance occurrences, but represent a system failure. Each employee must accept responsibility for their personal health and safety, as well as that of fellow employees.

Strive to Eliminate Waste and Emissions
We believe that all wastes and emissions represent defects in our processes. We will work toward zero waste generation at the source, and are committed to pollution prevention.

Continuously Improve Processes and Services
We will continually analyze our processes and services to maximize efficiency and reduce environmental, health and safety risk through the entire life-cycle of our services. We will encourage recycling, conservation of energy and natural resources.

Encourage Employee and Community Outreach
We will openly communicate our environmental and safety performance and encourage strategic partnerships with stakeholders. We will work with our communities by voluntarily supporting environmental and other worthy initiatives.

Demonstrate Management Leadership
We will make environmental, health and safety a way of life in Saxon, by holding management accountable. Management is responsible to train and lead employees to understand and comply with this commitment. Environmental, health and safety excellence can only be achieved through management leadership and the personal commitment of all our employees.
EHS ADMINISTRATION & RESPONSIBILITIES

PURPOSE: To provide a description of the general administration of EH&S and specific EH&S responsibilities of all employees.

2.0 REQUIREMENTS

2.1 General

All levels of management are responsible for the implementation of EH&S policies and procedures to eliminate injuries, illnesses and environmental incidents. A manager’s capability to manage is measured by EH&S performance.

The EH&S organization is responsible to facilitate management’s implementation of EH&S policies and, practices and to lead the continuous improvement of EH&S programs, practices and techniques.

2.2 Roles

1. Saxon Corporate Safety
   a. Provide guidance and technical services to management and project sites
   b. Provide oversight through formal audits of projects and facilities
   c. Provide guidance and direction to management and EH&S professionals
   d. Lead the development and facilitate the implementation of EH&S management system improvements.
   e. Lead the development and delivery of EH&S training programs
   f. Assess project and facility compliance with company requirements
   g. Assist in Workers’ Compensation claims management and cost reductions
   h. Lead the professional development of EH&S professionals
   i. Track and report EH&S metrics.

3. Site Safety
   a. Provide oversight of the project/facility.
   b. Assess and monitor site/facility compliance with host company requirements
   c. Provide guidance and direction to management
   d. EH&S personnel administration
      1. Site/facility staffing
      2. Performance evaluations
      3. Professional development planning
      4. Serve as focal point for site/facility EH&S issues and activities
      5. Troubleshoot and problem solve

2.3 Project Manager

The overall responsibility for project EH&S performance rests with the Project Manager. The Project Manager’s role in meeting this responsibility includes:

1. Ensuring where applicable, the customer provides mandatory EH&S requirements, emergency procedures, and specialized training requirements to Saxon.

2. Ensuring that sufficient funds are budgeted to provide appropriate EH&S resources, training, equipment, supplies, audits, and compliance with company, customer, contractual, and regulatory requirements.
3. Ensuring the development and implementation of a Health, Environmental, and Safety Plan (HESP) that addresses project specific health, environmental and safety issues, concerns, and/or requirements. The plan need not contain general environmental, health, and safety requirements, but shall, as a minimum, incorporate by reference applicable Saxon EH&S requirements, or their equivalent, to cover such requirements.

4. The HESP shall include, but may not be limited to, project specific procedures for the following applicable topics.

   a. Emergency situations responses, and notification
   b. Fall prevention
   c. Confined space/vessel entry
   d. Fire prevention
   e. Personal protective equipment
   f. Environmental protection and waste disposal
   g. Lockout/Tag-out & Try
   h. Respiratory protection
   i. Hazard communication
   j. Permitting systems
   k. Training and orientation
   l. Client requirements
   m. Ladders and scaffolds
   n. Medical Services

5. Ensuring that project systems are in place to ensure compliance with company, customer, contractual and regulatory environmental, health, and safety requirements, including the reporting of incidents and project safety data.

6. Ensuring that material purchases appropriately address environmental, health, and safety issues in all contracts and purchase orders, including applicable health, and safety requirements, or precautions from suppliers, fabricators, etc.

7. Ensuring that all subcontractors and suppliers are informed of and comply with the contractual environmental, health, and safety requirements, and submit a proper insurance certificate prior to beginning work on the job site.

8. Be an active and visible leader of the project’s EH&S program.

9. Conduct regular job site EH&S walk downs.

2.4 Project Engineer

1. Ensures that engineering and the procurement of engineered equipment meet the established environmental, health, and safety standards.

2. Ensures that design and installation procedures facilitate the safety of construction.

3. Ensures the identifying aspects of safety related restriction, i.e., load limits or restrictions;

4. Ensures the materials specified are evaluated from an EH&S perspective and the less hazardous materials are specified.

2.5 Site/Facility Manager
1. Ensures that all supervisors take an active role in promoting and enforcing EH&S policies and procedures.

2. Ensures that each employee understands his/her responsibilities as outlined in this procedure manual and any site specific procedures prior to beginning work.

3. Ensures timely and accurate injury/illness reporting.

4. Assumes responsibility for project compliance with EH&S requirements.

5. Implements and enforces all EH&S policies and procedures.

6. Establishes an EH&S committee and monitors its activities.

7. Reviews all accident investigation reports and ensures that follow-up action is taken.

8. Establishes training sessions in cooperation with project EH&S personnel.

9. Personally conducts at least a weekly EH&S walk down of the site/facility.

10. Establishes a weekly EH&S audit schedule, involving field superintendents and/or subcontract coordinators.

11. Sets an example of safe work habits and follows EH&S regulations.


13. Provides the necessary resources and training to meet EH&S regulatory objectives.

14. Employs contractors who are committed to EH&S and regulatory compliance, and holds the contractors to our standards.

15. Investigates injuries/illnesses, near misses and environmental incidents and communicates the lessons learned throughout Saxon.

16. Distributes a Health and Safety Report and records of achievement to the home office on a monthly basis.

2.6 Environment, Health and Safety (EH&S) Professional

1. Supports Project and site/facility management in fulfilling their EH&S responsibilities

2. Coordinates the project EH&S effort with Saxon and client requirements.

3. Maintains a current knowledge of federal, state, local and host company EH&S standards and Saxon requirements.

4. Maintains current knowledge of state-of-the-art practices in EH&S protection.

5. Administers project EH&S policies and procedures, with a focus on potentially hazardous operations and emphasizing proactive solutions.

6. Communicates to project management and corporate safety the progress of the project EH&S program.

7. Leads the development and facilitates the implementation of programs for the accomplishment of short range and long range project EH&S objectives.

8. Participates in a formal weekly EH&S inspection program with a documented report reflecting EH&S discrepancies and recommendations for appropriate corrective actions by the responsible party.
9. Attends, and provides EH&S input into, weekly Supervisor’s safety meetings.

10. Administers the project’s EH&S training programs.

11. Administers the project’s hazardous waste program in cooperation with the site materials/warehouse manager.

12. Monitors and administers the project’s radiation operations program in coordination with the site Quality Assurance manager.

13. Evaluates and distributes project incident reports, health and safety reports, and records of achievement to the site manager.

14. Assists in the investigation of all accidents, injuries/illnesses, fire, property damage, and other related incidents, and issues reports as required.

15. Supports the subcontract administrator in the review and evaluation of subcontractor qualifications and EH&S programs.

16. Maintains the project’s EH&S Recordkeeping system and is responsible for its accuracy.

17. Classifies all occupational injuries and illnesses in accordance with U.S. Department of Labor - Bureau of Labor Statistics Recordkeeping guidelines and is responsible for its accuracy.

18. Assists the management during investigations by outside agencies.

19. Manages site/facility first-aid, emergency services and also, has primary interface and coordination responsibilities, for offsite/facility medical services.

20. Evaluates the need for personal protective equipment, fire protection equipment, and other related equipment and specifies the equipment to meet those needs.

21. Manages site/facility hazard communication program including a review of the MSDS for chemicals and hazardous material. Review of product MSDS shall be performed prior to ordering the material to determine acceptability of the product.

22. Maintains cumulative, historical MSDS files for chemicals used on projects.

23. Displays and maintains materials on site bulletin boards as required.

24. Informs site manager of staff EH&S training needs.

25. Analyzes site/facility incident and injury data and trends then makes improvement recommendations to management.

26. Assumes responsibility for managing workers’ compensation claims process per Admin Procedure Section IO Workers’ Compensation Claim Management.

2.7 Superintendent

1. Implements and enforces the EH&S Program

2. Assumes responsibility for compliance with EH&S requirements associated with the assigned work and his/her craft.

3. Assists in training new employees and ensures that employees have required training.
4. Sets an example by working safely, presenting a positive safety attitude and requiring employees to work safely.

5. Identifies workplace deficiencies and takes immediate corrective action.

6. Attends weekly safety meetings, assists in resolving EH&S questions and ensures that safety meetings are productive.

7. Performs daily EH&S inspections of crafts or areas and corrects unsafe conditions as they are found.

8. Leads a formal, weekly EH&S inspection.

9. Leads injury/illness and accident investigations and reviews reports to ensure that investigations are complete and that solutions are in place.

10. Ensures that all required personal protective equipment is available and used properly.

11. Assumes responsibility and accountability for preventing incidents, injuries/illnesses and environmental incidents, in his/her area or craft.

2.8 General Foreman

1. Implements and enforces the EH&S Program

2. Assumes responsibility and accountability for preventing incidents, injuries/illnesses and environmental incidents by his/her crews.

3. Communicates and enforces EH&S policies and procedures.

4. Ensures that injuries/illnesses, fires, accidents, near-misses, etc. are promptly treated, reported and investigated.

5. Instructs employees about job hazards, how to avoid injury and illnesses, and appropriate emergency procedures.

6. Ensures that Job Planning and Safety Task Analyses are completed and reviewed before tasks are begun.

7. Investigates the cause of accidents and injuries/illnesses, and completes reports as required.

8. Inspects work areas daily to ensure that work practices and equipment meet EH&S standards.

9. Ensures that required safety devices and personal protective equipment are provided and used.

10. Takes immediate corrective action whenever hazardous conditions and/or acts are personally observed or reported by employees.

11. Sets an example of proper work habits, positive safety attitude and follows EH&S regulations.

2.9 Foreman

1. Assumes responsibility for compliance with EH&S requirements by his/her crew.

2. Ensures that hazardous conditions in the work area are eliminated or controlled.

3. Ensures that necessary protective equipment is available and used as required.
4. Instructs crew(s) in EH&S requirements, and enforces compliance.

5. Uses positive reinforcement and disciplinary action to ensure employee compliance with requirements.

6. Discusses safety and health protection with workers prior to beginning tasks.

7. Ensures that all injuries/illnesses are treated and reported immediately.

8. Investigates all accidents (injuries, illnesses, environmental incidents, fires, near-misses, etc.), files complete reports, and corrects causes immediately.

9. Takes immediate corrective action whenever hazardous conditions and/or acts are personally observed or reported by employees.

10. Participates in weekly safety meetings and attends weekly supervisor’s safety meetings.

11. Sets an example of proper work habits and a positive safety attitude, and follows EH&S regulations.

12. Assumes responsibility and accountability for preventing incidents, injuries/illnesses and environmental incidents by his/her crew.

2.10 Employee

1. Assumes responsibility for personal health and safety and the health and safety of fellow workers.

2. Understands and follows all Saxon EH&S instructions, training and communicated requirements.

3. Performs all duties in a safe and proper manner.

4. Reports hazardous acts and conditions

5. Reports accidents, injuries/illnesses, and environmental incidents immediately.

6. Wears personal protective equipment as required and maintains the equipment in good condition.

7. Sets an example of proper work habits and follows EH&S regulations.

8. Attends and contributes to all scheduled safety meetings.

9. Reviews tasks prior to beginning work; obtains an adequate understanding of the hazard(s) and control measures associated with the task, and follows all applicable safe work practices as described in the safety procedures and Safety Task Analysis form.

2.11 Management Requirements

1. All levels of management and supervision are charged with the responsibility of preventing condition and actions that could lead to occupational injuries or illness.

2. While the ultimate success of an EH&S process depends upon the full cooperation of every employee, it is management’s responsibility to ensure that EH&S rules and procedures are adequate and enforced.

3. It is management’s responsibility to ensure that effective training and educational programs are provided.
INCIDENT INVESTIGATIONS

PURPOSE: To provide requirements for making the appropriate investigation of incidents.

2.0 REQUIREMENTS

1. The site/facility manager has the responsibility to insure that the incident investigation is complete and accurate.

2. When an incident occurs, the initial focus shall be obtaining treatment for injured people and securing the scene to prevent additional hazards or injuries. The focus of the investigation shall be to determine the facts of the incident to develop preventive measures.

2.1 Fatality or Hospitalization of Three (3) or More Employees

1. Upon notification of the Corporate EH&S Department, arrangements will be made as necessary to conduct a formal accident investigation with the assistance of the Corporate EH&S Department.

2. Once the injured have been cared for and the scene has been secured, it is necessary to investigate the incident to determine facts, root causes, the extent of damage and to implement corrective action. Extreme care shall be taken, after patient care is given, to insure that the incident scene is not disturbed until the scene is released by the incident investigation team. The accident scene shall be secured as soon after the accident as possible to preserve all evidence. Securing the scene may include measures such as:
   a. Erecting barricades
   b. Having security monitor the scene 24 hours a day
   c. Restricting access to authorized personnel only
   d. Taking Photographs
   e. Video Taping

3. The investigator shall make a sketch of the area indicating the location of the injured person, equipment being used, material in the area, people in the area, and shall include any other pertinent information. Photographs shall be taken of the area and equipment and shall show different angles of the accident scene.

4. Witnesses to the accident shall be taken to a quiet area, separated, and given a witness statement form to fill out. It is extremely important that witness statements be taken as soon after the occurrence, while the facts about the accident are still clear in their minds. Of equal importance, witnesses should be asked not to converse among themselves until they have completed the witness statement form. Witness statements shall be reviewed with the witness to ensure accuracy and completeness. Each statement shall be typed, signed and dated by the witness and signed and dated by a company representative witnessing the statement.

2.2 Other Incidents

1. When an incident occurs, an investigation shall be conducted. For incidents listed in section 2.3, site/facility personnel will typically conduct the investigation. However, assistance from the Corporate EH&S Group may be appropriate.

2. Incidents are extremely varied and all shall be investigated. The level of investigation will depend on the degree of injury or the severity of the incident.

2.3 Incident Investigations

1. Formal incident investigations shall be conducted for the following types of incidents:
a. injuries involving a doctor’s care
b. recordable injuries/illnesses
c. restricted work day cases
d. lost work day cases
e. material damage > $5,000.00 or as deemed appropriate by management
f. fires
g. vehicle/equipment accidents

2. First-aid cases and near misses shall be investigated to the extent necessary to determine the root cause and determine if the lessons learned from the incident are applicable to other tasks or work sites to prevent a similar incident from recurring.

3. The Saxon Incident Investigation Report Form, (I.D.001) shall be used. This form is a multi-page form and the investigation team shall determine which pages need to be completed. In general, the form shall be completed in the following manner:

   a. Section I, will be completed for all incident investigations
   b. Section II, shall be completed for all fires
   c. Section III, shall be completed for incidents involving vehicles and/or equipment whether owned by the company or a third party.
   d. Section IV, shall be completed for incidents involving damage to utilities controlled by the host company or a third party.
   e. Section V, shall be completed for incidents involving spills or releases of chemicals or employee exposure to hazardous chemicals.
   f. Section VI, shall be completed for incidents involving spills or releases of substances when a government agency shall be notified.
   g. The employee’s statement shall be completed for incident investigations involving a Saxon employee.
   h. The witness statements shall be completed for incident investigations that are witnessed.
   i. Section X, The Site/Facility Manager’s Concurrence shall be completed for all incident investigations.

4. The investigation shall be completed within 8 working days of the incident.
5. A copy of the completed investigation form shall be forwarded to the Project Manager, the President and the Corporate EH&S Department.
6. The completed investigation shall be filed in the project EH&S files.

Note: The Saxon Incident Investigation Report Form may be used by the subcontract administrator to assist subcontractors in conducting an adequate investigation of incidents involving subcontract employees.
MEDICAL SERVICES - FIRST AID

PURPOSE: To provide requirements for adequate first aid or medical care for job-related injuries and illnesses.

2.0 REQUIREMENTS

1. The site/facility manager has the responsibility to insure this process is properly managed and followed.

2. The site/facility EH&S professional/resource is responsible for interviewing and approving qualified medical personnel as needed for the site/facility. The site/facility EH&S professional shall manage the activities of the medical personnel and the accuracy of the medical files in addition to being responsible for the interface and coordination with off-site medical services and providers.

3. Medical/first aid personnel are responsible for providing care to injured or ill employees according to their training and protocols.

2.1 General

1. The level of on-site medical services needed for a site/facility shall be determined during the development of the project execution plan. Considerations include the size of the workforce, availability of qualified, local medical providers, and the physical and/or chemical hazards associated with the work being performed. The Corporate EH&S Department can assist in this determination.

2. Each site/facility shall provide an adequate space for storage of first aid materials and equipment and for the confidential treatment of the injured or ill employees. The facility shall have appropriate hand washing capabilities.

3. The first aid supplies shall be evaluated by either the site/facility EH&S professional with the knowledge and ability to determine what is appropriate.

4. A site/facility-specific bloodborne pathogen (BBP) plan shall be developed that meets or exceeds the requirements of 1910.1030. All site/facility medical, rescue, janitorial, and other employees that are exposed to or might be exposed to bloodborne pathogens in their assignments shall be included in the BBP plan. See Procedure III.D.7.

5. Off site/facility emergency medical transportation shall be arranged. The transportation provider shall be furnished a map of the site/facility's location and detailed instructions for easy access to the site/facility.

6. There shall be at least one person with a valid first aid and CPR card on the project when work is in progress. All medical treatment shall be performed under the protocols of a physician.

2.2 Recordkeeping

Refer to Procedure I.N. for recordkeeping/documentation requirements.
BEHAVIORAL SAFETY PROCESS

PURPOSE: To provide a procedure for the implementation of the behavioral safety process at the project level.

2.0 REQUIREMENTS

2.1 The BSP Team Responsibilities:

1. Develop an observational checklist based on current work practices and conditions that could cause accidents, injuries or property damage at the project.

2. Identify specific needs for employees through observational methods concerning the environment, health and safety.

3. Provide feedback on the effectiveness of recent employee coaching/positive reinforcement.

4. Develop key result areas and measures of performance in behaviors that meet the requirements of the Project Health & Safety Policies.

2.2 Training

1. The Site/Facility Safety Professional or his/her designee will provide formal training to all observers.

2. All managers and supervisors are required to attend formal training to understand and promote the behavioral process and the implementation methodology and procedures.

3. Training for site managers, superintendents, general foreman and foreman shall cover:
   a. General overview of the behavioral safety process and behavior reinforcement.
   b. Supervisor responsibilities for the safety and well being of employees.

4. Awareness training on the behavioral safety process shall be incorporated into the new hire orientation to give an overview of the process.

5. Annual awareness training shall be conducted for all employees. Training will be to reinforce their understanding of the process, and to incorporate any project changes and or to, Federal, State or Local regulation.

2.3 Procedure Instructions

1. The behavioral process shall not be initiated on the project until a thorough evaluation by the Project Management Team (Site/Facility Manager’s designee) is completed to determine the best approach for implementing the process.

2. The observer shall be required to perform job/task observations of employee activities and work area conditions. These observations shall be classified as:
   a. Formal Observations: Scheduled observation of assigned areas made daily by BSP members.
   b. Informal Observations: Unscheduled observations made during regular job performance and documented at a later time.

3. The observer shall be alert for unsafe acts, unsafe work habits, and unsafe conditions that could cause injuries, illness, equipment or property damage. The observation time can vary depending on the nature of the
4. The observer will focus on six critical areas of safety:
   a. Conditions
   b. Work Habits
   c. Collection and use of tools
   d. Material handling, storage and lifting
   e. Housekeeping
   f. Personal protective equipment

5. These critical areas can be changed to fit particular needs of the project with the concurrence of the Site Manager and the Corporate Safety Manager.

2.4 Recordkeeping / Data Results

1. All observational forms and results will be maintained in the project safety files. It is essential to make sure that the observation forms are filled out correctly and action is taken on each observation observed.

2. All data will be generated weekly and discussed in staff meetings, progress review meetings and daily safety meetings to increase employee awareness.
EHS EDUCATION & TRAINING

PURPOSE: The purpose of this procedure is to define the requirements for the education and training of personnel in the recognition of hazards and the methods used to control and/or eliminate those hazards.

2.0 REQUIREMENTS

1. Management is responsible to provide the training resources necessary to equip employees with the EH&S knowledge and skills required for them to accomplish their jobs in compliance with company requirements.

2. Management is responsible to assign tasks only to employees who have successfully completed the EH&S training required for the task.

3. Training shall be conducted in accordance with Saxon procedures, applicable regulatory and client requirements.

4. All formal training delivery will include a written test to verify understanding of the information presented. Employment decisions are not to be made based on test results.

5. Each construction/maintenance project and operating facility shall prepare a training plan based on their specific needs. The plan shall be reviewed and updated on an annual basis.

6. Training shall be documented according to Saxon Training Documentation requirements. Training hours shall be tracked.

7. All meetings involving five (5) or more people will begin with a safety topic discussion. The Corporate and/or local EHS Department will be responsible to provide information and resources to the organization to facilitate the safety topic discussion.

Employee EH&S education and training shall be accomplished through, but not limited to the following:

1. EH&S orientation for all employees new to the company or new to the location
2. Formal classroom training
3. Supervisory EH&S orientation for all new supervisors
4. Weekly Gang Box Meetings
5. Job Planning and Safety Task Analysis – See Procedure I.U. Section 2.3
6. Participation in EH&S assessment teams
7. Mentoring
8. On-the-job training
9. Simulator or mock-up training aids
10. Third-party training
NEW EMPLOYEE ORIENTATION

PURPOSE: To provide an outline of the Company's four-part, new employee safety orientation designed to increase workers' and supervisors' safety awareness by involving supervisors directly in training workers. The seriousness of Saxon's safety commitment is impressed upon employees during this orientation, which trains them in specific hazard recognition and promotes communication between individuals, crafts, departments, and management and employees. Saxon places the highest priority on the safety of all employees and accepts the responsibility of providing a safe workplace where workers can perform their jobs without injury to themselves or others.

2.0 REQUIREMENTS

2.1 Planning

Planning for the four-part orientation begins at the pre-bid stage of the project, at which time the benefits and savings resulting from the orientation are explained fully to the customer. While Saxon management and customers already know the importance of safety; they also need to know how to provide a safe workplace and how to educate employees in safe work practices.

2.2 Site/Facilities

The size of the site/facility determines the size of the facilities needed to ensure proper training. Normally a trailer dedicated to H&S training is used for the many aspects of safety training required by the Saxon, including but not limited to:

1. The first new-hire orientation and the superintendents' orientation
2. Human Resources for signing new hires
3. Hazard communication training
4. Equipment training (powder-actuated tools, manlift use, rigging, etc.)
5. Foreman's weekly meeting with the Safety Department
6. Respiratory protection training and fit testing
7. Other (conferences, meetings, etc.)

2.3 Schedule and Time

1. All four parts of the orientation are vital to the training needed to prepare employees to be safe; therefore, each part shall be scheduled with supervisors to ensure that it occurs, thus avoiding the negative message that cancellation or postponement would send to employees. A recommended sequence is:

   a. Initial Orientation

      First thing on the first day of hire, new or rehired employees attend a general orientation on Company safety policies given by the site/facility H&S professional. This orientation, which employees shall attend before beginning work, can last from 1½ to 4 hours, depending on the size and complexity of the project and whether drug testing is conducted.

   b. Foreman’s Orientation

      1. Immediately upon assignment of an employee(s) to a foreman, the foreman conducts the second session of the new-hire group’s safety orientation, covering crew safety issues, injury-producing activities, and the current Job Planning and Safety Task Analysis (STA).

      2. The site/facility EH&S professional meets with each foreman to help design the foreman's tailored agenda for his crew, covering the immediate hazards of the crew's activities shall be addressed, i.e.,
a. Specific and complete discussions about dangers associated with crew fall hazards, trenches, confined spaces, welding/burning, GFCIs, tag lines during scaffold erection or lifting loads, material handling, lifting concerns, ergonomics, lockout/tagout/try, etc.

b. Personal protection equipment (gloves, goggles, face shields, etc.)

c. Hand tool safety

c. General Foreman's Orientation

1. The general foreman's section of the safety orientation for new hires takes place not later than their second week of assignment and covers craft safety issues and craft injury-producing activities. Session time and day should be arranged so that a specific craft meets on a specific day of the week, with each craft assigned a different weekday. Consistency reinforces the importance of safety training to employees and supervisors alike.

2. The site/facility H&S professional meets with the general foreman to help design the general foreman's tailored agenda for his crews, covering the following areas as needed:

   a. Permits (confined space, excavation, burning, proximity, etc.)

   b. Craft dangers

      1. Carpenters (hazards such as lacerations, hand and power tools, foreign bodies in the hands and eyes, hand protection, and lifting hazards and hazard communication)

      2. Ironworkers (lifting, rigging, fall, grinding, welding/burning, ventilation hazards, welding/burning hazards, hand protection, and hazard communication)

      3. Pipe fitters (grinding, lifting, fall, pinch points, hand protection, flash burns, and rigging hazards and hazard communication)

      4. Laborers (trench safety, proper lifting, hand protection, and hot-cold exposure hazards and hazard communication)

      5. Electricians (grounding, GFCI, lockout, fall protection, ladders, hand protection, wire-pulling hazards, working near energized circuits, and hazard communication)

      6. Millwrights (hand tools, lockout, ergonomics, hand protection and pinch points hazards and hazard communication)

      7. Equipment Operators (noise exposure, fall hazards, hand protection, vibration, traffic, fueling hazards)

d. Superintendent's Orientation

1. The craft superintendent's section during new employees' third week completes the four-part orientation. Project and craft safety issues are covered in this session; time and day for which should be arranged to promote regular, consistent safety training for all new employees.

2. The site/facility H&S professional meets with the superintendent to help set up the superintendent's tailored agenda for his craft, covering the following areas at a minimum:

   a. Permits

   b. Housekeeping

   c. Reporting injuries
d. Their personal commitment to health and safety of all workers on-site

e. Safety awareness

3. Supervisors charged with safety training for their new employees are encouraged to apply the
   foregoing suggested curriculum or to adapt it to suit any unique needs of a particular craft.

4. Additional specialized training such as hazard communication and manlift/snorkel lift,
   powder-actuated, and respirator fit test training is given by appropriate highly trained
   individuals.

2.4 Basic Curriculum

1. Each supervisor meets with the site/facility H&S professional to develop a curriculum, which has the
   flexibility to change as needed. Supervisors ideally should train their own employees rather than exempting
   themselves due to a lack of public speaking ability. To document training, each employee shall sign an
   attendance roster similar to that used for toolbox meetings.

   a. Curriculum Suggestions - First Orientation

      1. Greeting and Introduction

         a. Explain Company Health and Safety Policy. (Post on all bulletin boards.)

         b. Review Company Health and Safety Beliefs. (Post on all bulletin boards.)

         c. Explain and describe project.

         d. Describe the safety history and the management effort.

      2. Accident Reporting

         a. Employees immediately report all injuries to their foreman and the site/facility H&S
            department no matter how minor.

         b. Employees assist the foreman in the accident investigation to help prevent the incident from
            happening again.

      3. Injuries Requiring a Doctor's Care

         a. Employees shall give prior notice of their intent/need to seek medical attention for a job-
            related injury or illness to their foreman and the site/facility H&S department.

         b. Transportation to and from the project doctor's office is provided.

         c. Modified or light duty is available for all crafts.

         d. A written doctor's release indicating restrictions (if any) and permission to return to work is
            required.

         e. Explain the employee's rights under the specific state's workers' compensation laws. Assure
            the employee(s) that we will protect their rights, but we will also exercise our own.

         f. Explain how to obtain medical care for after hours for work related injury/illness.

      4. First Aid Station
5. Personal Protective Equipment
   
   a. Safety glasses, equipped with rigid side shields, are required at all times.
   
   b. Hard hats are required at all times including when welding, grinding, or burning.
   
   c. Sturdy industrial grade leather, steel or composite (elect) toed work shoe or boot, long work pants, work vest and a shirt with a minimum of 4-inch sleeves is required. Sport, soft-soled, or soft-toed shoes are not acceptable.
   
   d. Hearing protection is used where required or requested by the employee. (Show proper method of placing earplugs.)
   
   e. Respiratory protection shall be used as required or requested by the employee. (Explain need and limitations, medical qualification process, fit testing, use and maintenance) Work activities that have the potential for airborne contaminant exposure and where respirators are used will have an Industrial Hygiene evaluation. Airborne contaminants are often associated with welding operations, concrete sawing and demolition, chemical handling and processing, insulation work, and structural demolition.
   
   f. Gloves are required when working. (Explain the need for an evaluation about the proper glove for different hazards, i.e., rubber, leather, cut resistant, etc.)

6. Fall Protection
   
   1. Any time personnel are exposed to fall hazard(s) of 6 feet or more, the use of 100 percent (%) fall protection is mandatory:
   
      a. Guardrails, midrails, toe boards
         
         1. Full body harness, configured with double, shock-absorbing lanyards. The lanyard is to be attached to the "D" ring located between the shoulder blades. (Demonstrate how to don and use – explain the concept of 100% “tie off”.)
         
         2. Discuss the site fall protection plan and the site anchorage selection process.
         
         3. When working off the ground, beware of potential fall areas, e.g., floor openings, roof edges.
   
      b. Ladders
         
         1. Nonconductive, fiberglass ladders are preferred.
         
         2. Ladders shall meet OSHA requirements and be in good repair: rungs not bent or damaged, side rails straight and not cracked or splintered, non-skid feet, etc.
         
         3. Proper setup includes adjusting to the proper slope of 4 to 1; tying the ladder off; extending the ladder 36 inches above the landing; step-ladders fully opened; bottom of ladder shall have a good clear access.
         
         4. The top two rungs of a step ladder shall never be used.
         
         5. A ladder shall always be inspected prior to use, even if the ladder is already set up. If the ladder is damaged, do not use it.
         
         6. Use of ladders shall be limited to short jobs. Use scaffolding or scissor lifts for longer jobs.
   
      c. Scaffolds
         
         1. Scaffolds shall be complete according to OSHA standards. Scaffolds shall be erected and dismantled under the direct supervision of a scaffold competent person.
         
         2. Scaffolds shall have guardrails, midrails, and toe boards whenever possible.
         
         3. Platforms shall be level and complete.
4. Uprights shall be plumb and sturdy.
5. Scaffolds shall be tagged with the project tagging system. Tags shall indicate a current daily inspection by a competent person.
6. All scaffolds are to be erected, altered, and dismantled by designated competent personnel only!

7. Mechanical Hoists
   a. Workers shall be trained and familiar with the particular hoist they are using.
   b. When working in the basket, workers are required to tie off to the basket.
   c. Workers should not travel with the basket in the elevated position.

8. Floor Openings
   a. All openings greater than 3 inches in its least dimension shall be considered a floor opening and shall have a standard guard railing or adequate floor cover made of \( \frac{3}{4} \) -inch plywood. It is a good to have a cover to ensure objects cannot be knocked off to a lower grade or elevation striking another employee.
   b. Leading edges or perimeters of floors shall have standard guardrails.

9. Electrical
   a. Cords and leads are to be kept 7 feet off of the ground or higher in traffic areas.
   b. All power is to be through Ground Fault Circuit Interrupters (GFCIs) or, a pre-approved assured grounding program shall be used.
   c. Lock, Tag, and Try Program (define)
      (This shall be designed and taught in detail.)
      1. Locks are available in the (explain where).
      2. Tags are to be completely filled out and placed with every lock.
      3. Work on any energized system is prohibited without first isolating all energy sources or prior approval of the employee's superintendent and site manager. This includes electrical, steam, mechanical, spring, gravity, and any other form of energy.

10. Hazard Communication (This shall be designed and taught in detail.)
   a. Written program is in the ________________.
   b. Material Safety Data Sheets (MSDSs) are on file in the ________________. (Explain how to obtain a copy of an MSDS.)
   c. All chemical spills shall be reported to __________ at __________. (Fill in name and phone number.)
   d. All containers are to be labeled with the contents. Read the label before using any chemical. Explain the types of labels, i.e., NFPA, HMIS, etc.
   e. Use of any chemical is prohibited unless you have been formally trained on the proper handling, storage, and disposal techniques of the chemical.
f. Proper personal protective equipment is required.

  g. All hazardous materials are to be properly disposed.

  **Hazardous materials should not be thrown in the trash or on the ground.**

11. Fire Prevention

  a. Obtain a welding and burning permit before beginning any work. Permits can be obtained from (explain where).

  b. Remove all flammable and combustibles before starting work.

  c. Use fire blankets to catch sparks at the source. Do not allow sparks to fall.

  d. Set welding screens to protect others.

  e. Have a fire watch and a suitable functioning fire extinguisher immediately available. (within 25 feet)

  f. Report all fires immediately.

  g. Ensure that the fire watch and welder are both trained in the proper and safe use of fire extinguishers.

  h. The fire watch shall remain in the work area for 30 minutes after completion of the welding or burning operation.

  i. Explain and demonstrate the proper method of use for fire extinguishers.

12. Housekeeping

  a. All work and storage areas are to be maintained in a clean and orderly fashion at all times. Clean up messes and spills, etc., immediately.

  b. Nails are to be pulled from boards before they are stacked. If the boards are to be disposed of, nails are to be bent over.

  c. Aisles, walkways, and work areas are to be kept clean.

13. Confined Space Entry

  a. A confined space is any area that has a restricted access or egress, a restricted air flow, and/or was not designed for people.

  b. A confined space entry permit shall be obtained before entering any confined space.

  c. Air quality checks are required prior to entry and often are to be continuous.

  d. A hole watch at the access is required. The watch person is to be properly trained in his/her duties; the entrants' duties, how to maintain communication with the entrants, and how to summon rescue personnel.

  e. Entrants shall be trained in their duties, the hazards in the confined space, and how to tell if they are exposed to any hazards.

  f. Properly trained rescue personnel shall be readily available for all confined space entries.
14. Barricades
   a. Red plastic ribbon: Potentially dangerous or hazardous area. Do not enter the area without permission of the supervisor who erected the barricade.
   b. Yellow plastic ribbon: Exposure is possible. Check to see what the hazard is.
   c. Magenta plastic ribbon: Radioactive hazard present. Do not enter.
   d. A label or tag shall be placed on all barricades indicting the reason for the barricade and the responsible foreman.

15. Tool Care and Responsibility
   a. Inspect tool prior to use. If a tool is defective, return it to the tool room or to your foreman.
   b. Do not remove guards from tools. If guards are missing, return the tool to the tool room or to your foreman.
   c. Use the proper tool for each job.

16. Compressed Gas Cylinders
   a. Always store cylinders upright and secured to prevent the cylinder from falling over.
   b. Store cylinders with the cap in place. After use, remove the gauges and replace the caps.
   c. Separate oxygen and all fuel gases by 20 feet.
   d. When cylinders are empty or if you are through with them, return them to the proper storage areas.
   e. Cylinders shall be moved in carts or approved devices.

17. Personal Lifting Limits
   a. Limit personal lifting to 50 pounds. When lifting or moving items over 50 pounds, get help.
   b. Employees lifting over 50 pounds or lifting awkward loads shall either get mechanical help or help from other employees.
   c. Demonstrate proper lifting procedures!

18. Excavation Procedure
   a. An excavation permit shall be obtained before starting excavation.
   b. All excavations over 4 feet deep shall be shored, sloped, or benched to the angle of repose. Soil cohesive testing is to be performed on each excavation.
   c. All excavations are to be barricaded with a yellow ribbon as a minimum.
   d. Excavations left open overnight shall have lighted barricades.
   e. An access ladder is required within 25 feet of all workers in an excavation over 4 feet deep.
f. Water is not to accumulate in the bottom of an excavation.

g. All excavations are to be inspected prior to entry each day and after each rain or snowfall.

h. Any excavation that has bulging sides or where cave-ins have occurred should not be entered.

19. Vehicle Safety

a. Private vehicles are restricted to parking lots and shall have a parking permit on the windshield where applicable.

b. Only three workers are allowed in the front seat of a company vehicle.

c. Seat belts are required and are to be used by all people in any vehicle prior to the vehicle being moved.

d. No one is allowed to ride in the bed of a pickup or other truck.

e. The driver of a vehicle is responsible to ensure that all passengers are in compliance with Company policy before moving the vehicle.

20. Evacuation Procedure

(Site specific safety plan or procedure, shall be developed on site/facility, and is required by law and company policy)

a. Shall have warning notification methods

b. Shall have evacuation routes and routes shall be marked & mapped

c. Shall have the all-clear notification

d. Should identify the evacuation hazard

21. Disciplinary Procedure

a. Unsafe acts can result in:

   1. Verbal reprimands with a notation in personnel file
   2. Written reprimands
   3. Suspension or termination

b. Extremely unsafe acts can result in:

   1. Immediate termination without other reprimands

22. General Safety

a. Work together—report unsafe acts to:

   1. The individual to help protect him/her
   2. Your supervisor
   3. A member of the safety committee
4. The Safety Department
   a. Attend daily toolbox meeting.
   b. Attend weekly safety committee meetings.
   c. Attend four-part orientation: This is the first part; the second part is by your foreman; the third part is by your general foreman; and the fourth part is by your superintendent.

2.5 Training

1. All supervisors attend a training session with the site/facility H&S professional to determine craft orientation curricula. Candidates for supervision should meet with the representative for supervisor's preparatory H&S training. These sessions should at a minimum include:
   a. Why, when, and how to reprimand workers
   b. Company and project drug and alcohol policy
   c. Safety orientation responsibilities
   d. How to give good tool box meetings
   e. This session could well take place immediately after the first new hire orientation and would be expected to last about four hours.

2.6 Records Retention

Orientation attendance rosters and all other documents relating to new employee safety training and orientation are maintained at the jobsite until project closeout and then processed in Closeout of Files & Records Retention.

Appendix I

Possible topics for foreman's and General Foreman's orientation:

- Power and Hand Tool Safety
- Housekeeping
- Electrical Cord Safety
- Lock out/Tag out
- 50 lb. Lifting Limits
- Emergency Evacuation Routes
- Confined Space Entry
- Working Near Energized Circuits
- Working Over/Near Water
- Hot Taps
- Fall Protection
- Welding/Burning Safety
- Flammable Liquid Handling and Use
- Fire Protection/Prevention
- Fire Extinguisher Use
- Excavation and Trenching Safety
- Ladder Safety
- Hazard Communication
- Process Safety Management
- Personal Protective Equipment
- Behavior Safety
- Barricades and Signs
- Rigging Safety
- Crane Safety
- Heavy Equipment Operations
- STAs
- Concrete Forms & Concrete Placement
EH&S ASSESSMENTS

PURPOSE: To provide requirements and responsibilities for performing EH&S assessments in order to proactively identify improvement opportunities.

2.0 REQUIREMENTS

2.1 Site/Facility

1. Each site/facility shall establish a formal, self-assessment process whereby all work areas are assessed for compliance with applicable EH&S requirement (regulatory, company, site/facility, client, contract, etc.).

2. The frequency of this assessment process will be at least:
   a. Monthly for job site
   b. Weekly for construction and field maintenance work activities.

3. Safety assessments shall be conducted by a team comprised of site management, employee mix and safety.

4. Assessment findings shall be documented and discussed in leadership team meetings. Summary of findings shall be communicated with the employees.

5. Management is responsible to ensure follow-up and correction of findings.

6. The EH&S group is responsible to analyze findings for trends and to recommend EH&S process improvements.

EH&S Assessment Program

1. Each site shall implement an assessment program managed by the site Safety Manager.

2. The program will provide for assessments of major operations with findings and recommendations contained in a report distributed within the organization, their management and the Saxon safety group.

2.3 Saxon EH&S Assessment Program

1. Saxon EH&S group will manage the Assessment Program.

2. The Saxon Assessment Program is described in Attachment A.

2.4 Saxon Safety Assessment Program

1. Saxon employees and its’ sub contractors will participate in the Saxon Safety Assessment Program.


2.5 Other EH&S Programs

Insurance carrier loss prevention personnel will conduct site assessments as requested. The Saxon safety group will manage this program.
ATTACHMENT A

Saxon Safety Audit Protocol For Construction and Maintenance Projects

Purpose:

The audit program will assist project and site management to identify areas for improvement. The program will give management recommendations for improvements based on Saxon standards, Client standards and industry best practices. The audit will quantify the degree of the project's compliance with regulatory and site requirements.

Scope:

The audit program applies to all Saxon projects.

Responsibilities:

**Corporate Safety**

Review all project EH&S records (OSHA citations, workers' compensation records, recordable and lost time incident rates, workers' compensation loss runs, etc.) and select projects to be audited. The selection will be reviewed with management to determine priorities and schedule.

**Project Management**

Implement corporate Safety requirements. Support audit schedules. Provide projects with the required resources to meet corporate Safety requirements.

**Site Management**

Implement corporate Safety requirements. Provide management and supervision personnel to participate in the audit process. Review audit results and recommendations, develop an action plan regarding findings and recommendations, and provide periodic status reports to the corporate Safety department.

Audit Format

The audit will consist of an evaluation of the project's compliance with company, client, regulatory requirements and industry best practices. Each item will have a weighting number. When the numbers are added together, the project will receive a letter grade indicating the project's success in meeting requirements.

Procedure
Projects shall be selected for auditing by the corporate Safety department with input from management. The selection shall be based on the project's size, type of project, Safety record, and longevity.

Project Management may or may not be notified by corporate Safety of the pending audit. The PM shall review the project's schedule with the corporate audit schedule to confirm the audit timing.

The auditors shall send a copy of the audit form to the site manager a minimum of two weeks before the audit.

Upon arriving at the project, the audit team and the site team shall have an opening meeting to discuss the audit, the site's additions to the audit team, the audit parameters and schedule, the written report, distribution of the written report, the site's action plan for the closing of the findings.

The audit team shall divide up the audit as needed and complete the administrative and field sections of the audit.

The audit team shall develop the first draft of the audit report.

The audit team and the site team shall meet for a closing meeting. Discussions shall be held regarding the draft of the written report, concurrence of findings, agreement to abatement dates, and the site's action plan. The final written report shall be completed and distributed within one week of the closing conference by the corporate EH&S department.

The project shall abate all audit findings by the agreed upon abatement dates. Written explanations of the abatements shall be sent to the corporate EH&S department. Corporate EH&S department shall review the abated concerns with the project management team to insure adequate closure of the finding(s).

The corporate EH&S department shall distribute the abatement documentation to all who received the original audit report.
EH&S METRICS REPORTING

PURPOSE: To provide requirements for the tracking and reporting of EH&S metrics of each site/facility.

2.0 REQUIREMENTS

2.1 Weekly Reports

1. Each site/facility shall submit a weekly Report to the main office. Weekly reports are due by nine am (9:00am) on the Monday.

2. The Corporate office will summarize the data and issue a Managers Report internally.

3. The Corporate EH&S office will issue a monthly report by the 15th of the following month.

4. All data for the categories on the Saxon Employees Monthly Health and Safety Summary Form No. I.L.001 and on the Saxon Health And Safety Summary By Contractor/Subcontractor Form I.L.002 shall be provided by each site/facility.

5. If notification of an injury is late or the classification of an injury is changed, then the change shall be reflected in the cumulative totals on the next Monthly Report.

6. All incidence rates shall be rounded to the nearest hundredth.

2.2 Quarterly Reports

Saxon EH&S shall submit a combined Quarterly EH&S Summary for Saxon.
### QUARTERLY EH&S SUMMARY REPORT

#### I. 100% Employee Productivity

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<td>3. Workers’ Compensation $/Hour Worked</td>
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#### II. EHS Integration Into Business

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#### III. Other

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<td>3. EHS Regulatory Inspections, Notices, Fines</td>
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NOTE: Total Recorded Training Rate = the number of EHS training hours received by all employees times 200,000 divided by work hours.
CLASSIFYING OCCUPATIONAL INJURIES/ILLNESSES

PURPOSE: To provide direction for the proper and consistent classifications of occupational injuries/illnesses.

2.0 REQUIREMENTS

2.1 Classifying Injuries on the OSHA 300 Log

1. If an employee has a condition that meets the requirements of 29 CFR 1904, it shall be placed on the OSHA 300 log.

2. All job-related injuries and illnesses requiring medical care beyond first aid shall be listed on the OSHA 300 log.

   Examples of some recordable injuries: given one dose or more of a medication that cannot be bought over the counter; all sutures, positive x-rays for any fracture, multiple doses of over the counter medication (motrin, naprosin or naproxin) at prescription strength; loss of consciousness, removal of foreign bodies embedded in the eye by any method other than irrigation or cotton tipped swab.

   Examples of some non-recordable injuries: multiple doses of non-prescription antiseptic ointments; multiple doses of over the counter medication (motrin, naprosin or naproxin) at non-prescription strength; hot/cold treatments; removal of foreign bodies in the eye by irrigation or a cotton tipped swab.

3. All job-related Lost Workday Cases are to be listed on the OSHA 300 log.

   Lost workday cases (LWDC) involving days away from work are cases resulting in days the employees could not work because of the job-related injury or illness. Calendar days and not work days shall be calculated. The focus of these cases is on the employee’s inability, because of injury or illness, to be present in the work environment during his or her normal work shift.

   Examples of non-LWDC: traveling to see a doctor and missing a complete work day(s) because of the travel; employees not returning to work even though released to work by a doctor. Missing the initial day of injury or doctor visit is not a LWDC. Employee missing days of work due to medical treatment or travel to receive medical treatment, e.g., an MRI

4. All job-related Restricted Workday Cases are to be listed on the OSHA 300 log.

   Cases involving days of restricted work activity are those cases where, because of injury or illness;

   a. the employee was assigned to another job on a temporary basis; or
   b. the employee worked at a permanent job less than full time; or
   c. the employee worked at his or her permanently assigned job but could not perform the normal weekly duties connected with it.

   Restricted workday cases (RWDC) occur when the employee, because of the job-related injury or illness, is physically or mentally unable to perform his or her normal weekly assignment during all or any part of the normal workday or shift. The focus of these cases is on the employee’s inability, because of injury or illness, to be present in the work environment during his or her normal work shift. Injuries/illnesses requiring an employee to change his/her work assignment, is a RWDC.

5. If a case meets the requirements of a “privacy case”, the employee’s name, title, and other identifying information shall be left off of the OSHA 300 log and privacy case is to be written on the proper line. All of the person’s identifying information shall be kept on a separate OSHA 300 log that is for privacy cases only.
The privacy case log shall be kept locked away and is to be available for Saxon management and OSHA inspectors only.

6. First Aid for OSHA recordkeeping purposes is a finite list of activities regardless of the employee’s status. Only treatment actions described as first aid in 29 CFR 1904.7(b)(5)(ii) are first aid. They are:

   Note: A recommendation by a physician or licensed health care professional to use non-prescription medication at prescription strength is medical treatment for recordkeeping purposes.
2. Administering tetanus immunizations
   Note: Administering other immunizations, such as Hepatitis B vaccine or rabies vaccine, are considered medical treatment. Administering prophylactic antibiotics is recordable.
3. Cleaning, flushing or soaking wounds on the skin’s surface
4. Using wound coverings such as bandages, Band-Aids™, gauze pads, etc. or using butterfly bandages or Steri-Strips™
   Note: Using other wound closing devices such as sutures, staples, etc. are considered medical treatment.
5. Using hot or cold therapy
6. Using any non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc.
   Note: Devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for recordkeeping purposes
7. Using temporary immobilization devices while transporting and accident victim:
   Examples: splints, slings, cervical collars, backboards, etc.
8. Drilling a nail to relieve pressure. Draining fluid from a blister
9. Using eye patches
10. Removing foreign bodies from the eye using only irrigation or cotton swab
11. Removing splinters or foreign bodies from areas other than the eye by irrigation, tweezers, cotton swabs or other simple means
12. Using finger guards
13. Using massages
   Note: Physical Therapy or chiropractic treatments are considered medical treatment for recordkeeping purposes.
14. Drinking fluids for relief of heat stress

7. The Corporate EH&S office is the final authority for determining the proper classification of occupational injuries/illnesses.

2.2 OSHA 300A Summary

The OSHA 300 log is not to be posted. The OSHA 300A Summary is to be completed using the totals from columns, G, H, I, J, K, L, M1, M2, M3, M4, and M5 of the OSHA 300 log to complete the blanks on the 300A form.

The OSHA 300A Summary is to be signed by the highest-ranking person on the project, usually the site manager.

The OSHA 300A Summary is to be posted from February 1 until April 30 of the following year.

2.3 The OSHA 301 (Saxon’s Immediate Incident Notification Report Form)

For Saxon projects, the Immediate Incident Notification Report form replaces the OSHA 301 Report form. Each entry on the OSHA 300 log shall have an Immediate Incident Notification Report form completely filled out. Every blank is to be completed. This form is the equivalent of the OSHA 301 if all blanks are completed. One copy of the Immediate Incident Notification Report form stays in the employee safety files and one copy is emailed to the Corporate Office.

2.4 Recordkeeping

All job-related injuries and illnesses classified as medical treatment, LWDC, RWDC, or fatality shall be logged on the OSHA 300 log. OSHA 300 logs shall be sent to the corporate EH&S department quarterly and at the end of each calendar quarter.
2.5 Record Retention

OSHA 300 logs shall be retained on the project and in the Corporate Office for 5 years.
OSHA 301 reports shall be retained on the project and in the Corporate Office for 5 years.
DOCUMENTATION REQUIREMENTS FOR OCCUPATIONAL INJURIES

1.0 PURPOSE

To provide the recordkeeping requirements for occupational injuries and illnesses.

2.0 REQUIREMENTS

1. Saxon shall comply with all occupational injury and illness reporting requirements established by OSHA, state worker's compensation agencies, and the Company's worker's compensation insurance carrier.

2.2 Forms Required for Accidents Resulting in Injury or Illness

1. First Aid Log
2. Incident Notification Report
3. Incident Investigation Report
4. Employer's First Report of Injury
5. Request for Medical Opinion and Release to Return to Work
6. Request for Access to Medical and Exposure Records
7. Release of Liability for refusing First Aid/Medical Treatment Form
8. Causal Factors Form
9. OSHA 300 Log
10. OSHA 300A Summary
11. OSHA 301 Report

1. First-aid Log (Form I.N.002)

When an accident involving an injury or a suspected injury occurs, appropriate and timely medical attention shall be secured for those involved. If an accident involves any level of treatment (first aid, doctor’s care, etc.), an entry shall be made on the First Aid Log (Form I.N.002). Injuries/illnesses that are only reported and do not require any treatment shall be logged on the first aid log to document the report.

2. Incident Notification Report (Form I.C.001)

The Incident Notification Report Form I.C.001 shall be completed when an employee is seen by a doctor for a job related injury or illness. A copy of this form shall be placed in the employee’s medical/safety file and a copy shall be sent to the Corporate EH&S Department within 4 hours of the incident.

3. Incident Investigation Report (Form I.D.001)

The Incident Investigation Report Form I.D.001 shall be completed for all job related injury/illnesses and near misses documenting results of the incident investigation and corrective actions as outlined in this manual.

4. Causal Factors Form

After the incident is investigated, the causal factors form shall be completed identifying all factors leading to the cause of the incident. For each significant causal factor documented, a corrective action shall be developed.

5. Employer’s First Report of Injury

The Incident Notification Report and the Accident Investigation Report shall act as the Employer’s First Report of Injury. The local Traveler’s Insurance office or other appropriate carrier shall be
contacted at 1-800-832-7839 to report a claim. All required information shall be given to Traveler’s during this call. The person reporting the claim shall ask for and document the worker’s compensation claim number.

To report a claim:

a. Call Traveler’s Insurance Co. at 1-800-832-7839 and give them all required information including wage information, married status, number of dependents (if any), and any other information requested. The operator shall notify the local Traveler’s office. This usually takes about one week.

b. Email or fax the Incident Notification report to the Corporate ES&H office.

6. Request for Medical Opinion and Release to Return to Work

When an employee is sent to a physician, the Saxon Request for Medical Opinion and Release to Return to Work Form (From I.N.003) shall be sent with the employee. An employee shall not be allowed to return to work without a return to work release from the physician.

7. Request for access to Medical and/or Exposure Records

When an employee's medical files are required, the injured worker shall sign the Request for Access to Medical and Exposure Records.

8. Release of Liability for Refusing First Aid/Medical Treatment Form

If an employee refuses any treatment for an occupational injury/illness, the employee acknowledging that the care was offered and he/she refused the treatment shall sign a release.

9. Causal Factors Form

To assist in the determination of the root causes of incidents, the Causal Factors Form shall be used. The accident investigation team shall review all of the circumstances revolving around the causes of an incident and determine the causal factors. Corrective actions shall be implemented for each significant causal factor.

10. OSHA 300 Log

a. 29 CFR 1904 shall be strictly adhered to by Saxon for determining the recordability of occupational injuries and illnesses.

b. If questions arise regarding recordability, the project Site/Facility Manager and the Site/Facility EH&S professional shall present the facts of the case to the Corporate EH&S staff for a determination. The Corporate EH&S department shall have sole responsibility for making the final decision.

c. Any attempt to falsify the occupational injury and illness records Saxon shall result in disciplinary action, up to and including termination.

d. At the end of each quarter a copy of the OSHA 300 Log shall be sent to the Corporate EH&S Department.

e. OSHA 300 logs shall be maintained and updated for 5 years.

10. OSHA 300A Summary
At the end of each calendar year the total from each column on the OSHA 300 log shall be transferred to the OSHA 300A Summary. The 300 Summary shall then be posted from February 1 through March 31 of the following year.

11. OSHA 301 Report

For each entry on the OSHA 300 log there shall be a 301 report (or equivalent) completed.

2.3 Establishing An Individual Injury/Worker’s Compensation File

In order to ensure that records are maintained in a consistent and useful manner. Saxon requires that individual injury/worker’s compensation files be established in the following manner.

1. The file label shall read:

   Personnel Injury file
   Project No.    Employee Name & SS#    Date of injury
   Project - City, State    W/C Claim #

2. All information relating to the injury shall be placed in this file. The pages shall be punched at the top and, using a metal file clip, attached to the right hand side of the file folder. The pages shall be placed in chronological order.

3. An ongoing communications log shall be maintained on the left hand side of the file folder. All communications between the project and the insurance carrier, the doctor's office, the injured employee or his/her representative, the Corporate ES&H office, etc. shall be documented.

2.4 Records Retention

1. Medical records shall be retained for 30 years.
2. OSHA 300 logs shall be sent to the Corporate EH&S Department and copies left in the safety files for storage.
WORKERS COMPENSATION CLAIMS MANAGEMENT

1.0 PURPOSE

To provide an outline of methods for managing injuries and illnesses that shall be used to control the costs of the injury/illness.

2.0 REQUIREMENTS

1. Pre-Injury Preparation
   a. Employee Training and Awareness
   b. The site/facility shall develop a new employee orientation program that teaches employees:
   c. Company requirements for immediately reporting injuries.
   d. Their rights and obligations regarding workers' compensation.
   e. Company rights and obligations regarding workers' compensation.
   f. Discussion of our intention to fully meet our obligations under the law to aggressively resist fraudulent and exaggerated claims.
   g. Explanation of how to obtain offsite medical care during and after normal hours.

2. Traveler’s or Other State or Local Administrator
   The site/facility shall:
   a. Develop contacts with adjuster(s) in the local office.
   b. Have the contacts visit the project at least on a quarterly basis to review cases and their status.
   c. Have correct State "First Report Of Injury" forms.
   d. Determine local and state requirements for case management. This information can be obtained from Traveler’s or appropriate insurance carrier.
   e. Discuss doctor selection options.
   f. Use recommended occupational doctor(s) for injured or ill employees.

3. Doctor Selection and Management
   a. Select either a qualified occupational doctor or a doctor recommended by Traveler’s. Interview the doctor to determine her/his level of familiarity with OSHA requirements, e.g., respiratory questionnaire, employee access to medical records, specific chemical regulations (lead, arsenic, etc.), etc. When possible, have a panel of doctors covering different specialties, e.g., orthopedics, dentistry, ophthalmology, etc., as this is mandatory in Georgia.
b. Establish a written policy that will encourage employees to see a company sponsored doctor. The policy could include paying for the employee's time if she/he sees our project doctor and not paying for the time if she/he sees a different doctor.

c. The site Safety person shall meet with the doctor to:

1. Discuss after-hours treatment (emergency departments, off-hour clinics, referrals to other doctors, etc.)

2. Discuss Return-to-Work (restricted work or light duty) programs. Provide the doctor with a commitment to adhere with his/her restrictions.

3. Determine the work release forms and process for releasing injured or ill employees back to work.

4. Deliver to the doctor copies any OSHA required standards, e.g., respiratory, lead, MSDS’s, etc.

5. Emphasize the welfare and care of the injured employee is of prime importance.

6. Set up regular meetings with doctor and/or office manager to discuss past injuries and treatments. Maintain a positive line of communication.

7. Invite the doctor to the project to better understand what is done and how. Show the doctor examples of light duty, e.g., flagger, bolt/nut connecting, warehouse work, tool crib, fire watch, hole watch for confined space, etc.

d. Emergency Transportation

1. The site shall:

2. Develop an emergency action plan in conformance with Title 29 CFR Part 1926.35. The plan should include site and off-site emergency response teams for medical emergencies.

3. Develop a map of how to enter the project, nearest crossroads, and how to travel within the site.

4. Contact the local emergency transportation provider, 911 dispatch, and the police or sheriff. Provide them with the developed map. Describe the project and the possible conditions that might require their assistance.

5. Set up a process for non-emergency transportation of injured or ill employee and who will transport. Often it is best to have the EH&S professional accompany the injured/ill or employee on the first few visits. After the relationship with the doctor is developed, another trained supervisor should accompany the injured or ill employee.

6. A trained supervisor or other trained employee understanding the need for managed care shall take the injured employee to the doctor. The trained supervisor/employee shall discuss the treatment and work assignment (restricted work) with the doctor. Subsequent visits shall be managed in a similar manner. A work release is required subsequent to each visit.

7. Emergency phone numbers shall be clearly posted at each phone.

e. Site Medical Treatment/First Aid (Refer to I.G.)

1. An employee currently certified in first aid or higher certification/license is required on site when employees are working.

2. Adequate first aid supplies and a treating area is required. The project physician needs to provide medical directives for medical treatment as needed.
3. Bloodborne Pathogen plan needs to be developed.

4. Establish a relationship with a pharmacy where employees can have prescriptions filled if needed.

2.2 Post Injury Activity

1. Care of Injured or Ill Employees

Provide the employee with the required first aid to adequately care for the condition. The doctor's office shall be called to notify them of the injured employee pending arrival. The doctor or nurse shall be reminded of our need for managed care, e.g., return to work.

2. Investigate Incidents

An immediate accident investigation shall be started. Refer to the Incident Near Miss Investigation Procedure.

3. Management of Lingering and/or Fraudulent Cases

a. Most employees are honest and their reported injuries are real. There are instances where a case will linger on or becomes fraudulent. If a lingering or fraudulent case develops, immediately notify the Saxon corporate safety, Traveler’s insurance or other insurance carrier's workers' compensation administrator. Document the reasons why you believe the case is lingering or fraudulent. Supply the documentation to the workers' compensation administrator. Discuss the case in detail and develop a plan that will satisfy the project's needs, the state laws and protect the interests of the company. Sometimes a private investigator can be used to document that an employee is lingering or falsifying a claim.

b. If the case is lingering, discuss the case with the injured employee. It is normally not a good practice to accuse the employee of lingering. Try and determine why the case is dragging on. Is the medical care adequate, is the light-duty proper and is it being followed, or are there other issues that are affecting the employee's well being. Quite often there is a reason for the employee being discontented.

2.3 Recordkeeping

1. A file shall be started for all workers' compensation claims. The employee medical file shall be kept confidential. Only employees with a right to see the records shall be allowed to see them. The file shall include:

   a. Accident investigation reports
   b. Medical reports and bills
   c. Return to work reports
   d. Other pertinent medical and accident information
   e. Documentation of related conversations and phone call with the insurance carrier, the Saxon corporate safety department, doctors, lawyers, the injured employee, other employees, etc.

2. Employees seeking access to their private medical records shall provide Saxon with a signed, witnessed statement releasing their records.

3. Medical records shall be retained for 30 years.
MOTOR VEHICLES

1.0 PURPOSE

To provide established requirements associated with the safe operation of vehicles/equipment used for transportation of personnel and material to, from and on Saxon site/facility.

2.0 REQUIREMENTS

1. Operational Requirements

The operation of vehicles by Saxon personnel shall conform to the regulatory requirements established by the references cited above and the following corporate operational requirements:

2. General Requirements:

a. Over the Road (Rental and Private Vehicles)

1. Saxon personnel shall not operate motor vehicles subsequent to the consumption of alcoholic beverages;
2. Drivers shall have a current, valid vehicle operator's license;
3. Drivers shall comply with all federal, state and local traffic regulations;
4. Drivers shall be well rested and alert prior to and during vehicle operations;
5. Drivers shall perform a pre-operational inspection of the vehicle. At a minimum, the inspection should include tire condition and inflation, adjustment and condition of mirrors, condition and operational status of windshield wipers and washer, heater & defroster, horn, turn signals, head lights, tail lights, and brake lights;
6. During winter weather, accumulations of snow and ice shall be removed from the windshield, all windows, and the hood of the vehicle prior to operation;
7. Installed condition and operational status of specialized safety items, such as back-up alarms and/or flasher beacons, shall be confirmed prior to vehicle operation;
8. Engines and ignition systems shall be shut off, and smoking is prohibited during all refueling operations;
9. Seat belts shall be worn by the driver and all occupants of the vehicle;
10. Vehicle occupancy shall not exceed the number of available seat belts in the vehicle;
11. Where installed, supplemental restraint systems (air bags) shall not be de-activated;
12. Loose items, such as books, hard hats, tools, brief cases shall be stowed in the trunk during vehicle operation;
13. Radar detectors shall not be utilized during work related travel;
14. Where possible, do not use cellular phones while driving.
15. All drivers shall be instructed in the proper method of reporting accidents.

2.1 Site/Facility Vehicles

1. Operation of vehicles used on Saxon site/facility shall conform to the requirements established by the OSHA regulations referenced above.

2. Saxon personnel being transported to/from locations on Saxon projects shall be permitted to ride in the bed of pickup trucks, provided that the following conditions are met:

   a. all personnel remain seated on the floor of the bed;
   b. personnel body parts remain inside the bed;
   c. the tailgate of vehicle is attached and shut;
   d. benches are not installed;
e. transport speed does not exceed 15 MPH;
f. the vehicle comes to a full stop during loading and unloading;
g. transport of material does not occur concurrent with personnel transport.

2.2 Records Retention

Vehicles used on jobsites will be inspected daily using Form I.P.001, *Daily Vehicle Inspection*. Completed inspection forms will be maintained by the Saxon EH&S Professional at the respective project or office.
HAZARDOUS WASTE MANAGEMENT

1.0 PURPOSE
To provide established minimum requirements for the proper identification, accumulation, storage, and disposal of hazardous wastes for all operating units of Saxon. When local requirements differ from this standard, the more stringent shall apply.

2.0 REQUIREMENTS

2.1 General
Any wastes generated by Saxon and/or subcontractors that, according to applicable laws or regulations, are classified as a hazardous waste, or are believed to possess a risk to public health or the environment, or pose a future environmental or safety liability to Saxon shall be handled according to this hazardous waste management standard.

2.2 Identification of Waste
All wastes shall be evaluated to determine if such waste is a hazardous waste. This evaluation may include, but is not limited to laboratory analysis, knowledge of the process, or review of material safety data sheets. All wastes shall be evaluated when associated materials, processes or conditions change or as required by any permits or exemptions maintained by the operation. The evaluation shall be performed, at a minimum, every two (2) years.

2.3 Generator Status
All locations are responsible for determining the site’s generator status (see Definitions Section).

2.4 Waste Accumulation/Collection

1. The differences between a satellite accumulation point and an accumulation point are the volume and the length of time wastes may be accumulated. At a satellite accumulation point, up to 55 gallons of hazardous waste may be accumulated for an unlimited amount of time. At an accumulation point, an unlimited volume of waste may be accumulated in tanks or containers for up to 90 days.

2. All wastes shall be accumulated onsite in designated waste accumulation areas meeting these minimum requirements.

2.5 Containers

1. All containers used to store hazardous waste shall be in good condition (no dents, rust, cracks, or physically weakened), compatible with the waste, and closed at all times (unless when adding or pouring waste). Containers used for ignitable or reactive waste shall be located at least 50 feet from the property line.

2. Special requirements for waste containing Volatile Organic Compounds (VOC) of 500 ppm (by weight) or greater: (RCRA Subpart CC Rules) See FR reference below.
   a. Containers greater than 25 gallons shall be DOT approved.
   b. Reuse of Single Trip Containers is not allowed.
   c. Satellite accumulation containers are exempt from this requirement provided that the container is kept closed.
   d. Recycling units (solvent stills) are exempt from this requirement, and Title 40 CFR Part 265 Subpart AA, BB, at facilities that are RCRA-permit exempt.
   e. Waste from cleanup or closure activities are exempt from this requirement.

2.6 Daily Waste Accumulation
All containers shall be labeled with the words "Hazardous Waste" and the contents of the container.
2.7 Satellite Accumulation Area (SAA)

1. SAAs shall be configured within secondary containment and on an impervious surface;
2. SAAs shall be covered to prevent accumulations of rain water and/or snow;
3. "No Smoking" signs and fire extinguishers shall also be posted in SAAs containing ignitable wastes;
4. The area or drum shall be conspicuously marked with a sign designating the area as a "Satellite Hazardous Waste Accumulation Area";
5. A label shall be affixed to each container of waste. The label shall specify: "Hazardous Waste", the contents of the container, the hazard(s) associated with the waste in the container, and the “accumulation start date”;
6. The container shall be kept closed when not in use;
7. A funnel shall be at the SAA to prevent spills while transferring waste from one container to another;
8. Proper electrical bonding/grounding procedures shall be employed for containers of ignitable liquids;
9. The waste container shall be inspected weekly for proper labeling, spills, leaks or deterioration of the container. The inspection and any corrective action shall be documented.
10. If the 55 gallon limit is exceeded at a SAA, the date the excess began accumulating shall be marked on the container holding the excess waste. The excess waste shall be transferred to either an accumulation point or to a permitted treatment, storage or disposal facility within 3 days after the excess waste accumulation begins.
11. Waste may be collected in a "satellite waste accumulation" container for up to one (1) year.
12. The emergency telephone number shall be posted at the nearest telephone to the waste area.

2.8 90-Day Waste Accumulation Area (WAA)

1. WAA(s) shall be configured within secondary containment and on an impervious surface;
2. WAAs shall be covered to prevent accumulations of rain water and/or snow;
3. "No Smoking" signs and fire extinguishers shall also be posted in WAAs containing ignitable wastes;
4. The area shall be conspicuously marked with a sign designating the area as a "Hazardous Waste Accumulation Area";
5. A label shall be affixed to each container of waste within the WAA. The labels shall specify: "Hazardous Waste", the contents of the container, the hazard(s) associated with the waste in the container, and the “accumulation start date”;
6. Containers within the WAA shall be kept closed when not in use;
7. Proper electrical bonding/grounding procedures shall be employed for containers of ignitable liquids stored in the WAA;
8. The WAA shall be inspected weekly for proper labeling, spills, leaks, deterioration of the secondary containment, and accumulation of liquids within the secondary containment. The inspection and any corrective action shall be documented.
9. For each container within the WAA, an accumulation start date shall be added to each container when the first amount of waste is added to the container. The 90-day limit for the container begins as soon as the waste is first added to the container. When full, or prior to reaching the 90 day storage limit, the contained waste shall be transported to an approved Treatment, Storage & Disposal facility, in accordance with regulatory and/or client contractual requirements.
10. The emergency telephone number shall be posted at the nearest telephone to the Hazardous Waste Accumulation Area.

2.9 Permitted Storage Facilities

Permitted Storage Facilities shall comply with the requirements of federal regulations, Title 40 CFR Part 264 or 265, or equivalent as well as applicable state, local or permit requirements. The Saxon site/facility shall comply with the most stringent requirements of the permit or regulations.

2.10 Waste Minimization

Each Saxon site/facility shall develop a waste minimization plan, and update the plan on an annual basis.
2.11 Transportation Requirements

All hazardous waste shall be accompanied by a hazardous waste manifest (unless exempted by the regulations) and properly marked, labeled, and placarded as stipulated by Title 40 and Title 49 CFR or other international requirements.

2.12 Emergency Planning

All locations subject to this standard shall implement the following:

2.13 Emergency Coordinator & Communication

Each location shall designate a Primary and Alternate Emergency Coordinator and post emergency phone numbers near the phone closest to the hazardous waste generation, accumulation, collection, and storage area(s).

2.14 Contingency Plan

If applicable, all Saxon site/facility that are classified as Large Quantity Generators or equivalent shall develop and maintain a current Hazardous Waste Contingency Plan compliant with the requirements of Title 40 CFR 265.50 - 56 and other applicable requirements. The plan shall be distributed to appropriate regulatory authorities via “Certified Mail” in order to confirm receipt of transmittal.

2.15 Emergency Response Resources

Emergency support arrangements shall be made with emergency response resources capable of responding to a significant release of hazardous materials or wastes.

2.16 Records Retention

All records and documentation applicable to the management of hazardous waste shall be retained.

2.17 Training Requirements

Employees at each Saxon site/facility who are responsible for the management, handling, preparation for shipment, spill response, and maintenance of hazardous waste or hazardous waste systems shall receive appropriate training on a periodic basis. All training shall be documented and retained as long as the employee is employed and 90 days thereafter. Training requirements shall be included with each employee’s job description.

2.18 Management of Hazardous Waste

Employees involved with the management of hazardous waste in a facility shall be trained in accordance with Title 40 CFR 265.16 and Title 29 CFR Part 1910.120. Training shall be completed prior to assignment to tasks related to hazardous waste management. Employees shall receive refresher training annually.

2.19 Ship or Prepare for Shipping

Employees shipping or preparing for shipment a hazardous waste or other hazardous substance shall be trained in accordance with U.S. Department of Transportation regulations, Title 49 CFR 172.700. Training shall be completed prior to assignment to tasks associated with packaging and shipment of hazardous wastes. Employees shall receive refresher training at least once every three years.

2.20 Response and Cleanup of Spills at Generator Sites or Hazardous Waste Operations at TSDF Facilities

Employees involved with response and cleanup of spills at generator sites, or Hazardous Waste Operations at TSDF Facilities shall be trained in accordance with OSHA regulations, Title 29 CFR 1910.120 (HAZWOPER). Training shall be completed prior to the employee’s assignment on any spill response or hazardous waste operation. Employees shall receive refresher training annually.
2.21 Hazardous Wastes in the Work Area

Employees not directly involved with, but working in an area where there are hazardous wastes shall be trained in accordance with Title 29 CFR Part 1910.1200 (Hazard Communication) and Saxon EH&S Standard "Chemical and Hazardous Material". Training shall be completed at the time of initial assignment. Training shall be updated whenever a new hazardous waste is introduced into the work area or the nature of a hazardous waste has changed, or the nature of employees assigned tasks creates new or increased potential risk for exposure.

2.22 Disposal Site Requirements

Saxon site/facility and/or Subcontractor operations that generate hazardous waste(s) shall use only treatment, storage, disposal and reclamation facilities that have been approved by Saxon EH&S.
POLLUTION PREVENTION

1.0 PURPOSE
To provide established minimum requirements for a pollution prevention program for Saxon site/facility. When local requirements differ from this standard, the more stringent shall apply.

2.0 REQUIREMENTS

2.1 General
1. Each site/facility has the responsibility to reduce, or eliminate to the extent practicable, the use of toxic chemicals, and the generation of pollution in its processes and products. Operations shall continually seek improvements in processes, designs, and raw materials to eliminate toxic chemical usage and pollution.

2. Toxic use reduction and pollution prevention make business sense. They save expensive chemical and waste handling procedures, regulatory compliance, paperwork, pollution control devices, disposal, and long term liability costs. Pollution prevention optimizes the use of raw materials, and can improve a product’s competitiveness. Pollution is a waste, a defect, a loss of production efficiency and an non-value added consequence.

2.2 Pollution Prevention Programs
Each Saxon site/facility shall have a pollution prevention program. A pollution prevention program is an organized, comprehensive, and continual effort to systematically identify and reduce, or eliminate where practicable, the use of toxic chemicals and the generation of pollution. Key elements of the program shall include:

1. Demonstrated Senior Management Support
2. Senior management support ensures that toxic chemical use reduction and pollution prevention are integrated into business processes and maintained as a priority.
3. Widespread Employee Ownership
4. Widespread site participation in the pollution prevention program is needed, especially from the engineering and manufacturing organizations.
5. Toxic Chemical and Pollution Characterization
6. Toxic chemicals and waste streams with significant pollution potential shall be characterized and quantified. Waste streams include but are not limited to hazardous waste, air emissions, and wastewater. Processes and inputs generating waste/emission streams shall be identified.
7. Toxic Chemical Use/Pollution Prevention Assessments
8. Periodic assessments shall be conducted to identify toxic chemical reduction and pollution prevention opportunities. Risks, costs, and trade-offs should be assessed to help prioritize areas for reductions. Assessments shall also identify and evaluate potential pollution prevention technologies.
9. Goals
10. Toxic use reduction/pollution prevention goals shall be developed to reduce the volume and the toxicity of chemical usage and waste generation. Inclusion of manufacturing and design personnel in goal setting will increase awareness and accountability. Goals and progress shall be reviewed periodically.
11. Metrics
12. Metrics which assist in evaluating the program shall be collected, analyzed, tracked, and communicated. The Corporate EH&S Department requires selected metrics.
13. Pollution Prevention Teams
14. A cross functional pollution prevention team, or equivalent, shall be designated to target chemical use reduction and pollution prevention opportunities.
15. Design for the Environment Processes
16. Site/Facility shall proactively consider environmental, health and safety factors into the design, development, and redesign of products and processes so as to minimize the use of toxic chemicals and the generation of pollution at the source. (See Design for the Environment Standard, 1.05).
17. Sharing of Best Practices/Technology Transfer
18. Toxic chemical use reduction and pollution prevention best practices and technologies shall be shared within Saxon. Sites/Facilities shall coordinate with, and seek assistance from, external technical organizations as appropriate.

2.3 Non-Transfer of Hazard

Permanent toxic use reduction and pollution minimization does not transfer a hazard of chemical exposure from one media to another, nor from one group to another (e.g., employees to consumers).

2.4 Environmental Management Hierarchy

Source reduction is the preferred strategy for reducing toxic usage and pollution, but it is not the only one. The following pollution prevention hierarchy shall be utilized in decision making. The hierarchy should be viewed as a set of preferences. Whether source reduction is selected depends on many factors including: the level of risk reduction that can be achieved, the cost-effectiveness, and applicable requirements of law.

1. Source Reduction – includes input substitution, process modification, process modernization, product reformulation; in-process recovery, recycling and reuse; improved operations and maintenance of equipment; and increased control of the purchasing, storage, management, and use of chemicals.
2. Recycling
3. Treatment
4. Disposal or release
SUBCONTRACTOR EH&S

1.0 PURPOSE
To provide the requirements and responsibilities for attaining superior subcontractor EH&S performance.

2.0 REQUIREMENTS

2.1 General

1. It is Saxon’s policy that we shall employ contractors and suppliers who are committed to EH&S excellence, and will hold them to the same standards as ourselves.

2. All provisions of this procedure apply to all tiers of subcontractors for which Saxon is responsible.

3. Each subcontractor shall know and comply with all Saxon, regulatory standards, project specific and client requirements.

4. Each subcontractor shall submit a written project-specific EH&S program to the Saxon organization managing the project. Before acceptance, the written program must adequately address all EH&S issues contained in the Saxon site/facility-specific EH&S plan and all EH&S related contract terms and conditions. The subcontractor may adopt any part or all of Saxon’s EH&S program.

5. The subcontractor is responsible for the safety of all employees working for it and for all other persons calling on or doing business with the subcontractor.

6. The subcontractor is responsible for assuring all general and specialized training is conducted for employees under its management.

7. Proof of subcontractor’s Workers’ Compensation and general liability insurance shall be secured prior to subcontractor beginning any activity on the site/facility.

8. Saxon site/facility management shall designate by name, the Saxon individual who is responsible and accountable for the subcontractor’s compliance with the EH&S provisions of the contract.

9. “Exhibit A Special Conditions” (attached) shall be incorporated into ALL Contract Package Terms and Conditions involving domestic field labor and shall apply to all tiers of subcontractors.

2.2 Subcontractor Environment, Health, & Safety Support

Each subcontractor shall have an environment, health, and safety (EH&S) professional as a member of its organization at the jobsite, whose duty shall be monitoring their compliance with all applicable EH&S requirements and preventing unsafe acts and conditions. The subcontractor shall submit the qualifications of all proposed EH&S professionals to Saxon before assigning them to the site/facility. The qualifications shall be reviewed by the Subcontract Administrator. If the subcontractor’s projected work force is a total of 25 employees or less, an appropriately trained and experienced supervisor may take on the duties of the EH&S professional. If the subcontractor’s total work force is between 25 and 50 workers, an EH&S professional whose main function is safety and health will be assigned to the jobsite as a minimum. If the projected work force is 51 or greater, the subcontractor shall assign a full time EH&S professional to the jobsite. When the total craft work force exceeds 250 workers, the subcontractor shall add an additional EH&S professional. In all cases the EH&S professional shall be assigned to the jobsite when work starts, not when the work force reaches the referenced action numbers.

2.3 Subcontract EH&S Process

The following is an effective management process for the safe completion of work by subcontractors.
Step 1 **Subcontractor Qualification** – Utilize Saxon Procurement’s procedure for qualifying subcontractors relative to EH&S

Step 2 **Develop Bid Package** – Identify all EH&S requirements and expectations of the subcontractor and include in the bid package. In addition, include the Special Conditions in Appendix A.

Step 3 **Pre-Award Meeting** – Review EH&S contractual requirements and expectations to assure understanding by the apparent low bidder.

Step 4 **Pre-Mobilization Meeting** – Review specific EH&S requirements and expectations (training, staffing, equipment/tools inspection, special programs, etc.) with the subcontractor project manager.

Step 5 **Mobilization/Orientation** – Conduct project EH&S orientation, identify competent persons by name, obtain MSDSs, equipment inspections, start employee communication/safety promotion activities, etc.

Step 6 **Start work with 100% enforcement.**
EXHIBIT 'A'
SPECIAL CONDITIONS

Subcontractor Site Environmental, Health & Safety Program
Requirements

The requirements listed herein shall not relieve Subcontractor from complying with the Occupational Safety and Health Act (OSHA) or any other contractual requirements.

1.0 DEFINITIONS

Environmental Health & Safety (EH&S) PROGRAM - All of the elements which the company uses to protect the health and safety of the workers, the environment, and the public. This program includes the continuing identification of hazards or potential problems, the design of control measures, the implementation of controls, and the evaluation of the controls.

Environmental Health & Safety (EH&S) POLICIES & PROCEDURES - Requirements presented in the EH&S Policies and Procedures Manual which state Saxon's method of complying with regulations promulgated by the Occupational Safety and Health Administration and the U. S. Environmental Protection Agency as well as those practices that are determined to be the "BEST WORK PRACTICES" by professionals in occupational and environmental health and safety.

Environmental Health & Safety (EH&S) PLAN - Those site specific Environmental Health & Safety Plans, Hazard Communication Programs, Respiratory Protection Programs, Confined Space Entry Programs, Fall Protection Programs, Bloodborne Pathogen Exposure Control Plans, etc. that describe how the requirements of the Saxon Program and the EH&S Policies and Procedures Manual will be met at the job site.

Environmental Health & Safety (EH&S) MANUAL - The book, binder, electronic media, or document that contains the EH&S Plan, EH&S Policies & Procedures, and other EH&S material.

2.0 ENVIRONMENTAL HEALTH & SAFETY REQUIREMENTS

Subcontractor's work shall be performed in accordance with this document, federal, state, local requirements, and other contract documents. Where these documents address the same subject, the most stringent requirement shall apply.

2.1 ENVIRONMENTAL HEALTH & SAFETY PROGRAM

Before starting work, each Subcontractor shall submit its written project specific EH&S program (or adopt the Saxon EH&S program, as its own) for the Construction Manager's review and comment. The submitted program shall contain the EH&S plans and meet the requirements of the Project Environmental Health and Safety Program. All Subcontractor’s employees shall follow the plans outlined in their EH&S program while on the job site. Types of plans required shall include but not be limited to fall protection plans, confined space entry plans, blood borne pathogen plans, lock out/tag out, and respirator plans. The submitted plans are accepted for information only. The plans may be reviewed and comments returned, however any review will not waive the requirement to fully comply with Saxon’s safety requirements and all federal, state and local regulations.

2.2 ENVIRONMENTAL HEALTH & SAFETY ORIENTATION

Each Subcontractor and Vendor employee shall attend a site-specific Environmental Health & Safety orientation approved by the Construction Manager before beginning work on the site. Orientation attendance shall be documented and furnished to Construction Manager upon request. Subcontractor shall comply with the following requirements:

Prior to starting work at the project site, the Subcontractor shall provide new or re-hired project employees
training on Subcontractor and project EH&S program and site specific requirements.

During the employees’ first week on the project, the foreman conducts the second session of the new-hire group’s EH&S orientation, covering crew health and safety issues and potential illness/injury producing activities.

The general foreman’s section of the orientation takes place during the second week of employment and covers craft EH&S issues and craft potential illness/injury producing activities.

The craft superintendent’s section is taught during the third week and completes the four-part orientation. Superintendent reviews important aspects of the health and safety policies.

Orientation attendance rosters and all other documents relating to new employee safety training and orientation shall be maintained at the jobsite by the Subcontractor until project completion.

2.3 ENVIRONMENTAL HEALTH & SAFETY TRAINING

EH&S training shall be conducted as described in 29 CFR 1926.21. All training required by OSHA, EPA, State, or Local agencies for the specific task being performed by the Subcontractor is mandatory. Examples of such training include, but are not limited to:

- New Hire Orientation
- Hazard Communication
- Lock/Tag/Try
- Equipment Inspections
- Competent Person Training
- Confined Space Entry Training
- Excavation Training
- Training for working with lead, arsenic, hex chrome and or cadmium (when applicable)
- Specific personal protective equipment (PPE) training

The Subcontractor's jobsite supervisor shall ensure that EH&S training is started before personnel start work and continues throughout all phases of the work. The Subcontractor shall inform each employee of his/her responsibility to work safely and prevent occupational injury and illnesses. The Subcontractor's job site supervisor shall hold a safety meeting for its personnel each week. Meeting topics and attendance shall be documented and furnished to the Construction Manager.

2.4 ENVIRONMENTAL HEALTH & SAFETY AUDITS

Subcontractor shall comply with the provisions of 29 CFR 1926.20.

The Subcontractor's job site supervisor shall participate with Construction Manager's Representative in a weekly field EH&S audit of all Subcontractor’s work areas. A written report of the audit findings and their resolutions shall be submitted to the Construction Manager on a weekly basis. The Subcontractor shall also inspect its work daily and correct all unacceptable conditions.

2.5 ENVIRONMENTAL HEALTH & SAFETY MEETINGS

Subcontractor shall comply with the provisions of 29 CFR 1926.20.

The Subcontractor's site supervisor and health and safety representative shall attend a meeting with Construction Manager’s Representative each week to discuss EH&S matters.

2.6 PERSONAL PROTECTIVE EQUIPMENT
The Subcontractor’s employees shall wear all applicable personal protective equipment (PPE) as required in 29 CFR 1926.28, 1926.100, 1926.101, 1926.102, 1926.103, 1926.104, 1926.105, 1926.106.

This shall include but not be limited to:

- Hard hats (including welders).
- Foot protection. Boots shall be of solid leather construction with hard soles and shall extend above the ankle. Other non-leather types of fabrics used in the construction of the boot will not be allowed.
- Eye protection. All components (frames, lenses, and side shields) shall conform to ANSI Standard Z87.1. Slip-on, flexible plastic side shields are not permitted. Safety glasses shall be worn in all areas of the project except in offices, gang shacks, and vehicles. Visitor spectacles, conforming to ANSI Standard Z87.1, worn over prescription glasses will be permitted. Unless otherwise protected by means approved by the Construction Manager, Subcontractor shall require the use of leather or cut resistant gloves while handling sheet metal, rough or unfinished lumber, metal bands, and other materials likely to cause hand injuries.
- Other types of PPE, for example; respirators, hearing protection, chemical resistant gloves, suits, aprons, etc. will be required for the work activities they protect against.

2.7 BARRICADES/GUARDRAILS

All barricades and guard rails shall be erected and maintained as required in 29 CFR 1926.500, 1926.503, 1926.550 (a), 1926.202, 1926.203

The Subcontractor shall furnish, erect, maintain, and dismantle all barricades required for their work. The use of red barricade tape shall be at the discretion of the Saxon Construction Manager and Environmental Safety and Health Professional. The barricades shall be removed from the work area when they are no longer needed. All barricades shall be labeled with the Subcontractor's name, date and reason for barricade.

Barricades shall be constructed and maintained as described below:

- Warning systems (tape and stand) - Tape shall be supported only by stands or posts acceptable to Construction Manager. Stands or posts subjected to wind shall be weighted or otherwise secured so they remain erect.
- Protective barricades (rigid) - Rigid barricades shall consist of guard rails and midrails meeting the OSHA definition of "standard railing" Section 1926.500(f)]. All rigid barricades are to be equipped with an entrance/exit "gate". Protective barricades are required as a minimum:
  - Around floor openings
  - At elevated wall openings
  - On scaffold platforms where required

2.8 CONSTRUCTION EQUIPMENT & VEHICLES

Construction equipment shall be operated, maintained and stored in accordance with the requirements of OSHA standards 29 CFR 1926.602, 1926.251, 1926.550

2.8.1 Crane Suspended Work Platforms

The Subcontractor shall submit a detailed plan of its proposed work platform and rigging method for Construction Manager's review before conducting any work from a platform suspended from a crane. Anti-two-block devices are required on all cranes.
Subcontractor must provide or be with the crane a copy of the latest 3rd party crane inspection report.

Subcontractor shall comply with the following requirements for crane suspended work platforms, man lifts, or bucket trucks: Operator training shall be the Subcontractor’s responsibility. Documentation of the training shall be furnished to Construction Manager upon request. Personnel shall use safety harness with the lanyard secured to the platform.

Personnel shall perform their work while standing on the platform floor. Standing on the top rail, mid rail, or toeboard will not be permitted.

Equipment will not be moved when the boom is elevated in a working position with workers in the basket or on the platform unless equipment was manufactured to perform functions as stated in writing by the manufacturer. Rigging from the platform or boom will not be permitted.

No one shall be permitted to operate a lifting device (material or personnel) unless they have been properly trained per the manufacturer's requirements. Documentation of the training shall be available to Construction Manager. The manufacturer's operating instructions shall accompany the device.

2.8.2 Manlifts, Bucket Trucks, Fork Lifts, Powered Industrial Trucks

No one shall be permitted to operate a lifting device (material or personnel) unless they have been properly trained per the manufacturer's requirements. The Subcontractor shall maintain a list of qualified personnel authorized to operate manlifts, bucket trucks, fork lifts and/or powered industrial trucks. Documentation of the training shall be available to Saxon upon request. The manufacturer's operating instructions shall accompany the device.

2.8.3 Rigging Plans

A rigging plan shall be submitted to the Construction Manager no later than 15 calendar days before any critical lift is scheduled to be made. NOTE: Client requirements may earlier submittal of plans. A lift is considered critical when any of the following conditions exist:

1. The load exceeds 80% of the crane capacity in the configuration to be used during the lift.
2. Lifts involving more than one crane to handle a common load.
3. Any lift greater than 25 tons

The rigging plan shall include:

- Manufacturer, model, and capacity of the crane(s)
- Capacity charts of the crane(s)
- Working radius of the crane(s)
- Boom length of the crane(s)
- Weight of the load including rigging
- How the weight of the lift was determined
- Size and capacity of all rigging hardware (slings, shackles, etc.)
- A plot plan showing crane location with pick, swing and set points.

If requested by the Construction Manager, the Subcontractor shall submit a rigging plan no later than 7 calendar days before each non-critical lift is scheduled to be made.

2.8.4 Vehicles

Subcontractors shall comply with all of the requirements of 29 CFR 1926.600, and 1926.601.

In addition:
Drivers must have a current, valid vehicle operator's license. Employees must be seated, with arms and legs inside of the vehicle. Employees may mount or dismount vehicles only when fully stopped. Only three people may ride in the front seat of a truck.

When repair work or maintenance of any sort is performed on any vehicle, the parking brake shall be set and the wheels chocked to prevent movement of the vehicle.

All vehicles used on site shall be equipped in accordance with state and local laws and regulations. The Company requires the following equipment:

- Non-glare rear-view mirror
- Left-hand outside rear-view mirror
- Turn signals
- Two windshield wipers
- Snow tires and chains, where conditions warrant
- A back-up alarm audible above the surrounding noise levels is required on:
  - All earth moving vehicles
  - All other vehicles used in the work area in association with construction, which have restricted rear view through the rear window or do not have a rear window.

Petroleum waste oil changes and similar maintenance activities are preferred to be done off-site. If it is necessary to do this work on site, a qualified person must perform the work and ensure that proper protection is provided to avoid a spill. The dispensing of fuel into equipment shall be performed only over something that will catch any spills. All equipment shall be grounded prior to the fueling operation starting. The Subcontractor is responsible for containing such waste. Waste shall be contained in 55 gallons drums supplied by the Subcontractor.

**2.9 OBSTRUCTING ACCESS TO EQUIPMENT**

Access to exit doors, electrical or elevator panels, and fire extinguishers or other emergency equipment shall not be blocked at any time.

**2.10 SCAFFOLDS**

Scaffolds shall be erected, used, maintained and dismantled as described in 29 CFR 1926.451

In addition:

- The competent person will assess the structural integrity of scaffolding systems. All workers shall tie off with a safety harness when there is no (or an incomplete) handrail, when there are openings over 12 inches in the working platform, or when on suspended working platforms.

- A scaffold that is ready for use shall be tagged with either a green or a yellow tag.

  A green scaffold tag designates a complete scaffold as defined by the manufacturer.

  A yellow scaffold tag designates a scaffold which is not complete but which is altered to suit a specific job and may be used safely with specific restrictions, e.g., 100% tie off.

  A red tag designates a scaffold is in the process of being erected, changed, or dismantled and shall be considered unsafe and shall not be used.

  A competent person shall determine whether a usable scaffold receives a yellow or a green tag.

The scaffold tag shall be affixed to each scaffold access ladder 5 to 6 feet from its base.

Daily inspections shall be performed by a competent person to ensure that all tags are legible and
all scaffolds are safe.

Any scaffold which must be specially adapted to the work place must be approved by a qualified supervisor and environmental, safety and health professional.

Scaffold handrails shall be a minimum of 39 inches above the work platform.

2.11 FALL PREVENTION

The provisions of 29 CFR 1926.500, 1926.501, 1926.502, & 1926.503 concerning fall protection shall be adhered to at all time.

All employees exposed to a fall of 6 feet or more shall use 100% fall protection.

In addition, the Subcontractor shall provide a fall protection plan to the Construction Manager that identifies potential fall hazards and the method the Subcontractor shall use to prevent falls.

2.12 GROUND FAULT PROTECTION/ASSURED GROUNDING

The provisions of 29 CFR 1926.404 shall be followed concerning ground fault protection.

Subcontractor shall provide ground fault circuit interrupter protection for all cord sets, receptacles, and electrical tools and equipment connected by cord and plug which are used or available for use by employees. Use of permanent building receptacles, require GFCI, shall be tested quarterly and the testing shall be documented.

2.13 GAS CYLINDERS

Compressed gas cylinders shall be operated, maintained and stored as required in 29 CFR 1926.350.

In addition:

When compressed gas cylinders are used they shall be properly secured on two-wheel hand trucks designed for this use and brought into buildings only as needed and removed as soon as work is completed or tanks are emptied. Unless individual cylinders are equipped with regulating devices, they shall have the safety cap secured in place.

All cylinders shall be broken down with regulators removed and protective caps screwed down hand-tight at the end of each shift.

2.14 TOOL INSPECTION

All tools used or to be used by the Subcontractor shall be stored, used and maintained as described in 29 CFR 1926.951.

In addition:

· All Subcontractor-furnished portable tools and equipment are subject to inspection at any time while on the project site.

· The Construction Manager retains the right to prohibit or restrict the use of tools and equipment determined to be in unsafe working condition.

2.15 PROJECTING MATERIALS/IMPALEMENT HAZARDS

Projecting materials shall be protected or guarded as described in 29 CFR 1926.701 (b).
Reinforcing steel or similar material projecting above horizontal surfaces shall be capped or otherwise protected to prevent the possibility of impaling personnel. Non-reinforced plastic caps are not approved for falls of six (6) feet or more above vertical projections. Use covers of wood or other approved material.

2.16 LOCK-OUT/TAG-OUT PROCEDURES

The Subcontractor shall follow the requirements mandated in 29 CFR 1926.417 concerning lock-out/tag-out.

In addition:

The Subcontractor shall follow the site's lock, tag and try procedure before starting work on existing process or electrical systems and new systems which have been placed in commission. The Subcontractor shall provide all locks and tags required to comply with the site procedure.

2.17 CONNECTIONS TO POWER SOURCE

Electrical conductors shall not be connected to a power source until all field installation work associated with the equipment, device, or apparatus is complete. No electrical equipment, device, or apparatus shall be energized without the prior approval of Saxon’s subcontract administrator or designee.

2.18 SAFETY VIOLATIONS

Employees who repeatedly violate health and safety requirements will be denied access to the job site.

In the event of health and safety violations or unsafe practices involving imminent danger to the public or workers on the project, immediate action shall be taken to stop work and correct the hazardous situation. If violations continue or corrective actions are not taken after a reasonable period of time, the Construction Manager’s option of terminating the contract in accordance with terms of the contract will be considered.

2.19 REPORTING INJURIES/ILLNESSES/INCIDENTS

The Subcontractor shall immediately notify the Construction Manager of any occupational injury/illness or potentially serious hazard to personnel on the site. Each OSHA recordable injury shall be investigated by the Subcontractor’s site supervisor and by the Construction Manager's Health & Safety Committee. The Subcontractor shall submit a detailed report to the Construction Manager within 24 hours of the injury, illness or incident.

A weekly Safety Performance Report shall be submitted to the Construction Manager on Friday of each week.

2.20 HOUSEKEEPING/CLEAN UP

The Subcontractor shall clean up and remove all scrap materials and waste materials that accumulate from its operations on a daily basis. The scrap shall be placed in approved containers.

Should the Subcontractor fail to keep its work areas clear of debris, the Construction Manager may remove the debris on a time-and-material basis and back-charge Subcontractor.

The Subcontractor shall segregate the waste containers as needed. Any containers that contain hazardous materials, hazardous waste or waste oil shall be labeled as required in 29 CFR 1926.59, 40 CFR Part 281 and 40 CFR Part 279 respectively. The Subcontractor shall empty the containers at frequent and regular intervals, or as directed by the Construction Manager.

2.21 ALL SUBCONTRACTOR BUILDINGS AND TRAILERS

Trailers shall be blocked up in their final position and tied down every 10 feet with over the trailer or frame straps according to site/area requirements.
Buildings and trailers shall have a fire extinguisher rated 10 A:B:C or higher. Buildings and trailers shall be properly grounded if supplied with electricity. The main office building or trailer shall have a sign prominently posted, indicating the person's name and telephone number to contact in case of emergency at any time.

2.22 LADDERS

The Subcontractor shall follow the requirements mandated in 29 CFR 1926.1053 concerning maintenance and work on/around ladders. Subcontractors shall establish a monthly ladder inspection program.

Only light, short-term work shall be performed from ladders. Ladders shall not be placed in front of doors that open toward the ladder unless the door is locked or otherwise guarded.

Straight ladders shall be secured to prevent displacement. When ascending, or descending ladders, workers are to face the ladder. Three point contact shall be maintained at all times.

Carrying material up or down ladders is not acceptable. Ladders shall be inspected before each use and monthly for deterioration and damage.

2.23 FIRE PROTECTION

The Subcontractor shall comply with all requirements of 29 CFR 1926.150 - 29 CFR 1926.155.

Subcontractor's employees will be oriented on the fire alarm and evacuation procedure.

Smoking will be permitted only in areas designated by the Construction Manager. The Subcontractor shall furnish a metal butt can and fire extinguisher in each designated smoking area.

Subcontractor shall furnish fire extinguishers as required by OSHA and the NFPA.

Dirty and oily rags shall be kept in labeled fireproof metal containers with self-closing lids and removed from work areas daily.

2.24 SANITATION/POTABLE WATER

Subcontractor shall comply with the requirements of 29 CFR 1926.51

Drinking Water containers shall be cleaned and sanitized on a daily basis.

3.0 PERMITS

3.1 Safe Work Permits will be required on an as needed basis for cutting/burning activities. The Subcontractor shall submit a completed Safe Work Permit request to the Construction Manager 1 workday (typically 24 hours) before work is scheduled to start.

3.2 Safe Work Permits will be required for use of construction equipment within 15 feet of any overhead electric power line or process pipe.

Vessel and Confined Space Entry Permits will be required daily for any work inside a vessel or other confined space (i.e., any area, which must be entered through a restricted opening, such as tanks, vessels, ductwork, vessel skirts, manholes, etc.). Subcontractor shall fill out the necessary permit forms and submit them sufficiently (typically 24 hours) in advance to allow all required approvals to be obtained before work in the vessel or confined space is scheduled to start.

Continuous monitoring equipment shall have audible alarms. Subcontractor shall utilize personnel who have been trained in equipment operation and emergency retrieval procedures. Documentation of the training shall be furnished to the Construction Manager. Subcontractor shall document all calibration of atmospheric testing
equipment as well as the results of all atmospheric tests conducted. This documentation shall be available for review by the Construction Manager.

An excavation permit will be required to begin all digging operations using mechanical equipment or where digging is expected to interfere with traffic flows in the area. Continuations of previously authorized work without an additional permit shall be at Construction Managers discretion. The Subcontractor shall hand excavate when within five (5) feet of all identified underground services when mechanical excavating equipment is being used.

4.0 OCCUPATIONAL HEALTH/INDUSTRIAL HYGIENE PROGRAM

4.1 WORK AREA HAZARD ASSESSMENT

The Subcontractor shall assess the work area and determine the potential for exposure to chemicals and physical agents regulated by OSHA or The American Conference of Governmental Industrial Hygienists (ACGIH). Following the identification of potential hazards the Subcontractor shall monitor the work area to quantify employee exposure. All monitoring equipment shall be calibrated according to manufacturer specifications. Laboratory analysis shall be done by an American Industrial Hygiene Association (AIHA) or Environmental Protection Agency (EPA) accredited laboratory, whichever is applicable. Subcontractor shall adhere to all requirements of 29 CFR 1926.55. In addition, any chemical specific requirement must be followed, if applicable. Examples include but are not limited to:

- Lead
- Cadmium
- Asbestos
- Vinyl Chloride
- Benzene
- Hexavalent Chromium

4.2 RESPIRATORY PROTECTION PROGRAM

Before any employee uses respiratory protective equipment, Subcontractor shall furnish Construction Manager proof of compliance with OSHA Section 29 CFR 1910.134, including the following documentation:

- Written Respiratory Protection Plan
- Medical approval for each employee to use respiratory protective equipment.
- Training records indicating each applicable employee and supervisor has been trained on the use, limitations, and storage of the particular respirator chosen.
- Fit test records for each type of respirator the employee is qualified to use.

4.3 HAZARD COMMUNICATION

The Subcontractor shall comply with the requirements of OSHA's Hazard Communication Standard 1926.59 and all applicable state and local hazard communication requirements.

Saxon considers hazardous materials and waste minimize efforts an essential element in reaching the project goal of zero environmental infractions and no injuries to employees.

Some key elements include:

- Developing and implementing a written hazard communication plan for the site.
- Employee training in handling hazardous materials.
- The development and maintenance of a list of hazardous chemicals used on the project.
- Obtaining and maintaining Material Safety Data Sheets (MSDSs) for all hazardous chemicals.
- Labeling the containers of hazardous materials.
The Subcontractor shall obtain Construction Manager's approval before introducing any hazardous materials onto project site.

Note:

If a spill of a hazardous material (fuel, oil antifreeze, etc.) occurs on the site, the material and any contaminated matter at least 6” of additional material from the sides and bottom (soil, vegetative material, etc.) must be collected and put into a 55 gallon drum provided by the Construction Manager. The drum is to be labeled (describing the contents, date material was placed into drum(s) and Subcontractor name). All spills shall be reported immediately to the site EH&S Department. Do Not throw any hazardous materials into any dumpster or on the ground. All small containers (5 gallons or less) shall be filled over an approved containment device.

All fueling operations from tankers shall have a person from the receiving Subcontractor monitoring the operation to ensure correct procedures are used to prevent spills.

All threading machines shall be used over a drip containment tray with absorbent materials. Subcontractors shall maintain an adequate supply of absorbent material on site to absorb any potential spill of their materials.

4.4 NOISE AND HEARING CONSERVATION

Subcontractor shall comply with the requirements of 29 CFR 1926.52 and 29 CFR 1926.101.

4.5 WORK WITH OR AROUND ASBESTOS-CONTAINING MATERIALS

Subcontractor shall comply with the requirements of 29 CFR 1926.1101. If suspect asbestos containing materials are identified that might be disturbed the following actions shall be taken:

- Stop all work in the immediate area.
- Isolate the area to prevent disturbance of the material.
- Contact the site EH&S professional.
- Prior to a demolition or renovation project, the facility or impacted area of the facility shall be inspected by an accredited inspector for asbestos containing materials.
- Ensure that proper notification(s) have been made prior to the start of any asbestos abatement activities.
- Pre-job submittals shall be obtained and reviewed before a notice to proceed is given to the asbestos abatement Subcontractor.
- Personal and perimeter air sampling shall be performed daily during the asbestos abatement activities. The sampling shall be performed by a third party consulting firm.
- Asbestos removal Subcontractors shall maintain a current log of all persons who enter and exit the enclosure, and the time they enter and exit. Post-job submittals are required after the project is completed.

4.6 ON-SITE RADIOGRAPHIC EXAMINATION

Subcontractor shall submit the following information to Saxon for review before being approved by Saxon to use on site radiographic examination:

- The Subcontractor’s, or proposed Subcontractor’s, State Department of Health license number.
- Type and size of radioactive source to be used.
- Certification that the Subcontractor will be fully responsible for the bagging and protection of personnel, and that maximum radiation received in any period will be in accordance with any/all federal and state regulations.
- The type of camera or source handling facilities to be used.

4.7 WASTE MATERIAL PREVENTION AND CONTROL
The Subcontractor is responsible for proper transportation and disposal of all waste material and/or oil generated by the Subcontractor. Subcontractor shall ensure that its operations comply with the oil spill prevention provisions of 40 CFR 112. For all oil and/or liquid hazardous materials in a container greater than five (5) gallons, secondary containment shall be provided and used by the Subcontractor. Furthermore, the dumping, pouring, spilling, or disposal of oil or any hazardous or toxic substance onto the ground or into plant dumps, trenches or ditches is strictly prohibited. SAXON shall be immediately notified of all spills and Subcontractor is responsible for having spill kits readily available, promptly cleaning up the spill and properly disposing.

DISPOSAL DOCUMENTATION SHALL BE PROVIDED TO THE CONTRACTOR.

5.0 EMERGENCY PREPAREDNESS/EVACUATIONS

Subcontractor shall comply with all the requirements stated in 29 CFR 1926.35 concerning emergency preparedness and evacuations.

Subcontractor is responsible for ensuring all building exits and exit paths from their work areas are clearly marked.

6.0 EXCEPTIONS TO REQUIREMENTS

If a Subcontractor believes it cannot perform its contract under the above safety requirements, the Subcontractor shall notify Saxon in writing what its concern is and how it will meet the intent of the requirement. Saxon will not give a variance to an environmental, health or safety requirement without a plan to meet the intent of the requirement.

7.0 SAFETY REPRESENTATIVE

Subcontractor shall have a safety professional as a member of its organization at the jobsite whose duty shall be monitoring Subcontractor’s compliance with the requirements of this Exhibit and preventing unsafe conditions and accidents. Subcontractor shall submit the qualifications of all proposed safety professionals to the Construction Manager for his review and consent before mobilization to the Jobsite. If the Subcontractor’s projected work force is a total of twenty (20) employees or less, an appropriately trained and experienced supervisor may take on the duties of the safety professional. If the Subcontractor’s total work force is between twenty (20) and fifty (50) workers, a safety professional whose main function is safety will be assigned to the Jobsite as a minimum. In all cases the safety professional shall be assigned to the jobsite when work starts not when the work force reaches the referenced action numbers.
REGULATORY AGENCY INSPECTIONS

1.0 PURPOSE

To provide appropriate guidelines for use in the event of an inspection by a regulatory agency.

2.0 REQUIREMENTS

It is the practice of Saxon to admit any lawfully delegated Government Employee whom, upon presentation of proper credentials from a local, state or federal regulatory agency, requests entry to conduct a site/facility inspection. This practice, however, is not intended to abridge the rights of Saxon, or our subcontractors, who have the right to request a warrant prior to allowing entry for an inspection of their work site/facility.

2.1 Notification

Any recipient of a contact by a compliance inspector representing a regulatory agency shall immediately notify corporate management and the EH&S manager and advise them of the details concerning the contact. The type of contact might be in the form of a site/facility visit, a site/facility inspection, a telephone contact or a letter of inquiry.

2.2 Inspecting Compliance Safety & Health Officer (Government Employee)

1. In the pursuit of his/her duties, the Government Employee shall not be granted unrestricted access to the site/facility. The Government Employee may take any amount of samples or measurements that are deemed to be of importance to the inspection, photograph objects or personnel, and conduct interviews with employees. The Government Employee can request copies of any literature, documents, or those parts of the contract, which relate to environmental, safety or industrial hygiene. In the majority of cases such information will be readily provided. However, prior to providing such requested documentation, the Saxon Site Manager shall contact the Saxon EH&S Department.

2. The Government Employee shall not violate any applicable safety regulations, nor site/facility specific EH&S policies or requirements, e.g. site/facility hazard orientation training. If required by regulations or site/facility specific EH&S requirements, the Government Employee shall produce documentation related to issues such as medical clearance and training. The Government Employee is responsible for providing and wearing personal protective equipment as required for the jobsite/facility. In the event the Government Employee does not have the required equipment, and there is appropriate equipment available at the jobsite/facility, it will be offered to the Government Employee at no expense. With the exception of mouth-bit escape respirators or air supplied escape respirators, e.g. at paper mill site/facility, Saxon will not provide the Government Employee with respiratory protection. In the event that respiratory protection is required on the site/facility, the Saxon Site/Facility EH&S Manager shall verify that the equipment to be provided and used by the Government Employee is appropriate for the hazards to be encountered. If Saxon provides the Government Employee with an escape respirator, the appropriate training shall also be given and documented. Deviation from this policy shall be approved by the Saxon EH&S Manager.

3. Failure of the Government Employee to comply with the site/facility EH&S program is cause for denying the Government Employee access to the site/facility, or stopping an inspection that is in progress.

2.3 Manager’s Inspection Requirements

1. During the course of the inspection, the senior manager present at the site/facility and the site/facility EH&S professional shall accompany the inspection party.

2. If the inspection is the result of an official complaint, request a copy of the complaint before commencing the inspection.

3. Begin a chronological record of the entire inspection. This record shall include where the Government Employee goes, which employees are interviewed and for how long, whether a specific location is re-
inspected, any specific comments that are made regarding the site/facility’s EH&S program, suspected violations, and in general, a running documentary of the entire inspection. At the conclusion of the inspection, all of the narrative information should be transcribed to typewritten copy, and the record forwarded to the Saxon EH&S Manager;

4. Do not allow the Government Employee to wander into areas of the site/facility that are not covered by the complaint. Site/facility EH&S personnel shall provide guidance related to areas of the site/facility that may have access restrictions or conditional entry, e.g. confined space work, fall protection requirements;

5. Do not permit unneeded personnel to linger near, or accompany the inspection party.

6. If the Government Employee desires photographs of work areas, clearance and approval for such shall be obtained from the Saxon client/owner. When photographs are taken, inquire as to the nature of the suspected violation and record the information. Every effort should be made to obtain similar photographs for Saxon reference and possible defense. Photos should be taken in such a manner so as to duplicate the Government Employee’s photographs. Take additional photographs to reference the inspected area and other similar activities. If possible, video tape the entire workplace inspection.

7. If air samples or any other type of sampling is performed by the Government Employee, duplicate samples shall be obtained by the Saxon Site/Facility EH&S department during the same time period and at the same location as those obtained by the Government Employee.

8. The Government Employee has the right to question Saxon employees. If the employee is a manager or supervisor, Saxon shall have either the site facility manager, EH&S manager, or a Saxon attorney present. If the employee is a craft employee, the employee has the right to request that site/facility management or an attorney be present. If the employee does not request to have management's presence, the Government Employee can speak to the craft employee alone.

9. Answers to questions posed by the Government Employee regarding Saxon safety policy shall be consistent with information contained and expressed by the Saxon EH&S Policies and Procedures Manual. Questions presented to Saxon management personnel by a Government Employee shall be clarified and understood prior to responses being provided.

2.4 Citations and Penalties

In the event a citation, penalty action, or notice of violation is received from a regulatory agency, the Saxon Site/Facility Manager shall immediately notify by telephone, the Saxon EH&S Manager with the details of said citation.

Copies of daily journals, minutes of meetings, notes made during the inspection proceedings, copies of air sample results, photographs taken, or copies of documents requested by the Government Employee should be forwarded to the Saxon EH&S Manager.

2.5 Legal Review

1. Saxon Site/Facility Managers are responsible for informing their respective managers of any regulatory agency contact, inspection, citation, or notice of violation and advising of any intended action and its outcome.

2. Saxons’ legal department shall be informed, review, and approve all responses to alleged violations, citations, notice of violation, and payment of any fines to a regulatory agency.
PLANNING AND HAZARDS ANALYSIS

1.0 PURPOSE
To provide identification and control the risk of occupational and environmental hazards that may be encountered on sites/facilities.

2.0 REQUIREMENTS

2.1 Managerial Requirements

1. The Saxon Project Manager shall ensure that a scope specific hazard assessment is performed on the assigned site/facility prior to employee mobilization to the site/facility.

2. The Saxon Project Manager shall ensure that issues identified in the hazard assessment are analyzed and a Site/Facility Specific Environmental Health and Safety Plan (EHSP) developed as a process for hazard anticipation, recognition, evaluation and control before mobilization.

3. The Saxon Project Manager shall ensure that the EHSP contains task specific hazard control procedures and/or exposure control plans that are required by regulations or corporate standards.

4. Consistent with the EHSP, the Saxon Project Manager shall establish a schedule for frequent, documented work area evaluations to identify behavior(s) and/or conditions that need corrective action or warrant positive recognition.

2.2 Operational Requirements

1. In order to evaluate and control the potential hazards identified in the EHSP, the Saxon Project Manager shall ensure that management processes, supported by written plans and procedures, are developed and implemented where required by regulation or company procedure. Such plans and procedures may include, but may not be limited to:

   a. Hazard Communication Program
   b. Job Planning and Safety Task Analyses (STA)
   c. Respiratory Protection Plan
   d. Confined Space Entry Program
   e. Steel Erection Plan(s)
   f. Electrical Safety Plans, e.g., Assured Grounding / GFCI
   g. Control of Hazardous Energy Sources (Lock-Out / Tag-Out / Try)
   h. Fall Protection Plan
   i. Excavation Plan(s)
   j. Exposure Control Plan(s), e.g., Lead, Cadmium, Arsenic, Benzene, Acrylonitrile, Asbestos, Methyleneedianiline, hexavalent Chrome, 1,3-Butadiene, etc…
   k. Emergency Preparedness & Response Plan(s)
   l. Process Safety Management Plan (if in place)
   m. Crisis Management Plan
   n. Regulatory Inspection Procedures, e.g., OSHA or EPA

2. A copy of any changes to the site’s/facility’s EHSP developed for the site/facility shall be submitted to the Saxon EH&S Manager or his designee, for review and approval prior to implementation.

3. Each plan shall specify how the requirements of the procedure will be met at the site/facility, and have a review schedule established. Reviews shall be conducted with a frequency that allows the plan to reflect the current hazards of the project and/or revised regulatory requirements.
4. As the plan is reviewed, it shall be revised as needed. Revision date(s) shall be noted in the footer of the document. The Saxon Project Manager shall approve, with signature each revision to the plan. A copy of the revision shall be forwarded to the Saxon EH&S Manager, or his designee, for review.

5. These plans shall form the basis of employee training programs conducted at the site/facility, therefore, the written program title and revision date shall be referenced in training documentation. Assistance in plan development is available from the Saxon EH&S staff.

6. A copy of the EHSP and all original and revised written plans shall be maintained with the project’s administrative files and maintained for the duration of the project plus 30 years.

2.3 Safety Task Analysis (STA)

1. Safety Task Analysis (STA) is designed to assist supervisors and employees identify and minimize hazards prior to beginning tasks.

2. Each site/facility shall establish a plan for conducting Job Planning and Safety Analysis (STA) before beginning each task. A properly executed STA will help employees recognize hazards, identify training needs, and plan their work; thereby, ensuring a safer and more efficient work process.

3. A typical STA exercise will include, but may not be limited to the following questions:
   a. Is there adequate lighting?
   b. Could people trip over materials on the floor?
   c. Are there exposed live electrical wires?
   d. Are tools, machines, and other equipment in good repair?
   e. Do machines have guards in place?
   f. Are noise levels too high to allow clear communication?
   g. Are fire alarms and portable extinguishers readily available?
   h. Are emergency exits clearly marked?
   i. Is personal protective equipment available, in good condition, and used when necessary?
   j. Is the work area adequately ventilated?

4. The STA Form I.U.001 shall be used to meet the requirements of this procedure.

5. At a minimum the STA process should list all specific job steps and create a checklist to identify possible hazards:
   a. Include each step
   b. Describe each step in adequate detail.
   c. Include inspection and use of protective equipment.
   d. Detail job set-up procedures.
   e. Include the condition, use, and safety of equipment and machinery.
   f. Identify any machine parts or exposures that could create risk of injury.
   g. Detail actual steps followed while performing the job to identify any movements or positions that could create risk of injury.
   h. Note procedures to follow when it’s necessary to shut down equipment.
   i. Include organization and placement of parts, tools, etc.
   j. Identify hazards created while performing the job (dust, chemicals, heat, excessive noise, falls, cave-ins, falling objects, floor openings, etc.)

6. Determine the best way to eliminate/reduce identified hazards:
a. Fix clear cut problems, such as replacing missing machine guards.
b. Seek ways to eliminate, combine, or rearrange job steps to eliminate or reduce hazards.
c. Identify equipment that could be used to reduce the hazard(s).
d. Change tools, add ventilation, or make other physical changes to reduce the hazard(s).
e. Detail new job steps to follow after changes are made.
f. Identify hazards that can’t be reduced and seek ways to eliminate the job or do it less often.
RECOGNITION AND PERFORMANCE AWARDS

1.0 PURPOSE
To provide guidelines for recognizing superior EH&S performance and to describe the formal EH&S Performance Awards Program.

2.0 REQUIREMENTS

2.1 Recognition Guidelines

A. Project/Craft

1. Milestone Awards - The Milestone Awards can be gift items, luncheons, momentos, or a combination of awards as determined by the project safety committee.

2. Milestone Examples - Site management shall determine which milestones will be tracked and recognized.

   a. Large Sites (150 or more employees)

      1) Work hours without OSHA recordable injury/illness; 250K, 500K, 750K, 1M.
      2) Work days without OSHA recordable injury/illness; 30, 60, 90, 120, 200, 365.
      3) 500K, 1 million, 2 million, 3 million, etc. work hours without lost workday injury/illness.
      4) Achieving a safe acts index of 100% for four consecutive audits.

   b. Small Sites (less than 150 employees)

      1) Work hours without OSHA recordable injury/illness; 100K, 250K, 500K, 1M.
      2) Work days without OSHA recordable injury/illness; 60, 120, 200, 365.
      3) 500K, 1 million, 2 million, 3 million, etc. work hours without lost workday injury/illness.
      4) Achieving a safe acts index of 100% for six consecutive audits.

B. Offices/Group EH&S Awards

1. Milestone Awards - The Milestone Awards can be gift items, luncheons, momentos, or a combination of awards as determined by the office/group safety committee.

2. Milestone Examples - Office management shall determine which milestones will be tracked and recognized.

   a. No OSHA recordable injuries/illness for the calendar year.

   b. 500K, 1 million work hours without OSHA recordable injury/illness.

   c. 1 million, 2 million, 3 million work hours without lost workday injury/illness.

C. Other

1. Safe Craft or Subcontractor Award

   a. Monthly awards given to a craft or subcontractor based on criteria established by the project; i.e., recordable injury/illness, audit results, housekeeping, participation in safety program, corrective action timing, training compliance, etc.

   b. Safety Crew of the Month based on criteria established by the project.
c. Craftsman Recognition - Projects should implement program for spot awards for employees working safely or who provide correct responses to safety questions.

2.2. Performance Awards Program

A. President's Safety Award - Projects
   1. Given annually to projects meeting the following criteria:
      a. Project work hours must be at least 50,000 during the calendar year. (Projects with less than 50,000 work hours during the calendar year will have their previous year(s)'s experience combined with current year's experience.)
      b. OSHA recordable incidence rate less than company goal.
      c. Zero Lost Workday injury/illness and fatalities.
      d. Zero reportable environmental incidents with the potential to endanger health or the environment.

B. Safety Achievement Award
   1. Given to projects, facilities, offices or groups who achieve the milestone of 1 million work hours without a Lost Workday injury/illness.

C. Safety Leadership Award
   1. Given to individuals (supervisor, manager, group leader, construction superintendent, etc.) who have accumulated one million work hours without a Lost Workday injury/illness or fatality in their area of responsibility and who have significantly contributed to improving the safety process within their group or the company. The individual must portray the characteristics of a safety leader.
      a. Nominated by company management, Project/Facility Site Manager or Group/Office Manager. Nominations to include description of contributions and characteristics.
      b. Nominations are sent to Corporate EH&S & Vice Presidents.
DEVIATION FROM PROCEDURES APPROVAL PROCESS

1.0 PURPOSE

To provide requirements for approving deviations from procedures contained in the Saxon EH&S Policies and Procedures Manual.

2.0 REQUIREMENTS

2.1 Requests for deviations must be in writing and include the engineering or administrative controls to be implemented to assure an acceptable level of EH&S for the operation. Any deviation requires the following written approvals for each organization listed.

a. **The Saxon Group Inc.**
   1. Project Manager
   2. Site Manager
   3. Site EH&S Professional
   4. EH&S Manager

b. **Host Company**
   1. Site/Facility/Project Manager
   2. EH&S Department
   3. Anyone else the Senior Manager deems necessary

c. **All Others**
   1. Site/Facility/Project Manager
   2. EH&S Department
II - Office Section Safe Work Practices
SAFE WORK PRACTICES

1.0 PURPOSE

To provide requirements for safely working in offices.

2.0 REQUIREMENTS

2.1 Office Behavior

2.1.1 Office safety rules, regulations, and requirements shall be understood, communicated, and complied with by all personnel.

2.1.2 Sit properly in chairs at all times. Do not tilt back in straight chairs or lean to the extreme in swivel chairs. Do not overreach while seated.

2.1.3 Do not engage in any horseplay, fighting, or other acts that could endanger personnel. These types of behavior are grounds for disciplinary action.

2.2 Reporting Incidents and Potential Incidents

2.2.1 All actual or suspected work-related illness or injuries, regardless of severity, must receive attention by trained medical personnel and shall be reported to supervision and the EH&S Manager.

2.2.2 Immediately report any conditions or incidents having the potential for injury, adverse health effects, property damage, or adverse impact on the environment to supervision and the EH&S Manager.

2.3 Firearms and Weapons

2.3.1 Firearms, ammunition and weapons are not permitted in buildings unless special permission has been granted by management.

2.4 Substances Abuse

The Company Substance Abuse Standard prohibits the unauthorized manufacture, dispensing, distribution, possession, or use of alcoholic beverages, or illegal drugs by an employee while on Company business or on Company property.

Note: See the Corporate Standard for specific requirements, prohibitions and screening/testing programs.

2.5 Running

Do not run in the building or on building grounds, except in designated areas, jogging tracks, picnic grounds, or in extreme emergencies.

2.5 Walking in Buildings

2.5.1 While walking in corridors, keep to the right and do not drink beverages or read documents.

2.5.2 While ascending or descending stairs, use handrails, keep to the right, and ascend or descend one step at a time. Do not pass others or run on the stairs.
2.6 Transportation

2.6.1 Wear passenger restraints while using company, rental, public transportation or personal vehicles for company business.

2.6.2 At all times, follow the direction arrows, warning signs, and posted speed limits on site roads and in parking lots,
EMERGENCY PLANNING

1.0 PURPOSE

To provide requirements for preparing emergency procedures to cope with emergencies and resulting disasters that may endanger personnel, property, the public, or the environment.

Emergencies covered include unexpected situations or sudden occurrences demanding immediate action, such as fires, explosions, bomb threats, severe weather or the release of toxic gas or vapors.

2.0 REQUIREMENTS

1. Each location shall develop specific emergency procedures addressing signals, and alarms, communications, actions, responsibilities, evacuation routes, assembly points, and personnel accounting.

2. Disseminate pertinent information about emergency signals, evacuation routes, assembly points and alarms to all personnel by whatever educational means are deemed most effective (e.g. wallet cards, signs, orientations, or safety, health, and environmental meetings, postings in hallways, etc.).

3. Provide all personnel with a copy of the emergency procedure and related material.

3.1 Alarm

Specify the kind, type, pattern, and duration of the alarm signal.

3.2 Evacuation Routes

Identify exits and evacuation routes.

3.3 Assembly Points

Designate and clearly identify area assembly points and the personnel accounting process.

3.4 Emergency Instructions

Instruct employees in how and when to activate or sound the alarm, what each alarm means, what emergency response crews will do, what action is expected of the employee, and any other information pertinent to the emergency procedure involving the employees’ work assignments.

3.5 Specific Responsibilities

Each office determines the appropriate personnel to perform emergency functions, such as the following:

1. Establish communication with the office
2. Handle reports accounting for personnel
3. Ensure that work ceases in the affected areas
4. Ensure that all ignition sources are extinguished
5. Account for all visitors
6. Ensure that medical personnel respond as dictated by the emergency
7. Relay messages

3.6 General Considerations

1. Unauthorized personnel may not re-enter the emergency area for any reason until after the “all clear” signal is sounded.
2. Keep clear of emergency personnel and equipment responding to the emergency.
3. Do not make unnecessary telephone calls during an emergency.
4. Only the Saxon management team is authorized to release information outside the company.
5. Office management is responsible for contacting local, state, and/or federal authorities.
HOUSEKEEPING

1.0 PURPOSE

To provide requirements for good housekeeping of offices.

2.0 REQUIREMENTS

Orderly offices and good housekeeping is required to eliminate injury-causing conditions, to increase efficiency, and to create a safe, professional environment. Every office must adopt and enforce stringent safety and housekeeping standards appropriate to its particular facilities and type of activities.

2.1 Responsibilities

1. Every individual must follow office safety rules and maintain housekeeping in the work area. Clean and straighten work areas after job completion and at the end of each day or shift. Be considerate of others by leaving the general and common areas of the facility in better shape than you found them.

2. All employees are responsible for maintaining a safe working environment. Anyone discovering unsafe conditions or broken equipment, furniture, or facilities must correct the problem or report it to the person responsible for taking corrective actions.

2.2 Safety and Housekeeping Inspections

Safety and housekeeping inspections shall be performed on a monthly basis to ensure a safe work environment and to eliminate injury causing conditions.

2.3 Vertical Surfaces and Walls

Use the following guidelines when mounting display material on vertical surfaces and walls:

1. Suitably frame and support all material on office walls (e.g., photographs, paintings, and certificates).

2. Do not use adhesive-backed tapes and pushpins on standard wall construction and finishes. Avoid using standard thumbtacks (their tendency to land point up when dropped creates a safety hazard).

2.4 Office Machines

1. Machines shall not be placed on tables or desks where there is danger of the machine falling off.

2. Machines that creep or vibrate during operation shall be secured to prevent movement.

2.5 File Cabinets

1. File cabinets should be placed against walls or columns and should be secured against tipping when possible.

2. Drawers shall not be overloaded.

3. Only one drawer shall be open at a time to prevent cabinets from tipping over.

4. File drawers shall not be left open and unattended.

2.7 Floors
Floor finishes and/or carpets with anti-slip qualities shall be chosen. Well maintained floors/carpet provide protection against slips and falls.

2.8 Passageways/Aisles

A minimum width of 3 feet shall be established for aisles. Obstructions such as wastebaskets, telephone and electrical cords, low tables, and office equipment must be kept where they do not present tripping hazards.

Stairways shall be protected with anti-slip material.

Doors shall not open into travel paths.

2.9 Electrical

Electrically operated machines and extension cords require that outlets and extension cords be arranged to avoid tripping hazards. If extension cords are required, they must be secured and covered to eliminate tripping hazards. Extension cords shall be capable of carrying intended power loads.

Circuits providing power to office machines must be adequately sized.

All outlets shall not be overloaded.

2.10 Materials Storage

1. Materials shall be stored out of the way of normal office traffic for easy access.

2. Materials shall be stored neatly so that they will not fall or cause a tripping hazard.

3. Flammable or hazardous liquids used in offices must be stored and dispensed from approved safety containers. Bulk storage must be in a properly constructed fireproof room or cabinet.

2.11 Ladders/Stools

Ladders and stools used for reaching high storage should have either nonskid safety feet or be equipped with brakes that automatically lock when weight is applied.

2.12 Fire Protection, Prevention, and Emergencies

1. Good housekeeping is essential in preventing fires.

2. Type ABC portable fire extinguishers must be conspicuously located and labeled. Extinguishers must be inspected monthly, and tagged annually and maintained in a fully charged condition.

3. Smoke detectors and/or alarm systems should be checked once a month for proper operation. For those facilities where Saxon is a tenant, such inspection / testing must be coordinated through, or performed by, the facility owner. At a minimum, Saxon shall verify frequent inspection and testing of alarm systems.

4. A fire emergency procedure and a basic emergency plan must be developed for each office complex per Procedure IIB. Emergency phone numbers for fire, police, or medical emergencies must be posted at each telephone.

5. Evacuation route maps shall be posted at numerous locations on occupied office floors.
AIR QUALITY

1.0 PURPOSE
To provide basic directions for the control of office air quality and ventilation which are source control, source elimination, ventilation improvements, and air cleaners.

2.0 REQUIREMENTS
Saxon will have the indoor air quality analyzed where necessary to provide baseline data on the overall levels, and effects of existing contaminants. If air quality is less than adequate, the following strategies shall be utilized.

2.1 Source Control
Sources of indoor air pollution such as carbon monoxide, tobacco smoke, radon, biological contaminants, asbestos, office cleaning products, stoves, natural gas, copy machines, etc. may exist in air contaminant levels requiring action to control exposure to these sources. Typical symptoms attributed to poor indoor air quality include: Headache, fatigue, shortness of breath, nausea, sinus congestion, coughing, sneezing, eye, nose, and throat irritation, skin irritation, and dizziness.

2.2 Source Elimination
1. Before ventilation upgrades, or air cleaners are considered as strategies for control of air quality, elimination of the contaminant source will be considered first.

2. Where possible, copy machines and like equipment will be located in rooms having no occupants.

2.3 Ventilation Improvements
1. If the source of the air pollution cannot be eliminated, ventilation upgrades will be considered. By changing the air dynamics within an office, this can either reroute bad air to the outside or draw bad air away from exposed workers.

2. Ventilation systems shall be cleaned and inspected on a regular basis to prevent accumulation of biological growth (bacteria, molds, or viruses). For those facilities where Saxon is a tenant, such inspection / cleaning / testing must be coordinated through, or performed by, the facility owner. At a minimum, Saxon shall verify that such regular inspection and cleaning of ventilation systems is performed.

2.4 Air Cleaners
Where ventilation improvements prove ineffective, air cleaners will be considered. The type(s) of air cleaners suitable to the removal of specific contaminants will be selected based on analytical data obtained from air testing. Where known types of air contaminants exist, such as tobacco smoke, automobile exhausts etc., selection will be based on existing known hazards.
LIGHTING

1.0 PURPOSE

To provide requirements for a safe, comfortable, and efficient visual environment.

2.0 REQUIREMENTS

Adequate illumination and the elimination of eye strain associated with office work is a priority as it relates to employee safety, comfort and productivity. This task can be a challenge in offices where traditional, rigid attitudes about office layout and design exist. The following lighting criteria should be used, as a minimum, to improve work area lighting conditions in office areas:

1. Bare light sources shall not be used. Light fixtures should be equipped with diffusers and/or adjustable shades.

2. The luminance and reflectance of surfaces of furnishings, shades, louvers, acoustic screens, shall be considered as it relates to work area illumination. If the reflectance or light intensity is uncomfortable to employees, the condition shall be changed to create a comfortable condition. Offending light sources shall be removed or shielded.

3. To eliminate glare on computer monitor screens, the monitor should be repositioned. Repositioning of the computer monitor(s) such that the screen is at a “right-angle” (90°) to the light source, will usually eliminate glare problems. Where monitors cannot be repositioned, the windows should be equipped with louvers or adjustable shades and/or anti-glare screens installed on the monitor.

4. Office desks and tables, where writing, reading or computer work is performed, may need localized “task lighting” to provide comfortable, adequate illumination. Where such lighting is utilized, the light source should be positioned at the work station on the side opposite the person’s “dominant” side, in order to preclude shadows on the work surface, i.e. lamp on left side of a “right-handed” person.
OFFICE FIRE PREVENTION

1.0 PURPOSE

To provide an outline of office processes that shall be established to prevent fires and provide proper response to office fire emergencies.

2.0 REQUIREMENTS

Each office or site is responsible for developing and implementing processes to meet the fire safety requirements set forth in this procedure. The commitment to provide a safe and healthy workplace for employees applies to all sites/facilities, owned or leased, including offices. All employees must be instructed and required to follow basic office fire safety principles set forth for their area. No office space shall be occupied without a fire safety review.

2.1 Fire Safety Requirements for Building Exits

1. The following fire safety features are required for exits:
   a. An exit must be provided from every floor and every building.
   b. Unlocked at all times of building occupancy.
   c. Travel distance from any point to the nearest exit shall not exceed 200 feet, or 300 feet if the building is completely protected by automatic sprinklers. A "dead end" travel distance or common path of travel not exceeding 50 feet is acceptable.

2. The following fire safety features are required for exit stairways:
   a. All exit stairways in buildings more than one story high (counting all stories above or below grade) shall be enclosed by masonry walls (or equivalent fire-resistant construction such as gypsum board) with self-closing fire doors.
   b. Stairways in buildings three stories or less in height should have one-hour fire-resistant enclosures with one-hour rated fire doors. Buildings with four or more stories should have two-hour fire-resistant enclosures with one and one-half hour fire doors.
   c. All Exit stairways in building shall be equipped with emergency lighting.
   d. Self-closing fire doors leading to exit stairways shall latch upon closing and shall not be propped open. If desired for security reasons, the stairway doors may be made inoperable from the stairway. If this is done, however, one door at every third level should allow access back into that level, or all doors should be designed to unlock automatically when an automatic fire detection or sprinkler system is activated.
   e. Exit stairways shall have handrails on both sides.
   f. Exit stairways shall not be used for storage or for any other activity that compromises their use as an exit (e.g., used as electric cable raceways or as pathways for heating, air conditioning, or ventilation system ducts).

3. The following fire safety features are required for exit doors:
   a. Doors in exits shall swing in the direction of exit travel.
   b. Doors shall not be locked chained or barred shut.
c. Doors shall be arranged to be readily opened from the side from which egress is made when the building is occupied. Latches or other fastening devices shall be provided with a knob, handle, panic bar, or other simple releasing device.

d. The interior finish in exit enclosures, such as wall covering, ceilings, and floor covering, shall be noncombustible.

e. Every exit shall be marked by a sign readily visible from any direction of access to the exit. Access to exits shall be marked by readily visible signs in all cases where the exit or the way to reach it is not immediately visible to occupants.

f. Every exit sign shall be illuminated by a reliable internal or uninterrupted external powered light source. Glow-in-the-dark signs are acceptable. Exits, including corridors, aisles, and stairs, shall be illuminated continuously during the time the building is occupied.

2.2 Emergency Lighting

1. Emergency lighting shall be provided if any of the following conditions exist:

   a. the building is three or more stories high

   b. the building is subject to occupancy by 100 or more persons above or below the level of exit discharge, or subject to occupancy by 1,000 or more persons

   c. the building has no windows

   d. the building has basement areas or interior spaces that receive no light from the outside

2. Emergency lighting shall activate automatically when normal lighting is interrupted, and shall provide no less than 1 footcandle (11 lux) for a period of one and one-half hours.

2.3 Fire Protection Features of Building Construction

1. Protection of Vertical Openings

   Elevator shafts, escalator openings, utility shafts, ventilation shafts, and other vertical openings shall be of fire-resistant construction and enclosed. Openings in floors around wiring, conduit, pipes, and ducts shall be sealed with fire-resistant materials.

2. Protection of Horizontal Openings

   Horizontal openings in fire walls and fire cut-offs shall be protected by self-closing doors. Ducts passing through fire walls shall have automatic fire dampers. Openings around wall conduit pipes and ducts shall be sealed with fire-resistant materials.

3. Protection of Potentially Hazardous Areas

   a. Potentially hazardous areas include the following:

   1. areas used for general storage, trash storage, or fuel storage
   2. janitorial closets
   3. maintenance shops
   4. kitchens
b. All potentially hazardous areas should be protected by automatic sprinklers, or separated from other parts of the building by fire-resistant construction (one-hour rating is recommended), with all openings protected by self-closing fire doors.

4. Protection from Co-Occupancy Hazards

Occupancies in the same building or office building other than Saxon related or controlled buildings should be separated from the Saxon spaces by fire resistant construction (one-hour rating recommended), or should be protected by automatic sprinklers.

2.4 Fire Alarm Systems

Any office building that is three or more stories high, subject to occupancy by 100 or more persons above or below the level of exit discharge, or occupied by 1,000 or more persons shall be equipped with a manual fire alarm system unless it is protected throughout by automatic fire detection or sprinkler systems that sounds an alarm. The municipal fire department should be notified automatically if the building system is activated.

2.5 Extinguishing Systems and Equipment

1. Properly installed and maintained sprinklers are the most effective safeguards against loss of life and property by fire. Sprinkler protection is recommended in office buildings. Requirements vary by applicable national and local codes.

2. Fire extinguishers shall be strategically located with no more than 75 feet travel distance from any point to an extinguisher. They shall be well maintained, have unobstructed access, and their location shall be clearly marked by signs readily visible from any direction. Multipurpose dry chemical (ABC) extinguishers are required; however, the number, size, type, and location of extinguishers should be determined by the site safety coordinator to meet the specific fire protection needs of various areas of offices.

3. Use powder or other non-liquid extinguishing systems in computer rooms.

2.6 Elevator Control Circuits

Elevators should be equipped with fire fighter recall circuits that are activated by an automatic smoke detection system. (Detectors are usually located in elevator lobbies.) These circuits cause the elevators to respond directly to a predetermined floor, usually the ground floor, or an alternate floor where they can be operated by the fire department.

2.7 Smoke Control Systems

Smoke control systems on heating, ventilation, and air conditioning (HVAC) systems are desirable, particularly in high-rise buildings (four or more stories high). When activated by smoke detectors, smoke control systems may perform one or more functions, such as totally shutting down HVAC systems or pressurizing stair towers to prevent smoke infiltration.

2.8 Temporary Buildings, Outbuildings, and Office Trailers

Temporary buildings, outbuildings, and office trailers that are classified as office occupancy space shall have fire safety plans. They shall conform to the requirements of national, state, and local codes and site codes and regulations, as well as the requirements of this procedure.

1. Exits - Two means of exit are required when the building size, shape, and/or equipment or furniture layout causes the possibility of a fire cutting off the single means of exit and trapping personnel.

2. Portable Heaters - The use of portable heaters shall be monitored as needed.
3. Flammability of Materials - Give special consideration to the flammability of construction materials and/or furnishings and their placement with regard to the heating system and other heat-producing equipment. For example, curtains and furniture should not be placed close to wall-mounted and wall-recessed electric heaters.

4. Storage - Prior to use, buildings used exclusively for storage shall be verified as appropriate in design and construction as well as equipped to fire safety standards for the chemicals or materials being stored. For fire safety requirements for flammable and combustible liquid. Refer to the Fire Protection and Prevention Procedure.

2.9 Fire Prevention Practices

1. Make every effort to limit the combustibility of interior finishes, such as wall coverings, room dividers, carpeting, and furnishings. The use of fire-retardant paneling, fabrics, and upholstery padding materials is strongly recommended.

2. Store files in closed metal file cabinets. Protect "open" file storage areas (e.g., boxed file storage or shelved file storage areas or rooms) with an automatic extinguishing system.

3. Stationery supply rooms and storage rooms containing flammable or fire source materials shall be "No Smoking" areas.

4. Keep flammable and combustible liquid handling and storage to a minimum. When the use of a flammable liquid is necessary, it shall be dispensed from approved safety cans, unless the entire contents of the vendor’s can are used at one time, or the vendors container is no larger than one quart (one liter) capacity. Do not store product or laboratory samples containing flammable or combustible liquids in offices.

5. Do not store flammable or combustible paints, thinners, and maintenance materials in general office areas. Provide approved flammable liquid storage cabinets in maintenance storage areas for these items.

6. Remove trash regularly to minimize fuel load and reduce probability of fire caused by carelessly discarded smoking materials or intentional burning. Empty trash collection containers promptly into an outside receptacle.

7. Do not store combustible materials in rooms or closets used for electrical controls, or telephone wiring or switching.

2.10 Ignition Source Control

1. Smoking shall not be allowed in permanent or temporary Saxon offices or buildings. Smoking areas shall be assigned. Discard smoking materials in approved containers.

2. All electrical equipment shall be UL-approved by an accredited testing agency and should be inspected before first use and periodically thereafter. (Annual inspection is recommended.)

2.11 Heat-Producing Electrical Appliances

Heat-producing electrical appliances such as coffeepots shall not be enclosed in cabinets or closets while plugged in. They shall only be connected to timer-controlled electrical outlets that are on for a maximum of eight hours, used in constantly attended areas, and unplugged when not in use. Such equipment shall also be approved by an accredited testing agency and shall be inspected at least annually.

2.12 Malfunctioning or Broken Electrical Equipment

Malfunctioning or broken electrical equipment such as switches, outlets, cords, and appliances, shall be removed from service and repaired promptly. Circuit breakers or fuses that trip frequently or overheated wires indicate overload and shall be reported and corrected promptly. Multiple plug adapters and lightweight extension cords shall not be used.
2.13 Emergency Planning

1. The office management is responsible for developing emergency action procedures which include a fire emergency plan.

2. Fire drills will be conducted at least annually.

2.14 Office Management Responsibilities

Office management has the following responsibilities for providing fire prevention and protection:

1. Office management shall provide office facilities that meet Saxon minimum acceptable fire safety criteria. Cooperation is needed between building management (whether the building is company-owned or leased) and other tenants with respect to housekeeping, control of public areas, inspecting and testing fire protection systems, and following established evacuation procedures.

2. Office management shall consider fire safety presented by occupancies other than Saxon including laboratories, and manufacturing facilities in or near the Saxon occupied facility.

3. Office management shall conduct a periodic evaluation of the fire safety procedures, practices, and protection equipment to ensure that an adequate and acceptable level of fire safety is maintained. This evaluation is recommended after new construction or major office space restructuring and shall be conducted at least annually. For a sample Building Fire Safety Inspection Checklist, see Form II.F.001.

4. Office management or designee shall conduct monthly fire safety inspections of office facilities to assure compliance with fire safety standards. For a sample Monthly Fire Safety Inspection Checklist, see Form II.F.002.

5. Office management is responsible for identifying needs and providing for the training of employees in the use of occupant-applicable fire emergency equipment and fire emergency procedures.
Site Section 3A General
HOUSEKEEPING

1.0 PURPOSE
To provide established requirements for housekeeping on Saxon projects.

Housekeeping is a fundamental and necessary activity on all projects and is the responsibility of every individual working on the project. Good housekeeping promotes good production.

2.0 REQUIREMENTS

1. Work areas, passageways and stairways and other areas shall be kept free of debris and materials.

2. There shall be unobstructed access at all times to such areas as electrical panels, safety disconnect switches, fire extinguishers, emergency exits, etc.

3. Suitable containers shall be provided for waste disposal. Combustible waste, such as oily rags, paper, etc. shall be stored in a safe place such as covered metal containers. All containers shall be labeled to indicate the permissible contents.

4. Trash which does not contain any hazardous waste shall not be stored or disposed in bags or containers marked for hazardous waste.

5. Lunchroom area trash disposal cans shall be provided with covers, their use shall be enforced, and they shall be emptied daily.

6. Lunch and break areas shall be kept clean and free of all food scraps, wrappers, cups, and other disposable items.

7. The use of glass bottles will only be allowed in designated lunch and break areas.

8. Work areas shall be cleaned as often as necessary to eliminate tripping and fire hazards. Particular attention shall be focused to the area around scaffolds, ladders, ramps, stairs and electrical and mechanical equipment. Tools and loose materials shall also be removed if a hazard is created.

9. Extension cords, wires, and electrical cables shall be kept in an elevated position where they pose no potential danger to personnel and the extension cords are not likely to be damaged by activities or equipment.

10. Timely response to spills such as oil, grease, or other liquid shall be according to Saxon site specific plans.

11. Protruding nails shall either be removed or bent over in such a way that they no longer present a risk. This shall be done as the hazard develops and not at a later time.

12. Cleaned lumber shall be stacked in orderly piles.

13. When nails are removed from lumber, the nails shall be collected and disposed of properly to eliminate puncture hazards.

14. Storage and laydown areas shall be kept clean and materials neatly stacked or placed.
SANITATION

1.0 PURPOSE
To provide established requirements for providing adequate sanitary facilities and potable water on job sites.

2.0 REQUIREMENTS

2.1 Potable Water

1. An adequate supply of potable water shall be provided in all places of employment.

2. Portable containers used to dispense drinking water shall be capable of being tightly closed, sealed, and equipped with a tap. Water shall not be dipped from containers.

3. Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and shall not be used for any other purpose.

4. The common drinking cup is prohibited.

5. Where single service cups (disposable) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

6. Drinking water containers shall be cleaned and sanitized on a daily basis. Steps 1-6 are an acceptable method of cleaning and sanitizing drinking water containers.

   a. The individual assigned to the task of cleaning the containers shall wash his/her hands with soap and water and put on disposable or rubber gloves.

   b. The outside of the container shall be rinsed off prior to opening the container.

   c. Containers are to be washed with a detergent daily. Hot water shall be used when available. Dishwashing liquid and a scrub brush or sponge shall be used to clean the containers.

   d. All cleaning utensils such as scrub brushes or sponges shall be cleaned and sanitized daily before each use.

   e. Containers are to be rinsed with clean water to remove all soap residue.

   f. Containers are to be sanitized:

      1. Rinse containers in a solution of 2 tablespoons of chlorine bleach in one gallon of water.

      2. Rinse containers in clean water.

      3. When a location is available, the containers shall be allowed to air dry prior to refilling.

7. Drinking water containers shall be sealed and dated once the container is filled and ready for use.
2.2 Non-potable Water

1. Outlets for non-potable water, such as water for industrial or firefighting purposes only, shall be identified by signs to indicate clearly that the water is unsafe and is not to be used for drinking, washing or cooking purposes.

2. There shall be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing non-potable water.

2.3 Toilets at construction jobsites

1. Toilets shall be provided for employees according to the following table:

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>Minimum number of facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 or less</td>
<td>1</td>
</tr>
<tr>
<td>20 or more</td>
<td>1 toilet seat and 1 urinal per 40 workers</td>
</tr>
<tr>
<td>200 or more</td>
<td>1 toilet seat and 1 urinal per 50 workers</td>
</tr>
</tbody>
</table>

2. Temporary toilets shall be maintained in accordance with applicable regulations.

3. Toilets shall be constructed so as to shield the occupants from view and protect against weather and falling objects.

4. They shall be ventilated and all windows and vents screened.

5. Adequate tissue shall be provided.

6. All toilet facilities shall be cleaned and emptied when necessary.

2.4 Washing facilities

1. Washing facilities shall be made available in all places of employment.

2. The washing facilities shall be maintained in a sanitary condition.

3. Each washing facility shall be provided with hot and cold running water or tepid (lukewarm) running water or equivalent.

4. Hand soap or similar cleansing agents shall be provided.

5. Individual hand towels or sections thereof, of cloth or paper, warm air blowers or clean individual section of continuous cloth toweling, convenient to the lavatories shall be provided.

6. Whenever showers are required by a particular standard, the showers shall meet the following requirements:

   a. One shower shall be provided for each 10 employees of each sex, or numerical fraction thereof, who are required to shower during the same shift

   b. Body soap or other appropriate cleansing agents shall be provided.

   c. Showers shall be provided with hot and cold water feeding a common discharge line.

   d. Employees who use showers shall be provided with individual clean towels.
2.5 Eating and drinking areas

No employees shall be allowed to consume food or beverages in a toilet room nor in any area exposed to a toxic material.

2.6 Vermin Control

Every enclosed workplace shall be so constructed, equipped, and maintained so far as reasonable to prevent the entrance or harboring of rodents, insects, and other vermin. A continuous, effective extermination program shall be instituted where their presence is detected.

2.7 Change rooms

Whenever employees are required by a particular standard to wear protective clothing because of the possibility of contamination with toxic materials, change rooms equipped with storage facilities for street clothes and separate storage facilities for the protective clothing shall be provided.

3.0
ILLUMINATION

1.0 PURPOSE
To provide established requirements for illumination of work areas.

2.0 REQUIREMENTS

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

<table>
<thead>
<tr>
<th>Foot-candles</th>
<th>Area or operation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>General construction area lighting</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>General construction areas, concrete placement, excavation and waste areas, accesses, active storage areas, loading platforms, refueling, and field maintenance areas.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Indoors: warehouses, corridors, hallways, and exits.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. US Dept. of Labor, Mine Safety and Health Administration approved cap lights shall be acceptable for use in tunnel heading.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>General Construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, barracks or living quarters, locker or dressing rooms, mess halls, and indoor toilets and workrooms.</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>First-aid stations, infirmaries, and offices.</td>
<td></td>
</tr>
</tbody>
</table>


3.0
MATERIALS AND STORAGE HANDLING

1.0 PURPOSE
To provide requirements for safe handling and storage of materials.

2.0 REQUIREMENTS

1. Both temporary and permanent storage shall be neat and orderly. When planning material storage, a minimum of 36 inches of clearance shall be allowed under sprinkler heads. Automatic sprinkler controls and electrical panel boxes shall be kept free and unobstructed.

2. There shall be a three-foot unobstructed access way to fire hoses and extinguishers. Clear access to emergency exits and aisles shall be maintained. Areas immediately outside emergency exits shall be left clear for egress. See EH&S IV.B.

3. Materials shall be separated based on the kind, size, and length of the material. It shall also be placed in neat, orderly piles that will not fall. If the piles are high, they shall be stepped back as the height increases, and shall be secured by cross piling or cross tying. Piles of material shall be arranged to allow for passageways.

4. Storage bins and racks that are in good condition shall be used to make storing materials easier and reduce hazards. Storage racks shall be secured to the wall and/or floor as well as to each other. Damaged racks shall not be used for storage. Employees shall not be allowed to climb racks. Racks and bins shall have a weight limit and shall be labeled accordingly. Elevated floors shall also be labeled indicating their load capacities.

5. The safety of a manual lift depends not only on the weight of the load, but also the horizontal distance of the load from the employee, the vertical distance traveled, the frequency of the lift, and the dimension and weight distribution of the load. All loads that will be handled often and/or manually shall be stored as close to “waist” height as possible.

2.1 Lumber Storage
Lumber shall be stacked on solid, level sills. Cross-strips or cross-pilings shall be used where the pile is more than 4 feet high. The top of each pile shall be kept as level as possible when lumber is being removed. Used lumber shall have nails removed before it is piled. Two workers shall carry long boards (over eight feet), and care should be exercised at corners and crosswalks. Employees shall wear gloves when handling lumber.

2.2 Steel Storage
Reinforcing steel shall be stored in separate piles according to size and length. Corrugated and sheet steel shall be stacked in flat piles. Spacing strips shall be placed between each bundle. Employees shall wear gloves while handling steel.

2.3 Pipe Storage
Pipe shall be stored on pipe sills or racks and shall be blocked to prevent rolling. When removing pipe, employees shall work from the end of the pile as much as possible. Pipe larger than 2 feet in diameter should be handled using mechanical equipment. Two workers should carry long lengths of pipe (over eight feet), and care shall be exercised at corners. Employees shall wear gloves while handling pipe.

2.4 Petroleum Product Storage – Refer to Fire Protection and Prevention Procedure IV.C

2.5 Flammable Liquid and Gas Storage – Refer to Fire Protection and Prevention Procedure IV.C

2.6 Material Handling
1. Supervisors shall give advance consideration to the size, shape, and weight of materials to be handled and plan the most efficient and safest method to accomplish the task. Proper tools shall be provided for the job, and alternate methods should be considered.

2. Supervisors shall ensure that the work fits the employee in terms of knowledge and physical abilities. When unusual or hazardous operations are required, before beginning the work, employees shall be warned about all possible hazards and given specific safety instructions by their immediate supervisor.

3. One employee shall not be allowed to manually lift more than 50 pounds of material at one time. If a load exceeds 50 pounds, either mechanical help or help from other employees is required.

   a. Begin by examining the object you are going to lift to find out if it has cutting edges, rough or slippery surfaces, or is too heavy. Unless you have received special training, do not attempt to lift heavy weights. Get help.

   b. When you lift, place your feet apart, bend your knees, keep your back straight and get a secure grip. Lift gradually by straightening your legs in order to put the weight on your strong leg muscles. Never over-reach.

   c. If you have to lift a load shoulder high or above your head, first lift it waist high, rest it on a support if possible and change your grip. Then bend your knees in order to get added power for the big upward push.

   d. When moving a load, be sure that you can see where you are going. Never try to change the position of a load while you are carrying it. Rest it upon some object and then re-adjust your grip.

   e. You set a load down the way you picked it up – by bending your knees – but do not set it down on your hands. Put down one corner of the load first and then slide your hands away.

   f. Special types of objects and materials require special handling.

   g. Reverse lifting procedure, lower load slowly without twisting body. Remember, keep your back straight.

2.7 Safe Practices

Because proper storage and material handling procedures help conserve materials and equipment, increase productivity by providing a smooth flow of materials when needed, and reduce the number of accidents and injuries usually associated with this function, the following practices shall be followed:

1. Chock and block tires of trucks during loading and unloading.

2. Provide proper personal protective equipment.

3. Ensure that only properly trained personnel are used to handle hazardous materials and to oversee material handling methods.

4. Report any unsafe condition or practice that cannot be corrected within the scope of your authority.

5. Label elevated floors and storage racks with maximum capacities.

6. Train warehouse and craft personnel responsible for storing and handling material.
7. When unloading trucks or trailers with a fall hazard exceeding six (6) ft., ladders will be used or fall protection shall be designed and used.
SIGN AND BARRICADES

1.0 PURPOSE
To provide directions for the use of signs and barricades, to restrict access to areas. Non-routine activities may require additional measures to ensure employee safety.

2.0 REQUIREMENTS

1. Supervisors are responsible for erecting and maintaining barricades that are required for employee protection and ensuring adherence to this procedure. The barricade tags shall have the erecting supervisor’s name written on the tag.

2. The Supervisor (Foreman, General Foreman, and Superintendent) who had the barricade installed shall retain responsibility for the integrity of the barricade and shall take additional appropriate action if the barricade is not adequately limiting access. Responsibility may be formally passed on to another supervisor. Tags and labels shall be changed to reflect the new supervisor. When the need for the barricade has ended the barricade shall be removed immediately.

2.1 Signs

1. Signs designating hazard or giving instructions shall be placed on barricade stands, posts, other suitable surfaces.

2. Signs shall be placed in visible locations, before work starts and shall be removed to proper storage areas when they are no longer needed.

3. Signs shall be legible and maintained in a usable condition.

4. Employees shall obey posted signs.

2.2 Barricades

If a site/facility will routinely use barricades, a barricade plan shall be developed.

1. Barricades shall be used in order to alert employees to potential hazards and indicate if authorization, protective measures, or protective equipment are required.

2. A tag shall be affixed to the barricade. The tag shall be in a conspicuous location and shall contain the following information:
   a. The date the barricade was erected.
   b. The reason for the barricade.
   c. The name of the Saxon supervisor responsible for the barricaded area.

3. Barricades shall be a minimum of 42 inches high, neat, uniform, and level.

4. Barricades shall be a minimum of 6 feet back from the edge of excavations, holes, platforms, and roofs ledges.

5. Barricades shall have blinking lights when used on roadways or walkways after dark.

6. Barricades shall have an entrance, opening, or gate whenever possible.
7. Temporary barricades are generally erected for a specific purpose and intended for quick and easy removal. Examples are colored tape, sawhorses, safety cones, etc. All barricades shall have a sign and color code signifying warning, caution, or danger to prevent or restrict access to the area.

2.3 Barricades are required around:

1. Excavations
2. Floor and roof openings
3. Edges of roofs and elevated platforms
4. Around overhead work areas
5. Where ever necessary to warn employees of potential for falling in, through, off or the potential of being struck by a falling object.

2.4 Use of Yellow-black barricade tape

Yellow-black tape is used to indicate caution or warning. An employee may enter such an area only after reviewing the tag and taking the necessary precautions.

2.5 Use of Yellow-magenta barricade tape

Yellow-magenta tape is used to restrict access to a work area where a radioactive material is present or where X-raying is being done. Entry is prohibited without the authorization of the supervisor of the radiation work.

2.6 Use of Red barricade tape

1. Red barricade tape is used to indicate danger. No one may enter a red barricaded area unless they are specifically authorized by the supervisor signing the barricade tag and they have met the requirements indicated on the tag.

2. When a supervisor feels that a red barricade is necessary, an EH&S Professional shall be consulted to assess the situation. When it is not possible to eliminate or control the hazard, the supervisor shall authorize the use of the red barricade and establish the requirements for entering the barricade.

2.7 Removal of temporary barricades

Once temporary barricades are no longer needed, they shall only be removed by the supervisor or competent person authorizing its use.

3.0
LADDERS

1.0  PURPOSE
To provide requirements for selecting, constructing, maintaining, inspecting, and using ladders.

2.0  REQUIREMENTS

2.1  Ladder Selection
Great care should be taken in selecting the proper size and design of the ladder for the use intended.

1.   Ladders shall have non-skid surfaces on each cleat.

2.   Ladders shall be capable of supporting four times their intended load.

2.2  Straight Ladders/Extension Ladders

1.   All portable straight ladders shall be equipped with approved safety shoes.

2.   Metal ladders shall not be used when doing electrical work or around open electrical circuits.

3.   A rope should be spliced onto one of the top rungs of a ladder to provide a ready method of securing the ladder.

2.3  Step Ladders

1.   Step ladders (sometimes referred to as "A" frame ladders) shall have positive locking spreaders that will be fully spread and locked when the ladder is in use.

2.   Step ladders shall not be used as straight ladders. Workers shall not be allowed to work from the rung next to the top or the top of a stepladder.

3.   Step ladders shall be firm and well constructed. Care shall be taken when setting a ladder on grating. Often the feet of a stepladder will slip through the grating causing the ladder to fall.

4.   Step ladders shall be tied off, or a worker shall hold the ladder, when the user is 6 feet or more above the floor.

2.4  Ladder Usage

1.   The feet of the ladder shall be placed approximately one quarter of its supported length away from the vertical plane of its top support. (That is, set the ladder at a 4:1 slope.)

2.   Only light, temporary work should be performed from ladders.

3.   Ladders shall not be placed in front of doors that open toward the ladder unless the door is locked or otherwise guarded.

4.   Ladder feet shall be placed on a firm base, and the area at the top and bottom of the ladder shall be kept clear.

5.   When using straight ladders/extension ladders, the top of the ladder shall be secured to prevent displacement. When possible the bottom of the ladder should be secured. Use ladder shoes, stakes, or other means to secure the ladder.

6.   Ladders leading to landings, walkways, platforms, etc. shall extend 36 inches above this point and shall be securely fastened to prevent moving. If the ladder is not long enough to extend 36 inches above the landing,
suitable grabrails shall be installed. Long ladders shall be braced at intermediate points as necessary to prevent springing.

7. On two-section straight/extension ladders, the minimum overlap for two (2) sections in use shall be as follows:

<table>
<thead>
<tr>
<th>Size of ladder (feet)</th>
<th>Overlap (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to and including 3’</td>
<td>3’</td>
</tr>
<tr>
<td>Over 36’ up to and including 48’</td>
<td>4’</td>
</tr>
<tr>
<td>Over 48’ up to and including 60’</td>
<td>5’</td>
</tr>
</tbody>
</table>

8. When ascending or descending ladders, workers are to face the ladder and use both hands to hold onto the ladder. Employees shall maintain a three-point contact at all times while ascending or descending a ladder. If material shall be moved from one level to another, a rope, block and tackle, or other means shall be used. Materials are not to be hand carried on ladders.

9. Ladders shall not be used horizontally as runways or scaffolds.

### 2.5 Job-Built Ladders

When it is necessary to build a ladder at the jobsite, the ladder shall comply with the following requirements:

1. OSHA and ANSI requirements regarding job-made ladders.
2. All lumber shall be thoroughly seasoned, straight-grained, and free from large or loose knots, decay, and other defects. All surfaces shall be planed and free of splinters, and edges where handrails are used should be beveled.
3. Rung spacing shall be uniform and not over 14 inches or less than 10 inches on centers. The wood for the rungs shall be clear, straight-grained, and entirely free of knots. The slope of the grain in the cleats shall not be less than 1 in 15. Preferably the cleats should be straight-grained. Single cleat ladders shall not exceed 30 feet in length.
4. Rungs or cleats should be recessed ½ inch into the rails, or filler strips of the same thickness as the cleats shall be inserted between the cleats and nailed to the side rails.
5. Portable ladders shall support four times the intended load.
6. Ladders shall be at least 16 inches wide at the base.

### 2.6 Ladder Inspection

1. Ladders shall be inspected before each use and monthly for deterioration and damage. Close visual inspection is recommended.
2. No employee shall be allowed to use (for any reason) any ladder that has broken, loose, or cracked rungs, side rails, or braces. Any ladder found in this condition shall be removed from service immediately. All inspections shall be documented, and ladders shall be color coded for each month.

### 2.7 Ladder Maintenance

1. Wooden ladders may be periodically treated with a clear preservative such as varnish, shellac, or linseed oil. Ladders shall not be painted because painting covers up structural defects.
2. All ladders should have the rungs cleaned to prevent accumulation of materials that might destroy their non-slipping properties, and all metal fittings should be carefully checked for rust and corrosion.
3. When not in use, ladders should be protected from the weather. Ladders stored horizontally should be supported at both ends and at intermediate points to prevent sagging of the middle section, which tends to loosen the rungs and warp the rails.
SCAFFOLD SAFETY

1.0 PURPOSE
To provide requirements for erecting, use, and dismantling elevated work platforms.

2.0 REQUIREMENTS

2.1 General Requirements

1. Each site/facility shall designate a scaffold competent person(s). This designation shall be made in writing and the individual’s qualifications shall be documented.

2. Each site/facility shall conduct training regarding the safe erection and dismantling of scaffolds for all employees involved in those activities. The training shall comply with the current version of OSHA’s scaffolding standards.

3. Each site/facility shall conduct safety training for all users of scaffolds in accordance with the current version of OSHA’s scaffolding standards.

4. Each scaffold shall be erected, altered and dismantled under the direct supervision of a competent person.

5. All working platforms shall be capable of sustaining a minimum working load of 75 psf on 6-foot spans or have a safety factor of 4 to 1 for the intended load.

6. Posts shall be plumb, and scaffold platforms shall be level.

7. Handrail and midrail are required on all scaffolds regardless of height.

8. A stationary scaffold shall be secured to the building or a fixed structure vertically every 25 feet starting at the base of the scaffold and horizontally every 30 feet. This rule shall also apply to mobile scaffolds at their working stations. Outriggers may be used in lieu of tying off, or scaffolds may be clamped together so that the height does not exceed three times the smallest base dimension without additional stabilization.

9. Where persons are required to work or walk under scaffolding, a screen guard of No. 18 gauge ½-inch wire mesh or equivalent shall be provided between the toe board and handrail.

10. Welding leads, extension cords, hoses etc., shall not be allowed to be suspended from scaffold components.

11. All workers shall tie off to an acceptable anchorage when there is no (or an incomplete) handrail, when there are openings over 12 inches in the working platform. When working from suspended scaffold/platform employees shall be secured to an independent lifeline.

12. Anchorage parts for independent lift lines shall be able to withstand 5,000 pounds per employee attached.

13. Swinging stages, floats, and boatswain’s chairs shall be tested before using (Test by applying the maximum intended load with the unit close to the floor or ground).

14. Crews requiring scaffolds shall requisition them well in advance to avoid delays and to allow time to provide the best scaffold for the job.

15. Scaffold erection crews shall inspect all components for defects as the erection proceeds. Any components found to be defective shall be set aside and tagged for repair or disposal.
16. The competent person shall perform daily inspections of the scaffolds. All defects shall be corrected at once or the scaffold shall have a "red" tag attached.

17. Scaffold handrails shall be about 42 inches above the platform. The minimum distance between the handrail and the platform is 38 inches. The 38 inches allows for overlap of the scaffold planks. A midrail shall be placed approximately midway between the platform and the handrail.

18. When scaffold platforms are more than 2 feet above or below a point of access, portable ladders hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders such as ladder stands, ramps walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Cross braces shall not be used as a means of access. Where possible gates shall be used for safe access and egress.

19. Saxon’s policy is to build each scaffold as complete as physically possible; complete deck, handrail/midrail, toeboards and access ladder.

2.2 Tube and Coupler Scaffolds

1. Posts shall be erected on required bases and maintained plumb.

2. Diagonal cross bracing shall be provided as follows:
   a. Horizontally every third section
   b. Vertically every fourth section
   c. Whenever posts are farther apart then 7 feet, the braces shall be at a 45-degree angle.

3. Runners shall be erected along the length of the scaffold located on both the inside and outside posts at level heights (when tube and coupler guardrails and mid rails are used on outside posts they may be used in lieu of outside runners.)

4. Bearers and braces shall extend beyond the posts and runners, shall provide full contact with the coupler.

5. Tube and coupler scaffold over 125 feet in height shall be designed by a registered professional engineer, and shall be constructed and loaded according to the design.

2.3 Wood-Pole Scaffolds

1. Wood-pole scaffolding shall be designed and erected so that the load capacity is at least 75 psf on 6-foot spans or the safety factor is at least four times the intended load.

2. Wood pole scaffold higher than 60 feet shall be designed by a registered professional engineer. Pole scaffolds have many intricate requirements depending on its duty rating. See Title 29 CFR Part 1926.452.

3. Foundations for pole scaffolds shall be capable of sustaining the pole loads without sinking or shifting. Wood sills shall be a minimum of 2- x 10-inch lumber.

4. When poles are spliced, 4-foot wood splice plates or better shall be installed on at least two adjacent sides at the same height and length.

5. Pole scaffolds shall be secured at intervals of 25 feet vertically.
6. Diagonal and cross bracing of sufficient quantity and strength shall be used for scaffold erection to prevent any scaffold movement.

7. Where there is concern for combustible material in a work area, fire-resistant materials shall be used.

2.4 Trestle Scaffolds

1. Scaffold platforms shall not be placed any higher than the second highest rung or step of the ladder supporting the platform.

2. All ladders used in conjunction with step, platform and trestle ladder scaffolds shall meet pertinent requirements of Title 29 CFR Part 1926, Subpart X.

2.5 Suspended Scaffold Requirements

1. Two-Point Suspended Scaffolds shall have standard toe boards, midrails, and handrails.

2. Platforms shall not be more than 36 inches (0.9 m) wide unless designed by a qualified person to prevent unstable conditions.

3. The platform shall be securely fastened to hangers (stirrups) by U-bolts or by other means, which satisfy the requirements of Title 29 CFR 1926.451A.

4. The platforms shall be of ladder-type, plank-type, beam-type, or light-metal type. Light metal type platforms having a rated capacity of 450 pounds or less and platforms 40 feet or less in length shall be tested and listed by a nationally recognized laboratory.

5. The blocks for fiber or synthetic ropes shall consist of at least one double and one single block. The sheaves of all blocks shall fit the size of the rope used.

6. Two-point scaffolds shall not be bridged or otherwise connected one to another during raising and lowering operations unless the bridge connections are articulated (attached), and the hoists properly sized.

7. Passage may be made from one platform to another only when the platforms are the same height, are abutting and walk-through stirrups specifically designed for this purpose is used.

8. All suspension scaffold support devices such as outrigger beams, cornice hooks, parapet clamps and similar devices, shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist whichever is greater).

2.6 Multilevel Suspended Scaffolds Requirements

1. When two or more scaffolds are used they shall not be bridged one to another unless they are designed to be bridged, the bridge connections are articulated, and the hoists are properly sized.

2. If bridges are not used, passage may be made from one platform to another only when the platforms are the same height and are abutting.

3. Scaffolds shall be suspended from metal outriggers, brackets, wire rope slings, hooks, or means that meet equivalent criteria (e.g., strength, durability).

4. The rules listed for two-part suspended scaffolds apply here, Section 2.5.1 through 2.5.8, except those rules for fall protection:
a. Multilevel suspended scaffolds shall have lifelines not attached to the scaffold, independent of the supporting lines.

b. Employees on the top stage will tie off, with a safety harness, to independent lifeline.

c. Employees on the lower stages will tie off with a safety harness to the scaffold itself.

2.7 Floats

1. The platform shall be supported by a minimum of two bearers, each of which shall project a minimum of 6 inches beyond the platform on both sides. Each bearer shall be securely fastened to the platform.

2. Rope connections shall be such that the platform cannot shift or slip.

3. When only two ropes are used with each float, they shall be arranged so as to provide four ends that are securely fastened to overhead supports.

4. Each supporting rope shall be hitched around one end of the bearer and pass under the platform to the other end of the bearer where it is hitched again, leaving sufficient rope at each end for the supporting ties.

5. Workers on floats shall tie off to an independent lifeline before getting on a float and untie after getting off a float.

2.8 Needle-Beam Scaffolds

1. Needle beam shall be installed on the edge.

2. Ropes and hangers shall be used for supports, except that one end of the needle beam may be supported by a permanent structural member.

3. Ropes shall be securely attached to the needle beams.

4. The support connections shall be arranged so as to prevent the needle beam from rolling or becoming displaced.

5. Platform units shall be securely attached to the needle beams by bolts or equivalent means. Cleats and overhang are not considered to be adequate means of attachment.

6. Handrails and toe boards shall be used, and workers shall wear and use the proper fall protection.

2.9 Boatswains’ Chairs

1. Boatswains’ chair tackle shall consist of correct size ball bearings or bushed blocks containing safety hooks and properly “eyed spliced” minimum five-eight 5/8 inch diameter first-grade manila rope, or other rope which will satisfy the criteria (e.g., strength and durability) of manila rope.

2. Boatswains’ chair seats slings shall be weave through four corner holes in the seat; shall cross each other on the underside of the seat; and shall be rigged so as to prevent slippage which could cause an out-of-level condition.

3. Boatswains’ chair seats shall be a minimum of (5/8) inch diameter fiber, synthetic, or other rope which will satisfy the criteria (e.g., strength, slip resistance, durability, etc.) of first grade manila rope.

4. When a heat producing process such as gas or arc welding is being conducted, boatswains’ chair seat slings shall be a minimum of three-eight (3/8) inch wire rope.
5. Non-cross-laminated wood boatswains’ chairs shall be reinforced on their underside by cleats securely fastened to prevent the board from splitting.

6. The worker shall be tied off to an independent lifeline with a safety harness.

2.10 Electric Hoist Platforms

1. When working platforms are suspended from electric hoist mechanisms and used to raise and lower workers, a safety harness shall be worn and attached to an independently secured lifeline.

2. Such platforms shall have guardrails 42 inches in height above the platform.

3. Prior to each use, the hoist mechanism and support attachment shall be visually inspected and the load support checked at 1 foot off the ground.

4. The cable and the lay of the cable on the spool shall be checked constantly.

2.11 Mobile Scaffolds

1. Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination, thereof, to prevent racking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.

2. Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is being used in a stationary manner.

3. Manual force to move the scaffold shall be applied as close to the base as practicable, but not more than 5 feet above the supporting surface.

4. Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel scaffolds unless the scaffold is designed for such propulsion systems.

5. Scaffolds shall be stabilized to prevent tipping during movement.

6. Employees shall not be allowed to ride on scaffolds during movement.

2.12 Scaffold Erection and Dismantling Requirements

1. Pockets, pouches, and tool belts shall be used to carry the necessary tools for the work.

2. Scaffold members shall be hoisted or lowered with a hand line or passed from hand to hand. Throwing or dropping items to co-workers is not permitted.

3. Constant fall prevention measures shall be maintained. Provisions shall be established for using a safety harness and working on firm scaffold decks when this can be done safely.

4. Supported scaffold poles, legs, posts, frames and uprights shall bear on base plates and mudsills or adequate firm foundation.

5. Footings shall be level, sound, rigid and capable of supporting the loaded scaffold without settling or displacement.

6. When scaffolds are to be secured to fixed structures or outriggers are to be used, they shall be installed as soon as possible. When dismantling a scaffold, these should be left on as long as practical.
7. The coordination of this activity with surrounding operations and environment shall be given prior consideration.

2.13 Mounting and Dismounting Scaffold Requirements

1. Do not carry objects in hands. Keep both hands empty for climbing handholds.
2. Step only on secured ladder or access rungs.
3. Give full attention to stability while getting on and off the working platform. Do not use the toe board as a handhold or foothold.
4. Pay attention to each step and handhold; most falls occur near the top of the ladder or near the bottom.

2.14 Scaffold Tagging

1. General Scaffold Tagging Requirements
   a. A green scaffold tag designates a complete scaffold as defined by the manufacturer and/or Title 29 CFR Part 1926, Subpart L.
   b. A yellow scaffold tag designates a scaffold, which is safe to use but has been altered to suit a specific job. A yellow scaffold tag shall detail any hazards (incomplete handrail, incomplete decking, low-overhead, limited climbing clearance, etc.) and the necessary protective measures.
   c. If a scaffold is in the process of being erected, changed, or dismantled, it shall have a red tag. A scaffold that has a red scaffold tag shall be considered unsafe and shall not be used.
   d. If a scaffold has been damaged or is defective, a red tag shall be attached.
2. Installation and Removal of Scaffold Tags
   a. A competent person shall determine whether a usable scaffold receives a yellow or a green tag. The competent person shall be responsible for completing all pertinent information on the tag and affixing the tag.
   b. The scaffold tag shall be affixed to each scaffold access ladder approximately 5 feet, 6 inches from its base, where it will not interfere with normal access.
   c. Anyone may remove a green or yellow scaffold tag if the scaffold does not meet the requirements, e.g., a scaffold that has been damaged, has been improperly modified, is missing components, or is deficient in any safety aspect. A red tag will be used in these circumstances. Only a competent person in scaffold erection may place a yellow or green scaffold tag on a scaffold.
   d. After a scaffold has been repaired, a scaffold competent person shall inspect it and retag it accordingly.
   e. Daily inspections by the competent person shall be performed to ensure that all scaffolds are in safe condition and tags are legible.
   f. If a scaffold has been erected and does not have a tag, contact the scaffold foreman or competent person to inspect and tag the scaffold before work begins.

2.15 Inspection and Testing - Scaffold Planks

1. Scaffold planks shall be inspected and tested by a designated competent person upon receipt and prior to use as a platform. Users shall examine planks visually prior to each use.
2. Examine planks for knots, excessive grain slope, shakes, decay, dry rot, and other defects.

3. Density of lumber should be equivalent to Douglas fir and capable of supporting four times the intended load. Moisture content should not exceed 20 percent.

4. All scaffold planks shall be scaffold grade or equivalent as recognized by approved grading rules.

5. Planks shall be 2- x 10 inch or 2- x 12-inch heavy-duty (75 psi on 6-foot span lumber).

6. Discard the plank as a scaffold plank if evidence of a defect is noted.

7. Requirements 3 and 5 above should be specified on the purchase requisition.

2.16 Special Scaffolding

Any scaffold which shall be specially adapted to the work place where the requirements above cannot be met shall be approved by a qualified registered professional engineer, the site manager, and ES&H professional.

2.17 Storage of Scaffolding

1. Scaffold materials shall be temporarily stored in a manner that will protect and prevent damage to them.

2. Scaffold materials shall not be left in work areas where they obstruct traffic and/or cause fire hazards.
Fall Protection

1.0 Purpose
To provide fall prevention and fall protection system requirements to ensure Saxon employees are protected when work activities place them in an elevated position or in a position where a fall to a sub-ground elevation is possible.

2.0 Requirements

2.1 Fall Prevention

A fall hazard occurs when an employee's feet leave the ground. Fall preventative measures shall be implemented when the potential for a fall of 6 feet or more or into hazardous machinery or equipment exists. Prior to beginning a project, site/facility management shall perform an initial survey carefully evaluating the potential fall hazards and develop written plans for fall protection for those specific hazards. The plan shall meet the requirements of Title 29 CFR Part 1926 Subpart M and must address the elements of this procedure. Fall protection comes in many types. The safest form, is an engineered solution. An engineered solution is to design the work to prevent (or minimize) employee exposure to falls. An example of an engineered fall protection solution is a guardrail system including handrails, midrails and toe boards. Erecting steel on the ground and then erecting the assembled sections is an example of minimizing the exposure to a fall hazard.

2.2 Guardrails General

A guardrail system designed to support 200 pounds of force in either the downward or outward directions shall be required if the walking or working surface is six feet (four feet for general industry) or more above a lower level. Handrails shall be 42 inches (plus or minus 3 inches) above the walking surface. Midrails are to be halfway between the handrail and the floor but cannot have more than 19 inch opening between the midrail and either the walking surface or handrail. The guardrail system shall have toe boards or screens. The screens shall be from the toeboards to the guardrails. The screen is to be of #18, 1/2” wire mesh or equivalent material.

Guardrails systems that have an access opening for a ladder, the opening must have either a swing gate or an offset so an employee cannot back into the opening. Access openings for stairs do not need a gate or offset.

1. Wooden guardrails shall be constructed of, as a minimum, a 2” x 4” handrail with a 1” x 4” midrail with 2” x 4” posts spaced no more than 8 feet apart. Material shall have no loose or large knots and shall be free of splinters or protruding nail heads.

2. Pipe guardrails (posts, top rails, and midrails) shall be made of schedule 40 pipe that is at least 1 1/2 inch inside diameter (I.D.). The post shall be placed a maximum of 8 feet apart on centers. Toe boards are required.

3. Structural steel guardrails (posts, rails, midrails) shall be of at least 2” x 2” x 3/8” angle iron with posts spaced not more than 8 feet apart on center. Toe boards are required.

4. Wire rope guardrails shall be made of at least 3/8” wire rope. Wire rope midrails shall be at least 1/4-inch wire rope. The posts shall be on 8 foot centers or less and the wire rope stretched tight to keep the deflection to less than 3 inches. Wire rope handrails shall not deflect to a height less than 39 inches above the floor. The wire rope shall be flagged every 6’ with a highly visible material. For 1/4” wire rope, a minimum of 2 clips shall be used and shall be spaced no more than 1 1/2” apart and torqued to 15fp. For 3/8” wire rope, a minimum of 2 clips shall be used and shall be spaced 2 1/4” apart and torqued to 45fp. For 1/2” wire rope, a minimum of 3 clips shall be used and shall be spaced 3” part and torqued to 65fp. Openings between the handrail and midrail shall not exceed 19”. Often, this requires the use of 2 midrails spaced evenly between the handrail and the platform.

5. Toe boards are required on platforms with guardrails and on scaffolds that are above the ground or floor as falling object protection and fall protection. Toe boards shall be 3 1/2” (4” nominal for scaffolds) or more in height. They shall be made of wood, metal or 1/2” wire mesh. There shall be no more than 1/4” clearance...
between the top of the platform and the bottom of the toeboard. The toeboard shall be capable of withstanding 50 pounds of force.

### 2.3 Floor Hole Covers and Wall Opening Barricades

1. Any hole larger than 2 inches in its least dimension shall have either floor hole covers or guardrails. Hole covers shall be used to protect employees from falling through holes, tripping into holes, and from material falling through holes. Covers shall be designed to support at least twice the intended weight of employees, material or maximum axle load of the largest piece of equipment expected to pass over the cover.

2. Covers shall be made of 3/4-inch plywood or equivalent. If both sides of a hole equal 18” or more, doubled 3/4” plywood or equivalent is required. If covers become damaged due to equipment traffic, substantially stronger covers shall be designed.

3. Covers shall be secured to prevent accidental displacement. Securing the covers can be by wiring or nailing the covers down. If this is not possible, nail 2” x 4” boards (or something similar) the size of the hole to the bottom of the cover. Placing the covers over the hole with the 2” x 4” boards in the hole will keep the covers from being accidentally displaced.

4. Covers shall be marked with the words "hole cover" and be easily readable.

5. When not in use, the covers should be neatly stacked out of the way. Employees shall be cautioned about removing covers and stepping into the hole.

6. Wall openings shall be protected by a standard guardrail system.

### 2.4 Controlled Access Zones

A controlled access zone is a floor or platform that has no perimeter guardrail system but does have a fall hazard of 6 feet or greater. Leading edge work is an example of where a controlled zone is used. Only authorized and trained personnel shall work in a controlled zone.

### 2.5 Fall Protection/Personal Fall Arrest Systems

1. Saxon allows only full body harnesses to be used for fall arrest. The harness must be of the proper size and adjusted to fit in order to provide the proper protection.

2. Lanyards shall be of the shock absorbing type. Two lanyards (or twin lanyards) shall be used, in most cases, to facilitate tie off while moving.

3. When an employee falls while using a harness, the shock force on the body is to be less than 1800 pounds. With a standard lanyard the force can reach as high as 5500 pounds. In order to meet this requirement, a shock-absorbing lanyard is required.

4. Shock absorbing lanyards allow for no more than a 6 feet free fall and 3.5 feet of deceleration distance. This is a total distance of 9.5 feet plus the dangling distance of the torso and the legs. Employees need an anchor point that will not allow them to hit any objects below them. Falling 9.5 feet to a floor that is 10 feet below will involve a severe impact for the employee. Employers and employees need to insure the fall zone is adequate for the size of the employee and the length of the lanyard or the lanyard needs to be secured high enough above the employee’s head to prevent contacting any lower objects in the event of a fall.

5. One end of the lanyard shall be attached to the D-ring between the employee's shoulder blades. The other end shall be attached to an anchorage that is high enough so that a fall of more than six feet cannot occur (usually at least the same height as the D-ring). The lanyard shall restrict the free fall to no more than 6 feet and the deceleration distance to 3.5 feet. Lanyards from other countries do not always meet this requirement.
6. Rope lanyards are discouraged because they are easier to damage than web lanyards. Most manufacturers do not allow a rope lanyard not be snapped back onto itself (this is a bad habit for any lanyard). Snapping the lanyard back onto itself causes a weak point in the lanyard similar to placing a knot in the lanyard, which is not allowed. (Note: there are lanyards manufactured that allow the user to snapback into its self.)

7. Snap hooks shall be of the self-locking type.

8. Anchorage and anchor connectors (tie off points) shall be capable of supporting 5,000 pounds per person or engineered with a 2 to 1 safety factor. This eliminates items like small bore pipe (less than 2”), conduit, handrails, most all-thread systems, most scaffolding components, etc. The best anchorages are manufactured anchorages, e.g., girder grips, beamers, beam straps, lifelines (horizontal and vertical), retractable lifelines, rope grabs, etc.

9. Horizontal lifelines shall be erected above the employee’s shoulders whenever possible. The lifelines shall be protected from sharp edges and abrasion. Lifelines shall be independent of scaffold systems and capable of supporting 5,000 pounds per person attached.

2.6 Fall Protection/Warning Line System

1. A warning line shall be placed a minimum of 6’ back from the edge of a roof or floor. Employees shall not be allowed to work between the warning line and the edge without personal fall arrest or a safety monitor.

2. The warning line system/monitor system shall only be used with a detailed written plan and trained employees.

2.7 Fall Protection/Monitor System

1. A safety monitor shall be an assigned employee who has continuous view of all employees. The safety monitor shall be an employee who can communicate and is easily understood by all employees between the warning line and the roof edge. The safety monitor shall immediately warn any employee who approaches the edge.

2. The warning line system and safety monitor system is the least effective method of providing adequate fall protection for our employees. It should only be used as a last resort when there is no other method available. Always attempt to find a better method of fall protection.

2.8 Competent Person

The written plan shall address the responsibilities and authority of the competent person(s) and note who they are. A competent person shall oversee all aspects of the fall protection program. A competent person shall ensure component compatibility to help reduce the risk of equipment failure or rollout.

2.9 Inspection

Components of fall protection systems shall be inspected prior to each use for mildew, wear, damage, and other deterioration. Defective components shall be removed from service if their function or strength has been adversely affected. Body harness system or components subject to impact loading shall be immediately removed from service and shall not be used again for employee protection unless inspected and determined by a competent person (as defined by Title 29 CFR Part 1926, Subpart M) to be undamaged and suitable for reuse.

2.10 Rescue

1. Rescue plans shall be provided for suspended employees. Prompt rescue shall be readily available for employees who are not able to self-rescue.
2. Rescue equipment shall be identified in the project fall protection plan. All rescue equipment shall be routinely inspected and immediately available.

2.11 Care, Use and Maintenance of Equipment

All lifelines and lanyards shall be protected against being cut or abraded. For example, independent lifelines used on rock-scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be protected from such hazards and shall have a minimum breaking strength of 5,000 pounds.

2.12 Training Content and Requirements

1. Training shall be conducted by a qualified or competent person and shall include the nature of the fall hazards, procedures for erecting, using, inspecting and dismantling fall protection, limitations of fall protection equipment, selection of anchor points, the elements of the site/facility specific fall protection plan and the requirements of Saxon and the governing authority.

2. Retraining shall be conducted annually, when the fall protection program changes, a new hazard is introduced into the work place, new fall protection equipment is introduced or when the employees performance indicates the need for retraining to restore the desired level of competency.
WORKING OVER WATER

1.0 PURPOSE
To provide established requirements that ensure Saxon employees are protected from hazards associated with working over or near water.

2.0 REQUIREMENTS
Site/Facility management shall conduct a hazard assessment and develop a site/facility specific plan that details how employees will be protected from recognized or foreseeable hazards while engaged in activities that require them to work over or near water. The site/facility specific plan shall address the following elements:

1. The use of personal floatation devices as mandated by governing authority.

2. Fall Protection including
   a. Fall arresting devices
   b. Fall restraint devices
   c. Safety nets
   d. Lifelines

3. Working in an isolated setting – work shall be monitored so at least one person is capable of initiating the rescue plan. Methods shall be established to allow prompt notification of rescue services in the event of an emergency.

4. Electrical safety – refer to Standard III.E – Electrical Safety

5. Rescue Plan – shall indicate equipment, methods and persons involved in rescue operations.

6. Water Rescue equipment such as:
   a. Ring buoys with at least 90’ of rope placed less than 200’ from the work area.
   b. Rescue boat or lifesaving skiff immediately available when working over or adjacent to water.
   c. Self rescue or egress out of the water to dock, barge or boat shall be provided.

7. Transportation of an injured or drowning victim to a treatment facility shall be part of the rescue plan.

8. Training requirements:
   a. Training shall cover the elements of the site-specific plan. Employees shall be trained prior to being assigned activities that require them to work over or near water.
   b. Retraining shall be conducted annually, when work conditions or procedures change or when the employees’ performance indicates the need for retraining.
STEEL ERECTION

1.0 PURPOSE
To provide requirements for the safe erection of structural steel on Saxon projects. If another erection contractor is performing the steel erection, these requirements and 29 CFR 1926 – Subpart R are to be followed.

2.0 REQUIREMENTS

The Site/Facility Manager along with the EH&S professional, Structural Superintendent and steel erection foreman shall establish a site/facility specific plan to assess and address specific and foreseeable hazards associated with structural steel erection. If the requirements of 29 CFR 1926 – Subpart R are not met, a site specific steel erection plan shall be developed to the differences. Work methods shall be established to ensure the safety of the employees performing steel erection as well as others adjacent to the affected area. As a minimum, the site erection plan shall detail provisions necessary to accomplish the following objectives:

1. Assess and secure the area surrounding the steel erection activity, structures, process equipment, etc. before swinging suspended loads over the area. No loads are allowed to swing over any personnel.
2. Locate both overhead and underground piping or utilities that could be contacted or affected by the steel erection activity. Provisions shall be established to ensure utilities, pipelines or process equipment are not affected.
3. Routing of personnel, equipment and vehicular traffic around the erection area. Saxon, as the controlling contractor, is responsible to plan movement of material, personnel and equipment.
4. Pre-job planning, including rigging and lifting plans.
5. Personal protective equipment including fall protection systems that will be used.

2.1 GENERAL

A. Saxon, as the Controlling Contractor shall:

1. Certify, in writing, concrete has reached 75% of minimum compression strength to the structural superintendent or to the erecting contractor.
2. Give written notification to the structural superintendent or to the erector of any anchor bolt modifications or repairs and certifies they are adequate.
3. Provide adequate access roads for movement of trucks, steel and cranes.
4. Provide an adequate laydown yard if one is used.
5. Controls work to ensure other crafts do not work under steel erection activities.
6. Assumes control of fall protect systems when the erection contractor is directed to leave same.

B. Planning:

Proper planning shall include the timely delivery and installation of the permanent guardrail system. The use of wire rope for periphery guardrails shall be discouraged when permanent railing is part of the design.
1. The site/facility manager and the site/facility EH&S professional shall examine the need for wire rope guardrails and approve the design of the system.

2. The use of wire rope guardrails shall meet the following requirements:
   a. Only 3/8” diameter wire rope or larger shall be used. All wire rope clips shall be installed and maintained per the manufacturer’s requirements. Usually this will require two clips for 3/8” wire rope and 3 clips for ½” wire rope.
   b. The top rails shall be 42 - 45 inches above the platform. No more than three (3) inches of deflection is allowed in the top or mid rails.
   c. Uprights shall be spaced no more than eight (8) feet apart.
   d. A toe board shall be placed. The toeboard shall not be more than 1/2” above the platform and shall be a minimum of 1” x 4” nominal lumber.
   e. Midrails shall be placed about half way between the toe board and the top rail with an opening of less than 19 inches.
   f. The top guardrail shall be flagged every six (6) feet or less with highly visible material.
   g. The top guardrail shall support without failure a force of 200 pounds in either a downward or an outward direction. The Midrails shall support without failure a force of 150 pounds in either a downward or an outward direction.

3. A tag line of proper length shall be used on all crane loads.

4. The crane operator shall have the authority to stop the hoisting of any load he/she deems improper.

5. Employees shall not be allowed to ride the headache ball, hook or load.

6. When using a crane suspended personnel basket, Saxon procedure III.A.13 of this manual shall be followed.

7. Employees shall straddle (coon) the beams when moving using 100% fall protection. If the beam is too large to straddle, the employee may walk the flange while using 100% fall protection as part of the fall protection plan.

8. Employees connecting the steel shall bolt up each end wrench tight before releasing the rigging from the steel. Employees are not allowed on the steel unless both ends are connected with a minimum of two bolts wrench tight.

9. When setting columns, before unhooking the column from the lifting device, the nuts on the anchor bolts shall be drawn down tight or temporary guy lines shall be secured.

10. Areas below structural steel erection shall be barricaded and signs indicating overhead work shall be posted. No other work is allowed below steel erection activities. All employees shall be protected from falling objects.

11. Christmas treeing (the hoisting of multiple loads suspended below the hook) of structural steel is not permitted without prior consent of Corporate Safety approval.

12. Containers shall be provided to insure proper storage for bolts, drift pins and other loose objects. These containers shall be secure against accidental movement and shall be removed to a permanent level at the end of the shift. No loose material shall be allowed in the steel.

13. Two (2) employees shall operate drilling and reaming machines, unless the handle is firmly secured to resist the torque reaction of the machine if the bit would stick.

14. Magnetic drills shall be secured to the structure to prevent dropping in the case of a power failure.
15. **Plumbing-up of columns**
   - All columns shall be evaluated by a competent person to determine whether guying or bracing is needed; if guying or bracing is needed, it shall be installed.
   - When deemed necessary by a competent person, plumbing-up equipment shall be installed in conjunction with the steel erection process to ensure the stability of the structure.
   - When used, plumbing-up equipment shall be in place and properly installed before the structure is loaded with construction material such as loads of joists, bundles of decking or bundles of bridging.
   - Plumbing-up equipment shall be removed only with the approval of a competent person.

16. **Controlled Decking Zone (CDZ):**
   - Fall arrest must be provided and used at six feet above the ground or lower floor.
   - Restricted access - only trained employees allowed in controlled decking zone.
   - Boundaries clearly marked with barricades at least 39” high - 90’ x 90’ maximum size (8,100 sq. ft.).
   - Training is required for all personnel working in the CDZ.
   - Only 3000 square feet of unsecured decking maximum is allowed at any one time.
   - 4000 pounds maximum weight per bundle.
   - Decking bundles are to be placed within one (1) foot of the joist end. Joists shall not be overloaded.
   - Only decking activities are allowed in the CDZ.

2.2 **FLOORING REQUIREMENTS, PERMANENT**

1. Permanent flooring shall be installed as the erection of structural members progresses, and there shall be no more than eight stories between erection floor and the uppermost permanent floor, except where the structural integrity is maintained as a result of the design.

2. At no time shall there be more than four floors or 48 feet of unfinished bolting or welding above the foundation or uppermost permanent secured floor.

**Metal decking**

1. **Hoisting, landing and placing of metal decking bundles.**
   - Bundle packaging and strapping shall not be used for hoisting unless specifically designed for that purpose.
   - If loose items such as dunnage, flashing, or other materials are placed on the top of metal decking bundles to be hoisted, such items shall be secured to the bundles.
   - Bundles of metal decking on joists shall be landed in accordance with §1926.757(e)(4).
   - Metal decking bundles shall be landed on framing members so that enough support is provided to allow the bundles to be unbanded without dislodging the bundles from the supports.
   - At the end of the shift or when environmental or jobsite conditions require, metal decking shall be secured against displacement.

2. **Roof and floor holes and openings.** Metal decking at roof and floor holes and openings shall be installed as follows:
   - Framed metal deck openings shall have structural members turned down to allow continuous deck installation except where not allowed by structural design constraints or constructability.
   - Roof and floor holes and openings shall be decked over. Where large size, configuration or other structural design does not allow openings to be decked over (such as elevator shafts, stair wells, etc.) employees shall be protected in accordance with §1926.760(a)(1).
   - Metal decking holes and openings shall not be cut until immediately prior to being permanently filled with the equipment or structure needed or intended to fulfill its specific use and which meets the strength requirements of paragraph (e)(3) of this section, or shall be immediately covered.

3. **Installation of metal decking.**
2.3 FLOORING REQUIREMENTS, TEMPORARY

1. Temporary flooring such as the derrick or erection floor of every building shall be solidly planked or decked over its entire surface except for access openings. Planking, or decking of equivalent strength, shall be thick enough to carry the working load. Planking shall be no less than 2 inches thick, full-sized undressed, and shall be laid tightly and secured to prevent movement.

2. On buildings or structures not adaptable to temporary floors and where 100% personal fall arrest equipment is not used, safety nets shall be installed and maintained whenever the potential fall distance exceeds 30 feet. Nets shall be hung with sufficient clearance to prevent falling objects from contacting structural surface below.

3. Floor periphery-safety railing: A standard railing including midrail and toe boards shall be installed 42 inches high at the periphery (including all floor openings) of all temporary-planked or temporary metal-decked floors of tier buildings and other multi-floored structures during structural steel assembly.

Note: The use of wire rope for periphery guarding may be used at the discretion of the site/facility manager and the EH&S Professional. Wire rope shall only be used when other means of periphery guarding cannot be used and then only in accordance with Title 29 CFR Part 1926 – Subpart M. Maintaining periphery wire-rope guardrails shall be done daily. No more than three inches of deflection is allowed in wire-rope railing. Proper planning shall include purchasing and installing the permanent guardrail system instead of a temporary system.

4. Where skeleton steel erection is in progress, a substantial tightly planked floor shall be maintained within two stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which work is being done, except when gathering and stacking temporary floor planks on a lower floor in preparation for transferring such planks for use on an upper floor.

5. When gathering and stacking temporary floor planks, the planks shall be removed successively, working towards the last panel of the temporary floor so that work is always done from the planked floor.

6. In erecting a building having double-wood-floor construction, the rough flooring shall be completed as the building progresses, including the tier below the one on which floor joist are being installed.

7. For single-wood-floor or other flooring systems, the floor immediately below the story where the floor joist are being installed shall be kept planked or decked over.

2.4 SPECIFICATIONS

Specifications for the size, dimensions and placement of the structural steel and flooring requirements shall be provided by the client or a registered professional engineer in accordance with both federal and local standards. These specifications along with the availability of storage and laydown facilities will dictate the delivery and site erection sequence of the structural steel members.

2.5 FALL PROTECTION

Fall protection requirements shall meet Saxon fall protection policies found in EH&S Procedure III.A.8 and applicable government standards. All employees exposed to a fall of six (6) feet or more shall be protected from the fall.

1. Covering roof and floor openings.
   - Covers for roof and floor openings shall be capable of supporting, without failure, twice the weight of the employees, equipment and materials that may be imposed on the cover at any one time.
All covers shall be secured when installed to prevent accidental displacement by the wind, equipment or employees.

- All covers shall be painted with high-visibility paint or shall be marked with the word "HOLE" or "COVER" to provide warning of the hazard.
- Smoke dome or skylight fixtures that have been installed are not considered covers for the purpose of this section unless they meet the strength requirements in OSHA Subpart R.

2. Decking gaps around columns.
   - Wire mesh, exterior plywood, or equivalent, shall be installed around columns where planks or metal decking do not fit tightly. The materials used must be of sufficient strength to provide fall protection for personnel and prevent objects from falling through.

3. Before using open web steel joists, purlins or girts for anchor points for fall protection, the project’s structural engineer of record shall approve their use.

2.6 RIGGING

1. Rigging activities shall meet Saxon requirements in Procedure III.A.11 & 12.

2. Before using open web steel joists, purlins or girts for rigging points for fall protection, the project’s structural engineer of record shall approve their use.

2.7 ACCESSING THE STRUCTURAL STEEL

1. Access to the steel shall be part of the steel erection plan. The permanent access stairs shall be placed, with a guardrail system, as the structural steel is placed. In areas that do not have permanent stairs, temporary stairs may be used, e.g., scaffold stair towers. The temporary stairs shall have a guardrail system placed. If stairs are not possible, ladders with self-retracting lifelines or articulating boom lifts (JLGs, snorkel lifts, etc.) may be used for employees to access the structural steel.

2. Employees are not allowed to climb the columns of structural steel.

2.8 TRAINING

1. Training shall meet the requirements of 29 CFR 1926.21 and 1926.761.

2. Training shall be conducted a qualified person.

3. Training shall be provide for the following:
   All ironworkers in recognizing the hazards of their work
   Fall hazard training
   - Recognition and identification of fall hazards
   - Use and operation of guardrail system
   - Procedures for erecting, maintaining, inspecting, & disassembling of fall protection equipment
   - Fall protection requirements for the project
   Riggers
   - Proper rigging procedures
   - Requirements for multi-lift rigging (christmas treeing not allowed)
   - Proper inspection of rigging equipment
   Connectors
   - Recognition of hazards of connecting steel
   - Fall protection requirements
   - Requirements for connecting double connections at beams and columns
Employees working in controlled decking zones
  · Hazards of working in CDZ
  · Fall protection requirements
  · Requirements of a CDZ

3.0
LIFTING AND RIGGING PLANS

1.0 PURPOSE
To provide an outline of the requirements for lifting and rigging plans.

2.0 REQUIREMENTS

2.1 Guidelines
1. Lifts are to be planned so personnel involved with the lift are aware of the lifting sequences, equipment uses, and the hazards associated with lifting.

2. Loads greater than 25 tons or when using more than one crane on a single lift are classified as critical lifts and require a formal, written lift plan.

3. The design and manufacture of job made or vendor supplied lifting devices such as lifting beams, spreader bars, hooks etc. require a Structural PE review and stamp.

4. All critical lift plans shall be reviewed and accepted on site by the site/facility manager and the EH&S professional, then submitted for approval to the next level of management in the office. Approval is required prior to a critical lift.

5. All lift plans shall be posted in cranes.

6. The lifting supervisor shall monitor and direct lift as described in plans.

2.2 Competent Person

The site/facility manager shall assign the responsibility of preparing and insuring compliance for rigging/lift plans to a specific individual in charge of all lifting operations (Rigging/Lifting Supervisor). The person shall be a competent supervisor or superintendent and shall be responsible for the safe handling and rigging of all loads. This individual shall be qualified and competent in the rigging and equipment field as deemed by the company, based on previous experience and training. The competent person’s responsibilities shall include:

1. Need to determine if the soil in the lift area is sufficient to hold the weight of the crane and load. If the soil is not sufficient, improved soil may be used or mats or both. A competent engineer shall make this decision.

2. The supervisor shall identify the rigging/lifting activities, rigging equipment, lift accessories, operating equipment, and any other materials needed to perform assigned duties.

3. All rigging equipment, operating equipment, and material shall be listed by serial number or identified by name, diameter, length, and documented per the Form, III.A.11.001 Rigging/Lift Plan.

4. Develop rigging sketches and plot plans showing all the above methods of attachment, boom angles, crane orientations, limitations to be applied on any equipment or rigging accessories, and any other factors affecting the capacity of equipment and accessories to be used in the lift.

5. The lifting supervisor shall submit the lifting plans and sketches to the site/facility manager and the EH&S manager for approval.

6. After approval, the rigging supervisor shall hold a meeting with all site personnel involved with or affected by the lifting, including company and client management. The supervisor shall cover the contents of the rigging/lift plans, speed of lift, who is directing the lift, and any associated hazards. Supervisor shall allow time for any questions by attendees.
7. The lifting supervisor shall insure that all crane operator(s) are trained and certified for the crane they use per the requirements of the manual III.C.I plus have a physical examination as required by ANSI B30.5.

8. The crane(s) involved in the lifting plan shall be inspected per company and government requirements.

9. Supervisor shall run a visual check reviewing the load, crane placement, rigging, shims, anchor bolts, etc. After all components are verified and acceptable the supervisor shall fill out the pre-lift checklist. All rigging/lift plans, and signatures shall be in order.

2.3 Record Retention

Lifting plans shall be retained and sent to archives for ten year storage at project completion.

3.0
SLING INSPECTION

1.0 PURPOSE
To provide requirements for the inspection of slings, cables and rope used for rigging operations.

2.0 REQUIREMENTS

2.1 Visual Inspection

All users of this equipment shall perform a visual inspection of slings, cables, and ropes daily. A competent person shall perform a detailed monthly inspection. Items to look for while conducting this inspection shall include the following:

1. Kinks or severe twists
2. Nicks, breaks, and frayed or unraveled edges
3. Deformed, worn, or flattened surfaces
4. Corroded or pitted surfaces
5. Shortened or lengthened rope lays
6. Weld spatter
7. Missing or damaged labels (synthetic slings, chains)

If any of these conditions are found, the sling shall immediately be removed from service.

2.2 Detailed Inspection, Wire Rope

A competent person shall perform a detailed monthly inspection. The inspector, wearing heavy work gloves shall examine the entire length of sling. The slings shall be removed from service when the following conditions are present.

1. In any eight diameters, if more than 10% of the wires are damaged or broken
2. Severe localized abrasions or scraping
3. Kinking, crushing, birdcaging, or any other damage resulting in distorting of the rope structure
4. Evidence of heat damage
5. End attachments that are cracked, deformed, or shows excessive wear
6. Hooks showing any cracks or spreading. missing or damaged throat latches shall be replaced.
7. Severe corrosion of the wire rope or end attachment

2.3 Detailed Inspection, Chain Slings

A competent person shall perform a detailed monthly inspection. (Remove from service if conditions are present)

1. Check for stretched, bent, worn or gouged links.
2. Multi-leg slings are to be of equal length for all legs.
3. All chains shall have a tag with the grade and capacity.

Note: Chains are not the preferred equipment for rigging.

2.4 Detailed Inspection, Synthetic Web Slings

A competent person shall perform a detailed monthly inspection. (Remove from service if conditions are present)

1. Inspect label for rated capacity for type hitch, type of synthetic material, and manufacturer information.
2. Excessive pitting or corrosion, cracking, distorted or broken fittings due to acid exposure
3. Melting or charring, holes, cuts, tears, or excessive fraying on any part of sling
4. Excessive broken or worn stitching in splices
5. Knots in any part of sling

2.5 Slings Inspection, Synthetic Endless Round Sling

A competent person shall perform a detailed monthly inspection.

Extreme care shall be taken when using these slings. Slings shall be stored in a dry area away from sunlight. These slings have many good attributes. It is difficult to determine the level of wear because the core is not visible. Users shall take sections 2.4.1, 2.4.3, 2.4.5 listed above into consideration when performing a visual inspection.

2.6 Detail Inspection, Metal Mesh Slings

A competent person shall perform a detailed monthly inspection. (Remove from service if conditions are present)

1. Inspect tags for rated capacity for type hitch, manufacture’s trademark.
2. A broken weld or a broken brazed joint along the sling edge
3. A broken wire in any part of the mesh
4. Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion
5. Lack of flexibility
6. Distortion of either end fitting such that the width of the eye opening is decreased by more than 10%
7. Distortion of the choker fitting so the depth of the slot is increased by more than 10%
8. A 15% reduction of the original cross-section area of metal around the hook opening or end fitting
9. Visible distortion or cracked fitting on either end

NOTE: IF THERE IS ANY QUESTION ABOUT ACCEPTABLE WEAR OR DEFECTS, TAKE SLINGS OUT OF SERVICE AND CONTACT MANUFACTURE FOR INFORMATION.

2.7 Record Retention

All monthly sling inspection documentation shall be kept on file in the project files.
SLING INSPECTION

1.0 PURPOSE
To provide requirements for the inspection of slings, cables and rope used for rigging operations.

2.0 REQUIREMENTS

2.1 Visual Inspection
All users of this equipment shall perform a visual inspection of slings, cables, and ropes daily. A competent person shall perform a detailed monthly inspection. Items to look for while conducting this inspection shall include the following:

1. Kinks or severe twists
2. Nicks, breaks, and frayed or unraveled edges
3. Deformed, worn, or flattened surfaces
4. Corroded or pitted surfaces
5. Shortened or lengthened rope lays
6. Weld spatter
7. Missing or damaged labels (synthetic slings, chains)

If any of these conditions are found, the sling shall immediately be removed from service.

2.2 Detailed Inspection, Wire Rope
A competent person shall perform a detailed monthly inspection. The inspector, wearing heavy work gloves shall examine the entire length of sling. The slings shall be removed from service when the following conditions are present.

1. In any eight diameters, if more than 10% of the wires are damaged or broken
2. Severe localized abrasions or scraping
3. Kinking, crushing, birdcaging, or any other damage resulting in distorting of the rope structure
4. Evidence of heat damage
5. End attachments that are cracked, deformed, or shows excessive wear
6. Hooks showing any cracks or spreading. missing or damaged throat latches shall be replaced.
7. Severe corrosion of the wire rope or end attachment

2.2 Detailed Inspection, Chain Slings
A competent person shall perform a detailed monthly inspection. (Remove from service if conditions are present)

1. Check for stretched, bent, worn or gouged links.
2. Multi-leg slings are to be of equal length for all legs.
3. All chains shall have a tag with the grade and capacity.

Note: Chains are not the preferred equipment for rigging.

2.3 Detailed Inspection, Synthetic Web Slings
A competent person shall perform a detailed monthly inspection. (Remove from service if conditions are present)

1. Inspect label for rated capacity for type hitch, type of synthetic material, and manufacturer information.
2. Excessive pitting or corrosion, cracking, distorted or broken fittings due to acid exposure
3. Melting or charring, holes, cuts, tears, or excessive fraying on any part of sling
4. Excessive broken or worn stitching in splices
5. Knots in any part of sling

2.4 Slings Inspection, Synthetic Endless Round Sling

A competent person shall perform a detailed monthly inspection.

Extreme care shall be taken when using these slings. Slings shall be stored in a dry area away from sunlight. These slings have many good attributes. It is difficult to determine the level of wear because the core is not visible. Users shall take sections 2.4.1, 2.4.3, 2.4.5 listed above into consideration when performing a visual inspection.

2.5 Detail Inspection, Metal Mesh Slings

A competent person shall perform a detailed monthly inspection. (Remove from service if conditions are present)
1. Inspect tags for rated capacity for type hitch, manufacturer’s trademark.
2. A broken weld or a broken brazed joint along the sling edge
3. A broken wire in any part of the mesh
4. Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion
5. Lack of flexibility
6. Distortion of either end fitting such that the width of the eye opening is decreased by more than 10%
7. Distortion of the choker fitting so the depth of the slot is increased by more than 10%
8. A 15% reduction of the original cross-section area of metal around the hook opening or end fitting
9. Visible distortion or cracked fitting on either end

NOTE: IF THERE IS ANY QUESTION ABOUT ACCEPTABLE WEAR OR DEFECTS, TAKE SLINGS OUT OF SERVICE AND CONTACT MANUFACTURE FOR INFORMATION.

2.7 Record Retention

All monthly sling inspection documentation shall be kept on file in the project files.

3.0
1.0 PURPOSE
To provide for the safe operation and inspection for manually operated lifting equipment.

2.0 REQUIREMENTS

2.1 Chain Hoist and Lever Hoist
The site/facility manager shall designate a competent person(s) to administer a maintenance and inspection program for all manual operated hoist and jacks. The program shall ensure that this equipment is used in accordance with the safe operating procedures and manufacturers specifications.

2.2 Testing And Inspection, Chain Hoist, Lever Hoist
The designated competent person(s) shall perform and document a detailed inspection. This inspection shall be performed monthly or on all new and repaired hoist. When any extensive repairs are performed, the hoist shall be pull tested for the maximum designed rated capacity by the manufacturer or the site may perform this test if equipped with a hoist test rack. All test shall be documented. The following components shall be inspected and if these condition are present the equipment shall be taken out of service and repaired or replaced.

1. Check the top and bottom hooks, if the hooks are bent, cracked, or if the hook throat is opened greater than the designed measurement, they shall be replaced.
2. Check the pull handle on the lever hoist for bends or cracks. The handle shall operate (ratchet) freely in the up or down direction. The up or down pull switch or toggle switch shall operate freely.
3. Check housing for any cracks, dents or gouge marks.
4. Check the load chains interlink points for signs of wear. Check the length of the chain against the original length using at a minimum in length, 20 links of chain. If the length shows an increase of three percent elongation, replace the chain.
5. Check load chain and pull chain for any other defects such as bends, cracks, gouges, or arc marks.
6. All lubrication shall be performed according to the equipment manufacturer’s specifications. Never lubricate clutch brakes.

2.3 Visual Inspection Chain Hoist, Lever Hoist
Prior to each assigned task, all users shall perform a visual inspection, looking for the following damage, wear, or irregularities.

1. Brake mechanism
2. Hoist housing and sheaves
3. Hooks and safety latches
4. Lever handles
5. Wire rope
6. Load chains and pull chains
7. Lubrication

2.3 General Precautions, Chain Hoist and Lever Hoist
When operating hoist, observe the following safety precautions:

1. Make sure the supporting structure, monorail system, and trolleys capacities are equal or greater than capacity of the hoist and the load. The system shall support the loads and forces imposed by the lifting operation. The monorail system and the hoist shall be clearly marked with the maximum rated capacity.
2. Never use a hoist to lift more than its maximum rated capacity load. Use a larger capacity hoist if necessary.
3. Do not leave a load on any hoist unattended.
4. Do not stand below or expose any parts of the body below a hoisted load. Use a tag line to control load.
5. Hoists are designed for a one person operation. Use a larger capacity hoist if one person cannot operate the hoist.
6. Never use damaged, or malfunctioning equipment. Make sure the hoist has been inspected and properly tagged.
7. Do not throw or drop the hoist. Handle the equipment with care.
8. Never use the load chain as a sling.
9. The hoist shall have a automatic, fail-safe type load brake to prevent the load from dropping while the hoist is in the up or down position.
10. Make sure the load chain and the pull chain are not twisted.
11. Never use a manual hoist to lift or support personnel.
12. Always use a shackle when using two or more eyes in the hook.
13. Barricade the perimeter of the lift area. Alert employees in the general area.

2.4 Testing And Inspection, Jacks

Prior to each work assignment, every jack shall be visually inspected. Observe the following when evaluating this equipment:

1. Make sure fluid is at the proper levels.
2. Check for leaks around the ram, jacking lever, and the toggle switch. All these functions shall be working properly before lifting.
3. Check housing for cracks, gouge marks, and dents.

NOTE: These Inspection Procedures Shall Also Apply To Port-A-Powers.

2.5 General Precautions, Jacks

1. Always store hydraulic jacks in the vertical position.
2. Do not leave a load on jacks unattended.
3. Handle jacks carefully. Do not throw or drop them.
4. Never use a damaged or malfunctioning jack. Make sure jacks have been inspected and properly tagged before using.
5. Never jack metal to metal. Use wood or rubber softners. Never jack against rollers.
6. Operate jack handles with your hands only. Never step on a jack handle to get additional force.
7. Properly position jacks and raise loads uniformly to avoid unexpected load shifts.
8. To prevent the load from shifting or keep the jack from kicking, as the load is elevated, place wooden blocks between the load and the jacking surface. Never leave a jack under a load without blocking the load.
9. When jacking large profile loads, determine the center gravity and place the jacks at a equal distance apart from the center of gravity. Always place the jacks as wide as possible to ensure a stable lift.
10. Place the jack base firmly and evenly on a solid footing to ensure that the jack is stable when loaded. Never place the jack directly on soil. Wood or plate is good temporary footing support.
11. If blocking is necessary for elevation adjustment, place the block under the jack instead of between the ram and the object being lifted.
12. Make sure jacks are level before lifting.
13. Do not use jack handle extensions.
14. When raising a load with a multi-jack system, brace the load laterally with struts to prevent the jacks from upsetting at once.
15. Lash or block the jacks when used in the horizontal position.
17. Use caution when lowering loads with a multi-jack system.

2.6 Record Retention

All inspection forms or any documentation shall be filed in the site/facility files.

3.0
1.0 PURPOSE
To provide requirements for the safe use of hand tools.

2.0 REQUIREMENTS

2.1 General
1. Hand tools shall only be used for the purpose for which they were designed.
2. Employees shall only use tools that are in good condition. Worn or broken tools shall be repaired or replaced.
3. Employees shall use the appropriate safety equipment for each tool.
4. Employees shall store tools that are not in use. Proper storage includes toolboxes, tool racks, and cabinets.
5. Employees shall not leave tools in overhead work areas where they may fall.
6. Employees shall not carry a sharp or pointed tool in his/her pockets or belt unless the point or edge is protected with a cover.

2.2 Hammers and Sledges
1. Employees shall wear safety glasses as a minimum and additional eye and face protection if the job requires.
2. Employees shall check behind themselves before swinging a hammer or sledge.
3. Employees shall be instructed to keep their eyes on the object to be hit.
4. Employees shall never use a damaged hammer or sledge.

2.3 Chisels and Punches
1. Employees are required to wear safety glasses as a minimum and additional eye and face protection if the job requires.
2. Employees shall keep chisels sharp and in good condition. Repair or replace dull or damaged tools.
3. Employees shall be instructed to strike blows squarely and aim a chisel or punch away from the body.
4. Mushroom heads of chisels and punches shall be ground down to prevent spalling.

2.4 Wrenches
1. Employees shall not use a "cheater" to increase leverage.
2. Whenever possible, employees shall pull on the wrench handle rather than push. They shall be instructed to adjust their stance to avoid a fall if the wrench slips.
3. Employees shall repair or discard any worn or damaged wrenches.
4. Employees shall never use hand sockets on power or impact tools.
5. Employees shall not use a hammer on a wrench unless it is the striking face type.
6. The use of adjustable wrenches should be limited to task that no other wrench can perform.

2.5 Pliers
1. Employees shall not use pliers for cutting hardened wire unless they are specifically made to do so.
2. Employees shall not use pliers as a striking tool.

2.6 Screwdrivers
1. Employees shall use a screwdriver with the right type of blade and one that properly fits the size screw.
2. Employees shall never use a bent or damaged screwdriver.
3. Employees shall not use a screwdriver as a prybar or a chisel.
4. Employees shall keep handles free of grease and oil.
2.7  Hand Saws

1. Employees shall wear appropriate eye protection.
2. Employees shall keep saw blades sharp. Resharpen or replace blades that have lost cutting teeth.
3. Employees shall lubricate hacksaw blades with light machine oil to prevent heat build-up, which can cause the blade to break.
4. Employees shall store saws so that there is no chance for someone to fall onto or bump into their blades.

2.8  Pocketknives are not to be used.
1.0 PURPOSE

To provide requirements for the safe use of power tools.

2.0 REQUIREMENTS

2.1 General

1. Employees shall follow all manufacturers’ instructions regarding the safe storage, operation, and maintenance of power tools.
2. Employees shall not use a power tool unless they have been trained to use it properly and safely.
3. All guards shall be in place before operating the tool.
4. Appropriate eye protection shall be worn when operating or working near power tools.
5. Employees shall not wear loose-fitting clothing or jewelry when using power tools.
6. Employees shall disconnect the tool from power source before changing blades, bits, etc.
7. Employees shall remove chuck keys, etc., before using a power tool.
8. Employees shall disconnect power tools from the power source by pulling out the plug; they shall not pull on the power cord.
9. Tools shall be either double insulated or have three-prong plugs with grounded extension cords and receptacles.
10. Employees shall be required to keep their finger off the trigger and make sure the switch is "off" before plugging in a tool.
11. Employees shall not use electric tools that have worn or damaged plugs or cords.
12. Employees shall secure small pieces of work with a clamp or in a vise.
13. When using power tools, the work area shall be kept free of any trip hazards or slippery conditions.
14. Employees shall never use compressed air to blow off equipment or clothing; use a brush.
15. All power tools shall be used for their intended use only.
16. Locking device or switches on all power tools shall be removed prior to use.

2.2 Saws (General)

1. Employees shall not jam or force saws into the work.
2. Portable saws shall have a spring-loaded operating switch.
3. Employees shall be instructed to stay out of the saw’s line of cutting.
4. Employees shall be instructed to start and stop the saw outside the work piece.
5. Employees shall wear appropriate eye and hearing protection.

2.3 Circular Saws

1. Employees shall not retract the lower guard while the blade is moving.
2. Employees shall use the retracting handle or safety lift lever to move the lower guard.
3. Employees shall not clamp or tie the guard open.
4. Employees shall not operate the saw if the guard is not working properly.
5. Employees shall keep their hand(s) away from the blade while using the saw.
6. Employees shall keep the power cord out of the line of the saw cut.

2.4 Reciprocating Saws

1. Employees shall not use the saw unless the insulating boot is in place.
2. Employees shall be especially careful to keep their hands away from the blade when using this tool.

2.5 Drills
1. Employees shall wear safety glasses as a minimum and additional eye and face protection if the job requires.
2. Employees shall not use dull or chipped bits.
3. Employees shall let the bit cool down before changing or adjusting it.
4. Employees shall not force the drill into the work.
5. Employees shall use light oil to keep the bit lubricated and cool during use.

2.6 Pneumatic Tools

1. Employees shall wear appropriate eye and hearing protection.
2. Pneumatic power tools shall be securely attached to the compressed air hose.
3. Employees shall not make adjustments to pneumatic tools until air pressure is no longer being supplied to the hose or tool.
4. Employees shall not hoist, lower, or carry a tool by the hose.
5. Pneumatic impact tools shall have safety clips or retainers for tool bits.
6. Employees shall follow the manufacturers' guidelines for safe operating pressures.
7. Employees shall locate all air hoses so they do not present a tripping hazard.
8. A safety device shall be at the source of supply to reduce pressure in case of hose failure for all hoses exceeding ½ inch inside diameter.

   - Airline hose section connections shall be secured against separation. "Chicago" couplings shall be pinned together.

   - When using pneumatic tools in a confined space use only breathing quality air.

2.7 Portable Band Saws

Employees shall return dull or damaged blades to the toolroom. Do not leave blades in the work area because they create trip hazards.

2.8 Radial Arm Saws

1. The radial arm shall be self-retracting.
2. Employees shall not remove any manufacturers' guards.
3. Only authorized employees shall use a radial arm saw.

2.9 Magnetic Base Drills

1. Employees shall use a safety chain to secure mag drills to the work.
2. Electrical cord connections shall be taped.
3. Electrical connections at the source of power shall be tagged “do not unplug” so that they cannot be inadvertently unplugged during use.

3.0
1.0 PURPOSE

To provide established requirements for the safe use of powder-actuated tools.

2.0 REQUIREMENTS

2.1 General

1. All manufacturers' recommendations and local laws governing the proper use, inspection and maintenance of powder actuated tools shall be followed.

2. Only authorized, certified employees will be allowed to use powder-actuated tools.

3. The following general precautions are applicable to all types of powder-actuated stud guns:
   a. Explosive powder-actuated tools and cartridges shall be kept in a locked box at all times (other than when being used) to prevent unauthorized use.
   b. Storage of tools, cartridges, and studs shall be controlled so that only authorized, trained personnel can withdraw them for use.
   c. Tool manufacturers' representatives shall train, qualify, and certify site employees in the use and maintenance of stud guns.
   d. A current certification card for the powder-actuated tool being used shall be in the operator's possession.

4. The powder-actuated tool shall not be used where the stud is to be driven into surface-hardened steel, cast iron, glazed brick or tile, marble, granite, live rock, or similar brittle materials.

5. Tools shall not be used in any location where explosives, flammable gasses, vapors, or dusts are present.

6. The tool operator and any nearby workers shall wear face shields and goggles when the tool is being used. Ear protection shall be used 100 percent of the time this tool is used. Other workers in the near vicinity shall wear ear protection.

7. The utmost care shall be exercised to ensure that cartridges, studs, nails, etc., are of the proper specification.

8. At all times, the tool shall be equipped with the proper ricochet or spall guard.

9. Signs warning that powder-actuated tools are in use shall be posted.

10. Spent and misfired cartridges shall be disposed of and shall not be left in the work area.
2.2  High Velocity Guns

1. Only the "captive stud" type of gun should be used. Guns capable of firing a stud into free flight at high velocity are prohibited.

2. No stud is to be driven closer than 3 inches to the edge of brick, concrete, or masonry surfaces because of their tendency to split or crack. Exceptions to this rule may be made where steel safety shields are placed on the sides of the surfaces, as in the case of concrete curbs to prevent flying spalls.

3. In case of misfire, the tool shall be kept in operating position for 1 full minute then placed in vertical position, muzzle down, while the charge is removed.

4. The tool shall never be pointed at anyone. The line of fire—whether up, down, or across—shall be clear of personnel. Do not assume the stud will not shoot all the way through something.

5. Studs shall never be driven through predrilled or prepunched holes in fixtures or material without a special guard designed for this type of operation.

2.3  Low Velocity, High Inertia Guns

1. This type of gun employs the principle of a powder-actuated captive piston (high mass) driving a free stud at low velocity. Stud-driving energy is derived from piston inertia. Once free of the piston, the stud alone has insufficient inertia to produce free flight, ricochets, penetration, etc. This type of gun is recommended from both safety and productivity standpoints.

2. Adherence to the general precautions will afford adequate protection.
1.0 PURPOSE

To provide methods and protective devices required to safely use abrasive, wheel-grinding machines including pedestal, stationary bench, an hand-held portable grinders designed and guarded for use with abrasive wheels.

2.0 REQUIREMENTS

2.1 Safe Practices

1. Site/facility management shall ensure employees are trained by a competent or qualified person prior to using grinders and grinding wheels. Training shall be documented.

2. Prior to performing repair or maintenance on grinders, proper electrical/pneumatic disconnect procedures shall be followed. Operators shall inspect their grinders for proper wheel RPM rating, washers and spacing of work rest and guards. In addition, the operator shall ensure the grinder has been inspected per site/facility requirements.

3. Grinding wheels shall be run at full operating speed with safety guards in place before beginning work. While starting the grinder, stand to the side of the grinding wheel and out of the plane of rotation. Do not stand in line with the unprotected part of the wheel.

4. For bench grinders the operator shall ensure the wheel not in use is guarded to protect the operator and other employees in the area in case of wheel breakage.

5. Do not grind soft metals (such as aluminum, brass, or copper) with general purpose wheels. These soft metals will clog the grinding wheels making them useless.

6. Peripheral grinding wheels shall not be used for side grinding. They lack sufficient support to withstand the pressure exerted by this operation. For side grinding, use only wheels that are manufactured and designed for that purpose.

7. All grinding and cutting wheels and grinders (pedestal, bench, and portable) shall bear the rpm identification affixed by the manufacturer. This identification shall be maintained in readable condition.

8. Employees shall not wear loose fitting clothing when using a grinder.

2.2 Personal Protection

1. Safety glasses and a face shield shall be worn when using abrasive wheels. If the work creates significant airborne dust, consider adding monogoggles to your personal protective equipment.

2. Gloves shall be worn when using portable grinders. Do NOT use gloves when operating a bench grinder.

3. Many grinding machines produce noise levels that require hearing protection. Refer to Procedure III.B.10 for additional information on hearing protection.

4. Consider the need for respiratory protection or a ventilation system when dusty conditions exist. Consult the MSDS on materials you are grinding for more information about health hazards and the need for respiratory protection.

5. Protection shall be provided for personnel near the grinder with protection equivalent to the operator’s, or keep them away or shielded from the exposure area.

6. Portable screens for spark containment shall be used if the potential for fire from sparks exists.
2.3 Grinding Wheels

1. Only grinding wheels of the proper type and construction for the work shall be used. Wheels shall be properly attached to the grinder per the manufacturers requirements. No special adapters, arbors, or other improvisations are permitted. No more than one wheel shall be mounted between a single set of flanges.

2. Reinforced wheels reduce the hazard of flying parts or pieces in case of breakage. Organic (resinoid) bonded wheels have greater resistance to shock and breakage than do inorganic (vitreous) bonded wheels.

3. Before mounting or using a grinding wheel, inspect it closely and perform a ring test to make sure it has not been damaged while in shipping, handling or use.

4. The wheel RPM rating shall be equal to or above the maximum potential rpm of the grinder on which it is mounted. Reducing air pressure or volume to the grinder is not an acceptable substitute for the use of a wheel that has a higher rpm rating than the grinder.

5. Grinding wheels shall be stored in a dry place with the temperature above freezing and shall be protected from physical damage that could cause cracking.

2.4 Pedestal and Bench Grinders

1. Installation and inspection of grinders and grinding wheels shall be performed by a qualified person.

2. The operator using the grinder is responsible for maintaining the proper clearance (1/8 inch maximum) between the work rest and the wheel. Do not allow work rests to extend to the side of the wheel, unless the wheel is specifically made and designed for this purpose.

3. Safety Guards – Provide all abrasive wheel benches and pedestal grinders with safety guards that cover the spindle ends as well as the nut and flange projection. These guards shall be strong enough to withstand the effects of a bursting wheel. The angular exposure of the grinding wheel periphery and sides of safety guards shall not exceed 90 degrees.

4. Hood Guards – The distance between the wheel and the hood guard at the top of the opening shall not be more than ¼ inch (0.5 centimeters).

2.5 Portable Grinders

1. Portable grinders shall not be used as a replacement for a bench grinder.

2. The site/facility manager shall ensure that all portable grinders are inspected before initial use and at least quarterly thereafter. Employees shall inspect their grinders before each use.

3. Site/facility management shall ensure that air powered grinders are speed checked quarterly.

4. Employees using portable grinders shall be responsible for changing the wheels when necessary. Use only wheels with rpm ratings equal to or above that of the grinder.

5. All wheels shall be used with safety guards, with the single exception of wheels 2 inches or less in diameter to which it is impossible to apply safety guards. In this case, wear a full heavy-duty face shield, along with safety glasses. Allow safety guards on portable grinders a maximum exposure angle of 180 degrees, and affix them firmly to the grinder. Position guards so that pieces of an accidentally broken wheel are deflected away from the operator. Protect cup-type wheels with either a revolving cup guard or a band-type guard.
1.0 PURPOSE

To provide requirements that ensure Saxon employees are protected from hazards associated with the operation of lawn mowers, weed cutters and chain saws.

2.0 REQUIREMENTS

In addition to specific requirements noted in sections 2.1, 2.2, 2.3 and 2.4 of this standard, each site or facility shall address the following general safety requirements:

1. Equipment inspection guidelines shall be implemented.
2. Safety guards and devices shall not be tampered with or altered.
3. Basic personal protective equipment consisting of safety glasses, hearing protection, long work pants and sturdy leather work shoes shall be used.
4. Additional protective equipment shall be used in areas where physical, environmental, or natural hazards exist. Example, leggings will be needed in areas with tall grass that are known or suspected to be inhabited by snakes. Chemical repellents shall be considered for insect exposure and poison ivy/oak block shall be considered for exposure protection.
5. Consider the use of respiratory protection for dusty conditions that may be created.
6. Ensure that operators are qualified and well suited to perform these activities.
7. Work area inspections (debris, obstacles, hazards, snakes, wasp nest, hornet nest, and bee hives). Check work area for debris or obstacles placed in the area since the last activity.
8. Permits shall be site specific and handled according to site procedure. Each site shall develop their own procedure based on site/facility needs.
9. Fire protection while refueling. A fire extinguisher shall be available and equipment shall be shut down and allowed to cool for five minutes prior to refueling.
10. Equipment shall be serviced and maintained so as to prevent leaks and spills of fuel, oil, hydraulic fluid, etc.

2.1 Lawn Mowers

Employees operating a lawn mower shall be trained in the manufacturers requirements and the following safe work practices prior to using a lawn mower:

1. Do not use a lawn mower on steep inclines, drainage ditches, or areas where the mower may overturn or roll back on the operator.
2. Keep others a minimum of 25 feet away from a mower while it is running.
3. Do not place hands or feet anywhere near mower undercarriage while it is running.

2.2 Riding Mowers and Tractors

Riding mowers and tractors shall only be operated by qualified persons authorized by site/facility management. Employees operating a riding mower or tractor shall be trained in the manufacturers requirements prior to using the equipment. In addition to following the manufacturers safety requirements, provisions shall be established to address the following issues prior to operating a riding mower or tractor:

4. Methods and frequency of Inspection
5. Operator qualifications
6. Compatibility of equipment when various attachments are used
7. Lighting - if used after dark, the machine shall have factory-installed lighting or equivalent lighting subject to the site/facility managers’ approval.
8. Review equipment operations to ensure that the operator is not exposed to process hazards and that operation of the equipment will not cause a leak or exposure.
9. Planning the use of equipment around substations, exposed cables, lines, and other types of electrical equipment. If any part of the equipment or load could possibly come within 15 feet of an electrical source, follow the guidelines in the electrical standard.

10. Determine flammable and explosive classifications before using maintenance and landscaping equipment in any operating or manufacturing area.

11. Tractors, mowers, and similar equipment are often top-heavy and potentially unstable on inclines. Follow the manufacturer’s recommendations and guidelines for operating this equipment on inclines, as well as in other areas. Use seat belts when they are provided by the manufacturer. Do not add seat belts and rollover protection to this equipment without written approval from the manufacturer.

12. Equipment operated on public roadways shall meet the requirements of the local governing body.

13. Operate equipment within the site or facilities posted speed limits or within the equipment manufacturer’s suggested speed limit, whichever is less.

14. Shut off the motor and engage the parking brake when dismounting or leaving tractors, maintenance and landscaping equipment.

2.3 Weed Cutters

Employees operating a weed cutter shall be trained in the manufacturers requirements and the following safe practices prior to using the weed cutter:

1. Be careful when using weed cutters close to objects subject to damage, because the cutting radius of a weed cutter is difficult to determine and maintain during operation. An object may be damaged or become airborne if the weed cutter contacts it.

2. Do not operate weed cutters closer than 25 feet to other personnel or in restrictive spaces.

3. In addition to basic personal protective equipment, safety goggles shall be used.

2.4 Chain Saws

Employees operating a chain saw shall be trained in the manufacturers requirements and the following safe practices prior to using the chain saw:

1. Before cutting the material, inspect and clear it of foreign objects such as nails, wire, and rocks.

2. Keep other personnel at least 10 feet away from a chain saw while it is being used, or outside the radius equal to the height or length of the object to be cut, whichever is more restrictive. Use ropes or push poles to allow assisting personnel to keep at least a 10-foot distance.

3. Do not use the tip of a chain saw for cutting or allow it to touch inadvertently a limb or other object that is not being cut.

4. To avoid kick-back, be extremely cautious when cutting small limbs.

5. Always keep a firm grip with two hands on the chain saw while in use.

6. Always maintain the chain saw in proper working order with a properly sharpened and adjusted chain.

7. In addition to the basic personal protective equipment required, ballistic chaps and gloves shall be used.

3.0
1.0 PURPOSE

To provide established minimum requirements for the control of hazardous energy sources that could cause harm or injury if suddenly or unexpectedly released.

2.0 REQUIREMENTS

Each site/facility shall develop a site specific written plan for the control of hazardous energy sources (Lock-out/Tag-out/Try). Where Saxon shares a site with client personnel, the Saxon plan shall compliment the client program. However, the minimum requirements set forth in this procedure shall be met. Employees shall not be allowed to work on energized systems without authorization from the Site Manager and consultation with the Site EH&S Professional.

2.1 Site/Facility Specific Plan

The site/facility specific plan shall address the following lock-out and tag-out issues:

1. Hazard Assessment and Energy Control Procedure – A hazard assessment shall be conducted, and, if more than three lock-out devices or location points are involved to de-energize a piece of equipment, system, circuit or process, a specific Energy Control Procedure (EPC) shall be developed which identifies the hazardous energy sources and their approximate magnitude. In addition to voltage, pressure, temperature, motion and other physical characteristics of hazardous energy, the NFPA hazard diamond can be used as a means of communicating the magnitude of health, fire and reactivity hazards to workers. The ECP shall note the location of the energy isolation devices and the sequence in which isolation is to be performed.

2. Hazardous Energy – Hazardous energy is any energy that could cause harm or injury if it were suddenly, unexpectedly or inadvertently released. Several examples of potential hazardous energy are:
   a. Chemicals, liquids or gases under pressure which can be caustic, flammable, toxic or an asphyxiate by nature
   b. Mechanical motion such as blenders, mixers, conveyors, fan fans, etc.
   c. Extreme heat as may be generated by in-service equipment or steam
   d. Extreme cold as may be associated with cryogenic type chemicals and refrigerants
   e. Electricity
   f. Materials with the potential to engulf if spilled or released
   g. Springs and other counterweight type measures used to assist with manually opening overhead doors and other similar equipment
   h. Gravity

3. The initial, or primary hazardous energy isolation shall be adequately secured with a lock and identification tag. If the isolation device is not capable of being locked out, a tag will be used along with additional safety measures that will ensure the integrity of the isolation is equal to the same isolation with a lock in place.

4. Non-Hazardous energy – Vents and drains may be considered non-hazardous in some instances if they are part of the isolation plan and they are opened deliberately as part of preparing a piece of equipment for repair, alteration or maintenance activities. However, they shall be tagged to indicate that they are not in their normal operating position during these activities.

5. Energy isolation device – An energy isolation device is any mechanical device that physically prevents the operation of a system, and controls the potential release of hazardous energy. Push buttons, selector switches and other control circuit type devices are not energy isolation devices.
6. **Secondary Isolations** – In addition to hazardous energy, a secondary isolation may be needed to safely secure hazardous energy prior to opening a system. Example: An initial hazardous energy isolation and secondary isolation along with an open bleed, vent or drain (double block and bleed) is required prior to performing a first break into a process system that contains hazardous energy sources.

7. **Potentially Hazardous Work** - Potentially hazardous work such as confined entry or field welding on a line with hazardous or flammable chemicals shall require additional isolation in addition to the hazardous energy and secondary isolations. A physical disconnect (preferred), or, a slip blind (acceptable alternate) shall be used to ensure no re-accumulation of materials exists inside the line once it has been isolated and de-energized. Refer to EH&S Procedure III.A.28, Isolation from Plant Processes for additional information.

8. **Verification of isolation and de-energization.** Site management shall ensure that a means is established for employees to effectively verify isolation on systems they work on which contain hazardous energy sources. Employees shall verify isolation by attempting to start or energize the equipment prior to working on it. Electrical systems will be tested with a meter to confirm de-energization.

9. **Zone of Danger or Point of Operation** – When an employee is positioned where any body part would be affected in the event of a sudden release of hazardous energy the employee is in a zone of danger or point of operation.

10. **Locks and Tags** – A combination of locks and/or tags can be used to control hazardous energy sources and secondary isolations. Locks and tags used for lock-out/tag-out shall be used only for lock-out/tag-out service at a facility.

11. **Equipment not capable of being locked out** – If a piece of equipment is manufactured or constructed in such a way that it is not physically possible to positively lock out hazardous energy sources, it is considered “not capable of being locked out”. When major repair, renovation, or replacement of this equipment is necessary, it is suggested that it be replaced with equipment that is capable of being locked out.

### 2.2 Group Lock-out or Tag-out

When servicing and/or maintenance is performed by a crew, craft, department, or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lock-out or tag-out device.

Group lock-out or tag-out devices shall be used in accordance with the procedures required by this instruction governing individual procedures which shall include, but not necessarily limited to, the following specific requirements:

1. Primary responsibility will be vested in a single employee who is authorized by management, for a set number of employees working under the protection of a group lock-out or tag-out device (such as a craft specific lock).

2. Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lock-out or tag-out of the machine or equipment will be made.

3. When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lock-out or tag-out control responsibility will be vested in a qualified employee designated to coordinate affected work forces and ensure continuity of protection.

4. **Multiple Locking Device and Lock Box** - Each authorized employee, or a qualified employee selected to represent a set number of employees shall affix a personal lock-out or tag-out device to the group lock-out device, group lock-box, or comparable mechanism when employees begin work, and shall remove those devices when employees stop working on the machine or equipment being serviced or maintained. This gives employees the same level of safety as if each had placed a personal lock or tag on each energy isolation
device. NOTE: When group lock-out is used and a selected employee locks out for a set number of employees, each employee retains the right to inspect the system and verify lock-out in accordance with the Energy Control Procedure. Employees are responsible to verify de-energization on the portion of the equipment they are working on.

2.3 Lock-out/tag-out device removal

Each lock-out/tag-out device shall be removed from each energy-isolating device by the employee who applied the device. The site specific plan shall address the removal of lock-out/tag-out devices when the employee who applied the device is not available to remove it. The plan shall address the following:

1. At least two authorizations for removal at the superintendent level or above is required
2. Management shall verify that the employee who applied the lock-out/tag-out device is not at the facility or available to return.
3. An effort shall be made to contact the person.
4. The craft supervisor and the general foreman/foreman shall "walk-down" to verify it is safe to start the system.
5. The employee shall be notified that his or her lock has been removed prior to returning to work.

2.4 Exclusions From Lock-out/Tag-out

1. Energized Equipment – Work on energized equipment such as hot tapping, testing of electrical circuits, and work on in-service equipment where energization of the equipment is required to perform necessary vital adjustments, may be excluded from lock-out/tag-out. However, specific procedures shall be developed before performing work on energized equipment. Refer to EH&S Procedure III.E – Electrical Safety.
2. Fire Water – Fire water may be excluded from Lock-out/Tag-out where it is not feasible to de-energize it, however, a procedure shall be developed prior to working on an energized fire water system to adequately address employee safety.

2.5 Training and Re-Training

Training shall be conducted initially prior to an employee performing service or maintenance on equipment containing hazardous energy sources. Re-training shall be conducted as a minimum, when the employees job assignment changes, when the Lock-out/Tag-out procedure changes, or, when the employees performance indicates the need for retraining.

3.0
1.0 PURPOSE

To provide requirements for work in and around excavations.

2.0 REQUIREMENTS

2.1 General

1. Each project shall develop a site specific written procedure. The written procedure will cover all requirements listed in this document, local government jurisdiction and those required by the client.

2. Each employee in an excavation shall be protected from cave-ins.

3. A designated competent person shall be onsite at all times during which excavation activities are conducted.

4. Before any excavation can be made, an Excavation Permit (Form III.C.21.001) shall be completed by the foreman with input from the authorized person for underground testing (utility identification) and the excavation competent person. Appropriate client approval is also necessary where required by client regulations.

5. Soil classification shall be made by the competent person or a registered professional engineer trained in soil classification. Unclassified soil shall be assumed to be Class C.

6. All excavations over 5 feet deep shall be shored, sloped, or benched as required. Excavations and the work scheduled to be performed in the excavation shall be evaluated by the competent person to determine if the shoring, sloping, or benching needs to begin at a depth less than 5 feet. Class C soil will be slope 1 ½: 1 or shored

7. All shoring for excavations over 20 feet shall be designed by a registered professional engineer and all shoring installed shall be approved and signed off by a registered professional engineer.

8. All spoils shall be placed a minimum of 3 feet from the edge of the excavation. Loose soil or rocks shall be removed from the sides of excavation walls.

9. Excavations 4 feet in depth or greater, shall have a stairway, ladder, ramp, or other safe means of egress within 25 feet of any employee.

10. All excavations shall be inspected by a competent person before entry:

   a. At the start of each shift
   b. After rain or snowfall
   c. After freezing and/or thawing temperatures occur
   d. After any condition that can change the integrity of the soil

11. During rainy weather, work in excavations shall be suspended until the excavation competent person has evaluated the excavation and the effect the rain is having. The excavation competent person shall maintain a regular inspection schedule during the rain if employees continue to work in the excavation. Depending on the amount of rain falling, the duration of the rainfall and the soil type, the competent person may need to maintain continuous observation of the excavation condition.

12. For all excavations 4 feet in depth or greater, the potential for a hazardous atmosphere shall be evaluated. If potential atmospheric hazards exist, then the atmosphere in the excavation shall be tested. This test will be performed by the EH&S professional or designee. Indications of the potential for a hazardous atmosphere
include, but are not limited to: gas lines, sewer lines, proximity to emissions sources for H2S, SO2, CO, and other gases that are heavier than air.

13. Excavations shall be evaluated for hazards in addition to cave-in potential. Electrical sources, energized (pressurized) pipes, underground tanks, etc. may present a hazard to employees who are required to enter the excavation.

14. The competent person responsible for the crew working in the excavation shall inspect the excavation throughout the work period and stop operations when unsafe conditions exist. The “Daily Excavation/Trench Inspection Report shall be used to document the daily inspections.

15. The number of workers in the excavation shall be limited to the number needed to perform the work.

16. Water shall not be allowed to accumulate in excavations at any time. Pumps, drains, or other means shall be used to remove water constantly.

17. Stability of adjacent structures shall be evaluated before starting an excavation and monitored daily thereafter.

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 will be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

2.2 Training

1. Each employee who works in or around an excavation shall be trained to recognize potential hazards associated with excavations: cave-in potential, fall hazards, safe entry and exit, proximity to excavating equipment, air quality, back-filling and compacting activities, protective systems, etc.

2. Each individual assigned as an excavation competent person shall have documented training or shall have documentation of experience and qualifications in excavation activities.

2.3 Record Retention

A copy of the Excavation Permit (Form III.A.21.001) and Daily Inspection Form (III.A.21.002) shall be maintained in the site’s safety office for the duration of the project. Should an incident occur in an excavation or trench the original excavation permit and inspection form (s) will be placed in the project incident file.
1.0 PURPOSE

To provide established procedures for the safe handling, transportation, and use of explosive material on the project.

2.0 REQUIREMENTS

A site/facility specific written program shall be developed and conveyed to all personnel including client. The written procedure shall cover at a minimum the following:

1. Training of employees to handle, transport, load, detonate, and inspection of the blast area post detonation
2. Ordering, receiving, and storage of explosives
3. Disposal of old or damaged explosives
4. Safety of all employees in the area of the blast and mucking operations
5. Heavy equipment safety

2.1 Receipt and Inventory Records of Explosives

1. The site/facility shall designate authorized individuals who are allowed to receive shipments of explosive materials.
2. The proper authority shall be contacted and informing them that the site/facility is storing explosive devices onsite.
3. The site/facility shall have two storage sites, one for the explosive material and the other for blasting caps.
4. A perpetual inventory shall be maintained with all receipts and issues. A physical inventory shall be conducted daily and any confirmed discrepancies shall be immediately reported to the V. P. of Corporate Security and the proper authorities.

2.2 Surface Transportation of Explosives

Transportation of all explosive material shall be in compliance with government regulations.

2.3 Storage of Explosives and Blasting Agents

All explosive material shall be stored according to Title 27 CFR Part 55 and ANSI Standard, A10.7.

2.4 Use of Explosives and Blasting Agents

1. The handling of explosives and blasting agents shall be performed by a qualified blaster or by other employees under direct supervision.
2. All explosives, blasting agents, and blasting supplies shall be used in accordance with the manufacturer’s recommendations.
3. Original containers or Class II magazines shall be used for taking detonators and other explosives from storage magazines to the blasting area.
4. When blasting is done in congested areas or in proximity to a structure, railway, or highway, or any other installation that may be damaged, the blaster shall take special precautions in the loading, delaying, initiation, and confinement of each blast with mats or other methods so as to control the throw of fragments, and thus prevent bodily injury or property damage.
5. Persons authorized to prepare explosive charges or conduct-blasting operations shall use every reasonable precaution, including but not limited to, visual and audible warning signals, flags, or barricades, to insure the safety of the general public and workmen.

6. Whenever blasting is being conducted in the vicinity of gas, electric, water, fire alarm, telephone, telegraph, and steam utilities, the blaster shall notify the appropriate representatives of such utilities at least 24 hours in advance of blasting, specifying the location and intended time of such blasting. Verbal notice shall be confirmed with written notice. In an emergency, the authority having jurisdiction may waive this time limit.

7. Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lightning, adjacent power lines, dust storms, or other sources of extraneous electricity. These precautions shall include ensuring that mobile radio transmitters which are less than 100 feet away from electric blasting caps in other than original containers shall be deenergized and effectively locked.

2.5 Blaster Qualifications

1. Shall be in adequate physical condition to perform the work required.

2. Shall be able to understand and give written and verbal orders.

3. Shall be qualified by reason of training, knowledge, and experience in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of state and local laws and regulations, which pertain to explosives.

4. Shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

2.6 Loading of explosives or blasting agents

1. All drill holes shall be checked for water or other hazardous conditions before loading and be sufficiently large enough to admit freely the insertion of the cartridges of explosives.

2. Tamping shall be done only with wood rods without exposed metal parts. Violent tamping shall be avoided. The primer shall never be tamped.

3. No holes shall be loaded except those to be fired in the next round of blasting.

4. Drilling shall not be started until all remaining butts of old holes are examined for unexploded charges.

5. No explosives or blasting agents shall be left unattended at the blast site.

6. Machines and all tools not used for loading explosives into boreholes shall be removed from the immediate location of holes before explosives are delivered.

7. No activity of any nature other than that which is required for loading holes with explosives shall be permitted in a blast area.

8. Power lines and portable electric cables for equipment being used shall be kept a safe distance from explosives or blasting agents being loaded into drill holes. Cables in the proximity of the blast area shall be de-energized and locked out by the blaster.

9. Holes shall be checked prior to loading to determine depth and conditions.

10. Standard-type warning signs indicating a blast area shall be maintained at all approaches to the blast area.
11. No loaded holes shall be left unattended or unprotected.

12. The blaster shall keep an accurate, up-to-date record of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate running inventory of all explosives and blasting agents stored on the operation.

2.7 Initiation of Explosive Charges

Only electric blasting caps, delay electric blasting caps, non-electric delay blasting caps, or detonating cord, or a combination thereof, shall be used for blasting operations in congested areas, or adjacent to highways open to traffic. Electric blasting caps shall not be used where sources of extraneous electricity make the use of electric blasting caps dangerous.

2.8 Safety Fuse and Primer Blasting

1. Safety fuses shall only be used where sources of extraneous electricity make the use of electric blasting caps dangerous. The use of a fuse that has been hammered or damaged in any way shall be forbidden.

2. The average burning rate of the safety fuse being used shall be determined by test burns and posted on bulletin boards or other conspicuous places where all employees can see it.

3. Before capping a safety fuse, a short length shall be cut from the end of the supply reel so as to assure a fresh cut end in each blasting cap.

4. Only a cap crimper of approved design shall be used for attaching blasting caps to a safety fuse.

5. No unused cap or short capped fuse shall be placed in any hole to be blasted; such unused detonators shall be removed from the working place and destroyed.

6. No fuse shall be capped, or primers made up in any magazine or near any possible source of ignition.

7. No one shall be permitted to carry detonators or primers of any kind on his person.

8. The minimum length of a safety fuse to be used in blasting shall be that which is required by state law or as established by the authority having jurisdiction, but in no instance shall it be less than 30 inches.

9. At least two (2) men shall be present when multiple cap and fuse blasting is done by hand lighting methods.

10. When blasting with safety fuses, consideration shall be given to the length and burning rate of the fuse. Sufficient time, with a margin of safety, should always be provided for the blaster to reach a place of safety.

2.9 Detonating Cord Blasting

1. Care shall be taken to select a detonating cord consistent with the type and physical condition of the borehole and stemming and the type of explosives used.

2. Detonating cord shall be handled and used with the same respect and care given to other explosives.

3. Detonating cord shall be handled and used with care to avoid damaging or severing the cord during and after loading and hooking-up.

4. All detonating cord connections shall be inspected before firing the blast.

5. When detonating cord millisecond-delay connectors or short-interval-delay, electric blasting caps are used with detonating cord, and the practice shall conform strictly to the manufacturer’s recommendations.

6. Detonators for firing the trunkline shall not be brought to the loading area nor attached to the detonating cord until everything else is in readiness for the blast.
2.10 Firing the Blast

1. A code of blasting signals shall be posted at one or more conspicuous places at the operation. All employees shall be required to familiarize themselves with the code and conform to it.

2. Before a blast is fired, a loud warning signal shall be given by the blaster in charge who has made certain that all surplus explosives are in a safe place and all persons, vehicles, and equipment are at a safe distance or under sufficient cover.

3. Flagmen shall be safely stationed on highways, which pass through the danger zone so as to stop traffic during blasting operations. Before firing an underground blast, warning shall be given and all possible entries into the blasting area and any entrances to any working place where a drift raise or other opening is about to hole through shall be carefully guarded. The blaster shall make sure that all persons are out of the blast area before firing a blast.

4. The blaster shall give three (3) verbal shouts - “Fire in the Hole”.

5. When electric blasting operations are conducted, appropriate precautions shall be taken to prevent accidental discharge of electric blasting caps.

2.11 Procedures after Blasting

1. No person shall return to the blast area until permitted to do so by the blaster.

2. During post blast clean up only the operator and blaster are allowed in the area.

3. Sufficient time should be allowed for the smoke and fumes to leave the blasted area before returning to the blast area.

4. An inspection of the area shall be made by the blaster to determine if all charges have been exploded before employees are allowed to return to the operation.

5. If a misfire is found, the blaster shall provide proper safeguards for excluding all personnel from the danger zone.

2.12 Underwater Blasting

1. Loading tubes and casings of dissimilar metals shall not be used because of possible electric transient currents from galvanic action of the metals and water.

2. Only water resistant blasting caps and detonating cords shall be used for all marine blasting. Loading shall be done through a non-sparking metal loading tube when a tube is necessary.

3. No blast shall be fired while any vessel under way is closer than 1,500 feet to the blasting area.

4. Blasting flags shall be displayed.

5. The storage and handling of explosives aboard vessels used in underwater blasting operations shall be in accordance with the provisions outlined under handling and storing explosives as prescribed in ANSI A10.7 - 1970.

2.13 Blasting in Excavation Work under Compressed Air

1. Detonators and explosives shall not be stored or kept in tunnels, shafts, or caissons.
2. When detonators or explosives are brought into an air lock, no employees except the powderman, blaster, lock tender, and the employees necessary for carrying, shall be permitted to enter the air lock. No other material, supplies, or equipment shall be locked through with the explosives.

3. All metal pipes, rails, air locks, and steel tunnel lining shall be electrically bonded together and grounded at or near the portal or shaft, and such pipes and rails shall be cross-bonded together at not less than 1,000-foot intervals throughout the length of the tunnel. In addition, each low air supply pipe shall be grounded at its delivery end.

2.14 Underground Blasting

1. Holes shall be electrically fired to give all men a chance to get out of the shaft or tunnel.

2. In shaft blasting where there is danger of damaging property or injuring personnel by flying rocks and debris, blasting mats shall be used. When mats are metal, care shall be taken to keep them from grounding out the blasting circuit and possibly causing a misfire.

3. In underground operations, blasting machines should be used. However, when firing from a power circuit, a safety switch shall be placed in the permanent firing line at intervals. This switch shall be made so it can be locked only in the “off” position and shall be provided with a short-circuiting arrangement of the firing lines to the cap circuit.

2.15 Poisonous Gas Hazards

1. Confine the charge with incombustible stemming.

2. Provide adequate ventilation and make frequent tests for carbon monoxide and gases.

3. Spray muck pile with water.

4. Allow the maximum practical time after blasting before returning to the blast area.

3.0
1.0 PURPOSE

To provide established minimum requirements for employees building and working in tunnels, caissons, and cofferdams.

2.0 REQUIREMENTS

2.1 The project shall have a written procedure outlining the following procedures for tunnels, caissons, and cofferdams:

1. Safe means of access and egress to protect employees in all work areas. The safe means of access and egress shall protect employees from being struck by excavators, hauling machines, trains, and other mobile equipment. No employees, other than equipment operators operating their equipment, shall be allowed in tunnels during mucking operations.

2. Check-in \ Checkout shall be established to ensure an accurate count of personnel in the event of an emergency.

3. Employees shall be orientated in the following safety procedures:
   a. Air Monitoring
   b. Ventilation
   c. Illumination
   d. Communications
   e. Flood Control
   f. Mechanical Equipment
   g. Personnel Protective Equipment (PPE)
   h. Explosives
   i. Fire Prevention
   j. Emergency Procedures

4. Oncoming shifts shall be informed of any hazardous occurrences or conditions that have affected or might affect employee safety.

5. Continuous and uninterrupted communications shall be maintained between the workforce from the surface to all portions of the underground work.

6. If the shaft is used for access and egress emergency hoisting capabilities shall be readily available.

7. Self-rescuers (respirators) shall be immediately available to all employees at workstations in underground areas where employees might be trapped by smoke or gas.

8. Rescue Team(s) need to fit the needs and requirements of the site/facility and government requirements.

9. At least one designated person shall be on duty above ground whenever any employee is working underground. The designated person shall be responsible for securing immediate aid and keep an accurate count of employees underground in case of an emergency.

10. Each employee underground shall have an acceptable cap lamp on for emergency use or an emergency lighting system that provides adequate illumination for escape.

11. Hazard classification: Gassy operations 10% LEL for methane or other explosive gas.

12. The project shall perform air quality and monitoring check for LEL, \text{O}_2 deficiencies, and other air quality issues.
13. Ventilation of fresh air shall be supplied to all underground work areas in sufficient quantities to prevent dangerous or harmful accumulations of dust, fumes, mist, vapors, and gases.


15. Fire prevention and control measures shall conform to Title 29 CFR Part 1926, Subpart S, Subpart F, Subpart J, and Subpart K.

16. Welding, cutting, and other hot work shall conform to Title 29 CFR 1926 Subpart J and Subpart S.

17. Ground support:

   a. Portal Areas: Shoring, fencing, head walls, shotcreting or other equivalent means shall protect portal areas.

   b. Subsidence areas: The project shall ensure ground stability in subsidence areas by shoring, or erecting barricades in hazardous areas.

   c. Underground areas shall be inspected by a competent person for the following:

      1. Ground conditions along haulageways and travelways to ensure safe passage of employees and equipment
      2. Rock bolts for proper torque
      3. Support nets to ensure proper tension

18. Blasting will conform to Title 29 CFR Part 1926, Subpart S and U.

19. Drilling rigs associated drilling equipment and Jumbo decks shall be inspected prior to use each shift. All government requirements and company requirements shall be adhered to for inspection, fall protection, etc.

20. Hauling equipment such as power mobile haulers, employee transportation equipment, and material hauling shall be inspected each shift. Employees shall only ride equipment that is equipped for personnel transportation.

21. Electric power lines shall be insulated and located away from water lines, telephone lines, airlines, or other conductive materials. Lighting circuits shall be located so that personnel or equipment movement shall not damage the circuits or disrupt service. All other requirements shall comply with Title 29 CFR Part 1926, Subpart K.

22. Hoisting of personnel and material shall conform with Title 29 CFR Part 1926, Subpart N and S.
1.0 PURPOSE

To provide established requirements for all Saxon employees working in confined spaces.

2.0 REQUIREMENTS

2.1 Written Plan

A site/facility-specific, written confined space plan shall be developed that designates what types of training will be required, who will be trained, rescue procedures, personnel and training requirements, specific precautions for types of confined spaces, e.g., newly arrived/constructed confined spaces versus used contaminated confined spaces, and any other pertinent issues involving confined space entry.

2.2 Confined Space Identification

1. All confined spaces shall be identified as they develop or arrive on site. A survey of the project shall be ongoing to identify the confined spaces and to determine the hazards associated with each confined space, i.e., past and present uses, access, mechanical energy sources, pipelines, etc.

2. A "Danger - Confined Space" sign or other equally effective means shall be used to identify a confined space and is to remain at the entrance to the confined space.

2.3 Training

1. All employees shall receive awareness training regarding confined spaces.

2. All affected employees (entrants, attendants, rescuers, supervisors, monitoring/evaluating personnel, etc.) shall be trained in aspects of the written plan that affect them. Training shall be documented. Entrants shall be trained in self-rescue.

3. Individuals entering Confined Spaces shall be provided with training. This training shall include a general confined space entry class and a specific pre-task review of any hazards identified for that space, a discussion of the work assignment and any control measures necessary for accomplishing the task in a safe manner.

4. Individuals entering confined spaces that have the potential for a hazardous atmosphere, materials that might engulf an entrant, a configuration that might trap an entrant or any other recognized hazard shall be provided with formal Confined Space Training. Training shall be developed for Authorized Entrants, Attendants, Entry Supervisors and Rescue/Emergency Service Personnel, and shall meet the requirements of Title 29 CFR Part 1910.146 (g)(1)-(4) and cover the duties outlined in Title 29 CFR Part 1910.146 (h)-(k).

5. Individuals conducting atmospheric monitoring shall be trained in the proper use and calibration of the monitoring equipment and documentation of the monitoring results.

2.4 Entry Procedure

1. Safe Work Permit and Confined Space Entry Tag shall be in place.

2. A hazard assessment shall be performed and documented on the Safe Work Permit (Form III.A.24.001) prior to entry. The supervisor in charge of the work shall schedule this action.

2.5 Atmospheric Monitoring

1. The internal atmosphere shall be tested and documented by a competent person, prior to entering the confined space. (Exception: in emergency situations entry may take place prior to monitoring the confined space, if and only if the atmosphere is considered to be IDLH and the appropriate precautions taken)
2. An attendant shall be assigned to the confined space when the individual performing atmospheric monitoring is inside, in addition to all other precautions necessary for the particular space.

3. The atmospheric testing shall be performed with a calibrated direct-reading instrument.

4. Instrument calibration (according to the manufacturer's instructions for zero calibration and span check) shall be conducted and documented each day the direct-reading instrument is used.

5. In order to account for the potential layering of contaminants in a confined space, the entire depth and width of the space shall be monitored.

6. The atmosphere shall be monitored for the following conditions in the order given:
   a. oxygen content,
   b. flammable gases and vapors,
   c. potential toxic air contaminants.

7. The monitoring results shall be recorded on the Confined Space Entry Permit and the Confined Space Entry Tag.

8. There may be no hazardous atmosphere within the space whenever any employee is inside. (Exception: in emergency maintenance/rescue situations the atmosphere shall be considered IDLH and appropriate protective measures taken).

9. If tests indicate that the atmosphere is unsafe, the confined space shall be ventilated until the hazardous atmosphere is removed, prior to employee entry. The ventilation required shall be noted in the special precautions section of the Safe Work Permit.

10. The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

11. If, after ventilating the space, tests indicate a hazardous atmosphere, no person will be allowed to enter unless equipped with an approved air-line respirator equipped with an escape bottle or a self-contained breathing apparatus, safety harness, and lifeline. Such entries shall be made only during emergency situations and the number of workers participating shall be kept to a minimum.

2.6 Fire Prevention/Protection

1. Precautions shall be taken to prevent fires inside of confined spaces.

2. The need for a fire watch inside the confined space shall be evaluated. At no time shall compressed bottles be allowed in the confined space.

2.7 Piping/Vessel System Check

All energized piping systems shall be locked or blocked and tagged to isolate contaminants and energy.

2.8 Electrical Safety Check

All electrical energy sources shall be isolated, per requirements by Procedure III.A.20.

2.9 Special Precautions

1. Communication requirements shall be evaluated during the hazard assessment. If an attendant is required, constant two-way communication shall be maintained between entrants and the attendant.
2. Lighting requirements need to be evaluated. Low voltage, GFCI controlled or intrinsically safe lighting is required in all metal tanks/vessels and in other confined spaces with flammable atmospheres. If GFCI’s are used on lights for confined space entry, backup lighting shall be immediately available in case the GFCI trips.

3. In potentially explosive or flammable atmospheres, non-sparking tools shall be used. Smoking, open flames, and cutting or welding are prohibited in these situations.

4. Continuous air monitoring, safety harnesses, and lifelines shall be required when the activities inside the confined space (such as cutting and welding, distributing accumulated sludge, or use of solvents) may produce a hazardous atmosphere; even if the initial atmospheric tests indicate a safe atmosphere.

5. Personal Protective Equipment such as coveralls, impervious gloves, boots, respirators, and face and eye protection shall be used as required by the nature of the operation to be performed.

6. All entrants shall wear a body harness with an attached lifeline secured to a fixed object outside the confined space unless there is written documentation on the safe work permit as to why it is more dangerous or impossible to do so.

7. In vertically accessed confined spaces, a mechanical hoisting device shall be immediately available for rescue.

2.10 Ventilation for Confined Space Entry

1. The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space. The air supply of the forced air ventilation shall be from a clean source that does not increase the hazards in the space.

2. Ventilation smoke tubes shall be used to generate a visible smoke cloud in the confined space. This smoke shall be introduced into the space after the ventilation system has been set up so that the efficiency of the ventilation may be evaluated. If the "smoke test" indicates that the ventilation set up is not effective in carrying contaminants out of the confined space, the ventilation shall be rearranged and the smoke test repeated. This process shall be continued until the appropriate ventilation configuration has been established.

3. Exhaust fans should be used to provide local exhaust ventilation venting the fumes outside of the confined space during some tasks e.g., welding & grinding. The hood/snorkel shall be located as close as possible to the point of generation of the fume or dust. As work progresses the hood/snorkel shall be moved in order to remain within inches of the work.

4. In some cases, it may be desirable to have exhaust fans located away from the work area. A supply of flexible hose may be attached to the suction end of the air mover and then be placed in the confined space to draw contaminants out of the space. Again, the efficiency of this set up shall be evaluated with a smoke test to ensure that contaminants are being pulled out of the space.

5. Ventilation shall consist of a pre-entry purge of several air changes, followed by additional air monitoring, and then continuous introduction of fresh air during occupancy.

2.11 Additional Training

A competent person shall review the additional training requirements. The training might include hazard communication; powder actuated tools, hearing conservation, respiratory protection, etc.

2.12 Hazards of near-by Areas

A competent person shall evaluate hazards of near-by areas. These hazards might include water run off, vehicle traffic, outside contaminants (exhaust emissions, pop-off valves, etc.), overhead work, etc.

2.13 Rescue Plan
1. The rescue plan shall be developed by a competent person and shall include provisions for training, practice drills, body harnesses, life lines, hoisting equipment, communications, responsibility, etc. as needed.

2. Self rescue and non-entry rescue shall be the rescue method of choice whenever possible.

3. Only trained personnel shall attempt rescue. Training shall include
   a. Proper use of personal protective equipment
   b. Proper use of rescue equipment
   c. Current certification in first aid and CPR
   d. Bloodborne pathogens
   e. The same training as the authorized entrants
   f. Non-entry rescue techniques
   g. Rescue training on the types of rescues they will be expected to perform
   h. The rescue personnel shall be retrained in all aspects of rescue at least annually.

THE SAFE WORK PERMIT SHALL BE POSTED AT THE CONFINED SPACE ENTRANCE WHILE EMPLOYEES ARE WORKING IN THE CONFINED SPACE.

2.14 Equipment

1. A direct reading instrument, which measures the percentage of the LEL and oxygen concentration simultaneously, is recommended. However, individual meters to measure the percentage of oxygen concentrations and the LEL may also be used. Other atmospheric monitoring equipment shall be used for monitoring other known gases such as hydrogen sulfide, sulfur dioxide, etc., which may be present in confined spaces (tanks, vessels, etc.) as needed. An Industrial Scientific TMX 410 configured for each project is recommended.

2. A self-contained breathing apparatus (SCBA) or a TYPE-C supplied-air respirator with an escape bottle (10-minute) shall be used in atmospheres Immediately Dangerous to Life and Health (IDLH) and/or confined space rescues.

3. Harness and lifelines: A harness shall be capable of retrieving an inert body in an upright position. A parachute-type harness with a single lifting ring attached to the upper back, or with duel lifting rings attached to the shoulder straps, is required for all confined space that have recognized hazards or a vertical entry of over five feet.

4. For confined spaces deeper than 5 feet and a vertical entry, a mechanical retrieval device shall be immediately available for rescue.

5. Ventilation: A portable blower shall be used to ventilate the space when atmospheric monitoring or the work to be done in the space indicates an actual or potential hazardous atmosphere.

6. A competent person shall maintain and issue all self-contained and/or supplied-air breathing apparatus required by this procedure.

7. The EH&S professional or designee shall maintain and ensure calibration of all combustible gas/oxygen meters, which shall be readily available.

8. A competent person shall inspect rescue equipment each quarter. The inspection shall be documented by colored tape on the equipment (see color codes for assured grounding) or on logs.

2.15 Program Review
The project confined space entry program shall be re-evaluated by the site manager, the EH&S professional, and members of the safety committee after any failure of the process and at least annually. The review shall be documented.

2.16 Record Retention

1. A Safe Work Permit (Form III.A.24.001) indicating its expiration time and date shall remain posted at the entrance to the confined space during entry. The posted copy and results of the atmospheric testing for the confined space shall be filed in the safety office. These records shall be maintained with the project files.

2. The equipment inspection and calibration records shall be maintained for 30 years.

3. Training records shall be maintained for 30 years.

4. Monitoring data shall be maintained for 30 years.

3.0
1.0 Purpose

To provide requirements for safe welding, cutting, and heating.

2.0 REQUIREMENTS

2.1 General Requirements

1. Fire fighting equipment shall be within 25 feet of all welding and burning activities.

2. All flammable and combustible materials shall be removed or covered by fire resistant material before starting to weld or burn.

3. The need for firewatchers during welding or cutting operations will be determined by the Hazard Assessment.

4. Fire-watch shall have fire-extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half-hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires. Firewatchers may have to be on different levels and possibly in other rooms depending on the configuration of the building.

5. The welder shall wear proper personal protective equipment, i.e.

   a. long sleeve shirts
   b. cutting goggles/welding hood
   c. gloves/aprons/capes
   d. clothing without frays or rips
   e. hard hats
   f. respirators
   g. etc.

2.2 Arc Welding and Cutting

1. Welders shall wear the head and eye protection required in their work area. They shall wear appropriate welding helmets, long-sleeve shirts, leathers and welders gloves. If grinding or chipping is done, a face shield shall be worn. If respirators are required, these also shall be used.

2. At a minimum, employees that are working with welders shall wear long-sleeve shirts, and appropriately tinted glasses with side shields or welding eye goggles.

2.3 Equipment and Inspection

1. Arc-welding and cutting equipment shall be industrial rated, in good condition, and meet local governing authority requirements regarding application, installation, and operation. Trained and qualified people shall make a complete preventive maintenance inspection at least annually. The last inspection date shall be marked on the equipment.

2. Before each use, the following items shall be inspected:

   a. All leads for broken or cut insulation
   b. Electrode holders for broken insulators or worn holders
   c. Oil and fuels on gas- or diesel-powered units
   d. Covers are in place where leads attach to welding machines
e. All connections have no exposed current-carrying parts

2.4 Electric Shock Hazard

1. Almost all electric currents present some degree of potential shock hazard. Under optimum conditions, even welding voltages as low as 30 volts can be hazardous. Operating voltages listed on nameplates are usually much lower than open-circuit voltages, which should not exceed 100 volts DC or 80 volts AC.

2. Either AC or DC current can be used for welding, and, although both present serious shock hazard, AC is potentially more hazardous. Be certain not to use any equipment that is either wet or has been recently drenched. Welding units that are powered by AC shall be adequately grounded. To change polarity, the unit shall be shut down.

3. Electrodes shall never be changed with bare hands or wet gloves or when standing on a wet floor or grounded surface. Cables that become worn enough to present a hazard shall be replaced immediately. Keep welding cables away from power supply cables and high voltage wires. Do not dip hot electrode holders in water to quick cool them.

4. GFCIs shall not be used on welding machines with DC current outlets for cord plugs. They do not function properly in this application.

2.5 Inert and Toxic Gas Exposure

Many welding procedures require an inert gas, such as argon and/or helium. These gases present an asphyxiation hazard. Welders and fitters need to keep these points in mind:

a. Inert gases are odorless and colorless. They can only be detected by monitoring with the proper detection meters.

b. Large-diameter pipes contain larger volumes of inert gas and greater potential for problems. Removing the gas containment quickly will release the gas into the immediate area.

2.6 Ventilation Requirements

1. Welding, Cutting and Heating In Enclosed Spaces

General mechanical or local exhaust ventilation shall be provided whenever welding, cutting, or heating is performed in areas with inadequate ventilation and in enclosed spaces. The ventilation shall be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits. (Levels below OSHA PELs and/or TLV’s will be considered to be “safe limits” as described above. In some cases OSHA Action Levels, excursion limits and STELs may be substituted as “safe limits”). The adequacy of the ventilation shall be determined by air monitoring.

a. When sufficient ventilation, as described above, cannot be obtained, the employees shall be protected by appropriate respiratory protection.

b. Oxygen shall never be used to ventilate an area.

c. Employees performing welding and/or cutting operations on the materials listed below in enclosed spaces shall use local exhaust ventilation or the employees will be protected with airline respirators. Airline respirators shall also protect other employees working in the immediate area.

1. Lead base metals or materials coated with lead-bearing materials
2. cadmium bearing or cadmium coated materials
3. Metals coated with mercury-bearing materials
4. Beryllium-containing base or filler metals (because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air-supplied respirators).
2.  Welding, cutting, and heating in open air (areas with adequate ventilation)

Employees performing welding and/or cutting operations on the materials listed below in the open air shall be protected by air-purifying respirators (filter type). Air-purifying respirators shall also protect other employees working in the immediate area.

a.  Lead base metals or materials coated with lead-bearing materials

b.  Cadmium bearing filler materials

c.  Chromium bearing metals or metals coated with chromium-bearing materials.

d.  Metals coated with mercury-bearing materials

e.  Beryllium-containing base or filler metals  (Because of its high toxicity, work involving beryllium shall be done with both local exhaust ventilation and air-supplied respirators).

3.  Inert-gas metal arc welding

a.  The use of chlorinated solvents (example: Tap-free) shall be kept at least 200 feet away from any inert-gas metal arc welding unless shielded from the exposed arc.

b.  Surfaces prepared with chlorinated solvents shall be thoroughly dry before welding is permitted on such surfaces.

c.  Welders and other employees who are exposed to welding flash shall be protected so that skin is covered completely to prevent burns and other exposure to ultraviolet radiation.

d.  When inert-gas metal-arc welding is performed on stainless steel, either local ventilation or air-supplied respirators shall be utilized. The local ventilation shall be of sufficient capacity and so arranged as to maintain nitrogen dioxide levels at or below the current TLV for nitrogen dioxide (3ppm).

4.  Welding, cutting and heating - paints and coatings

a.  Before welding, cutting or heating any surface covered by a coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Coatings shall be considered to be highly flammable when scrapings burn rapidly.

b.  When coatings are determined to be flammable, they shall be stripped from the area to be heated/burned/welded to prevent ignition (a minimum of 4 inches to each side of the location heated).

c.  When coatings are determined to be toxic, the coating shall be stripped at least 4 inches from the area of heat application, or the employees shall be protected with appropriate respiratory protection. Half-mask cartridge respirators equipped with HEPA filters are the minimum acceptable respiratory protection that can be used when welding on surfaces with toxic coatings.

d.  When working in enclosed spaces on surfaces covered with toxic preservatives (i.e. lead, cadmium or zinc chromate paints, etc.), the coating shall be stripped at least 4 inches from the area of heat application. If this is not possible, the employees in the enclosed space shall be protected by air-supplied respirators.

e.  When working in enclosed spaces on surfaces covered with coatings that have been determined to be other than toxic, the coatings shall be removed a sufficient distance from the area that is to be heated to ensure that the temperature of the un-stripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heated area may be used to limit the size of the area required to be stripped.
1.0 PURPOSE

To provide directions for entering piping systems or equipment that has been in operation.

2.0 REQUIREMENTS

First line breaks can come in many areas. Some examples are breaking flanges to place pancakes, removing pancakes, hot taps, removing valve packing, etc. All first line breaks shall be managed according to this procedure.

2.1 Preparing and Authorizing First Line Break

1. Every attempt shall be made to have owner personnel make the first line break.

2. Any site/facility considering a first line break shall develop a site-specific plan that addresses all provisions outlined in this procedure. The plan shall include lockout/tagout/try provisions, training requirements, necessary steps to take to ensure that no unknown substances, chemicals, or processes are in the system, and the methods to be taken for preventing, containing, collecting, and disposing of spilled materials. The site/facility manager shall approve the plan.

3. The system, including all valves and pumps, shall be isolated and de-energized according to Procedure III.A.20 of this manual. The system shall be depressurized, drained, flushed, and vented to prepare the system for safe opening.

4. The pipe superintendent or superintendent responsible shall complete the Line Breaking Permit. The superintendent shall work with the facility owner to complete the permit and to prepare the system for opening.

5. Only employees approved by the superintendent and trained to make first line breaks shall perform this type of work. The training shall include hazard communication information regarding the material in the pipeline, the appropriate PPE required, emergency action plans, locations of emergency showers and their operation, proper first aid procedures if contact with the material occurs, and the detailed explanation of the first line break plan. A Job Planning and Safety Assessment (JPSA) shall be completed and taught to each involved employee prior to the first line break. Employees shall be trained to report if any hazardous chemical or other toxic substance comes in contact with eyes, skin, clothing, or shoes, or if they inhale a hazardous chemical or other toxic substance. The superintendent shall maintain a list of approved employees. No employee may begin making a first line break until he/she has received and acknowledged understanding of specific safety and health instructions.

6. The superintendent and foremen shall be present when each first line break is made.

7. The system shall be identified, with all lockout points marked and labeled by the superintendent. The supervisors who will have involvement in the line break shall agree upon the locations of the locks and location of the break.

8. Isolating valves shall be closed and pumps stopped. The system will then be locked out, tagged, and then tried according to the lockout procedure.

9. During planning of the line break, PPE requirements shall be reviewed and planned in the JPSA.

2.2 Executing First Line Breaks

1. The area where the line break will occur shall be barricaded and all drains plugged. This will prevent exposing other workers in adjacent areas and floors below. Volume and pressure of the system being worked on shall be considered when setting the barricade and drains to be plugged. Only those immediately involved with the line break operation shall be allowed in the barricaded area.
2. Each employee involved in the line break shall be shown the location of the nearest exit, safety shower, and eye wash station before the line break occurs. Employees shall be instructed in emergency first-aid procedures for the system they will be working on. Employees shall be trained in the use of special protective equipment such as air-supplied respirators, self-contained respirators and/or air purifying respirators if used. Employees making the first line break shall be instructed where to stand so that any initial spray is directed away from them, e.g., upwind and opposite side from the first loosed bolt. Standard practice for breaking a flange is to loosen the bolts on the lower and opposite side from the mechanic, keeping the bolts nearest the mechanic under control and allowing the line to separate in a manner that caused any spillage to be away from the mechanic. The flange should then be spread apart. The mechanic should always be positioned on the upwind side of the flange being broken.

3. Respirators shall be worn where concentrations of a toxic substance might exceed allowable limits. Contact the site or corporate EH&S office for assistance.

4. Once the first break is completed and the line is verified by management to cleared (i.e., drained, vented, flushed, and demonstrated to be clear of any hazardous residue, plugged, or pressure), work may be done on the system or in the area without special PPE. If the line or system cannot be verified to be clear then all workers shall remain in required PPE for the line break.

5. When a valve bonnet is removed, the line shall be drained and the valve placed in the open position before the bonnet bolts are loosened. Ball and plug valves may have pressure in the cavity under the stem packing and bonnet, regardless of the position of the valve and the pressure in adjacent lines. Ball and plug valves that are to be removed from the system shall be opened, closed and reopened to relieve pressure after the line is drained.

6. For first line breaks requiring hot suits, acid suits or any type of respirator or fresh air breathing apparatus, a stand-by member of the work team and the pipe superintendent shall be present. The stand-by person shall have the same PPE and the same training as the person performing the first line break. The stand-by person and the superintendent shall both remain in full view of the job and be prepared to render emergency assistance.

7. Should the conditions of the task to be performed differ from the JPSA, work shall stop and a new plan developed.
1.0 PURPOSE

To provide minimum requirements, for personnel performing Hot Tap operations on operational piping systems or equipment.

2.0 REQUIREMENTS

2.1 Preparing and Authorizing Hot Tap

1. Where possible, the system shall be depressurized, drained, flushed, and vented before the system is opened.

2. Hot tap on process or service systems that are flammable, toxic, corrosive, and/or operating above 200 psi and/or 450° F (232° C) are defined as critical and shall be performed by a qualified contractor.

3. Ultrasonic thickness checks shall be performed on piping in areas to be hot tapped. The hot tap shall not be made if thinning of the pipe wall is in excess of corrosion allowance according to applied codes.

4. The system shall be identified, with all lockout points marked and labeled. All supervisors who will have involvement in the hot tap shall agree upon the locations of the locks and location of the hot tap. Should an emergency situation occur the system can be quickly isolated.

5. Only employees who have been trained and approved by management shall perform hot taps. A list of approved employees shall be maintained with HR.

6. During planning of the hot tap PPE requirements shall be reviewed and planned in the Job Planning and Safety Assessment.

2.2 Executing Hot Tap

1. The area where the hot tap will occur shall be barricaded with all drains plugged. This will prevent exposing other workers in adjacent areas. Volume and pressure of the system being worked on should be considered when setting the barricade and drains to be plugged.

2. A JPSA will be filled out by the supervisor and a meeting held with all employees involved in the hot tap operation. The employees shall be trained and understand all aspects of the work being performed. Training shall be documented. Only those immediately involved with the hot tap operation shall be allowed in the barricaded area.

3. Each employee involved in the hot tap shall be shown the location of the nearest exit, safety shower, and eye wash station before the line break occurs. Employees shall be instructed in emergency first-aid procedures for the system they will be working on.

4. Exercise care to see that the hot tap machine fitting is properly positioned and supported before welding so misalignment of the hot tap machine will not occur.

5. The hot tap valve to be used shall be of adequate size, proper metallurgy, and be a full opening valve. It shall be tested for seat leakage prior to installation.

6. During installation, the valve shall be centered on the nozzle flange.

7. Run the boring bar through the valve opening to be sure the cutter does not jam or drag.
8. Carefully calculate the travel of the cutter to ensure that the tap can be completed within those dimensional limits, that the cut will be stopped before the cutter touches the opposite side of the tapped pipe, and that the cutter can be retracted far enough to allow unimpeded closure of the tapping valve.

9. Check that the bleed-off valve will hold pressure and is not plugged.

10. Ensure that precautions have been established for safe bleed-off and disposal of material collected in the machine above the hot tap valve.

11. Check the tightness of bolts, packing, packing nuts, and bypass line to avoid possible leakage.

12. Should the conditions of the task being performed differ from the JPSA work shall stop and the plan shall be reevaluated.
1.0  **PURPOSE**

To provide minimum requirements to protect personnel from any stored energy while working on plant processes. This procedure applies to work on piping or equipment in operating areas. It does not address lock, tag, try, and test or does it address first line break.

2.0  **REQUIREMENTS**

The physical elimination of stored energy on piping systems and equipment is the main control for protection of personnel. Personal protective equipment (PPE) such as acid suits, face shields, rubber boots and rubber gloves are a secondary means of protection. Both levels of protection may be required to ensure employee safety.

2.1  **PPE Protection**

Always consider the following guidelines when planning proper PPE when working on a line or system exposed to process.

1. Inadequate decontamination
2. Inadequate drains or vents
3. Pockets in pipelines
4. Material or energy trapped in valves, traps, strainers, or pumps.
5. Release of toxic or explosive material
6. Release of toxic material if pipe or equipment is heated
7. Fluids trapped by vacuum
8. Always review the MSDS (material safety data sheet) and Piping Flow Diagrams (PFD) for the process or processes for proposed work.

2.2  **Pipe And Equipment Clearing**

Every attempt shall be made to have owner personnel make the first line break. Plant operations personnel shall make first line break on all potential stored energy in process areas or be present when workers make line breaks. Saxon personnel shall witness installation of blanks, flushing, and steam out to verify workers safety.

2.3  **Planning and Hazard Analysis**

Consider the following guidelines when completing the hazard analysis.

1. The type of valves involved
2. The service (toxic, corrosive, high pressure, explosive, high temperature)
3. Access and egress from work area
4. Personnel training
5. Proper PPE
6. Standby personnel required
7. Emergency plans
8. Consider the possibility of backfeed to the point of the work; isolate both ends of system being worked.
9. Whenever a piping system is being used as a drain or bleed, direct or carry away pipeline flow to a safe area.
10. Only use positive shutoff valves (gate, globe, ball, plug, needle, etc.) as isolation valves. Do not use control valves, valves that have been modified for continuous flow, or check valves for isolation. If there is any potential of a leaking valve during work activities install a blank or pancake, and control the leak before proceeding with the assigned task.

2.4  **Category I Pipe Systems**

1. All lines pressurized above 125 pounds per square inch (psi)
2. All acid, caustic, flammable liquid or gas, or toxic processes  
3. Any other lines that could contain hazardous material upon contact or inhalation  
4. Fluids over 140 degrees Fahrenheit  
5. Personnel working on Category I pipelines shall follow the hierarchy of isolating hazards listed.  
   a. Block bleed block (double block and bleed)  
   b. Block and blank  
   c. Block, physical disconnect and blind  
   d. Where none of the above is possible, special procedures must be in place for workers protection.

2.5 Double Block and Bleed Valves

Use the following steps for double block and bleed safety:

1. Close first block valve upstream of the area of work  
2. Open a bleed valve between the two block valves, verify the integrity of the upstream valve  
3. Close second block valve upstream of the work  
4. Lock and tag the block valves closed and the bleed valve in the open position  
5. Open, drain, flush, and clear the section of pipe ready to have work performed  
6. Supervisor or competent person shall verify these steps and valves are locked and tagged.

2.6 Block Valves and Line Blanks

Workers shall follow these steps listed below:

1. Close valve  
2. Lock and tag the block valve  
3. Drain and clear downstream of valve  
4. Install a line blank downstream of the closed valve  
5. Tag the blank  
6. When possible, open and tag a bleed valve between the closed valve and the line blank  
7. Open, drain, and clear the section of pipe on which the work is to be performed  
8. Supervisor or competent person shall verify these steps and valves are locked and tagged.

2.7 Block, Physical Disconnect And Blind Flanges

Workers shall follow these steps listed below:

1. Block, drain and clear the line  
2. Remove the section of pipe  
3. Install a blind flange on the upstream flange where the pipe has been removed. When the possibility of backfeed exists, blinds must be installed on both upstream and downstream sides.  
4. Supervisor or competent person shall verify these steps and valves are locked and properly tagged.

2.8 Category II Pipe Systems

1. Category II pipe systems are all remaining systems not considered Category I. Personnel working on category II systems shall be protected by one of the procedures described in Category I.

2. To use closed valves to protect and isolate personnel, supervisors shall ensure the following:
   a. Close, lock, and tag a block valve  
   b. Open clear and drain the section of the pipe to be worked.

2.9 Pipe Blanks and Blind Flanges
Consider the following points before installing blanks (pancakes). First Line Breaks shall always be the first consideration.

1. Fabrication of blanks shall meet ASME B31.3 requirements.
2. Blanks shall be identified with a handle painted a bright color for easy identification and removal.
3. Consider the material of the blank prior to fabrication; consider the type of process fluids and the piping material.
4. Blind flanges shall meet the requirements of ANSI standard B16.5.
5. Verify the material of the blind flange and the piping are compatible.
6. Install a drain in the blind flange when possible for safer removal of stored energy.

3.0
1.0 PURPOSE

To establish requirements to ensure personnel safety while performing pressure vessel, tank, and piping system testing.

2.0 REQUIREMENTS

1. For the purpose of this procedure, pressure vessels include both temporary construction and permanent equipment installations.

2. Testing should be hydrostatic or pneumatic. Tests shall be performed only to prove the integrity of a pipe system, pressure vessel, or tank.

2.1 Maximum Test Pressure

Maximum test pressure, as allowed by specifications, shall not be exceeded without engineering approval.

2.2 Relief Valves

Relief valves shall be installed for all tests. The relief valve setting shall not be set more than 110 percent or 10 psi above the test pressure, whichever is lower.

2.3 Test Gauges

Test gauges shall have a sufficient range, allowing the upper limits of the test pressure to be 33 percent to 66 percent of the gauge range. Use pressure snubbers on gauges used in hydrostatic tests to protect the gauges from shock damage from the test pumps. Test gauges shall be calibrated at least every six months.

2.4 Temporary Test Blanks

Temporary test blanks shall be fabricated in accordance with applicable engineering specifications.

2.5 Test Limitations

1. Blinding or bypassing is required for the isolation of:

   a. Equipment and equipment seals, i.e. pumps, turbines, compressors, and package units, which have been previously tested by the manufacturer, etc.
   b. Exchangers and/or vessels which are not to be subjected to pressure testing.
   c. Vessel components which would be contaminated or damaged by the testing media.
   d. Equipment that cannot be drained or pneumatically tested, or when it is specifically recommended by the manufacturer that tests should not be made.

2. Filter elements that may have been installed shall be removed from the system prior to pressure testing.

3. All instruments shall be protected from damage when hydro testing piping systems.

4. All instrument air signal tubing shall be excluded from testing.

5. Process lead lines for instruments that are to be excluded from pressure testing shall be tested to the first block valve.

2.6 Hydrostatic Testing
1. Vents or drains shall be installed at the high or low points of all lines to be hydro-statically tested. The vents or other connections shall be opened to eliminate air from lines, which are to receive a hydrostatic test. Lines shall be thoroughly purged of air before hydrostatic test pressure is applied. If required, additional vents or drains shall be installed upon the approval of the Test/Start up Engineer.

2. Adequate vents and drains shall be installed in the system for filling and draining. Each system shall be analyzed to locate vents for removal of all air. CAUTION: Vents shall be fully opened while filling and draining the system to purge all air and to prevent a possible collapse of the system.

3. It is preferable that the test pressure gauge be located at the lowest elevation of the system, and as near to the test pump as practical. Test pressures shall be increased to compensate for any static head above the gauge connection. For water, use 0.433 psig for each foot of head.

4. Lines which are spring or counterweight supported shall be temporarily blocked up during testing.

5. Large ducts for air or vapor service shall be checked for temporary supporting requirements, which may be necessitated by the weight of the test media. Foundations and supports for all vessel, tank and piping systems to be hydro-statically tested shall be verified adequate to support the weight of the liquid medium used for testing.

6. Care shall be taken to avoid overloading any parts of supporting structures, which may not be able to support the test fluid weight. Example: equipment that is to be hydro-tested, and is supported by another piece of equipment.

7. Test pressure shall not be applied until the piping, equipment or vessel and the pressurizing fluid are at approximately the same temperature.

8. The system under test shall be held at full test pressure until all welds and joints are examined for leaks. In no case shall the duration of the pressure test be less than ten minutes as shown in ANSI/ASME B31.3, paragraph 337.1, or a period of time specified by the owner.

9. Wear a face shield when making a close inspection for leaks.

10. Maximum test pressure shall be in accordance with ANSI/ASME B31.3, paragraph 345.4.2

11. Relieve pressure before making any repairs to the system being tested.

### 2.7 Pneumatic Testing

1. Pneumatic testing shall not be done without the approval of the Test/Start up Engineer and the EH&S Professional.

2. Method - Pneumatic testing requires careful supervision. When the test pressure is 25 psig or less, the initial pressure level can be taken directly to the test pressure. When the test pressure is greater than 25 psig, the system shall be initially pressured to 25 psig. All welds and connections shall be inspected for leaks by applying a soap type solution to the joints and checking for bubbles. The pressure shall then be increased gradually to 50 percent of the test pressure. This pressure shall be maintained at least 10 minutes. The pressure shall be further increased in steps of approximately 10 percent of the test pressure until the required test pressure has been reached. After holding the test pressure for a minimum of 10 minutes, inspect for leaks of all piping welds and connections. The system shall not be depressurized during this procedure unless it leaks to the extent that the required test pressure cannot be obtained. In that event, the system shall be depressurized and the necessary repairs shall be made. The system shall then be repressurized in accordance with the procedure originally outlined.

3. Maximum test pressure shall be in accordance with ANSI/ASME B31.3, paragraph 345.5.4
4. Any pressure vessel included in any system to be pneumatically tested or pressured during normal working hours shall have had a previous code hydro-test, and shall not be pressured to more than 110 percent of allowable working pressure.

5. No adjustments or repairs requiring mechanical force or heat are to be made on any part of the test system while it is pressurized above 25 psig. Such adjustments or repairs shall not be made without the approval of the EH&S Professional, if the system has a stored energy level of 50,000 (PV, or pressure times volume in cubic feet) or more.
1.0 PURPOSE

To provide established safe practices for identifying, handling, and storing compressed gas cylinders on Saxon sites/facilities.

2.0 REQUIREMENTS

1. Employees shall be trained in the proper use, handling and storage of compressed gas cylinders.

2. Identification - Compressed gas cylinders shall not be accepted from the distributor or supplier unless the cylinder is clearly identified with a visible and proper manufacturer’s label.

3. Site/facility management shall periodically inspect both vendor-supplied and site-owned cylinders. The condition of the cylinders and Department of Transportation (or other regulating authority) required testing shall be verified.

4. Tagging – Defective cylinders shall be tagged and identified as defective and shall be segregated from other cylinders. Site/facility management shall establish a policy for exchanging or disposing of defective cylinders.

5. Handling – Cylinders shall be moved or stored in the upright position. Racks or cradles shall be used to prevent them from tipping, falling, or dropping. Enclosed cages or carrying cradles shall be used to lift cylinders from one level to another. Rope or chain slings shall not be used. When transporting cylinders on trucks or trailers, cylinders shall be stored and secured upright in a cage or cradle.

6. The valves on compressed gas cylinders shall always remain closed unless the cylinder is in use.

7. Valve protection caps, where the cylinder is designed to accept a cap, shall always be in place and hand tight, except when cylinders are in use or connected for use.

5.1 Storage and Use

1. Policies and Practices – Compressed gas cylinders shall be stored and used in the upright position. Cylinders shall be secured with a noncombustible material to provide maximum stability and prevent them from falling. Cylinders shall not be secured by their valves or collars.

2. Segregate cylinders by the type and amount of their contents. Full and empty cylinders shall be stored separately. Cylinders of oxygen or other oxidizing gases shall be stored separate from fuel-gas cylinders and other flammable materials by a minimum of 20 feet (6 meters), unless a suitable, ½-hour rated, flame-resistant partition is provided.

3. Cylinders shall be kept away from radiators and other sources of heat. Smoking, spark-producing work and open flame are not permitted within 20 feet (6 meters) of any cylinder storage area containing cylinders of flammable gas. Signs shall be posted prohibiting these activities in cylinder storage areas.

4. Cylinders shall not be placed where they can become part of an electrical circuit.

5. Cylinders should be stored so they can be used in the order they are received.

6. Because projects/facilities may differ in allowing storage and use of compressed gas cylinders in operating or work areas, a policy shall be established before cylinders are stored inside buildings. Cylinders stored inside buildings shall be stored in a well-ventilated and protected location. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.
7. The bulk storage facility shall be a minimum of 50 feet (15 meters) from adjacent buildings and easily accessible for pickup and delivery of cylinders. The storage rack or site/facility should have a ramp with a 1:12 maximum pitch so that cylinders can be lifted or rolled off forklifts without dropping or chipping them. Consider installing ramps on bottle racks to eliminate the need to manually lift cylinders in or out of the racks.

8. While in use, cylinders shall be placed or shielded to prevent contact with hot sparks or slag.

9. Compressed gas cylinders that are used daily, such as skid-mounted racks and bottle carts, may be stored closer than 50 feet (15 meters) to adjacent buildings as determined by site/facility management.

10. Store cylinders in a covered storage shelter when necessary to protect the valve housings from ice and snow and to protect the cylinders from direct sunlight.

3.0
1.0 PURPOSE

To provide minimum requirements for the safe operation, layout, inspection and maintenance of shop equipment, machinery, and facilities. It also outlines operator qualifications and training.

2.0 REQUIREMENTS

Site/Facility management shall ensure that “Do Not Use” tags are placed on all newly commissioned equipment until safety requirements determined for each piece of equipment are met according to this procedure. The craft supervisor is responsible for seeing that the requirements in this procedure are met.

2.1 Personal protective equipment (PPE)

1. PPE shall be viewed as the last line of protection designed to supplement, not replace, mechanical or electrical safety devices (such as screens, guards, and emergency stops) installed in the shop equipment.

2. A shop hazard assessment shall be performed and, unless otherwise designated, the minimum PPE for shop employees shall include industrial safety glasses and sturdy leather work shoes.

3. Hard hats shall be required in shop areas where overhead hazards exist. Hard hats shall be worn in shops when material is being hoisted overhead.

4. A hazard assessment shall be performed for each piece of shop equipment. And where specified, additional protective equipment shall be worn to protect the individual operating the shop equipment and, if necessary, any individuals working close to the operation. Signs shall be posted designating areas where additional protective equipment is required. The additional protective equipment may include, but is not limited to, the following:
   a. Face shield
   b. Free standing screens
   c. Hearing protection
   d. Kickback apron or equivalent
   e. Metatarsal foot guards or equivalent
   f. Monogoggles
   g. Respiratory protection

5. All required PPE shall be readily available to the operators.

6. Operators shall not wear gloves when operating rotating shop equipment. Hair, beards, jewelry, and clothing shall be worn in such a way so that it cannot become caught or tangled in operating equipment.

7. The EH&S professional shall conduct noise sampling and personnel monitoring to determine the noise level of the shop. Each piece of equipment or area shall be surveyed to determine the noise level. Post a “Hearing Protection Required” sign on equipment operating at 90 decibels or above.

8. Any additional PPE requirements necessary for the safe operation of a particular piece of shop equipment shall be posted on that equipment and included in the training of qualified operators.

2.2 Operator Qualifications and Training

1. Each site/facility shall establish a written training program to provide employees with necessary information regarding the safe operation of shop equipment. The training program shall include information on daily inspection, operating procedures, and hazardous chemicals. Training shall be conducted by a qualified person and documented.
2. Current operating procedures and manuals generated from manufacturers’ instructions and industry-accepted practices shall be maintained on site. This material shall be readily accessible to shop personnel.

3. The site/facility manager shall establish a method of recording the operator qualification training. Training shall consist of a practical or written test. The record of training shall include the following: operator’s name, employee identification number, date of training, trainer, and the nature and extent of training provided. The site/facility manager or designee shall ensure that training is kept current.

4. Employees shall not operate shop equipment for which they are not trained except when under the direct supervision of the shop supervisor or a qualified operator during training.

Shop personnel shall be trained in PPE requirements for each piece of shop equipment; include information on the point in the operating sequence when the equipment is required.

2.3 Shop Equipment

1. When possible, the foreman or supervisor should consider rotating equipment assignments periodically to avoid operator complacency and over familiarity with the same piece of shop equipment and to minimize the risk of “repetitive-motion” injuries.

2. Defective shop equipment shall not be operated. A “Defective” tag shall be filled out and affixed to the equipment until it has been repaired.

3. Site/Facility management shall ensure that an initial safety inspection has been performed on all new shop equipment before the equipment is placed in service.

4. Electrically powered shop equipment shall be inspected on a quarterly basis.

5. The shop foreman or supervisor shall immediately be notified of any defects in shop equipment and shall take appropriate action.

Equipment shall be maintained according to the manufacturer’s instructions. Machinery safeguarding shall be properly maintained in place to protect employees and prevent injuries.

Qualified personnel shall maintain shop equipment only. A manufacturer’s representative shall perform or direct site personnel on complex maintenance or repair tasks.

Shop equipment shall not be modified without the site/facility managers written approval. Consult the manufacturer and involve the site EH&S Professional. No “job-built” tool, jigs, fixtures, or devices may be made or used in conjunction with shop equipment without the approval of the site manager.

2.4 Shop Layout

1. Shops shall be provided with sufficient lighting, ventilation and local exhaust. Ensure that all shop environments are illuminated by a minimum of 10 candlepower.

2. Fire protection equipment shall be installed within 25 feet of all shop equipment powered by or using flammable liquids.

3. Where practical, locate equipment requiring operator-hearing protection in the same area of the shop to minimize noise exposure.

4. To properly store all flammable material and chemicals, ensure that the shop has a storage cabinet for flammables located inside a designated and marked storage area. Store all flammable material and chemicals
in the cabinet when they are not in use. Return all flammable material and chemicals to the cabinet at the end of the shift.

5. Eating and break areas shall be separate and distinct from work areas. Keep all food containers closed. Clean up and properly dispose of food scraps on a daily basis. Do not store coolers and bags containing lunches in the work areas.

6. Do not eat or drink at fabrication tables or in work areas. The shop supervisor ensures that methods for storing refrigerated foods and for heating lunches are in accordance with site policy.
1.0 PURPOSE:

To provide information on equipment requirements, operational procedures, training requirements, and maintenance of high-pressure water cleaning equipment.

2.0 REQUIREMENTS:

2.1 General

1. The use of high-pressure water blasting to remove unwanted matter from various surfaces requires the proper equipment. Safety checks are essential to avoid accident and potential injury. Personal protective equipment (PPE) is required to minimize contact with mist produced during water blasting to insure contaminated material or cleaning solution does not come in contact with an employee’s skin.

2. The use of high-pressure water cleaning equipment by “in house” personnel shall be limited to 25,000 psi. The use of higher pressure requires special handling and training. Pressure higher than 25,000 psi will be handled by contract specialist in this area.

2.2 Equipment

1. The high-pressure equipment consists of a high-pressure positive displacement pump, filters, pressure gauges, flexible hoses, lance, and nozzles. To prevent over-pressurization a relief valve and “dump” system are provided.

2. Dump System: The dump system is designed to lower system pressure when the lance operator desires. The actuator for the dump system is a foot-operated treadle, which is shielded to prevent inadvertent operation. This system reduces engine speed and diverts water to the drain when operated.

3. Hose Assembly: Hose assemblies between the discharge of the pump and the lance have a burst pressure equal to 2 1/2 times the ultimate pump pressure. Hoses are equipped with safety chains at all couplings to preclude hose whipping if a coupling fails.

4. Hose Inspection: Hoses shall be inspected daily prior to use to assure braids are not frayed or broken and couplings are round and threads are not damaged.

5. Hose Testing: Hoses are purchased from the vendor with couplings attached. They have been tested or gauged and certified depending upon manufacturer. Hoses shall be tested annually to assure fitness for continued service. Test pressure shall be the ultimate pump pressure of the machine. Records of testing shall be maintained in the site/facility office.

6. Lances-Fittings-Valves: All fittings, lances and valves on the discharge side of the pump have a working pressure equal to the ultimate pump pressure. Replacement fittings and pipe will be of proper material and rating. Hose to lance fitting is equipped with a hose failure safety shield.
2.3 Operational Procedures

1. Planning: Each job shall be preplanned. Personnel familiar with the equipment to be cleaned or the material to be cut and the work environment shall meet with the personnel who will be doing the work and shall outline the potential hazards of the work are, environmental problems, safety standards, emergency aid procedures.

2. Hazard Communication: A work permit shall be attached to the equipment identifying any chemicals that was in the equipment and subsequent wash solvents that were used to clean the equipment. A review of the Material Safety Data Sheets or MSDS’s for those chemicals is required of the supervisor of the water jetting crew or the individual who is responsible for overseeing the cleaning operation. Information concerning the potential health effects of overexposure and control measures (including protective equipment) shall be accessible to all personnel involved in cleaning.

3. Personal Protective Equipment (PPE) Requirements: The supervisor in direct charge of the work is responsible for assuring the correct PPE is used for each cleaning operation.

2.4 PPE

1. Body Protection: As a minimum, rain suits shall be worn while operating the lance. Such suits will not protect against injury from high-pressure water impact, but they do protect against chemical or solvent hazards and flying debris. For protection from chemical or solvent hazards (e.g., Aromatics 400, Crude oil, etc.), an impervious, disposable garment with hood and booties shall be worn.

2. Head Protection: A hard hat shall be worn by all personnel using high-pressure water cleaning equipment and all personnel in water jetting area.

3. Eye and Face Protection: Protective face shields and monogoggles are required for lance crews and the water jetting pump operator.

4. Hand and Foot Protection: Chemical resistant (PVC) gloves and boots shall be worn when operating the lance. Foot and toe protection shall be worn when cleaning vertical tubes from top or any job where water jet might come in contact with feet.

5. Hearing Protection: Lance and rig operators shall wear hearing protectors while equipment is operating. No non-essential personnel shall be allowed in the area while water-jetting operations are taking place.

6. Respiratory Protection: Spray from cleaning operation should not be inhaled. When spray cannot be avoided, a half-mask organic vapor respirator with pre-filters approved for “mists” used with goggles, or a full-face respirator shall be used. Supplied air is recommended for comfort and excellent performance.

2.5 Check List:

A safety and equipment check list has been developed and is provided. The Supervisor, or individual in direct charge of the work is responsible for completing the check list and posting it at the job site and assuring that the operators are completely briefed in precautions to be followed.

2.6 Barricades:

Barricades will be erected around the cleaning equipment to warn personnel not to enter. Barricades shall be RED-Do Not Enter.

2.7 Hook-ups

1. Hose and fittings are to be inspected by the supervisor for proper rating and evidence of excessive wear or damage prior to installation and by operators prior to each day’s work.
2. Fittings of improper rating are not to be used and fittings showing evidence of wear or damage shall be replaced.

3. Hoses shall be laid out in a safe and orderly manner.

4. Hoses, pipes and fittings are to be supported to prevent excessive sway, vibration or stress. All screwed joints shall be equipped with suitable safety chains to prevent hose whipping in the event of a fitting failure.

5. When new fittings or nozzles are installed, they shall be inspected to assure they are clean and the proper sealant or lubricants are used where applicable.

6. Before installing the nozzle, the system shall be completely flushed with sufficient water to remove air and foreign particles.

2.8 Work Area

All personnel working or entering the barricaded area while cleaning is in progress shall wear the required protective equipment listed.

2.9 Pressuring System

When pressuring equipment at the beginning of the day or after being shut off, pressure should be increased slowly while inspecting for leaks or faulty components. All leaks or faulty components shall be repaired or replaced before using the equipment. Repairs will not be attempted while the system is pressurized.

2.10 Hand Lancing

1. The person operating the nozzle shall have direct control of the dump system when using a hand lance or gun. When the Broadbent rig is used, the Operator controls the pressure from a remote location.

2. The person using the lance shall mark the length of lance on a fixed object, two to three feet short of the lance length, so that when removing the lance, system pressure can be reduced before the lance is removed from a tube.

3. .

4. When more than one hand lance operation is being performed in the same general area; a physical barrier shall be installed between operators to avoid the possibility of injury with high-pressure water.

5. Objects to be cleaned shall never be held manually, utilize mechanical devices to secure pipe or other materials to be lanced.

6. The points where the hoses connect to the dump system shall be shrouded by a hose failure safety shield to prevent injury to the operator, should the hose, pipe or fitting leak.

2.11 Flexible Lance (Snake)

1. Proper cup or approved shield, which fits over the lance, and provides necessary deflection away from the lance operator, shall be used in all cases while flexible lancing.

2. The nozzle shall be inserted one foot into the tube before pressurizing, but in no case is lance to be jammed into the debris as this will make the lance a hydraulic ram and tend to push it back out the tube. The lance shall be depressurized before reversing.

3. It is important that the clearance between the outside diameter of the nozzle and the inside wall of the item being cleaned is sufficient to allow adequate washout for water and debris.
4. Always insert the nozzle into the tube before pressurizing and depressurizing before removing the nozzle from the tube. Hose or lance shall be conspicuously marked so that the operator knows the tip of the nozzle is within 24” of the end of the tube.

2.12 Rigid Lance

1. The operator inserting the nozzle shall have direct control of the dump system.

2. When under manual operation, the nozzle shall be inserted into the tube prior to pressuring and shall be depressurized before removing the nozzle from the tube. Operator shall mark lance length location of a fixed object so that he will know when to depressurize on lance removal.

3. The clearance between the outside diameter of the lance and nozzle and the inside wall of the item being cleaned shall be sufficient to allow adequate wash out of water and debris.

4. Any water additive such as chemicals or detergents shall be used in accordance with the manufacturer’s recommendations. Supervisor or Foreman is responsible for assuring that these chemicals are properly used.

2.13 Training

A training program shall be developed and presented to each employee before assignment to the first high pressure-cleaning job. Training shall include coverage of all items listed in this section.

1. Cutting Action: Cutting action and potential hazard to the human body is demonstrated through the use of audiovisual aid and the actual use of the equipment (cut through a piece of lumber, concrete block or other material). The object is to assure that operators will remain clear of high-pressure water stream.

2. Personal Protective Equipment: The minimum personal protective equipment required by operation of this equipment is a rain suit, hard hat, gloves and face shield with monogoggles. Supplemental PPE is also reviewed. All operators are instructed in the proper use of this equipment before being allowed to use the high-pressure system.

3. System Operation: This includes a complete overview of the system operations, how the safety devices work, layout in connection of hose, proper stance for sound footing, correct method of marking the lance or picking a fixed location to assure the lance is not withdrawn while the pressure is still on the nozzle, proper operation of the dump system including proper connection of hose lines to and from it and operational items to be observed to assure that the system is operating properly.

2.14 Maintenance

Whenever deficiencies are found in the equipment, the system will be depressurized and defective equipment replaced. If deficiency is of such a nature that the operator cannot make replacement of repair, the Supervisor will shut down equipment until proper repair can be effected.

3.0
1.0 PURPOSE

To provide established minimum requirements for safely inspecting and operating air compressors and using compressed air.

2.0 REQUIREMENTS

2.1 Equipment Inspection

A qualified inspector shall inspect all air compressors before initial use and at least quarterly thereafter. The user shall inspect the compressor before each use.

2.2 Operation of Equipment

1. Air compressors shall not be modified without prior written authorization from the manufacturer.

2. Couplings shall be checked daily before use. Use only couplings designed for compressed air services. All hose couplings shall be provided with a positive locking device.

3. Hoses shall be checked daily before use. When using compressed air, use only hoses designed for compressed air service. When using compressed air hoses, take precautions that include the following:
   a. All hoses shall be checked for cuts, breaks, and loose connections before assembling the system.
   b. Hoses shall not be crimped, coupled, or uncoupled while pressurized.
   c. Unless the equipment has quick-change connectors (with internal check valves), air shall be shut off at the air supply valve ahead of the hose before breaking the connection.
   d. When possible, airlines and hoses shall be routed through areas with little or no vehicular or pedestrian traffic. Air hoses shall not be laid across roadways unless they are protected from traffic. Air lines and hoses crossing pedestrian walkways shall be suspended at least 7 feet above the ground or floor, or provide trip protection.
   e. All hoses exceeding 1/2 inch inside diameter shall have a safety device (an excess flow valve) at the source of supply or branch line to reduce pressure in case of hose failure. All air hose connections over 1 inch in diameter shall be equipped with safety chains or an equivalent restraint that is secured when the connection is made.
   f. Hoses equipped with special connections require special tightening techniques or equipment. One example is hammer union connection, which shall be tightened with a hammer. Another example is spanner wrench connections, which shall be tightened with a spanner wrench. Do not tighten these or similar connections by hand.
   g. Hose connections shall be secured before turning on air valves.
   h. Air hoses shall not be directed at personnel.
   i. Air hose connections that are designed to accept a pin shall be securely pinned in the holes provided to prevent disconnection.
   j. When hanging an air hose in the vertical position, hose connections shall be supported above and below the connections to prevent the weight of the hose from pulling the connection apart or pulling the connection out of the hose.
4. Compressed air for cleaning shall not exceed 30 psi. Use monogoggles or a face shield over the safety glasses when cleaning with compressed air. Compressed air shall not be used to clean harmful dust or fibers that could be dispersed such as lead or asbestos.

5. Blowguns shall be equipped with an automatic shut off so that if the operator releases the blowgun, it shuts off.

6. Each compressor shall be equipped with a properly sized relief valve maintained according to local, state, and federal regulations.

7. Hearing protection shall be provided and worn if the air compressor and/or the compressed air create a noise level over 90 decibels.

8. Air compressors shall be shut off and a fire extinguisher shall be accessible during refueling.
1.0 PURPOSE

To provide established requirements for railroad work and the minimum safety requirements for track work and work in or on railroad cars.

2.0 REQUIREMENTS

1. Railroad work shall only be performed by qualified persons.
2. A written site/facility procedure is required in order to perform the following types of work:
   a. Loading or unloading chemical cars
   b. Moving cars on track
   c. Operating trackmobiles
   d. Repairing, modifying, altering, or cleaning railroad cars
   e. Rerailing railroad cars
   f. Repairing or remodeling tracks
   g. Working within 10’ of the center line of a railroad track

2.1 Permit Requirements

Site/Facility specific permitting requirements shall be followed for railroad track work.

2.2 Track Work

1. Notify the switch yard chief operator of the work scope, work hours and overall duration.
2. The track work shall be protected from both directions by installing locked and tagged track derailers and by placing standard signs at least 55 feet from the work. Place track derailers so cars are not derailed in a hazardous manner.
3. Be sure to remove material and debris on and around railroad tracks before removing derailers and signs.
4. Personnel shall not walk or step upon rails, switches, or guardrails.

2.3 Work in or on Railroad Cars

1. Notify the switch yard chief operator of the work scope, work hours and overall duration.
2. When performing work in or on railroad cars, use track signs to provide warnings. Place signs on both sides of the work location at a distance that gives adequate warning to switch engine crews. Place lighting on signs when working after dark. Remove signs promptly when work is completed.
3. Set brakes and chock car wheels.
4. Provide a safe means of access into the car. Ensure that the flooring will support the equipment and the load being used before loading or unloading rail cars.
5. Personnel working in or on railroad cars shall observe the following minimum safety precautions:
   a. Always assume that nearby cars are likely to move suddenly.
   b. Do not climb through, over, or under railroad cars, either standing or in motion.
   c. Do not cross any track within 10 feet of the end of a car being worked on.
d. Do not stand directly in front of box car doors when doors are being opened.

6. Saxon personnel shall load or unload only construction equipment or material. Any other material that is loaded or unloaded from railroad cars shall be covered by a written site procedure by the site/facility and Saxon site/facility management.
1.0 PURPOSE

To provide established safety requirements for dismantling and rearranging (D&R) existing facilities, buildings, or equipment.

2.0 REQUIREMENTS

The site/facility manager has the responsibility to ensure D&R activities are properly planned and controlled. As part of this responsibility, he or she coordinates D&R activity with client/owner, design and engineering personnel. The site/facility manager is responsible for ensuring that the requirements defined in this procedure are met.

2.1 Engineering Survey and Written Job Plan

Before permitting employees to start any D&R activity, The site/facility manager shall ensure that a competent person has conducted an engineering survey to determine the exact scope of work and the method for safely executing it prior to employees starting any D&R activity. The engineering survey shall be documented in writing. Depending upon the complexity of the work or the hazards involved, a written job plan may be necessary.

2.2 Lock, Tag, Try, and Test

The lock, tag, try, and test, EH&S Procedure III.A.20, is prerequisite for all electrical D&R. Before authorizing any equipment removal, the site/facility manager shall ensure that all electrical equipment and wiring planned for D&R have been physically identified and traced. A positive means of identification shall be used such as marking, tagging, maintaining visual and physical contact, or another approved method to verify that the correct equipment or cables are being dismantled or rearranged.

2.3 Line Blanks and Isolation

For all pipe, vessel, and equipment D&R, install line blanks and isolate piping equipment according to EH&S Procedure III.A.28, Isolation from Plant Processes. The site/facility manager shall ensure that physical marking or other positive means of identification has verified that the correct lines are identified and isolated before permitting employees to remove any piping systems.

2.4 Determining Hazards

Any hazardous chemicals, PCB/s, radiation, gases, explosives, flammable materials, asbestos, RCFs, or similar dangerous substances used in any pipes, tanks, or other equipment shall be identified before any D&R work begins and methods shall be determined for decontaminating or containing them.

2.5 Rigging

Special consideration shall be given to rigging because of the probable deteriorated state of the facilities. Give special consideration to rigging and removing equipment and materials during D&R.
1.0 PURPOSE

To provide minimum requirements for emergency eyewash and shower equipment.

2.0 REQUIREMENTS

The potential effect of the chemical exposure and other work conditions determine the selection of emergency eyewash and/or shower equipment. In a chemical exposure emergency, provide suitable facilities for quick drenching or flushing of the eyes or body.

2.1 Location of Eyewash and Shower Equipment

Equipment shall be located as close to the hazard as possible and in no case over 100 feet. Locations where eye wash stations shall be placed are vehicle maintenance shops, painting areas, sand blasting areas, battery charging areas, etc. The locations of equipment should not cause a hazard for personnel. Keep the locations of the equipment clear for free access at all times. Place the equipment in accessible locations. Reaching the equipment should take no more than 10 seconds. The maximum time required to reach the equipment shall be determined and evaluated against the effect of the chemical exposure. Eyewash and shower equipment shall be installed according to the manufacturer's instructions and applicable Codes.

7.2 Approved Emergency Eyewash and Shower Equipment Selection

The Site EH&S professional shall approve all selections, using the ANSI standard as a guide. Selection shall depend on the effects of the chemical on the body and/or eyes. Use one or more of the following types of equipment.

1. Combination drench shower and eyewash unit (fixed)
2. Eyewash fixture only (fixed)
3. Drench shower only (fixed)
4. Hand-held eyewash/drench hose spray unit
5. Portable eyewashes (fountain type)
6. Eyewashes (fixed) shall be activated by hand. The hand-operated valve shall be easily accessible.
7. Personal eyewash units may be used to support plumbed units, but not as a replacement for them.

Note: Where portable eyewash units are used, a process shall be in place to change the water and clean the unit as required by the manufacturer's instructions and applicable Codes.

2.3 Installation for Plumbed Eyewash and Shower Equipment

Connect water supply lines from the equipment directly to the main potable water lines. If the supply line is from a branch line that serves other uses, conduct flow pressure tests on the line. When the flow pressure test is conducted, at least half of the other use points shall flow at their normal rate at the same time. Eyewash and shower equipment shall meet the following flow pressure conditions:

1. Water Supply - Eye and Face Washers - Units permanently connected to a potable water supply or a temporary self contained unit shall be designed to flow at least 0.4 gallons per minute continuously for at least 15 minutes.
2. Water Supply - Showers and Eyewash/Shower Combinations – Units permanently connected to a potable water supply shall be designed to flow at least 30 gallons per minute continuously. Water shut-off valves in water lines feeding emergency eyewash and shower equipment shall be locked in the open position and tagged with a warning: DO NOT CLOSE THIS VALVE. Personnel may close the valve only after the equipment has been marked "out of service" and suitable standby equipment has been provided. When facility water service is fully or partially shut down for any reason and water pressure is reduced in plumbed eyewash and shower equipment, processes or activities requiring this equipment should not be permitted to operate until normal pressure is restored or until suitable standby equipment has been provided.
3. Water Supply - Showers and Eyewash/Shower Combinations – Temporary units connected to a self contained water supply shall be designed to flow at least 20 gallons per minute continuously for at least 15 minutes.
2.4 Identification of Emergency Eyewash and Shower Equipment

Identify all equipment with highly visible signs. The area within ten feet of the equipment shall be lighted with a minimum level of 50 foot-candles. Ensure that the area is free of tripping hazards and changes in the level of the flooring.

2.5 Maintenance and Training

Inspect and test all equipment as required by manufacturer’s instructions to ensure proper operation according to its design specifications. All equipment shall be inspected and tested at least monthly. Maintain a record of the inspections and tests for each piece of equipment. Employees who might be exposed to chemicals shall be trained in the proper use of eyewash and shower equipment in their area. Hands-on training on the eyewash and shower equipment shall be given to newly hired and transferred employees before the employees begin any duties within the department.
1.0 PURPOSE

To establish requirements for the safe maintenance of vehicles.

2.0 REQUIREMENTS

1. Only trained and qualified employees will perform maintenance activities on vehicles.
2. Prior to working on electrical circuitry or opening the fuel line on a vehicle, ensure that the ground has been disconnected from the battery. In many cases, the fuel line between the tank and the carburetor is under pressure. When opened, the pressure drops suddenly causing the fuel pump to begin pumping fuel even though the ignition switch is turned off.
3. If the vehicle has been running prior to maintenance activities, many surfaces such as the engine, exhaust system, transmission and brakes can be very hot. Wait until it cools before performing maintenance on these or nearby systems.
4. If the vehicle is disabled in an area where it is not allowed or unsafe to perform maintenance activities, it shall be towed to an area where maintenance activities can be safely performed.
5. Only the proper tools shall be used for the job.
6. Ensure an adequate fire extinguisher is located nearby and is readily available in the event of an emergency.
7. Lighting shall be adequate while working on a vehicle. If enough lighting is not available, use approved portable lighting.
8. Minimum personal protective required to perform maintenance activities on a vehicle is safety glasses. Unless small parts and intricate detail is required, gloves shall be worn also.
9. When servicing clutch or brake systems the need for respiratory protection shall be evaluated. On older vehicles, the brake and clutch linings may contain asbestos.
10. When extra clearance is necessary while working under a vehicle, jack it up very carefully and ensure it is properly and adequately secured with jack stands or the equivalent. When working under a vehicle, the tires shall be chocked, the parking brake set and the transmission in park or 1st gear.
11. Use caution when handling fuel. Keep fuel stored in a well ventilated area away from direct sunlight and away from sparks and other heat sources.
12. Provide containment and avoid spills when draining or handling fuels, lubricants, brake and cooling fluids. Dispose of used lubricants and coolants properly.
13. Air conditioning systems shall be serviced by qualified persons in accordance with federal regulations. Refrigerant cannot be released to the environment. Systems can only be evacuated by a qualified person using appropriate recovery equipment.
14. Do not jump-start a disabled vehicle unless you have been properly trained to do so. Improper jump-starting can result in the battery exploding causing serious injury and damage to equipment.
15. A safety tire rack, cage, or equivalent protection shall be provided and used when inflating, mounting, or dismounting tires installed on split rims, or rims equipped with locking rings or similar devices.
1.0 PURPOSE

To establish requirements for site/facility parking lot safety to provide safe orderly access and egress to the site/facility.

2.0 REQUIREMENTS

2.1 General Requirements

1. Parking lot shall be paved or covered with a material appropriate for the specific climate that will not cause employees to slip, trip or fall while walking between their vehicles and the work area.

2. Parking areas within the parking lot shall be designated to prevent employees from parking in areas where parking is not desired. This will assist in keeping clear access for fire trucks and other emergency vehicles if needed.

3. Ensure parking spaces allow adequate clearance from buildings, fire hydrants, emergency equipment and hazardous or classified areas.

4. Establish designated walkways or areas to segregate and protect pedestrians from vehicle traffic.

5. Establish flow of traffic to prevent departing and arriving traffic from creating hazards for each other.

6. Site/facility management shall establish and post the speed limit for traffic in the parking lot.

7. The parking area shall be kept clean. Trash containers shall be provided to facilitate keeping the parking lot clean. This will prevent stray animals from frequenting the parking lot in search of food. Employees shall be instructed not to feed stray animals in the parking lot or on site.

8. Parking lot requirements shall be communicated as part of the new hire orientation.

2.2 Pedestrians - Pedestrians in parking lots shall observe the following requirements:

1. Always walk. Never run

2. Use sidewalks, established walkways, pedestrian crossings, and pedestrian gates, where available.

3. Stay alert for moving vehicles at all times.

4. Use only approved walkways when snow or ice is present.

5. Stay alert for slipping hazards, and keep hands out of pockets while walking on slippery surfaces.

2.3 Drivers - Drivers in parking lots must observe the following requirements:

1. Always enter and leave the parking lot by prescribed routes.

2. Always wear seat belts and/or shoulder harnesses when driving.

3. Follow posted speed limits.

4. Observe traffic and warning signs.

5. Always look to the rear before backing.
6. Be alert for pedestrians. Pedestrians have the Right-Of-Way!

7. Be courteous. Do not cut in front of other vehicles. Do not accelerate so that wheels throw gravel or shale.

8. Clear windows, mirrors, and tail lights of obstructions before using a vehicle.

9. Do not block entrance gates, exit gates or emergency vehicle access.

10. Do not let passengers into or out of cars near parking lot entrances or exits, or on corners of public roads adjacent to parking lots.

11. Park cars neatly in designated parking places. Do not block walkways.

2.4 Bicycles, mopeds and motorcycles

1. Park bicycles, mopeds and motorcycles neatly in designated areas.

2. Do not park bicycles, mopeds and motorcycles on asphalt in hot weather. Kickstands can sink into hot asphalt, causing the vehicles to fall.
1.0 PURPOSE

To provide minimum requirements for the safe transport of personnel in vehicles or transporters.

2.0 REQUIREMENTS

2.1 Equipment Inspection

1. Vehicles that transport personnel shall be inspected as follows:

   a. An initial inspection shall be done before a new vehicle is placed in service.
   b. Daily pre-use inspections shall be conducted by the vehicle operator.
   c. State safety inspections shall be conducted at the state required interval.

2.2 Operator Qualifications

1. Vehicles used to transport personnel shall only be operated by a qualified operator. The operator of a vehicle used to transport personnel must be familiar with the contents of this procedure, possess a vehicle operator’s license valid for use on public roadways, and meet any additional site or governmental requirements.

2.3 Equipment Requirements

1. Equipment used to transport personnel must have the following safety features as a minimum:

   a. Vehicles and transporters shall not be loaded in excess of capacity as designed by the manufacturer. A seat and seat belt/harness shall be available for each passenger.
   b. The vehicle must have a safe means of access and egress. Methods include, but are not limited to, steps and ladders.
   c. The vehicle must have functional stop, tail, and turn signal lights and must have an adequate, audible warning device when backing.

2.4 Operating Requirements

When operating vehicles or transporters on site or on public roadways, obey all site rules and all applicable laws. Before operating any equipment on public roadways, make sure it meets the requirements of local governing body. Always observe posted speed limits.

2.5 Passenger Requirements

1. When riding in vehicles or transporters, passengers and drivers must observe the following safety precautions:

   a. Use the proper method of access and egress.
   b. Always keep torsos and extremities within the confines of vehicles or transporters.
   c. When seat belts and/or shoulder harnesses are provided, wear them at all times, and allow only the number of passengers for whom there are seat belts.

2.6 Transporting Personnel with Materials or Equipment

1. When purchasing, designing, and using vehicles or transporters, ensure that personnel are not transported in the same compartment with materials or equipment whenever possible.

2. When it is necessary to transport personnel and materials or equipment in the same compartment, the site manager or designee must develop a written procedure that details the rules for preventing personnel injury.

2.7 Transporting Personnel in Pickup Truck Beds
1. Current practice and laws allow the transporting of personnel in truck beds within the limits of company sites. Transporting personnel in truck beds off site shall not be permitted.

2. Saxon personnel being transported to/from locations on Saxon projects shall be permitted to ride in the bed of pickup trucks, provided that the following conditions are met:
   a. All personnel shall remain seated on the floor of the bed.
   b. Personnel body parts shall remain inside the bed.
   c. The tailgate of the vehicle shall be attached and shut.
   d. Transport speed shall not exceed 15 MPH.
   e. The vehicles shall be completely stopped while loading and unloading.
   f. Personnel and material shall not be transported together.
   g. Pickup shall be rated no more than 3/4 ton.
   h. No more than 8 persons shall be transported in the back of a long (8’) bed pickup. No more than 6 in the back of a short (6’) bed pickup.
   i. The operator shall ensure that the pickup is not overloaded.

3. The preferred method of transporting personnel to and from locations on Saxon site/facilities shall require that employees be seated inside a vehicle which has been designed to carry passengers. Such passenger vehicles shall not be put into motion until all passengers are securely seated, with seat belts secured - one per passenger.

2.8 Alternate means of transportation

1. Bicycles and other special forms of transporting personnel require site/facility procedures that address safe operation, inspection, and maintenance.
1.0 PURPOSE

To provide requirements for the removal of snow and ice accumulations.

2.0 REQUIREMENTS

1. Snow and ice create many different safety and health hazards; vehicles and equipment getting stuck or sliding off of roadways, ice falling on employees, employees slipping and falling, frost bite, hypothermia and other cold related illnesses are just a few of the hazards. These hazards can and need to be controlled by aggressively removing the snow and ice before our employees are exposed to the hazards.

2. In areas that normally receive accumulations of snow or ice, a site-specific plan shall be developed to insure the removal of it. The plan shall address, as a minimum, the following areas:
   a. Adequate heavy equipment - Snow and ice removal equipment might include snow plows, scrapers, front-end loaders, and graders.
   b. Trained heavy equipment operators - Employees certified to operate the heavy equipment and trained to operate the heavy equipment in snow and ice conditions. Often snow and ice removal should be completed before normal working hours.
   c. Vehicle upgrades - Snow tires and tire chains are needed to keep vehicles on the roads. Insure that antifreeze is adequately used and that heating and defrosting equipment is functioning.
   d. Snow collection areas - In areas of heavy accumulations of snow or ice, an area on the project for stockpiling the snow might be needed until it can melt.
   e. Adequate hand tools - Snow shovels and hand scrapers are needed to remove snow and ice from walkways, stairs and porches.
   f. Ice melting chemicals - there are many different ice melting chemicals ranging from toxic chemicals to ordinary sand. In some states and areas, chemicals are controlled. The site manager shall check with local authorities to determine what is allowed and the proper disposal techniques to be used.
   g. Employee training - Lowering the site speed limit, requiring employees to only use established roads and walkways, knowledge of cold effects on the human body, employee walking techniques, buddy systems, requiring the use of tire chains and snow tires on project vehicles are some of the areas that require employee training.
   h. Identify snow/ice removal areas - Areas could include roads (in some cases this might mean public access roads), material storage areas (laydown yards), sidewalks, walkways, stairways, porches, elevated platforms, e.g., outdoor scaffolds, structural steel, etc., and any other travel or work areas where people and snow or ice meet.
   i. Icicle removal - Snow and ice melting from roofs can create icicles. If the icicles are left hanging they can fall onto employees. Employees trained in the safe methods of icicle removal shall remove the icicles.

3. In areas that do not normally receive accumulations of snow or ice, The site manager shall be aware of the weather forecasts. If severe weather is forecast, the project shall make plans for the protection of employees, equipment and materials. The points addressed above shall provide direction for the required protection.
Site Section 3B PPE
1.0 PURPOSE

To provide established requirements for the use of appropriate personal protective equipment wherever a hazardous condition exists and a need is indicated for using such equipment to adequately reduce the hazard to personnel, visitors, and/or subcontractors.

2.0 REQUIREMENTS

Saxon reserves the right to select and/or approve all personal protective equipment to be issued and used by its employees, visitors, and/or subcontractors. Only such equipment issued or approved will be allowed on its sites/facilities.

1. The Site/Facility Manager shall ensure that the project management has assessed the workplace to determine if hazards are present or likely to be present. This assessment shall be documented in writing. The documentation shall identify the work place, the person(s) evaluating the work place, the dates of the assessment, and the hazards if any. The site/facility manager shall certify the hazard assessment as accurate and complete. If hazards are present, engineering and administrative controls shall be implemented to eliminate the hazard. If engineering and administrative controls will not eliminate the hazard, personal protective equipment (PPE) shall be used. Saxon management shall;

   a. Select and have each affected employee use the types of PPE chosen
   b. Communicate selection of PPE to employees (Training)
   c. Ensure that employees have properly fitting PPE.

2. Defective or damaged PPE shall be removed from service and shall not be reused unless repaired.

3. Saxon shall train each employee who is required to wear PPE on the following

   a. When PPE is necessary;
   b. What PPE is necessary
   c. How to don, doff, adjust, and wear the PPE
   d. The limits of the PPE
   e. The proper care, maintenance, useful life, and disposal of the PPE

4. The project shall document that each affected employee has been trained. The written documentation shall include the name of each employee trained, the dates of the training, and the subject of the training.

3.0
1.0 PURPOSE

To provide minimum requirements for head protection where a need is indicated for using such equipment to adequately reduce the hazard to personnel, visitors, and/or subcontractors.

2.0 REQUIREMENTS

1. All workers shall wear Saxon approved hard hats while working in construction/maintenance areas or areas of an existing site/facility that have been designated as a "Hard Hat Area." This includes visitors, subcontractors, engineers, inspectors, and anyone else who has authorized access to the project. When Company activities result in establishing a hard hat area in an area that typically does not require hard hats, signs shall be posted to inform others that hard hats are required.

2. Hard hats shall not be altered by drilling, cutting or other means unless approved by the manufacturer. Hard hats that have been altered by the addition of any items on the outside of the hat other than approved items shall not be permitted. When it is necessary to use additional personal protective equipment that is attached to the hard hat, only those hard hats designed for this purpose may be used.

3. Hard hats shall be inspected monthly and replaced when damaged, or every five years as a minimum due to the effects of ultraviolet light on the polymers. Headband assemblies shall be in good condition and shall be exchanged whenever they become broken or weakened. The area between the top of the headband and the top of the hard hat shall never be used for storage.

4. Welders are required to wear hard hats when in a hard hat area. Soft cap welding is not permitted without the approval of the site/facility manager and the EH&S professional.

5. Hard hats shall be required in areas that typically would not require the use of a hard hat (offices, break areas, barracks, etc.) when the work activity creates an overhead hazard.

6. Hard hats shall comply with the requirements of the most current ANSI Z89.1 standard with exception that class "C" hard hats shall not be allowed on project facilities.

7. Hard hats shall be worn with the bill facing forward. Welders shall wear their hard hat with the bill facing forward while not welding.

8. In addition, any employee exposed to high voltage shall wear a hard hat that meets Di-electric Standards. It is therefore, recommended that all hard hats purchased meet both the Z89.1 and Z89.2 specifications.
1.0 PURPOSE

To provide minimum requirements for eye and face protection.

2.0 REQUIREMENTS

In general, eye protection is required in all work areas except offices. Approved eye and face protection shall be worn whenever warranted by the work exposure. Eye protection shall also be worn in office settings when the work conducted therein creates the potential for eye injuries.

2.1 Safety Glasses

1. ANSI-approved safety glasses with full rigid side shields shall be worn in the following circumstances:
   a. In all construction or maintenance shops
   b. In fabrication areas adjacent to shops
   c. In any additional areas designated by specific operation requirements
   d. While drilling, chipping, pouring concrete, striking steel on steel, driving nails, power sawing, and performing similar tasks

2. When the employees job assignment results in a foreseeable or potential eye hazard.

3. Employees requiring corrective lenses shall have glasses in which the frames and lenses meet ANSI specifications or they shall be required to wear protective eyewear over their corrective lenses. The addition of side shields to non-safety glasses shall not be permitted.

4. Employees who wear contact lenses shall wear safety glasses in addition to the contact lenses where safety glasses are required. Contacts shall not be worn in chemical atmospheres.

2.2 Visitors’ Glasses

Visitors shall wear ANSI-approved glasses provided by the site/facility unless they are wearing safety glasses that comply with ANSI Z87.1.

2.3 Face Shields

1. In addition to safety glasses, always wear an approved face shield during activities such as the following:
   a. Grinding
   b. Cad welding
   c. Handling chemicals, corrosive liquids, or molten materials
   d. Chain sawing
   e. Chipping
   f. Jack Hammering
   g. Chiseling

2. Face shield shall be used any time work activities place the employees in the zone of danger where the employee would be struck if something unexpectedly splashed, sprayed or propelled in his direction. Other employees in the area (that is in any area in which grinding dust is falling/flying), shall be protected by screens, goggles or face shields.
2.4 Goggles

Goggles shall also be worn in areas where dusty operations are conducted, where windy conditions result in greater potential for flying particles or where the potential exist for a chemical splash, spray or mist to get in an employee's eyes.

2.5 Welding Shields

1. Welders shall wear a welder's hood with lenses that have the correct color density for the type of welding involved.

2. Welder's helpers and others exposed to the same level of hazard, as the welder shall wear the same level of eye protection as the welder.

3. Safety lenses shall be worn in front of and behind the welder's shaded lenses.

4. Welders shall wear safety glasses under their welding hood.

2.6 Burning Goggles

Use an approved burning goggle with no less than a #4 filter plate and safety lenses on both sides during all burning operations.

3.0
1.0 PURPOSE

To provide minimum requirements for foot protection wherever a hazardous condition exists and a need is indicated for using such equipment to adequately reduce the hazard to personnel, visitors, and/or subcontractors.

2.0 REQUIREMENTS

1. Each site/facility EH&S Professional shall conduct a detailed, documented hazard assessment of the site and the work activities conducted on the site and determine what foot protection is required. Site/facility management shall ensure that each affected employee uses protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards. When the hazard assessment indicates that the job activities or location requires special foot protection, the employees assigned to those areas and/or activities shall wear safety-toe footwear that meets the requirements and specifications in ANSI Z41.1 for Safety-Toe Footwear. Several examples of foot protection are:

   a. Sturdy leather work shoes/boots with safety or steel toe protection
   b. Work shoes with a steel shank
   c. Leather work shoes/boots with metatarsal protection
   d. Rubber boots with safety or steel toe protection
   e. High top work boots for ankle support
   f. Slip/Strap on steel toe and or metatarsal protection

2. Site/Facility Management shall ensure that approved foot protection is worn that is appropriate for the hazards at the site. Several examples of work activities requiring special foot protection are:

   a. Using a tamper
   b. Sorting rebar
   c. Sorting or “shaking out” structural steel
   d. Handling material
   e. Operating a jack hammer

3. Where the hazard assessment indicates that foot protection is not required, as a minimum, sturdy leather work shoes or boots with hard soles are required for use by all construction and maintenance workers.

4. When working with wet concrete, workers shall wear rubber boots.

5. Shoes and boots shall be kept in good repair, and those with worn heels or thin or worn soles shall not be permitted.

6. In addition, the wearing of sneakers, sandals, or shoes that have been slit or have holes cut in them, shall not be permitted.

3.0
1.0 PURPOSE
To provide minimum requirements for hand protection wherever a hazardous condition exists and a need is indicated for using such equipment to adequately reduce the hazard to personnel, visitors, and/or subcontractors.

2.0 REQUIREMENTS

Appropriate gloves shall be worn when persons work with materials or equipment that present the potential for hand injury due to sharp edges, corrosive, flammable and irritating materials, extreme temperatures, splinters, etc. Many job procedures specify that certain types of gloves shall be worn. General guidelines for wearing gloves are:

2.1 Leather gloves

1. Leather gloves shall be worn when working with the following materials, equipment or work conditions which present the potential for hand injury:

2. When handling material with rough or splintered edges. NOTE: May not be sufficient for razor sharp edges often encountered with stamped steel, metal shavings, and gaskets with sharp edges, etc.

3. Hand contact with moderately heated or cooled equipment or surfaces.

4. Tools causing friction such as shovels, picks, sledge hammers, etc.

5. Do not use leather gloves for handling caustic, hydrocarbons, corrosive, irritating liquids or acids. Heavily soiled leather gloves shall be discarded to avoid skin irritation.

2.2 Rubber or Vinyl – Appropriate rubber or vinyl chemical resistant gloves shall be worn when handling corrosive and irritating materials, such as acids, caustics, and hydrocarbons.

2.3 Insulated Gloves – Insulated gloves (such as Kevlar) shall be worn when handling equipment or materials, at extremely low or high temperatures, which could cause thermal burns if contact with the hands occurs.

2.4 Cut Resistant – Cut resistant gloves (Kevlar or metal reinforced) should be worn when handling extremely sharp instruments or equipment, which could cause severe lacerations if hand contact would occur.

2.5 Cloth Gloves – In general, cloth gloves may be worn to keep hands from getting dirty when handling harmless substances, such as dirt, dust, etc.

2.6 Chemical Gloves - Gloves such as neoprene, nitrile, butyl rubber, polyvinyl alcohol, “Silver-Shield”, or “Black Knight” may be required when handling specific chemicals. When a hazard assessment indicates that these specialized gloves are required, they shall be issued to the employee(s) assigned to the task.

2.7 Welder’s Gloves

1. Welders shall wear welding gloves with a cuff that fully covers the hand and wrist during all welding and burning operations.

2. Employees operating drill presses, power saws, bench grinders, and similar rotating machinery shall not wear gloves.

3.0
1.0 PURPOSE

To provide minimum requirements for the use of traffic vests wherever a hazardous condition exists and a need is indicated for using such equipment to adequately reduce the hazard to personnel, visitors, and/or subcontractors.

2.0 REQUIREMENTS

When employees are assigned work that places them near moving traffic, engineering controls such as guards, barriers or the re-routing of traffic shall be used to protect employees. Where engineering controls cannot safely and effectively be used, employees shall wear, as a minimum, a fluorescent orange or red high visibility safety vest, which will be provided by Saxon. If such activities are conducted at night, the vests shall be reflective.
1.0 PURPOSE

To provide minimum requirements for the use of personal floatation devices wherever a hazardous condition exists and a need is indicated for using such equipment to adequately reduce the hazard to personnel, visitors, and/or subcontractors.

2.0 REQUIREMENTS

1. When employees work on barges, floating pipelines or plants, or structures that extend over water more than 36 inches deep and are not protected by standard handrails, they shall wear U.S. Coast Guard-approved flotation vests. An approved method for retrieving a worker in the water shall be immediately available.

2. There shall be ring buoys available for non-entry rescue. Ring buoys with at least 90 feet of line shall be provided. Distance between ring buoys shall not exceed 200 feet.

3. If employees are capable of being in the water farther than a ring buoy can be easily tossed, at least one lifesaving skiff shall be immediately available on location. A designated operator shall also be named and made available for immediate dispatch in case of emergency.
1.0 PURPOSE

To provide minimum requirements for basic work clothing on Saxon projects.

2.0 REQUIREMENTS

1. Clothing with full-length trousers and shirts that cover the shoulders are minimum requirements at all Saxon project facilities. At certain times, the nature of the job or client requirements may necessitate the wearing of full-length sleeves. When long sleeves are not required, sleeves shall be a minimum of 4-inches in length.

2. The wearing of synthetic clothing should be discouraged, as it tends to absorb greases and oil more readily than natural fibers.

3. Flame retardant clothing may be required if work is being performed in an operating plant. In such applications, this shall be the outer most garment. Welders should be cautioned against wearing highly flammable clothing, such as polyesters, double-knits, etc. Clothing that has become torn, ragged, or frayed is not acceptable, since it presents a hazard of catching on rough corners or machine parts and could cause the wearer to trip or fall.

4. Raingear and rubber boots shall be kept on the site/facility in useable condition and issued as necessary.

5. Normally, construction and maintenance workers should wear clothing that is reasonably snug—particularly about the neck, wrists, and ankles. Employees shall be cautioned against wearing loose clothing, rings, watches, necklaces, or having long hair—all of which may catch in power-driven equipment and cause serious injury.
1.0 PURPOSE

To establish requirements for developing a respiratory protection program applicable to all Saxon site/facilities.

2.0 REQUIREMENTS

2.1 General

Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to respiratory hazards to the point where respirators are not required. When feasible engineering controls are not effective, employees will use appropriate respiratory protective equipment provided by the company at no charge.

2.2 Written Plan

Site/Facility Management must develop a written respiratory protection plan for the specific respiratory hazards of each site/facility where respirators are used. The written plan must address the following issues as required by TITLE 29 CFR PART 1910.134:

1. Selection and use
2. Comfort
3. Medical Evaluation Requirements
4. Training
5. Issuing respirators
6. Fit Testing requirements (prior to being issued a respirator)
7. Fit Check requirements (prior to working with a respirator)
8. Care and maintenance
9. Storage
10. Work area surveillance
11. Program evaluation
12. Record keeping and documentation
### Standards that contain requirements for respiratory protection
(This list is not all inclusive)

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Site Section 3C  Major Equipment
1.0 PURPOSE

To provide requirements for issuing certificates to employees who operate equipment.

2.0 REQUIREMENTS

1. Employees who are assigned work involving the operation of construction equipment shall be trained to use that equipment.
2. Operator will be required to have a valid drivers license.
3. Employee training shall include a practical examination demonstrating the employee’s ability to safely operate and inspect the equipment.
4. The training and practical examination shall be conducted by a supervisor designated as an equipment competent person or by a manufacture’s representative.
5. Upon completion of the training and successfully demonstrating competence in the operation of the equipment, the employee shall be issued a certificate to operate the equipment.
6. The employee shall maintain possession of the certificate at all times when operating equipment. A record of the certificate issued shall be maintained and kept on file with Human Resources.
1.0 PURPOSE

To provide an outline of the minimum safety requirements for mobile boom equipment in transit and while working around overhead lines and cables. This procedure also covers insulated bucket trucks operating around electric lines and cables.

2.0 REQUIREMENTS

2.1 Operating mobile equipment around electric lines.

Using mobile equipment around electric lines at a distance closer than 10 feet is an unsafe practice that exposes workers to potentially serious shock hazards. Work of this nature may be performed only after the line has been de-energized, locked-out, tagged and tested, and after safety grounds have been attached, or after approved insulating barriers have been installed.

1. Mobile boom equipment in transit

Keep all mobile boom equipment in transit at least 4 feet from electric lines with working voltages of 50 kV and below. Keep the equipment 10 feet from lines with working voltages of 51 kV to 345 kV.

2. Mobile boom equipment in operation

Other than in transit, an approved permit is required for any piece of equipment or any part of its load coming closer that 15 feet to any line operating below 50 kV, and 20 feet to lines operating above 50 kV.

2.2 Operating Mobile Equipment Around Electric Cables

1. Mobile equipment in transit

Keep all mobile equipment in transit at least 4 feet from electric cables with working voltages of 50 kV and below. Keep the equipment 10 feet form cables with working voltages of 51 kV to 345 kV.

2. Minimum Working Distances

Other that in transit, an approved permit is required for any piece of mobile equipment or any part of its load coming closer that 15 feet to any cable (not in cable tray or conduit) operating below 50 kV, and 20 feet to cables operating above 50 kV.

2.3 Operating Mobile Equipment Around Cable Trays or Conduit

1. Energized cables

When operating mobile equipment around cable trays or conduit containing energized cables, the minimum approach distances specified in prior sections do not apply. However, the equipment and its load shall not be allowed to contact the cable tray or conduit.

2. Lifting above cable trays

To prevent damage to the cable insulation when lifting above cable trays, cover the cable tray with wood capable of withstanding an impact if the load shifts, where possible. If the load is likely to damage the tray if it shifts, the wood covering is still required to offer some protection to the cable should a small part or tool fall onto the cable tray.

3. Critical Cables
If the conduit or cable tray contains cables considered critical (cables that disrupt production or create a serious environmental incident if damaged), and the mobile equipment or its load are to come within 4 feet of the conduit or cable tray a qualified electrical person should review the setup prior to starting the task.

2.4. **Bucket Trucks**

1. Bucket trucks used to perform electrical work around overhead lines, cables and open substations shall only be operated by trained and qualified persons.

2. Tested and approved insulated bucket trucks working around overhead lines or cables and open substations are not required to maintain the minimum approach distances.

2.5. **Overhead Line Permit**

1. An authorized and signed permit is required to use any piece of mobile equipment other than bucket trucks working closer to electric lines or cables (not in cable tray or conduit) than the distances outlined in sections 2.2.

2. Written approval to proceed with the work is provided only after all safety requirements specified on the permit have been satisfied.

2.6 **Mobile Equipment Operation**

When operating mobile equipment in compliance with an Overhead Line Permit, the following requirements shall be observed:

1. A signal person shall ensure that specified clearances are maintained.
2. The area around the equipment shall be barricaded and signs posted warning personnel to stay clear.
3. The operator is the only person permitted on the equipment.
4. All personnel shall maintain a safe distance while the mobile equipment is being positioned and during the lift.
5. A copy of the approved permit shall be posted in the equipment cab.
6. 

2.7 **Other Requirements**

1. Do not park mobile equipment with rubber tires under high voltage transmission lines. A static charge can build up and a severe shock transmitted to the operator accessing the mobile equipment.

2. All employees shall be instructed regarding all the hazards involved, including potential hazard present when a high voltage line contacts the earth or contacts and object that is not insulated from the earth.

3. For information on operating mobile equipment near hazardous or critical pipelines, see Procedure III.C.3.
1.0 PURPOSE

To provide directions for operating mobile equipment when any part of the equipment or load may come within 5 feet of a hazardous/critical pipeline(s), or may be extended or lifted over the top of hazardous/critical pipeline(s), regardless of the distance.

2.0 REQUIREMENTS

1. Reasonable efforts shall be made to eliminate the need to work over or near hazardous/critical pipelines. A hazardous/critical pipeline is one that either contains hazardous materials, e.g. chemicals, steam, or if it were to be damaged, would immediately effect the operation of the associated process. Should conditions exist, the craft supervisor must contact the following people: a client representative, the equipment supervisor, the mechanical supervisor, and the EH&S professional, before the work is to begin. Once the actual work location has been evaluated a permit for workers mobile equipment near hazardous/critical pipelines shall be completed.

2. Items to consider when working over or near hazardous pipelines include, but may not be limited to, the following:
   a. Type of mobile equipment
   b. Pipeline contents
   c. Need to shut down and/or drain pipeline
   d. Need for protective structure over pipeline
   e. Size of pipeline
   f. Configuration of load
   g. Tag lines
   h. Need for protective equipment
   i. Swing radius of the boom counterweight
   j. Underground pipelines affected by setting up of the crane
   k. Precautions to take and contingency plan to follow if the line breaks
   l. A signalman to ensure maintenance of clearances
   m. Barricades and appropriate signs around the work area
   n. Locking and tagging valves

3. The supervisor of the craft doing the work must review the approved equipment permit with the operator and others involved in the work.
1.0 PURPOSE

To provide requirements for the inspection and operation of mobile cranes.

2.0 REQUIREMENTS

The site/facility manager shall designate a competent person for mobile crane inspection. This person shall be responsible for administering and documenting a crane operator certification program and an equipment inspection program.

2.1 Equipment Inspection

1. All cranes used on site shall have an annual inspection before the crane is authorized for service. Some states require a yearly inspection sticker posted on the wind shield, at a minimum a copy of the annual inspection shall be kept on file. If the annual inspection expires the inspection shall be performed by a third party inspection company, other than the renter or owner of the crane.

2. Each mobile crane shall be inspected upon arrival. Listed below are some of the components that shall be inspected. If any of these components are damaged or show signs of extreme wear, they shall be repaired or replaced before the crane is authorized for service.

   a. Tires (proper pressure and wear).
   b. Outriggers, beams, pads, hydraulic system (proper functions, leaks, wear).
   c. Engine and torque converter (proper pressure and fluid levels).
   d. Cab, controls, windshield, instruments, seat belts, brakes (proper functions, wear).
   e. Gantry (pins, sheaves, lubrication, wear).
   f. Cable for boom hoist, main hoist, auxiliary hoist (proper lubrication, broken wires, flat spots, wear).
   g. Boom (pins, bent or dented lattices, bent boom sections).
   h. Boom point (pins, bent or dented lattice, sheaves, lubrication)
   i. Boom pendant lines (pins, broken wires in cable, flat spots, lubrication, wear).
   j. Jib (pins, bent or dented lattices, sheaves, lubrication).
   k. Jib pendants and jib gantry (pins, broken wires in cable, flat spots, lubrication, wear).
   l. Load block and ball (sheaves, lubrication, cracked becket, cracks in hooks, wear).
   m. Anti-two block system (proper functions, wear).

NOTE: It is a good practice to have needed repairs performed before the equipment is delivered to the project. A detailed inspection shall be performed after repairs have been made to ensure adequacy of the repair(s) and operational status of the equipment.

3. A monthly inspection and preventive maintenance (PM) shall be performed on all equipment. All inspection forms and PM schedules shall be documented.

4. A daily operator’s inspection shall be performed at the beginning of each shift. This form shall be posted in the crane, then turned over to the supervisor at the end of the shift.

2.2 Crane Operator Certification

All mobile crane operators shall be certified by Saxon to operate the specific make and model of the crane that is assigned. The operator shall pass a post-hire, pre-assignment physical examination (per ANSI 30.5 – Current), written/oral examination, and a functions test on the actual piece of equipment to be assigned. It shall be the equipment supervisor’s responsibility to evaluate the acceptable level of the operator skills.

1. The operator shall meet the following physical qualifications:
a. Vision of at least 20/30 Snellen in one eye and 20/50 in the other eye, with or without corrective lenses.
b. Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
c. Adequate hearing, with or without hearing aids, for the specific operation.
d. A medical opinion indicating any condition(s) that would preclude safe operation of a crane.

2. Evidence of physical defects or emotional instability which could render a hazard to the operator or others or which, in the opinion of the examiner, could interfere with the operators performance, shall be sufficient cause for disqualification. In such cases, specialized clinical or medical judgments and tests shall be required by a licensed examiner

3. Evidence that an operator is subject to seizures or loss of physical control shall be sufficient reasons for disqualification. Specialized medical evaluations shall be required to determine these conditions.

2.3 Safe Operating Practices

a. Only a certified operator shall be permitted to operate a crane.
b. The operator shall perform a daily mobile crane inspection before the start of each shift.
c. Each crane shall have a complete manufacturers load chart. A maintenance manual for each piece of equipment shall be kept on file for proper PM service.
d. The crane shall not be unattended while engine(s) is operating.
e. The operator shall stay at the controls while a load is suspended.
f. Mechanics shall not be permitted to adjust, oil, lubricate, or repair any mechanism with moving parts until equipment is shut down. Some adjustment requires the operation of the equipment to perform the final adjustment, extreme caution shall be used while these task are being performed. Any guards that are removed to adjust, oil, etc., shall be promptly replaced.
g. Rubber tired, mobile cranes shall be equipped with an audible back-up alarm that can be heard above ambient noise levels. This device shall sound continuously while the crane is backing up.
h. No employee shall be permitted to ride the load, block, hook, or ball of any crane, derrick, or hoist
i. All loads shall have a tag line that is a suitable length.
j. The accessible swing radius of the crane shall be barricaded. Only the rigging crew and the mechanics working on the crane shall have access inside the barricade. Extreme caution shall be used when working in the path of the rotating counterweight.
k. The load block and the auxiliary ball shall be equipped with a positive safety latch.
l. Mobile cranes shall be moved only when directed by a designated signal person. All employees shall use caution and stay clear of the rotating wheels and moving equipment.
m. Personnel shall not climb on or off a moving crane.
n. All loads shall be signaled by only one designated flagger. If the operator loses site of the flagger, the operator shall stop all crane functions, until a clear view is established.
o. When cranes are set-up on soft or unstable ground, mats shall be used. All outriggers shall be extended when crane is hoisting and/or lowering a load or traveling with a load. Some of the newer cranes have load charts for retracted outriggers, extreme caution shall be used when the crane is set-up in this configuration.
p. Use extreme caution when operating cranes next to or near excavations or in a area that may become impassable or unstable by rainfall, flash floods, etc. Proper matting and shoring shall be used in these applications.
q. No suspended loads shall be permitted to swing over other employees. All areas shall be barricaded before performing any lifts.
r. Use caution when lifting in wet or icy weather conditions, and always check the operating mechanisms, such as brakes, hoisting levers, all controls, and other mechanical parts prior to lifting a load.
s. All the crane’s components shall be maintained and kept in functional order.
t. No modifications or alteration to the equipment shall be made by the project or any individual without the manufacturer’s written approval.
2.4 Operating Hazards, Electrical

A crane shall not be operated, under any circumstances, when any part of the crane or load will come within 10 feet of energized distribution electrical lines unless the line(s) have been de-energized and grounded at the point of work or insulating barriers that are not part of the hoisting equipment have been erected. Listed below are the allowable distances for energized lines.

1. For lines rated 50 kv or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet.
2. For lines rated 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 1 kv over 50 kv or twice the length of the line insulator, but never less than 10 feet.
3. In transit with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 kv, and 10 feet for voltages over 50 kv, up to including 345 kv, and 16 feet for voltages up to and including 750 kv.

2.5 Operating Hazards, Traveling With Loads (Pick And Carry Operations)

Traveling with a load is not recommended as a means of transporting loads, this procedure shall only be performed as a last resort. Other means of transportation shall be utilized such as forklifts, boom trucks, farm wagons, and flatbed trucks. Load charts for dynamic and static loading of such equipment are provided by the manufacturer. Use extreme caution when using this equipment in this application.

Listed below are general precautions that shall be considered while transporting loads on rubber tires:

1. Never exceed the rated capacity load chart or exceed the manufacturer’s safe operating procedures.
2. Position the boom and load directly over the rear or the front of the crane.
3. Swing (house) lock shall be engaged.
4. Keep boom as short as possible. The boom angle shall be kept as high as possible, however do not adjust the boom angle too high, where the crane is top heavy or unstable.
5. Secure load to carrier with tag line or wire rope.
6. Position load as close to the ground as possible.
7. Travel on smooth, firm, and level terrain.
8. Maintain a constant and controlled speed that is suitable to the terrain and load.
9. Avoid sudden starting or stopping.
10. Use flagger, both front and rear.

2.6 Operating Hazards, Wire Rope

Wire rope with one or more of the following defects shall be replaced immediately:

1. When one wire rope of a set (pendants lines, multi-leg slings, etc.) requires replacement, the entire set shall be replaced.
2. In standing ropes, more than two broken wires in one lay in areas beyond end connections, or more than one broken wire at the end connection.
3. In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
4. Wear of one third of the original diameter of the outside individual wires caused by abrasion, scrubbing, flattening, or peeling.
5. Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure.
6. Evidence of heat damage from any cause.
7. Reduction from nominal diameter of more than,
   a. 1/64 inch for diameters up to and including 5/16 inch.
   b. 1/32 inch for diameters from 3/8 inch up to and including 1/2 inch.
   c. 3/64 inch for diameters 9/16 inch to and including 3/4 inch.
   d. 1/16 inch for diameters from 7/8 inch up to and including 1 inch.
   e. 3/32 inch for diameters from 1-1/4 inch up to and including 1-1/2 inch.
2.7 Operating Hazards, Hook Inspection

The hook inspection program shall coincide with the initial crane inspection.

Before the crane is authorized for use, a non-destructive inspection test shall be performed. The most accurate method of inspecting hooks for cracks are by magnetic particle and dye penetrant inspection. Hooks with threaded shanks shall be carefully inspected for wear in the thread area. If the hook shows signs of wear or stress, the hook shall be removed from service. Items to be checked during this annual inspection are listed below.

1. Cracks, severe nicks, or gouges
2. Wear, not to exceed 10% of original sectional dimension
3. A bend or twist, not to exceed 10 degrees from the plane of the unbent hook
4. Safety latch engagement damage, or any malfunctioning
5. Hook attachment and securing means
6. Measurement of hook throat

Note: Results of this inspection and original measurements, for the purpose of comparison in subsequent annual inspection shall be kept by the respective maintenance or equipment supervisor.

3.0
1.0 PURPOSE

This procedure provides requirements for operating, inspection, and operator qualifications.

2.0 REQUIREMENTS

2.1 Hold-Harmless Agreement

There should be a strong contractual hold-harmless agreement between Saxon and all other interested parties, such as the tower crane owner and/or vendor, the erecting/disassembling contractor, and all crane users.

2.2 Inspections/Erection

1. A Department of Labor approved, independent third-party inspection agency shall complete and document an annual inspection before the machine arrives on site, and an annual inspection thereafter is required. The complete annual inspection of all structural crane parts—including Non-Destructive Examinations (NDE) of welded joints by a competent person shall be furnished by the crane supplier prior to the erection of the crane. A copy of this inspection and NDE test results should be maintained on site. The inspection shall also be certified by a registered engineer.

2. The bolt torque on the crane structure shall be checked according to manufacturers recommendations.

3. Crane operators shall inspect all controls and safety devices at the start of each shift. If controls do not operate properly, they shall be repaired prior to use.

4. All tower, jib, and structural bolts and nuts, and other structural fasteners shall be new at erection time and meet manufacturer's specifications. All tower, jib, and slewing ringbolts and nuts shall be closely inspected and replaced as required during erection. All inspections, NDE tests, preventive maintenance, and repairs to tower cranes shall be performed by a qualified, competent person.

2.3 Operations

1. Tower cranes shall have flags or other indicators on the jib identifying the working load radius.

2. Tower cranes shall have devices to limit:
   a. Trolley travel at both ends of the jib
   b. Two-Blocking
   c. Operating radius in accordance with lifted load
   d. Pressures in hydraulic or pneumatic circuits
   e. Crane travel at both ends of the runway tracks
   f. Limiting devices for the load, acceleration, and deceleration, when provided, shall be installed in enclosures that can be locked or sealed to inhibit tampering. Operational tests shall be conducted, and a load limit device setting shall be verified by applying test loads of 100 percent or the manufacturer's requirements of the applicable ratings. These tests shall be performed prior to using newly erected and altered cranes with dated records kept on site.
   g. Use portable radios or telephones for all signaling. Hand signals are not recommended for tower crane operations.
   h. Prior to setting up crane, evaluate underground conditions for utilities, compaction, or any other possible dangerous conditions.
   i. Make sure the hoist line is always vertical.
   j. Ensure that no part of the crane or load comes within 15 feet of an electrical source or hazardous pipe.
   k. Continuous fall protection shall be used at all times when climbing tower or mast of crane. This also includes inspection of the boom and jib.
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1. Use caution when entering or exiting the cab, follow the manufacturers instructions.

m. Make sure cranes are able to weather vane in high winds or when left overnight.

n. Do not operate crane in excessive winds. Follow manufacture’s recommendations regarding operation during winds. Always consider wind loading on the crane and the item that’s going to be lifted.

o. Operator shall always maintain visual or vocal contact with signal person. If for any reason contact is lost, operator shall stop all operations until contact is restored.

p. If necessary, a device indicating wind velocity shall be mounted at or near the top of the crane. A velocity readout shall be provided at the operator's station in the cab, and a visible or audible alarm shall be triggered in the cab and at remote control stations when a preset wind velocity, recommended by the manufacturer, has been exceeded.

q. The manufacturer's operator's manual shall be kept with the crane while it is on site.

2.4 Operator Certification

1. The operator shall be trained, experienced, and qualified to operate the specific make and model of tower crane. Prior tower crane operating experience or training is required because of the dissimilarity between tower cranes and other equipment. Operator experience or training documentation shall be provided by the crane company or a subcontractor using the crane on site.

2. The operator shall successfully complete a physical exam as required in ANSI 30.3 Current.

3. Operators shall pass a written/oral examination. Successful completion of the exam is a qualification for employment.

2.5 Maintenance

Regular inspections and maintenance of cranes shall be conducted and performed in accordance with the manufacturer's specifications and current ANSI Standards. Maintaining tower cranes in good working condition must be of utmost consideration to eliminate unnecessary downtime and to prevent accidents. Companies or subcontractors shall be able to provide documentation for inspection.

2.6 Record Retention

Maintenance and inspection records shall be maintained at the project. Records shall be forwarded to Saxon project archives at job completion. Records shall be archived for a period of at least 30 years.

3.0
1.0 PURPOSE

To provide the requirements for the installation, inspection, maintenance, load testing and handling overhead cranes.

2.0 REQUIREMENTS

Only authorized personnel shall move materials with overhead cranes. Overhead cranes shall be designed, installed and tested to meet the specifications of applicable standards.

2.1 Rated Load Marking

1. The rated load of overhead cranes shall be plainly marked on each side. Overhead cranes containing more than one hoisting unit shall have a rated load marked on each hoist or its load block. In all cases the marking shall be clearly legible from the ground.

2. Newly installed overhead cranes shall be load tested to 110% of rated capacity prior to routine use of the crane.

2.2 Inspections

1. Prior to initial use a competent person shall inspect all new or altered overhead cranes. Written documentation of crane inspection and verification of load rating will be maintained for all cranes.

2. Overhead cranes in regular service shall have two classifications of general inspections:
   a. Frequent Inspection: Occurring daily to monthly
   b. Periodic Inspection: Occurring monthly to yearly

3. The frequency of inspection within each classification is dependent upon the nature of the critical components and the degree of their exposure to wear, deterioration or malfunction.

4. Overhead cranes that have been idle for a period of 1 month or more, but less than 6 months, shall be given a "Frequent" inspection and rope inspection prior to use. Overhead cranes out of service more than 6 months shall be given a "Periodic" inspection prior to use. All inspections shall conform to the requirements of Title 29 CFR Part 1910.179. Only a competent person shall perform frequent and periodic inspections.

2.3 Lifting Devices

Inspect all lifting equipment before each use. Do not use any device that is damaged or missing the identification tag. Report all unserviceable equipment to your supervisor and tag and remove the lifting device from service.

2.4 Training Requirements

1. All personnel operating overhead cranes or loads moved by overhead cranes require the following training:
   a. Conduct daily operation inspections
   b. Rigging techniques
   c. Lifting and moving the load
   d. Storage of equipment
   e. Selection and use of lifting devices such as: slings, (nylon, wire rope or chain), sling hooks, spreader bars, clamps, fixtures and any other rigging equipment used to lift the load.
   f. The use of equipment per manufacturer instructions

2. Employees will be retrained if there is any reason to believe they do not possess the understanding or skills required to work safely. The following circumstances require retraining:
2.5 Maintenance Requirements

1. A preventive maintenance program based on the overhead crane manufacturer’s recommendation shall be established.

2. When making repairs or adjustments the following precautions shall be taken:
   a. Move the crane to a place on the runway where it will not cause interference with other cranes or operations.
   b. Shut off the main power disconnect and lock it in the open position.
   c. Place warning or "out of order" signs on the crane so they are visible from the floor. Use barricades to secure the area under the crane to protect personnel from falling objects.
   d. Use rail stops or other suitable means to prevent interference from other cranes on the same runway.
   e. After adjustments and repairs have been made the crane shall not be operated until guards have been reinstalled, safety devices reactivated, and maintenance equipment and parts removed.

2.6 Load Handling

The following procedures shall be followed when lifting and moving a load:

1. The rated load shall not be exceeded at any time except during an authorized load test.
2. The hoist rope shall not be wrapped around the load.
3. The load shall be attached to the hoist hook by means of a sling or other approved lifting devices.
4. The load shall be balanced and well secured in the sling or lifting device before it is lifted more than a few inches.
5. A tag line shall be used to control the load.
6. Before moving the load, the operator shall insure that the hoist rope is free from kinks, multiple part lines are not twisted around each other, and the hook is centered to prevent the load from swinging.
7. When moving the crane the operator shall insure that no one is on the hook or the load, the load does not pass over any personnel and the load is not lowered below the point where there are two full wraps of rope on the drum.
8. The operator shall not leave the controls with a load suspended on the crane.
1.0 PURPOSE

To provide established guidelines for inspecting and safely operating draglines and clamshells.

2.0 REQUIREMENTS

2.01 Inspection

1. A qualified inspector shall inspect all cranes used with draglines and clamshells prior to their use on the jobsite and at least quarterly thereafter. Before using a crane, the operator shall inspect the work location for any unsafe conditions and report them to the supervisor immediately so they can be corrected.

2. The operator shall test all controls, safety devices, and wire rope before beginning work each day. If any of the controls do not operate properly, they shall be repaired before the crane is operated.

3. All mechanical and control repairs made to a crane shall be performed by a competent person according to the manufacturer’s recommendations and approvals.

2.02 Environmental Qualifications

Hydraulic lines shall be maintained to prevent leakage. If a leak or failure occurs in a hydraulic system, the spill shall be cleaned up according to site, local, state, and governmental regulations. Site should have a written procedure to respond to this type of spill.

2.03 Operator Qualifications

1. The site manager shall ensure that a testing program exists for operators.

2. When operators have successfully passed the medical and written/oral examinations and demonstrated that they can operate the equipment they will use, documentation is placed in their files.

2.04 Equipment Requirements

Every crane must be equipped with legible, durable load and range chart that shows the manufacturer’s recommended load configurations and maximum load weights. The chart must be kept visible to operators at all times when they are seated at the control station.

2.05 Operation

A crane operator must observe the following minimum safety precautions:

1. Maintain continuous contact, either visual or verbal, with qualified signal person. (If for any reason that contact is lost, the crane operator must stop all operations until full contact is restored)

2. Loose items, such as tools, oil cans and waste materials shall be prohibited in the operator’s cab.

3. Be constantly alert to the effects of dynamic loading when swinging, hoisting, and lowering the load or when moving the crane.

4. Prior to moving a crane into an area, evaluate underground conditions for crane stability and for the possibility of damage to underground facilities or injury to personnel.

5. Make sure the hoist line is vertical.
6. Barricade the swing radius of the counterweight. Use other barricades according to site procedures.

7. Know the radius of the load at all times.

8. Make sure the bucket attachment pins / shackles are in good working order and are used properly.

9. Follow the manufacturer’s instructions for entering and exiting the crane’s cab.

10. Do not operate cranes when wind speeds exceed 20mph.

11. Make sure cranes are able to weather vane in high winds and when left overnight or unattended.

12. Make sure the crane is level before operations begin.

13. Make sure when the crane is loading or unloading trucks, the truck’s cab is unoccupied.

14. Make sure that no one walks or stands between the dragline or clamshell load and a bank, high wall, spoil, or other obstacles.

15. Do not allow anyone else on the crane when it is in use.

16. Keep the loading areas clear of personnel.

17. Keep the swing path clear.

18. When any part of the equipment or load come within 15 feet of an electrical source or hazardous pipes during the planned swing radius, the requirements in Procedures III.C.2 and III.C.3 must be met.

19. Make sure that the equipment is shut down and a fire extinguisher is available during refueling.

20. Prevent the bucket and its contents from striking the boom.

21. Make sure dragline or clamshell buckets are sized according to the load capacity of the crane.

22. Lower the load bucket to the ground before leaving the controls so that it does not remain suspended while the crane is inactive.
1.0 PURPOSE

To provide established guidelines for inspecting and safely operating telescoping and articulating boom trucks. It also outlines the qualifications for boom truck operators.

2.0 REQUIREMENTS

2.1 Inspection

A qualified inspector must inspect all boom trucks prior to their use on site and monthly thereafter. Before using a boom truck, the operator must inspect the work location for any unsafe conditions and report them to the supervisor immediately so they can be corrected. The operator must test all controls and safety devices before beginning work each day. If any of the controls do not operate properly, they must be repaired by a competent person before the boom truck is operated.

3.2 Environmental Qualifications

Hydraulic lines must be maintained to prevent leakage. If a leak or failure occurs in a hydraulic system, the spill must be cleaned up according to site and governing agency regulations.

3.3 Operator Qualifications

1. The site manager must ensure that a testing program exists for boom truck operators.

2. When operators have successfully passed the medical and written/oral examinations and demonstrated that they can operate the cranes they will use, documentation is placed in their files stating that they are qualified to operate a specific type of boom truck.

3.4 Equipment

Every boom truck must be equipped with legible, durable load and range chart that shows the manufacturer’s recommended load configurations and maximum load weights. The chart must be easily visible to operators when they are at the controls. A fire extinguisher must be kept in the truck’s cab.

2.5 Operation

1. Boom truck operators must operate their equipment according to the manufacture’s recommendations.

2. An operator must observe the following as a minimum:
   a. Make sure the boom truck is level before operations begin.
   b. Make sure that when the boom truck is loading or unloading, the truck’s cab is unoccupied.
   c. Use tag lines to control loads at all times.
   d. Do not operate cranes when wind speeds exceed 20 mph.
   e. Do not leave the controls when the load is suspended.
   f. Make sure that no one works, stands, or walks under a suspended boom load and that no one rides on the hook or the load.
   g. Do not allow anyone else on the boom truck when it is in use.
   h. Keep the loading/unloading areas clear of personnel.
   i. Follow the manufacturer’s recommendations for maximum allowable loads and maximum boom lengths. (Remember that the weights of hooks, hook blocks, balls, slings, and all other load handling devices are considered part of the load.
   j. Make sure the boom is secured and lying in a rest before the boom truck is allowed to travel. If a rest is not available, secure the boom to prevent movement.
   k. Make sure all brakes and locks are engaged if the unit is going to be left unattended for extended periods of time or if the operator is leaving the immediate area.
1.0 PURPOSE

To provide requirements for operating and using aerial lift work platforms, extendable boom platforms, articulating boom platforms, scissors lifts, and bucket trucks.

2.0 REQUIREMENTS

All employees who work with aerial lifts, extendable boom platforms, articulating boom platforms, scissors lifts, and bucket trucks shall follow all safe work practices established by this procedure, as well as those established by the manufacturer of the equipment.

2.1 Inspection

1. Inspection of powered aerial work platforms will be made in accordance with manufacturer’s recommendations and company, governing agency inspection requirements and regulations.

2. A competent person must inspect all aerial lifts prior to their use on site and at least quarterly thereafter. Test lift controls each day to ensure that the controls are in safe working condition.

2.2 Operation

Employees shall not be permitted to use or operate lifts or platforms unless they have been trained and certified by the competent person in the use and operation of such equipment.

1. Powered aerial work platforms being used near electrical distribution or transmission lines shall comply with standards set forth in Title 29 CFR Part 1926 Subpart K.

2. Equipment shall not be moved when the boom is elevated in a working position with workers in the basket/bucket or on the platform unless equipment was manufactured to perform these functions as stated in writing by the manufacturer.

3. Manufacturer’s specifications and limitations shall be followed. Do not allow rigging from the platform or boom.

4. Safety harnesses shall be worn by employees working from the basket/bucket with the lanyard attached to the equipment. Under no circumstances shall the lanyard be attached to a pole, the structure, or other equipment.

5. Employees must work while standing on the platform floor, never on the top rail, mid rail, make shift platform, or toe board.

6. Employees who tamper with controls and/or bypass safety devices (such as emergency switches, etc.) are subject to disciplinary action including termination.

7. Mobile and self-propelled lifts and platforms shall not be used in outside work activities when severe wind conditions exist. (Winds above 20 mph)

8. Extended boom aerial work platforms shall not be exposed to “wind loading” while elevated and fully extended.

9. Work activities from aerial lifts, bucket trucks, or work platforms in outside areas are prohibited during electrical storms.

10. Outriggers must be used when available with equipment.

11. No alterations may be performed to the equipment unless the manufacturer approves them in writing.
2.3 Operator Certification and Training

1. A practical test, written/oral test and observation of his or her performance during the first month of operation must verify the operator’s knowledge of operation and safety procedures and requirements for this equipment.

2. The site/facility manager shall designate a competent person (such as an equipment superintendent) at each site. The competent person shall administer the practical and written/oral test to determine an applicant’s/employee’s operating ability.

3. A practical test shall be used to determine an employee’s ability to operate each type and model of equipment to be operated.

4. Training will be provided for each operator in compliance with equipment operator training procedures.

2.4 Record Retention

1. A training and testing record for each employee designated as an equipment operator shall be kept on file.

2. Inspection and maintenance of equipment shall be performed and documented in accordance with the manufacturer’s standard.
1.0 PURPOSE

To provide requirements for operating and using aerial lift work platforms, extendable boom platforms, articulating boom platforms, scissors lifts, and bucket trucks.

2.0 REQUIREMENTS

All employees who work with aerial lift platforms, extendable boom platforms, articulating boom platforms, scissors lifts, and bucket trucks shall follow all safe work practices established by this procedure, as well as those established by the manufacture of the equipment.

2.1 Inspection

1. Inspection of powered aerial work platforms will be made in accordance with manufacturer’s recommendations and Company, governing agency inspection requirements and regulations.

2. A competent person must inspect all aerial lifts prior to their use on site and at least quarterly thereafter. Test lift controls each day to ensure that the controls are in safe working condition.

2.2 Operation

Employees shall not be permitted to use or operate lifts or platforms unless they have been trained and certified by the competent person in the use and operation of such equipment.

1. Powered aerial work platforms being used near electrical distribution or transmission lines shall comply with standards set forth in Title 29 CFR Part 1926 Subpart K.

2. Equipment shall not be moved when the boom is elevated in a working position with workers in the basket/bucket or on the platform unless equipment was manufactured to perform these functions as stated in writing by the manufacturer.

3. Manufacturer’s specifications and limitations shall be followed. Do not allow rigging from the platform or boom.

4. Safety harnesses shall be worn by employees working from the basket/bucket with the lanyard attached to the equipment. Under no circumstances shall the lanyard be attached to a pole, the structure, or other equipment.

5. Employees must work while standing on the platform floor, never on the top rail, mid rail, make shift platform, or toe board.

6. Employees who tamper with controls and/or bypass safety devices (such as emergency switches, etc.) are subject to disciplinary action including termination.

7. Mobile and self-propelled lifts and platforms shall not be used in outside work activities when severe wind conditions exist. (Winds above 20 mph)

8. Extended boom aerial work platforms shall not be exposed to “wind loading” while elevated and fully extended.

9. Work activities from aerial lifts, bucket trucks, or work platforms in outside areas are prohibited during electrical storms.

10. Outriggers must be used when available with equipment.

11. No alterations may be performed to the equipment unless the manufacturer approves them in writing.
2.3 Operator Certification and Training

1. A practical test, written/oral test and observation of his or her performance during the first month of operation must verify the operator’s knowledge of operation and safety procedures and requirements for this equipment.

2. The site/facility manager shall designate a competent person (such as an equipment superintendent) at each site. The competent person shall administer the practical and written/oral test to determine an applicant’s/employee’s operating ability.

3. A practical test shall be used to determine an employee’s ability to operate each type and model of equipment to be operated.

4. Training will be provided for each operator in compliance with equipment operator training procedures.

2.4 Record Retention

1. A training and testing record for each employee designated as an equipment operator shall be kept on file.

2. Inspection and maintenance of equipment shall be performed and documented in accordance with the manufacturer’s standard.
1.0 PURPOSE

To provide the minimum requirements for sheet, soldier, tube, timber, concrete, auger and similar pile driving activities.

2.0 REQUIREMENTS

2.1 Equipment Inspection

A qualified inspector shall inspect cranes according to guidelines in Mobile Cranes III C-4. The operator shall inspect and complete Daily Inspection Report to ensure safe operation of the equipment.

2.2 Hoses

Hoses supplying power to a hammer, auger or vibrator are commonly routed up the crane boom, and are subject to separating during operation. Secure each hose approximately 12 inches from the coupler to independent point on the boom or lead. Ensure powered hose remains secure if separation occurs.

2.3 Operator Qualifications

Crane operator shall meet requirements stated in Procedure III C A. Only qualified personnel may operate leads, hammers, augers and vibrators.

2.4 Planning

Prior to starting pile driving activities a planning and hazard analysis is required by a competent person.

1. Health Hazards

When planning an auger or pile driving job, the Engineer or Designer shall consider analyzing sub-surface soil and water for potential contaminants that could present health hazards. The supervisor or EH&S is to ensure that appropriate methods are in place to protect employees from exposure to any identified health hazards.

2. Additional Hazards

Special consideration shall be given to any underground physical interferences (i.e., underground pipe lines or electrical cables), any above ground piping or electrical cables, the effects of vibration on adjacent facilities, and the effects of noise on personnel.

3. Permits

Each site/facility should develop a site specific permit for pile driving. Items for consideration for permit include vibration, noise, excavation permit, health hazards, disposition of waste materials, securing of supply hose and hazard analysis.

2.5 Equipment

1. Overhead Protection

Overhead protection shall not interfere with operator’s vision. Protection shall be equivalent of 2-inch planking or other solid material of equal strength.

2. Fixed Leads

Using fixed leads is the preferred method of pile driving. The site/facility Manager or Designee shall approve any other type lead.
2.6. Work Practices

1. Fall Protection

   Continuous positive fall protection, such as lifeline, rope grab and complete guardrails shall be used when a person is on a vertical lead or an apron. Every effort shall be made to eliminate the need to access the top of a pile. Examples of such efforts include mechanical pile threaders and remote release shackles.

2. Access to Elevated Work Locations

   Ladders and aerial platforms are the preferred means of access to elevated work areas.

3. Precautions

   a. Only personnel essential to the operation are allowed within radius equal to length of undriven pile.
   b. Personnel are not allowed near turning auger
   c. Noise levels shall be determined and high noise areas posted. Appropriate hearing noise protection for employees near operation is required.
   d. Personnel are to avoid skin contact with piles coated or treated with chemicals. Refer to material safety data sheet. Use protective barrier creams and protective clothing.
   e. Personnel shall use face shield and other PPE when sawing treated timber pile.
   f. When working over or near a body of water where potential for drowning exists, use personal flotation devices and rescue procedures.
   g. If any part of equipment or load comes within 15 feet of electrical source, follow guidelines in Section III.B.7.

2.6 Environmental Precautions

1. Material Handling

   Storage, hauling and disposal of materials (Such as spoils and treated pile wastes) shall be in accordance with site/facility and governing agency regulations.

   Hydraulic Lines

   Hydraulic lines shall be maintained to prevent leakage. If catastrophic failure of a hydraulic system occurs or any leak, the spill/leak shall be cleaned according to site/facility and governing agency regulations.
1.0 PURPOSE

To provide minimum requirements for Forklift inspection, operation and operator qualifications.

2.0 REQUIREMENTS

2.1 Inspection

A qualified inspector shall inspect forklifts prior to their use on the site/facility. Forklifts shall meet standards established by ANSI. Forklift operators shall inspect equipment prior to each shift, and complete daily forklift inspection form from this section.

2.2 Operator Qualifications.

Operator shall be qualified, certified, and demonstrate competency and experience. The subcontractors shall provide completed operator qualification form from this section. Only trained, qualified, certified, and authorized operators may operate forklifts on the site/facility.

2.3 Operation

1. Operate forklifts according to manufacturer’s instructions.
2. Forklifts may only carry operator.
3. Do not modify or alter forklift without written authorization from manufacturer.
4. If operator is out of the seat, place the lift carriage in its lowest position, set the brake, turn off engine, and if on incline chock wheels.
5. If any part of lift or load come within 15 feet of electrical source, follow guide lines in Section C.2.
6. Forklifts operated on roadways with automobile traffic shall be equipped with turn signals and brake lights. Operators shall observe applicable traffic regulations.
7. Drive at reasonable rate. Do not exceed posted speed limits.
8. Use horn in blind spots.
9. Give pedestrians right of way.
10. During refueling, stop, engine, have fire extinguisher available.
11. Slow down at intersections, corners, ramps, and other danger points.
12. While operating forklifts equipped with a Roll Over Protection Structure (ROPS) or a Fall Object Protection Structure (FOPS) operators shall use seat belts.

2.4 Attachments

If attachments are needed, use manufacturer supplied attachments whenever possible.

1. Use only attachments that are engineered
2. Never use sling off of single fork.
3. Use attachments only for their designed and intended purpose.
4. Use manufacturer’s supplied fork extensions whenever possible. Any exception shall be approved by site manager or EH&S professional.

2.5 Environmental Concerns

Hydraulic lines shall be maintained to prevent leakage. If spill occurs follow site/facility or governing authority regulations.
1.0 PURPOSE

To provide requirements for modification of construction equipment.

2.0 REQUIREMENTS

This procedure is to cover any and all equipment modifications. Some examples are mobile cranes, material elevators, aerial lifts, air compressors, backhoes, forklifts, etc.

2.1 Manufacturer’s Approval

1. Do not modify equipment unless the manufacturer agrees in writing to the proposed change. Site/Facility Manager and EH&S Professional shall also review manufacturer’s written approval before modifications are made.

2. Removal of parts may result in non-compliance with government, state and local regulations. Equipment may need to be re-rated as a result of modification.

2.2 Examples of Modifications

1. Attachments to fork truck masts
2. Addition of auxiliary sheaves to cranes
3. Modifications to crane counterweights
4. Extension changes or attachments to loader or excavator buckets
5. Adding personnel riding platforms to equipment
6. Removal of ladders, hood sides, guards on equipment supplied as part of equipment package.

2.3 Before equipment modifications are to be used a load test of 125% above rated capacity shall be performed and witnessed by EH&S professional or site manager.
1.0 PURPOSE

To provide the minimum requirements for inspecting and operation of earth moving equipment. Procedure to include dump trucks, front-end loaders, bulldozers, graders, backhoes, and tracked and rubber tired hydraulic excavators.

2.0 REQUIREMENTS

2.1 Equipment Inspection

1. A qualified inspector shall inspect all equipment before its use on site.
2. Operators shall inspect the equipment prior to each shift. Equipment checklist shall be used to document equipment inspections.

2.2 Operator Qualifications

1. Only qualified operators may operate earth-moving equipment.
2. Before operator uses equipment on the site/facility the operator shall demonstrate experience operating earth-moving equipment.

2.3 Permits

All excavations require excavation permit prior to excavation.

6.4 Operation

1. Operate equipment in accordance with local traffic regulations
2. Equipment may carry only as many people as there are factory installed seat belts.
3. During refueling engine shall be shut off, and fire extinguisher shall be present.
4. Any equipment operated after dark shall be equipped with factory lighting or approved equivalent.
5. Personnel shall not occupy excavators or buckets during equipment operation.
6. When moving track equipment on paved surfaces, provide protection to prevent paving damage.
7. Seat belts shall be used at all times during operation of equipment.

6.5 Hydraulic Lines

Hydraulic lines shall be maintained to prevent leakage. If a spill occurs, the spill shall be cleaned according to site/facility and governing agency regulations.

2.6 Backhoes

Backhoes shall not be used for operations exceeding the manufacturer’s recommendations or capacity of the equipment (i.e., using Backhoe Boom instead of Crane).

If manufacturer permits backhoe for a crane, rigging shall meet site requirements and be attached to bucket according to Manufacturer’s recommendations and load charts. Radius capacities shall be in backhoe.

2.7 Trucks With Dumping Beds

1. If the cab of dump truck is equipped with vertical and horizontal protection (designed to withstand impact of material being loaded), all personnel may remain in the cab of the truck during loading of the dump bed with material less than 3 inches in diameter. If the cab has insufficient protection and/or the materials are larger than 3 inches in diameter, then all personnel shall leave the truck during loading.
2. Driver and passengers shall all wear required P.P.E. when they are outside the vehicle.
3. Follow Manufacturer’s recommendations when dumping a load. Be aware of ground conditions and acceptable slope when operating dump bed. Dumping operations shall be performed on stable compacted areas.

4. Before and during dumping operations operator is to verify overhead clearances. If any part of equipment comes within 15 feet of electrical lines see Standard III.C.2 for further information.

5. Dump bed shall be down and locked before traveling.

2.8 Rollover Protection

1. All earth moving equipment except dump trucks and hydraulic excavators require rollover protection.

2. All backhoes require rollover protection except a backhoe attachment mounted on a tractor of less than 20 horsepower.
1.0 **PURPOSE**

To provide established requirements for safe operation of power drilling equipment and for soil sampling, test well, and drilled foundations.

2.0 **REQUIREMENTS**

2.1 **Equipment Inspection**

A qualified inspector shall inspect all drilling equipment prior to its use on site. Also, complete drilling inspection report daily.

2.2 **Planning**

1. The engineer shall consider sub-surface soil and water for potential contaminants and appropriate techniques to protect personnel from exposure of identified hazards.

2. Engineer and operator shall also survey area for physical hazards above and below ground. Examples of potential hazards are listed below:
   a. Underground pipe
   b. Underground electric cable
   c. Swing radius of equipment
   d. Above ground power lines
   e. Unidentified backfilled debris

2.3 **Permits**

All drilling requires excavation permit prior to drilling.

2.4 **Attachments**

1. Whenever possible, use Manufacturer supplied attachments.

2. Use only attachments that are engineered.

3. Use attachments only for their designed and intended purpose.

2.5 **Operations**

1. Only essential personnel shall work near turning drill.

2. Determine noise levels and post high noise boundaries.

3. Ensure operator and workers around drilling have proper hearing protection.

4. Immediately after completion of drilling each hole, excavation shall be barricaded or install hole covers.

5. Maintain access and egress at all times around excavation and drillrig.

6. When it is required to climb drillrig, continuous fall protection shall be provided.

7. Maintain clean up of spoil piles, tools and equipment around work area.

8. Follow site, local, state and government regulation in the disposal of spoils.

9. Hydraulic lines shall be maintained to prevent leakage.
Site Section 3D
1.0 PURPOSE

To provide requirements for the calibration of industrial hygiene sampling equipment.

2.0 REQUIREMENTS

2.1 Calibration Requirements

All industrial hygiene monitoring equipment utilized on Saxon sites/facilities shall be inspected, maintained and calibrated pursuant to manufacturer specifications, OSHA requirements, or standard industry practice.

2.2 Frequency & Methods

1. Most monitoring equipment will require an inspection and calibration by the manufacturer on a yearly basis. Refer to the manufacturer’s literature for details regarding inspection/calibration frequency and scope.

2. Direct reading sampling instruments (e.g., Industrial Scientific TMX, Biosystems PhD, GASTEC, RKI 2003) shall be calibrated before each use. If an instrument is to be used several times per shift, one calibration per shift is sufficient, unless operational problems are encountered. Where applicable, e.g., combination gas monitoring equipment, the calibration procedures provided by the manufacturer must be used. In these cases, the procedures described in the specific instrument's operating manual must be followed for proper calibration.

3. Certain types of direct reading, colorimetric gas/vapor detection equipment, (e.g., Drager, Sensidyne) may not require routine, pre & post sampling calibration. Routine pre-operational inspection may be all that is necessary. Manufacturer’s literature and/or OSHA protocol should be consulted to determine the appropriate inspection and/or calibration procedures.

4. Low-volume and High-volume air sampling pumps (e.g., SKC, Gilian, MSA) shall be calibrated before and after each sampling period. Calibration of such air sampling equipment shall be performed using a primary calibration standard, such as an electronic, bubble flow meter, e.g., Gilian Gilibrator.

5. Noise/sound measurement equipment (e.g., sound level meters, noise dosimeters, and octave band analyzers) shall be calibrated using compatible calibration equipment, supplied by the manufacturer, before and after each measurement period.

6. Radiation survey equipment shall be maintained in accordance with manufacturer’s recommendations and schedule regarding electronic calibration and response sensitivity. Units used at projects shall be field calibrated using appropriate radiation check sources to verify sensitivity and response.

7. All calibration equipment shall be maintained in conformance with manufacturer specifications. As appropriate, routine and scheduled inspection, repair and calibration shall be maintained for all field calibration equipment. An adequate supply of calibration “span gas” for gas monitoring equipment shall be available at each project that uses such equipment.
2.3 Documentation

1. All calibrations shall be documented, with the calibration record maintained with the sampling / exposure assessment record. Some instruments have a printout that serves as adequate documentation. These printouts should be saved with the monitoring record. If heat sensitive (thermal) printer paper is used, the printout should be photocopied to preserve the original data.

2. Instruments lacking a hardcopy printout require other types of calibration documentation. The date, serial number of the instrument, type of instrument (brand name and number), calibration parameters, calibration results, and person performing the calibration shall be noted on any documentation concerning calibration. The attached form III.D.1.001 Direct Reading Instrument Calibration Form shall be used for calibration documentation.

3. If calibration is frequent, a calibration log should be set up to document all calibration of equipment. A hardbound notebook should be used as the logbook. All entries should be made with ink. If an error is made, it is lined through and the person that corrected the mistake should initial the mistake and correction. As was stated before, the date, serial number of the instrument, type of instrument (brand name and number), and person performing the calibration must be on any documentation concerning calibration.
1.0 PURPOSE

To provide Saxon a method of protecting employees from noise hazards.

2.0 REQUIREMENTS

Saxon will administer a continuing, effective hearing conservation program, as described in the following paragraphs, whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures will be computed without regard to any attenuation provided by the use of personal protective equipment.

2.1 Written Program

Each site/facility shall develop a site/facility specific plan. The plan shall be reviewed on an annual basis and updated as changes in the company occur, or as changes are noted from OSHA, which requires revision of the plan. It shall encompass the total workplace, regardless of the number of workers employed or the number of work shifts. It is designed to establish clear goals and objectives. Affected employees shall be trained on the written plan.

2.2 Audiometric Testing Program

Saxon will maintain an audiometric testing program in accordance with the following guidelines:

1. Saxon will establish and maintain an audiometric testing program, free of charge, for employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels.

2. A licensed or certified audiologist, otolaryngologist, physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation will perform audiometric tests.

3. All audiograms obtained pursuant to this standard practice instruction will meet the requirements of Title 29 CFR Part 1910.95, Appendix C: Audiometric Measuring Instruments.

4. Saxon will provide protection against the effects of noise exposure when the occupational sound levels exceed those shown in Table 2.1, when measured on the A scale of a Type I or Type II sound level meter at slow response.
### Table 2.1

**PERMISSIBLE NOISE EXPOSURES**

<table>
<thead>
<tr>
<th>Duration per day, hours</th>
<th>Sound level dBA slow response</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>92</td>
</tr>
<tr>
<td>4</td>
<td>95</td>
</tr>
<tr>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2</td>
<td>102</td>
</tr>
<tr>
<td>1</td>
<td>105</td>
</tr>
<tr>
<td>0-1/2</td>
<td>110</td>
</tr>
<tr>
<td>1/4 or less</td>
<td>115</td>
</tr>
</tbody>
</table>

5. When noise levels are determined by octave band analysis, the equivalent A-weighted sound level will be determined by using the appropriate table from 29 CFR 1910.95, Appendix 1, Equivalent Sound Level Contours. Octave band sound pressure levels may be converted to the equivalent A-weighted sound level by plotting them on the graph shown as Figure G-9, 29 CFR 1910.95 and noting the A-weighted sound level corresponding to the point of highest penetration into the sound level contours. This equivalent A-weighted sound level, which may differ from the actual A-weighted sound level of the noise, will be used to determine exposure limits.

6. When employees are subjected to sound exceeding those listed in Table 2-1, Saxon will administer or have administered by qualified personnel, audiometric examinations, obtain valid audiograms, and ensure proper engineering or administrative controls are reviewed and implemented where feasible. If such controls fail to reduce sound levels within the levels of Table 2-1, personal protective equipment will be provided and used to reduce sound levels within the levels of the table.

7. If the variations in noise level involve intervals of 1 second or less, it will be considered to be continuous. When the daily noise exposure is composed of two (2) or more periods of noise exposure of different levels, their combined effect will be considered, rather than the individual effect of each.

8. Exposure to impulsive or impact noise will not exceed 140-dB peak sound level.
2.3 Hearing Conservation Program

1. An 8-hour time-weighted average of 85 decibels or a dose of fifty percent of the A table G-16-A in 29 CFR 1910.95. Appendix-A will be referred to as the action level.

2. Saxon will conduct noise dosimetry at each site/facility which will be designed to identify employees for inclusion in the hearing conservation program and to enable the proper selection of hearing protectors.

3. Saxon will use representative personal dosimetry to comply with the monitoring requirements of this procedure unless it can be shown that area dosimetry produces equivalent results.

4. All continuous, intermittent, and impulsive sound levels from 80 decibels to 130 decibels will be integrated into the noise measurements.

5. Instruments used to measure employee noise exposure will be calibrated before and after each measurement period to ensure measurement accuracy.

6. Monitoring will be repeated whenever a change in production, process, equipment, or controls increases noise exposures to the extent that:
   a. Additional employees may be exposed at or above the action level.
   b. The attenuation provided by hearing protectors being used by employees might be inadequate to meet the requirements of paragraph (j) of 29 CFR 1910.95.
   c. Saxon will notify each employee, exposed at or above an 8-hour time-weighted average of 85 decibels, of the monitoring results.
   d. Saxon will provide affected employees or their representatives with an opportunity to observe any noise measurements conducted.

2.4 Baseline Audiogram

1. Saxon will obtain a valid baseline audiogram within 1 year of an employee’s first exposure at or above the action level. Where baseline audiograms are obtained more than 6 months after the employee’s first exposure at or above the action level, employees will wear hearing protectors regardless of noise levels for any period exceeding 6 months after first exposure until the baseline audiogram is obtained.

2. Testing to establish a baseline audiogram will be preceded by at least 14 hours without exposure to workplace noise. Hearing protectors may be used as a substitute for the requirement that baseline audiograms be preceded by 14 hours without exposure to workplace noise.

3. Saxon will notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination.

2.5 Annual Audiogram

At least annually after obtaining the baseline audiogram, Saxon will obtain a new audiogram for each employee exposed at or above an 8-hour time-weighted average of 85 decibels.

2.6 Evaluation of Audiogram

Each employee’s annual audiogram will be compared to that employee’s baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. This comparison may be done by an individual trained to technician level. If the annual audiogram shows that an employee has suffered a standard threshold shift, a retest will be accomplished within 30 days and the results considered as the annual audiogram.
2.7 Problem Audiograms

1. Saxon will ensure that an audiologist, otolaryngologist, or physician review problem audiograms and determine whether there is a need for further evaluation. The reviewer will be provided the following information:

2. The baseline audiogram and most recent audiogram of the employee to be evaluated.

3. Measurements of background sound pressure levels in the audiometric test room, (if the testing was not conducted at the reviewer’s facility).

4. Records of audiometer calibrations, (if the testing was not conducted at the reviewer’s facility).

2.8 Follow-up Procedures

If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift has occurred, the employee will be informed of this fact in writing, within 21 days of the determination.

2.9 Standard Threshold Shift

Unless a physician determines that the standard threshold shift is not work related or aggravated by occupational noise exposure, Saxon will ensure that the following steps are taken when a standard threshold shift occurs:

1. Should the hearing threshold shift be work related the site/facility shall record this as an OSHA Recordable illness per OSHA recordkeeping guidelines.

2. Employees exposed or potentially exposed to high noise will be fitted with hearing protectors, trained in their use and care, and required to use them. For known high noise job assignments, employees will be fitted and trained prior to job assignment.

3. Employees already using hearing protectors will be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation if necessary.

4. Employees will be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if it is suspected that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

5. Employees will be informed of the need for an otological examination if a medical pathology of the ear that is unrelated to the use of hearing protectors is suspected.

6. If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour TWA of 90 decibels indicates that a standard threshold shift is not persistent, Saxon:

   a. Will inform the employee of the new audiometric interpretation.

   b. May discontinue the required use of hearing protectors for that employee.

2.10 Revised Baseline

An annual audiogram may be substituted for the baseline audiogram when, in the judgment of the audiologist, otolaryngologist, or physician who is evaluating the audiogram determine that:

1. The standard threshold shift revealed by the audiogram is persistent.

2. The hearing threshold shown in the annual audiogram indicates significant improvement over the baseline audiogram.
2.11 Hearing Protectors

1. Saxon will make hearing protectors available to all employees exposed to an 8-hour time-weighted average of 85 decibels or greater at no cost to the employees. Hearing protectors will be replaced at no cost as necessary.

2. Saxon will ensure that hearing protectors are worn:
   a. By any employee who is required by previous testing to wear personal protective equipment.
   b. By any employee who is exposed to an 8-hour time-weighted average of 85 decibels or greater, and who has not yet had a baseline audiogram established, or has experienced a standard threshold shift.

3. Employees will be given the opportunity to select their hearing protectors from different manufactures and of different sizes, of suitable hearing protectors provided.

4. Saxon will provide training in the use and care of all hearing protectors provided to employees.

5. Saxon will ensure proper initial fitting and supervise the correct use of all hearing protectors.

2.12 Hearing Protector Attenuation

1. Saxon will evaluate hearing protector attenuation for the specific noise environments in which the protector will be used.

2. Selected hearing protectors will attenuate employee exposure at least to an 8-hour time-weighted average of 90 decibels.

3. The adequacy of hearing protector attenuation will be re-evaluated whenever employee noise exposures increase to the extent that the hearing protectors provided may no longer provide adequate attenuation. More effective hearing protectors will be provided where necessary.

2.13 Estimating the Adequacy of Hearing Protector Attenuation.

1. For employees who have experienced a significant threshold shift, hearing protection provided will have an attenuation that is sufficient to reduce employee exposure to a TWA of 85 dB. The following method will be used to estimate the adequacy of hearing protector attenuation:
   a. The most convenient method is the Noise Reduction Rating (NRR) developed by the Environmental Protection Agency (EPA). According to EPA regulation, the NRR must be shown on the hearing protector package. The NRR is then related to an individual worker's noise environment in order to assess the adequacy of the attenuation of a given hearing protector. This procedure describes four methods of using the NRR to determine whether a particular hearing protector provides adequate protection within a given exposure environment. Selection among the four procedures is dependent upon the noise measuring instruments.
   b. Instead of using the NRR, site/facility may evaluate the adequacy of hearing protector attenuation by using one of the three methods developed by the National Institute for Occupational Safety and Health (NIOSH), which are described in the "List of Personal Hearing Protectors and Attenuation Data," HEW Publication No. 76-120, 1975, pages 21-37. These methods are known as NIOSH methods #1, #2 and #3. The NRR described below is a simplification of NIOSH method #2. The most complex method is NIOSH method #1, which is probably the most accurate method since it uses the largest amount of spectral information from the individual employee's noise environment.
   c. As in the case of the NRR method described below, if one of the NIOSH methods is used, the selected method must be applied to an individual's noise environment to assess the adequacy of the attenuation. Employers should be careful to take a sufficient number of measurements in order to achieve a representative sample for each time segment.
NOTE: The site/facility must remember that calculated attenuation values reflect realistic values only to the extent that the protectors are properly fitted and worn.

2.14 Assessing Hearing protector Adequacy

When using the NRR to assess hearing protector adequacy, one of the following methods must be used:

1. When using a dosimeter that is capable of C-weighted measurements:
   a. Obtain the employee's C-weighted dose for the entire work shift, and convert to TWA (see Appendix A, II).
   b. Subtract the NRR from the C-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

2. When using a dosimeter that is not capable of C-weighted measurements, the following method may be used:
   a. Convert the A-weighted dose to TWA (see Appendix A).
   b. Subtract 7 dB from the NRR.
   c. Subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

3. When using a sound level meter set to the A-weighting network:
   a. Obtain the employee's A-weighted TWA.
   b. Subtract 7 dB from the NRR, and subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

4. When using a sound level meter set on the C-weighting network:
   a. Obtain a representative sample of the C-weighted sound levels in the employee's environment.
   b. Subtract the NRR from the C-weighted average sound level to obtain the estimated A-weighted TWA under the ear protector.

5. When using area monitoring procedures and a sound level meter set to the A-weighting network.
   a. Obtain a representative sound level for the area in question.
   b. Subtract 7 dB from the NRR and subtract the remainder from the A-weighted sound level for that area.

6. When using area monitoring procedures and a sound level meter set to the C-weighting network:
   a. Obtain a representative sound level for the area in question.
   b. Subtract the NRR from the C-weighted sound level for that area.

2.15 Training Program

1. Saxon will institute a training program for all employees who are exposed to noise at or above an 8-hour time-weighted average of 85 decibels, and will ensure employee participation in such program.
2. The training program will be repeated annually for each employee included in the hearing conservation program. Information provided in the training program will be updated to be consistent with changes in protective equipment and work processes. Each employee will be informed of the following:

   a. The effects of noise on hearing.

   b. The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care.

   c. The purpose of audiometric testing and an explanation of the test procedures.

2.16 Access to information and training materials

   1. Saxon will make available to affected employees or their representative’s copies of this standard practice instruction and 29 CFR 1910.95 and will also post a copy in the workplace.

   2. Saxon will provide to affected employees any informational materials pertaining to 29 CFR 1910.95 that are supplied by OSHA.

2.17 Recordkeeping

   Saxon will maintain an accurate record of all employee noise dosimetry measurements.

   1. Audiometric tests:

       Saxon will retain all employee audiometric test records. This record will include as a minimum:

       a. Name and job classification of the employee.

       b. Date of the audiogram.

       c. The examiner’s name.

       d. Date of the last acoustic or exhaustive calibration of the audiometer.

       e. Employee’s most recent noise exposure assessment.

   2. Saxon will maintain accurate records of the measurements of the background sound pressure levels in audiometric test rooms.

   3. Saxon will retain audiometric and related records for at least the following periods:

       a. Noise exposure measurement records will be retained for thirty years.

       b. Audiometric test records will be retained for the duration of the affected employee’s employment plus thirty years.

   4. All records cited in this procedure will be provided upon request to employees, former employees, representatives designated by the individual employee, and representatives of OSHA. The provisions of 29 CFR 1910.20 apply to access to records under this section.

   5. if this employer ceases to do business, the records will be transferred to the successor employer and maintained by the successor employer. Should the company cease to function entirely, the records will be provided to the respective employees or as required by current law.
1.0 PURPOSE

To provide directions for the development of site specific Hazard Communication Program.

2.0 REQUIREMENTS

2.1 Written Plan

Each site/facility shall develop, implement, and maintain at the workplace, a written site specific Hazard Communication plan. This plan shall describe how:

1. The project will maintain labels and other forms of warning on chemicals in the workplace

2. The project will obtain Material Safety Data Sheets (MSDS), how the information will be used, how employees will be trained on the information, and how the MSDS file will be maintained and how employees will be provided access to MSDS.

3. The project will provide information and training to employees concerning the Hazard Communication Program and the hazards in their workplace.

4. A chemical inventory. A list of the chemicals known to be present in the workplace using an identity that is referenced on the appropriate MSDS (Form 56-310).

5. The methods Saxon will use to inform employees of the hazards of non-routine tasks and the hazards associated with chemicals contained in unlabeled pipes and vessels in work areas.

6. A detailed method for making chemical information available to other employers and their employees on Multi-employer worksites, including:
   a. The methods used to make sure MSDS are either stored in a central location or copied and provided to other employers:
   b. The methods used to inform other employers of any precautionary measures that need to be taken to protect employees during normal operating conditions and in foreseeable emergencies; and,
   c. The methods used to inform the other employers of the labeling systems used in the workplace.

2.2 Labeling

All containers of chemicals in the workplace shall be labeled, tagged, or marked with the following information:

1. The identity of the chemicals contained therein and

2. Appropriate hazard warnings

   Note: The diamond symbol (developed by the National Fire Protection Association, NFPA) provides a limited amount of information and does not satisfy the full requirements of this section. Other types of labeling systems, e.g. the HMIS label (Hazardous Materials Information System), are similar to the NFPA diamond; however, these have space on the label to include the identity of the chemical and a section where target organ information, special warnings and PPE requirements may be listed.

3. The manufacturer's labels and warning symbols shall not be removed or defaced unless a new label with the appropriate information is immediately affixed to the container.

2.3 MSDS FILE
An MSDS shall be requested and received from the manufacturer or distributor prior to ordering a chemical product. The purchasing agent (or individual responsible for ordering a material) shall forward a copy of the MSDS to the project EH&S professional. The purchasing agent (or receiving department) shall also maintain a copy of the MSDS in a binder or file of MSDS being reviewed.

1. An EH&S professional shall review the MSDS prior to ordering the material.
   a. When a MSDS arrives on site, the MSDS shall be reviewed to ensure that it is the most recent issue. The MSDS shall be marked with the date that the material was received. A copy of the MSDS shall be maintained in the safety office master MSDS file.
   b. Should the EH&S professional approve the material, then the material shall be ordered. The EH&S professional will supply the MSDS/Product Evaluation memo (Form 56-342) to the purchasing agent stating that the material has been approved and the EH&S professional shall place the MSDS in a file or binder of approved MSDS.
   c. If, based on the information in the MSDS, the EH&S professional feels the product should not be used on the site, project management shall be advised to find an alternative material. If no suitable alternative is available, then the EH&S professional shall provide conditional approval for the material with the understanding that the material will require special training, engineering controls, protective equipment, etc. as appropriate.
   d. A request for an MSDS shall also appear on the purchase order for any chemicals other than those excluded by Title 29 CFR Part 1926.59 (b)(6) (i-xii).
   e. Chemical product ordered/received by the project shall not be distributed into the workplace until the Purchasing Department has confirmed receipt of the accompanying MSDS.
   f. Manufacturers and distributors who fail to supply MSDS's will be notified that they will no longer be considered for chemical product purchases by the project.

2. Trade Secret

   Manufacturers are allowed to withhold some information concerning the identity of chemicals on the MSDS if that information is classified as a Trade Secret. However, medical personnel and health care professionals have steps by which they may request the information for emergency or evaluation purposes. If assistance is required due to the trade secret provision being used on an MSDS, contact EH&S.

2.4 Training

Employees shall be provided training on chemicals in their work area at the time of their initial assignment and whenever a new chemical is introduced into their work area. Employees shall be informed of:

1. The requirements of the hazard communication standard
2. Any operation in their work area where chemicals are present and
3. The location and availability of the written hazard communication program, including the required list of chemicals and MSDS.
4. Employee training shall include at least the following:
   a. Methods and observations that may be used to detect the presence or release of a chemical in the workplace
   b. The physical and health hazards of the chemicals in the work area;
c. The measures employees can take to protect themselves from chemical hazards including specific procedures implemented to protect employees from exposure to hazardous chemicals.

d. Specific details from the project's written hazard communication plan, including labeling information, MSDS's, and how to use the appropriate hazard information.

e. All training must be documented. The most current training outline shall be attached to each employee's training record.

f. A written examination following the training shall serve as documentation that the employee understood the information provided during the training session.

2.5 Non-Routine Tasks

1. Prior to performance of non-routine tasks, a hazard assessment shall be conducted. All management personnel are responsible for contacting the Project EH&S professional before any non-routine task is undertaken in their respective work area or anywhere else where employees have the potential for exposure to a hazardous material. This also applies to non-routine maintenance tasks. This is necessary to evaluate and communicate hazards to the affected employees.

2. Non-routine tasks will vary from project to project; therefore, the details of the hazard assessment to be conducted shall be specified in the site specific written program. The written program shall also indicate the method of transmitting the information concerning the hazards to the employees involved.

2.6 Coordination With Other Contractors

1. Arrangements shall be established with contractors on multi-employer sites for the transfer of Information concerning chemicals. The details of this arrangement shall be specified in the site specific written program.

2. Where the Saxon is the Construction Manager on a project, subcontractors will be required to prepare and implement their own hazard communication program that meets all the requirements of Title 29 CFR Part 1926.59. In addition, a copy of each contractor's chemical inventory and the MSDS for each material or chemical on the inventory shall be submitted to the Saxon EH&S Office upon request. This will provide a centralized location from which a MSDS may be obtained. This requirement, however, in no way substitutes for the contractor's maintenance of his own HAZCOM program or MSDS file.

2.7 Record Retention

1. MSDS will be treated as medical/exposure records and shall be maintained for the duration of the project plus 30 years.

2. Employee training records shall be maintained.
1.0 PURPOSE
To provide a procedure that ensures the quality and quantity of air used in supplied breathing air systems are adequate.

2.0 REQUIREMENT
2.1 Design
1. A low-level alarm is provided to alarm at a pressure and air supply volume sufficient to initiate the safe egress of all users.
2. Breathing air pipeline systems and outlets are color-coded and labeled “Breathing Air.”
3. Non-breathing air cylinders are not connected with personnel breathing air systems.
4. Individual particulate filters are used downstream of all components of breathing distribution systems that are potential sources of rust or other particles.
5. The filters are changed or cleaned periodically, per manufacturer recommendations.
6. Breathing air hoses shall meet the following requirements:
   a. They are dedicated solely to breathing air service to avoid mixing with potential contaminants.
   b. The maximum hose length for a breathing airline cannot exceed 250 feet.
   c. One-quarter inch Hansen fittings and three-quarter inch National Series A or compatible quick couplings are used only for breathing air service and only these fittings may be used on breathing air hoses.
   d. Green utility hoses are used only for breathing quality air and are equipped with three-quarter inch National Series A or compatible quick couplings.
   e. Self-Contained Breathing National Series A or compatible quick coupling apparatus (SCBA) bottles may be filled only by authorized persons and only from certified breathing air cylinders, or dedicated breathing air compressors.

2.2 Breathing Air Quality
1. The quality of breathing air supplied from vendor or on-site, from compressor supply systems or synthetically produced by mixing nitrogen and oxygen, shall meet applicable codes and regulations.
2. The applicable codes and regulations are CGA G-7.1, Type 1, Grade D Breathing Air and ANSI Z86.1.1983 which spell out appropriate certification testing requirements.
3. Each cylinder of breathing air filled by compressor supply system or synthetically produced breathing air through the mixture of nitrogen and oxygen are verified for oxygen content between 19.5 percent and 23.5 percent by analysis.
4. Breathing air cylinders have an oxygen test certification sticker attached to the end of each bottle or a single sticker may be used for a rack of bottles. If a single certification sticker is used on a rack of bottles, the supplier shall be able to provide test certificates verifying the breathing air cylinder contents are safe to use. SCBA bottles are not required to have a certification sticker.

2.3 Compressor Breathing Air Supplied Systems
1. Only compressors meeting the requirements of this procedure and dedicated solely to the compression of breathing air are used to provide personnel breathing air except where the portion of compressed air that is not used for breathing is discharged where contaminants cannot be back pressured into the supplied breathing air system. An example of this exception is a compressor that is supplying breathing air and at the same time is used as a driving force for pneumatic tools or for abrasive blasting.
2. Compressor intakes shall be located to avoid contaminated air.
3. Air quality checks shall be performed on all breathing air compressors every six months.
4. A positive alarm or other means of notification shall warn all potential and actual users of the breathing air system of an impending shutdown by high CO concentration, low pressure, high temperature or other cause. This requirement applies to atmospheres immediately dangerous to life or health.

5. A receiver of sufficient capacity is integrated into the air supply system, or a 5-minute escape bottle is provided to the respirator wearer to enable escape from a contaminated atmosphere in the event of immediate compressor failure. This requirement applies to atmospheres immediately dangerous to life or health.

6. Breathing air compressor systems are equipped with purifying beds and filters designed to provide quality-breathing air.

7. Compressor alarm systems and purification systems are inspected, tested, and maintained at a regular frequency. The frequency for the inspection and test of each component is posted on a checklist that is attached to the compressor. For example, if a compressor’s purification system has two filters, the maintenance and inspection of both filters are identified on the checklist. The checklist shall contain the components that comprise the compressors alarm system, purification system, and the test and inspection requirements for each component including date tested or inspected, and name of person that inspected or tested the component. See Attachment A for example of a checklist.

8. Oil-lubricated compressor systems are equipped with either a carbon monoxide (CO) alarm or a high oil temperature alarm and with an automatic shutdown system. If only a high temperature alarm is used, the air from the compressor is tested every two hours for CO. When CO alarms are used on oil-lubricated compressors, the alarm is actuated at a concentration of 10 ppm in the breathing air system. The CO concentration in a compressor breathing air system shall not exceed 10 ppm.

2.4 Cleaning

Components of the breathing air system shall be cleaned after each use.

2.5 Users of Supplied Breathing Air Systems:

1. Ensure respiratory equipment is clean prior to use.
2. Ensure there is a breathing air certification sticker on the breathing air bottle prior to use.
3. Ensure the following prior to use of a breathing air compressor system:
4. There is a checklist containing the components that comprise the compressors alarm system, purification system, and the test and inspection requirements for each component, including the date tested or inspected, and the name of person that inspected or tested the component.
5. The test and inspection dates are within the requirements specified on the checklist.
6. **DO NOT USE UTILITY OR "PLANT" AIR AS BREATHING AIR. DO NOT USE "PURE" OXYGEN (OVER 23.5%) AS BREATHING AIR.**

2.6 Training

1. Training requirements for the use of respiratory protection and breathing air bottles are found in the Respiratory Protection Procedure.
2. Training is required prior to using a breathing air compressor. Training consists of the compressor operation and alarm systems and the requirements of the procedure.

3.0
## Attachment A - Example of an Annual Checklist

<table>
<thead>
<tr>
<th>Component</th>
<th>Requirement</th>
<th>Date</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Filter</td>
<td>Renovate every 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Filter</td>
<td>Renovate every 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Quality Test</td>
<td>Test are performed every 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Quality Test</td>
<td>Test are performed every 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Filter</td>
<td>Renovate every 3 months (1&lt;sup&gt;st&lt;/sup&gt; Quarter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Filter</td>
<td>Renovate every 3 months (2&lt;sup&gt;nd&lt;/sup&gt; Quarter)</td>
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</tr>
<tr>
<td>Secondary Filter</td>
<td>Renovate every 3 months (3&lt;sup&gt;rd&lt;/sup&gt; Quarter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Filter</td>
<td>Renovate every 3 months (4&lt;sup&gt;th&lt;/sup&gt; Quarter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO/Temp. Alarm</td>
<td>Calibrated monthly during use</td>
<td></td>
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<td>CO/Temp. Alarm</td>
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</tr>
</tbody>
</table>
1.0 PURPOSE

To provide direction to reduce and control the hazards associated with temperature extremes in the workplace.

2.0 REQUIREMENTS

2.1 General – Heat

1. Environmental factors such as temperature, humidity, radiant heat and air movement shall be evaluated in all work areas.

2. Employees shall be instructed in the early warning signs of heat related illnesses.

3. Employees shall be evaluated for fitness to work in areas of extreme heat with age, weight, physical fitness, metabolism, alcohol or drug use, project work hours, general medical conditions including medications, taken into consideration.

4. An adequate supply of cool, potable water for drinking purposes shall be provided.

5. Salt tablets shall not be provided by Saxon. Electrolyte replacement drinks may be provided.


7. When working near sources of radiant heat the placement of shields or barriers, which are radiant-reflective or heat-absorbent, between the source and the employee are a means to reduce heat exposure.

8. When possible the heat source shall be isolated by turning it off.

9. The substitution of mechanical means to perform a specific job application shall be incorporated whenever possible.

10. The use of fans shall be used to increase the turnover rate of interior air and remove heat from the enclosure.

11. Where possible shade tents or covers shall be erected. The use of shaded rest areas is encouraged.

12. Employees shall be educated in the use, and encouraged to dress in breathable layers of clothing.

13. Should job tasks require the use of impermeable protective clothing, the use of auxiliary cooling systems may be required.

14. When conditions allow, schedule work activities in the evening or early morning hours.

15. New employees and employees returning from a greater than two week absence may require a five day acclimation period.

16. A work/rest regime may be required in situations where engineering and other controls are not adequate. This will require the monitoring of the ambient temperature, employee physical condition, including heart rate.

2.2 Training

Employees and supervision must understand the importance of early recognition and treatment of heat related stress. All employees with a potential exposure shall receive the following training at a minimum:

1. Heat stress, its components and effects.
2. Signs and symptoms of heat disorders.


4. Pre-disposing factors to heat stress; drug use, (including therapeutic) and alcohol in a hot work environment.

5. Protective clothing, equipment and its impact in hot environments.

6. Environmental and medical surveillance programs.

7. Importance of maintaining body fluids at normal levels.

8. Various engineering controls to reduce the impact of hot environments.

9. Administrative measures such as work/rest regimes in use to prevent heat stress.

10. Acclimation; how it is achieved and its limitations.

11. The components of the heat stress prevention program.

2.3 General – Cold

1. All work areas shall be evaluated with the occurrence of cold weather for possible exposure to hypothermia. Windy and wet conditions will increase the hazards. It does not have to be freezing or below to have problems with hypothermia.

2. Employees shall be instructed in prevention and the early signs of hypothermia.

3. Employees shall be encouraged to dress in layers.

4. Where practical, weather protection shall be erected.

5. Should an employee’s clothing become saturated, the employee must change into dry clothing.

6. Employees shall be assigned a “buddy”, allowing no employee to work alone in cold weather conditions.

7. At the first suspicion of frostbite any employee is to immediately seek medical attention.

8. If appropriate, space heaters shall be provided in the work area to warm hands, feet etc. All fire and electrical safe practices shall be observed when using space heaters. Space heaters shall be shut off when the site is not occupied.

9. Employees shall avoid overdressing when going into warm areas to performing strenuous activities.

10. Work shall be arranged in such a way that sitting still or standing for long periods is minimized.

11. Procedures shall be in place for working in whiteout blizzard conditions.

2.4 Training

Employees and supervision must understand the importance of early recognition and treatment of cold related stress. All employees with a potential exposure shall receive the following training at a minimum.
1. Cold stress, hypothermia, its component and effects.
2. Signs and symptoms of cold related injuries.
3. First-aid procedures for and potential side effects of cold stress.
4. Pre-disposing factors to hypothermia.
5. Protective clothing, equipment and its impact on cold environments.
6. Environmental and medical surveillance programs.
7. Working and walking with cold, snow and ice conditions.
1.0 PURPOSE

To provide requirements for protecting Saxon employees from work-related musculoskeletal disorders (WMSDs).

2.0 REQUIREMENTS

2.1 General

1. A site/facility specific ergonomics program shall be developed and implemented. Tasks shall be designed to adapt the physical requirements of the job to the physical capacity of the employee. Specific areas of concern involve tasks which repeat the same motion throughout the day, place the employee in an awkward position, require a great deal of force or require repeated heavy lifting.

2. The ergonomic program shall include as a minimum the following items:

3. Management and employee responsibilities shall be defined. This will include the individuals responsible for the development and implementation of the ergonomics program. The authority, resources, information and training required to implement the program shall be identified. The employee's responsibilities can include reporting WMSD hazards and their involvement in the development of JPSAs and training.

4. A means of open communication of WMSD information and concerns shall be established. All methods of garnering and dissemination of information regarding WMSD potentials or presence shall be identified, e.g., training programs, handouts, posters, etc.

5. An evaluation of job site/facility hazards shall be performed. In addition a job planning safety analysis (JPSA) shall be performed for each suspect task. Measures to eliminate or control the hazards identified shall be developed. All evaluations and analysis shall be documented.

6. Employee training plans, which address the recognition, control and prevention of WMSDs shall be in place.

7. Medical management protocols shall be defined. Medical evaluation, treatment and accommodations shall be monitored for effectiveness. The results shall be communicated to the medical manager. Work restrictions which are in place per medical direction shall be evaluated monthly.

8. Program evaluation protocols shall be established. These protocols shall define the frequency and scope of the evaluations. A means for the implementation of the findings shall be the incorporated into the program. A schedule for the implementation of the recommendations from the program evaluation shall be in place.

9. Recordkeeping procedures shall be defined. All required documentation shall be retained on the site. At the end of the project all records shall be retained in the company archives with the project records.

2.2 Engineering Controls

1. Material handling equipment and tools shall be used.

2. Where feasible, fixtures or jigs shall be used to hold work.

3. Locate controls, tools and materials with the most frequent activities performed in a neutral position.

4. Selection of tools.

5. Hand tools shall maintain the wrist in a neutral position.

6. Hand tools shall provide a sufficient hand/tool contact area to spread the stress evenly over muscles and joints.
7. All tools shall be in good condition with cutting edges sharp and gripping area repaired.

8. Pneumatic tools which blow air on the employees hand shall be avoided.

9. Hand tool shafts shall be the correct length for the job.

10. Non-single finger controls are preferable.

11. Work areas shall be designed to facilitate proper lifting techniques.

12. Materials shall be staged, stored to reduce excessive reach.

13. When pushing or pulling must occur, pushing shall be preferred.

2.3 Administrative Controls

1. Exposure to WMSD shall be reduced by the rotation of employees.

2. Employees shall be assigned tasks that meet the physical limitations of the individual.

3. Employees shall be provided with rest breaks when tasks require continuous repetitive motion.

4. Employees shall be provided with PPE of an appropriate size when it is required.

2.4 Employee Training

1. Employees shall receive instruction in all aspects of the site-specific ergonomic program.

2. Employees shall be instructed in the recognition of WMSD signs, symptoms and the importance of early reporting.

3. Employees shall be instructed in the procedure required to report WMSD signs, symptoms, hazards and how to make recommendations for corrections to the site EH&S staff.

4. Employees shall be instructed in the known potential WMSD causing tasks in the work area and the procedures required to perform those tasks.

5. Employees shall be instructed in the job specific controls and work practices, which have been implemented.

6. Employees shall receive specific instruction upon initial assignment and when significant changes take place.

2.5 Documentation

1. The inspections for the evaluation of job site hazards shall be documented.

2. Employee training records shall be maintained and updated as required.

3. All medical recommendations shall be documented.

4. Program evaluations shall be documented with the information provided to the affected employees.
1.0 PURPOSE

To provide directions for the protection of employees from occupational exposures to blood, body fluids or other potentially infectious materials.

2.0 REQUIREMENTS

2.1 Awareness Training

All employees shall receive bloodborne pathogen awareness training. Employees who have potential for exposure to blood or other body fluids that may result from the performance of their duties (such as first responders, EMT, paramedics, or nurses) must have more extensive training. This training must include:

1. An explanation of the OSHA bloodborne pathogen (BBP) standard and the location of an accessible copy of the standard.

2. A general explanation of the epidemiology and symptoms of bloodborne diseases.

3. An explanation of the modes of transmission of bloodborne pathogens.

4. An explanation of the Saxon site specific exposure control plan and the means by which an employee can obtain a copy of the written plan.

5. An explanation of the appropriate methods for recognizing tasks and procedures that may involve exposure to blood or other body fluids.

6. An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment (PPE).

7. Information of types, proper use, location, removal, handling, decontamination and/or disposal of PPE.

8. An explanation of the basis of selection of PPE

9. Information on the Hepatitis B vaccine.

10. Information in the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious material.

11. Information on the post-exposure follow up that will be provided for the employee following an exposure incident.

12. An explanation of the signs and labels.

13. The training is required initially, and on an annual basis.

2.2 Written Program

A written program is required for each site/facility where employees could have an occupational exposure to blood or other body fluids. The written program must be designed to eliminate or minimize employee exposure and must contain, as a minimum, the elements listed below:

1. The determination concerning which employees have anticipated or potential exposure to blood or other body fluids.
2. The methods of compliance i.e., engineering controls, work practices, including universal precautions, hand-washing, waste management, sharps control, personal protective equipment (PPE), housekeeping and labeling of trash container.

3. The methods of compliance with the requirement for pre-exposure Hepatitis B (See Appendix B) vaccination series and post exposure evaluation/follow-up. This shall include the required statement regarding an employee’s refusal to take the hepatitis vaccination.

4. A description of the information and training program used for bloodborne hazards.

2.3 The Methods for Recordkeeping

1. Medical Surveillance:

   Employees who have potential for exposure to blood or other body fluids that may result from the performance of their duties (such as first responders, EMT, nurses, or paramedics), must be offered the pre-exposure Hepatitis B vaccination series. Other employees must have the Hepatitis B vaccination within 72 hours of a reported BBP exposure incident. All other areas of post-exposure follow up will be performed after a BBP exposure incident.

2. Testing/Inspection: Not Required.

3. Misc. requirements: Extensive recordkeeping requirements.

3.0
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to inorganic lead to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to lead at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of fifty micrograms per cubic meter of air (50 µg/m³) averaged over an 8-hour period.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific lead hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1025 and/or 1926.62:

   a. Employee Information and Training
   b. Contaminant Specific Hazard Communication
   c. Exposure Assessment
   d. Monitoring Observation Procedures
   e. Engineering and Work Practice Controls
   f. Respiratory Protection
   g. Protective Work Clothing and Equipment
   h. Housekeeping
   i. Hygiene Facilities and Practices
   j. Medical Surveillance
   k. Medical Removal Program
   l. Recordkeeping and Documentation
   m. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

**Action level:**
means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 µg/m³) calculated as an 8-hour time-weighted average (TWA).

**Assistant Secretary:**
means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

**Director:**
means the Director, National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

**Lead:**
means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds.

**Permissible exposure limit:**
The employer shall assure that no employee is exposed to lead at concentrations greater than fifty micrograms per cubic meter of air (50 µg/m³) averaged over an 8-hour period.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to inorganic arsenic to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to arsenic at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of ten micrograms per cubic meter of air (10 µg/m$^3$) averaged over an 8-hour period.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific arsenic hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1018 and/or 1926.1118:

   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance
   l. Medical Removal Program
   m. Recordkeeping and Documentation
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

Action level means a concentration of inorganic arsenic of 5 micrograms per cubic meter of air (5 µg/m³) averaged over any eight (8) hour period.

Assistant Secretary means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

Authorized person means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures under paragraph (e) of this section.

Director means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

Inorganic arsenic means copper aceto-arsenite and all inorganic compounds containing arsenic except arsine, measured as arsenic (As).

Permissible exposure limit. The employer shall assure that no employee is exposed to inorganic arsenic at concentrations greater than 10 micrograms per cubic meter of air (10 µg/m³), averaged over any 8-hour period.

Notification of use: Within 60 days after the introduction of inorganic arsenic into the workplace, every employer who is required to establish a regulated area in his workplaces shall report in writing to the OSHA area office for each such workplace:

The address of each such workplace;

The approximate number of employees who will be working in regulated areas; and a brief summary of the operations creating the exposure and the actions which the employer intends to take to reduce exposures.

Whenever there has been a significant change in the information required by paragraph (d)(1) of this section the employer shall report the changes in writing within 60 days to the OSHA area office.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to cadmium to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to cadmium at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of five micrograms per cubic meter of air \( (5.0 \mu g/m^3) \) averaged over an 8-hour period.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific cadmium hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1027 and/or 1926.63:
   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

Action level (AL) is defined as an airborne concentration of cadmium of 2.5 micrograms per cubic meter of air (2.5 µg/m³), calculated as an 8-hour time-weighted average (TWA).

Assistant Secretary means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas or any person authorized by the OSH Act or regulations issued under it to be in regulated areas.

Director means the Director of the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

Employee exposure and similar language referring to the air cadmium level to which an employee is exposed means the exposure to airborne cadmium that would occur if the employee were not using respiratory protective equipment.

Final medical determination is the written medical opinion of the employee’s health status by the examining physician under paragraphs (l)(3)-(12) of this section or, if multiple physician review under paragraph (l)(13) of this section or the alternative physician determination under paragraph (l)(14) of this section is invoked, it is the final, written medical finding, recommendation or determination that emerges from that process.

High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of monodispersed particles of 0.3 micrometers in diameter.

Regulated area means an area demarcated by the employer where an employee’s exposure to airborne concentrations of cadmium exceeds, or can reasonably be expected to exceed the permissible exposure limit (PEL).

Permissible Exposure Limit (PEL). The employer shall assure that no employee is exposed to an airborne concentration of cadmium in excess of five micrograms per cubic meter of air (5 µg/m³), calculated as an eight-hour time-weighted average exposure (TWA).
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to acrylonitrile to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to acrylonitrile at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of two parts per million (2.0 ppm) averaged over an 8-hour period.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific acrylonitrile hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1045 and/or 1926.1145:

   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to MDA to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to MDA at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of ten parts per billion (10.0 ppb) averaged over an 8-hour period or a Short Term Exposure Limit (STEL) of 100 ppb.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific MDA hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1050 and/or 1926.60:

   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

Action level means a concentration of airborne MDA of 5 parts per billion (ppb) as an eight (8)-hour time-weighted average.

Authorized person means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees, for the purpose of exercising the right to observe monitoring and measuring procedures, or any other person authorized by OSHA or regulations issued under the OSHA Act.

Container means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, commercial packaging or the like, but does not include piping systems.

Dermal exposure to MDA occurs where employees are engaged in the handling, application or use of mixtures or materials containing MDA, with any of the following non-airborne forms of MDA:

· Liquid, powdered, granular, or flaked mixtures containing MDA in concentrations greater than 0.1% by weight or volume; and
· Materials other than "finished articles" containing MDA in concentrations greater than 0.1% by weight or volume.

Director means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

Emergency means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which results in an unexpected and potentially hazardous release of MDA.

Employee exposure means exposure to MDA which would occur if the employee were not using respirators or protective work clothing and equipment.

Finished article containing MDA is defined as a manufactured item:

· Which is formed to a specific shape or design during manufacture;
· Which has end use function(s) dependent in whole or part upon its shape or design during end use; and
· Where applicable, is an item which is fully cured by virtue of having been subjected to the conditions (temperature, time) necessary to complete the desired chemical reaction.

4,4’Methylenedianiline or MDA means the chemical, 4,4’-diaminodiphenylmethane, Chemical Abstract Service Registry number 101-77-9, in the form of a vapor, liquid, or solid. The definition also includes the salts of MDA.

Regulated areas means areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits, or where dermal exposure to MDA can occur.

STEL means short term exposure limit as determined by any 15 minute sample period.

Permissible exposure limits (PEL): an airborne concentration of MDA of ten parts per billion (10 ppb) as an 8-hour time-weighted average or a STEL of 100 ppb.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to benzene to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to benzene at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of one part per million (1.0 ppm) averaged over an 8-hour period or a Short Term Exposure Limit (STEL) of benzene in excess of five (5) ppm as averaged over any 15 minute period.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific benzene hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1028 and/or 1926.1128:

   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

Action level means an airborne concentration of benzene of 0.5 ppm calculated as an 8-hour time-weighted average.

Authorized person means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures, or any other person authorized by the OSHA Act or regulations issued under the OSHA Act.

Benzene (C₆H₆) (CAS Registry No. 71-43-2) means liquefied or gaseous benzene. It includes benzene contained in liquid mixtures and the benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene contained in solid materials.

Bulk wholesale storage facility means a bulk terminal or bulk plant where fuel is stored prior to its delivery to wholesale customers.

Container means any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, or the like, but does not include piping systems.

"Day" means any part of a calendar day.

Emergency means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which may or does result in an unexpected significant release of benzene.

Employee exposure means exposure to airborne benzene which would occur if the employee were not using respiratory protective equipment.

Regulated area means any area where airborne concentrations of benzene exceed or can reasonably be expected to exceed, the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.

Vapor control system means any equipment used for containing the total vapors displaced during the loading of gasoline, motor fuel or other fuel tank trucks and the displacing of these vapors through a vapor processing system or balancing the vapor with the storage tank. This equipment also includes systems containing the vapors displaced from the storage tank during the unloading of the tank truck which balance the vapors back to the tank truck.

Permissible exposure limits (PELs):

- **Time-weighted average limit (TWA):** an airborne concentration of benzene of one part of benzene per million parts of air (1 ppm) as an 8-hour time-weighted average.

- **Short-term exposure limit (STEL):** an airborne concentration of benzene in excess of five (5) ppm as averaged over any 15 minute period.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to silica to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to silica at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) established by Title 29 CFR Subpart Z - Part 1910.1000 Table Z-3: Mineral Dusts.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific silica hazards at each site/facility. The written plan must address the following issues, in accordance with the OSHA Special Emphasis Program for Silica Exposure, and as referenced in Title 29 CFR Subpart Z - Part 1910.1000 Table Z-3: Mineral Dusts:

   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.
Crystalline silica, is defined as silicon dioxide (SiO$_2$). "Crystalline" refers to the orientation of SiO$_2$ molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to consideration as silica.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to asbestos to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to asbestos at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of 0.1 fiber per cubic centimeter of air as an eight (8)-hour time-weighted average (TWA) or an Excursion limit value of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes as determined by the method prescribed Appendix A of Title 29 CFR Part 1910.1001.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific asbestos hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1001 and/or 1926.1101:
   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

Asbestos-containing material (ACM) means any material containing more than 1% asbestos.

Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas.

Building/facility owner is the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

Certified industrial hygienist (CIH) means one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

Employee exposure means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Fiber means a particulate form of asbestos 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of 0.3 micrometer diameter mono-disperse particles.

Homogeneous area means an area of surfacing material or thermal system insulation that is uniform in color and texture.

Industrial hygienist means a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

PACM means "presumed asbestos containing material."

Presumed asbestos containing material means thermal system insulation and surfacing material found in buildings constructed no later than 1980.

Regulated area means an area established by the employer to demarcate areas where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limits.

Surfacing ACM means surfacing material which contains more than 1% asbestos.

Surfacing material means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

Thermal System Insulation (TSI) means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

Thermal System Insulation ACM means thermal system insulation which contains more than 1% asbestos.

Permissible exposure limit (PELS):

Time-weighted average limit (TWA): an airborne concentration of asbestos of 0.1 fiber per cubic centimeter of air as an eight (8)-hour time-weighted average (TWA) as determined by the method prescribed in Appendix A of Title 29 CFR Part 1910.1001.

Excursion limit: an airborne concentration of asbestos equal to 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes as determined by the method prescribed in Appendix A of Title 29 CFR Part 1910.1001.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to 1, 3-Butadiene (BD) to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to BD at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of one (1) part BD per million parts of air (1.0 ppm) measured as an eight (8)-hour time-weighted average or a Short-Term Exposure Limit (STEL) of BD in excess of five parts of BD per million parts of air (5.0 ppm) as determined over a sampling period of fifteen (15) minutes.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific BD hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1051:

   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

Action level means a concentration of airborne BD of 0.5 ppm calculated as an eight (8)-hour time-weighted average.

Authorized person means any person specifically designated by the employer, whose duties require entrance into a regulated area, or a person entering such an area as a designated representative of employees to exercise the right to observe monitoring and measuring procedures, or a person designated under the OSHA Act or regulations issued under the OSHA Act to enter a regulated area.

1,3-Butadiene: an organic compound with chemical formula CH₂=CH-CH=CH₂ that has a molecular weight of approximately 54.15 grams/mole.

Complete Blood Count (CBC) means laboratory tests performed on whole blood specimens and includes the following: White blood cell count (WBC), hematocrit (Hct), red blood cell count (RBC), hemoglobin (Hgb), differential count of white blood cells, red blood cell morphology, red blood cell indices, and platelet count.

Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of BD.

Employee exposure means exposure of a worker to airborne concentrations of BD which would occur if the employee were not using respiratory protective equipment.

Objective data means monitoring data, or mathematical modeling or calculations based on composition, chemical and physical properties of a material, stream or product.

Permissible Exposure Limits, PELs means either the 8 hour Time Weighted Average (8-hr TWA) exposure or the Short-Term Exposure Limit (STEL).

Physician or other licensed health care professional is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide one or more of the specific health care services required by the BD regulations.

Regulated area means any area where airborne concentrations of BD exceed or can reasonably be expected to exceed the 8-hour time weighted average (8-hr TWA) exposure of 1 ppm or the short-term exposure limit (STEL) of 5 ppm for 15 minutes.

Permissible exposure limits (PELs):

Time-Weighted Average (TWA): an airborne concentration of BD in excess of one (1) part BD per million parts of air (1.0 ppm) measured as an eight (8)-hour time-weighted average.

Short-Term Exposure Limit (STEL): an airborne concentration of BD of five parts of BD per million parts of air (5.0 ppm) as determined over a sampling period of fifteen (15) minutes.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to formaldehyde to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to formaldehyde at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of 0.75 parts formaldehyde per million parts of air (0.75 ppm) as an 8-hour TWA, or a Short Term Exposure Limit (STEL) of two parts formaldehyde per million parts of air (2.0 ppm) as a 15-minute STEL.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific formaldehyde hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1048 and/or Title 29 CFR Part 1926.1148:
   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.
GLOSSARY

Action level means a concentration of 0.5 part formaldehyde per million parts of air (0.5 ppm) calculated as an eight (8)-hour time-weighted average (TWA) concentration.

Authorized Person means any person required by work duties to be present in regulated areas, or authorized to do so by the employer, or by the OSHA Act.

Emergency is any occurrence, such as but not limited to equipment failure, rupture of containers, or failure of control equipment that results in an uncontrolled release of a significant amount of formaldehyde.

Employee exposure means the exposure to airborne formaldehyde which would occur without corrections for protection provided by any respirator that is in use.

Formaldehyde means the chemical substance, HCHO, Chemical Abstracts Service Registry No. 50-00-0.

Permissible Exposure Limits (PELs)

Time Weighted Average (TWA): an airborne concentration of formaldehyde of 0.75 parts formaldehyde per million parts of air (0.75 ppm) as an 8-hour TWA.

Short Term Exposure Limit (STEL): airborne concentration of formaldehyde of two parts formaldehyde per million parts of air (2.0 ppm) as a 15-minute STEL.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to MC to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to MC at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of twenty-five parts of MC per million parts of air (25 ppm) as an 8-hour Time Weighted Average (TWA) or the Short-Term Exposure Limit (STEL) of one hundred and twenty-five parts of MC per million parts of air (125 ppm) as determined over a sampling period of fifteen minutes.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific MC hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1052 and/or Title 29 CFR Part 1926.1152:
   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

Action level means a concentration of airborne MC of 12.5 parts per million (ppm) calculated as an eight (8)-hour time-weighted average (TWA).

Authorized person means any person specifically authorized by the employer and required by work duties to be present in regulated areas, or any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring and measuring procedures, or any other person authorized by the OSH Act or regulations issued under the Act.

Emergency means any occurrence, such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment, which results, or is likely to result in an uncontrolled release of MC. If an incidental release of MC can be controlled by employees such as maintenance personnel at the time of release and in accordance with the leak/spill provisions required by the regulation, it is not considered an emergency as defined by the regulation.

Employee exposure means exposure to airborne MC which occurs or would occur if the employee were not using respiratory protection.

Methylene chloride (MC): an organic compound with chemical formula, CH₂Cl₂. Its Chemical Abstracts Service Registry Number is 75-09-2. Its molecular weight is 84.9 grams/mole.

Physician or other licensed health care professional is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by the regulation.

Regulated area means an area, demarcated by the employer, where an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL.

Symptom means central nervous system effects such as headaches, disorientation, dizziness, fatigue, and decreased attention span; skin effects such as chapping, erythema, cracked skin, or skin burns; and cardiac effects such as chest pain or shortness of breath.

Permissible exposure limits (PELs)

Time-Weighted Average (TWA): an airborne concentration of MC of twenty-five parts of MC per million parts of air (25 ppm) as an 8-hour TWA.

Short-Term Exposure Limit (STEL): an airborne concentration of MC of one hundred and twenty-five parts of MC per million parts of air (125 ppm) as determined over a sampling period of fifteen minutes.
1.0 PURPOSE

To provide requirements for developing an employee exposure control program applicable to all Saxon sites/facilities and activities.

2.0 REQUIREMENTS

2.1 General

1. Consideration shall be given to the use of effective engineering controls to eliminate or reduce exposure to VC to levels that are as low as reasonably achievable. At a minimum, Saxon shall assure that no employee is exposed to VC at concentrations greater than the OSHA required Permissible Exposure Limit (PEL) of 1 part per million (1.0 ppm) averaged over any 8-hour period. No employee may be exposed to vinyl chloride at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes. Additionally, no employee may be exposed to vinyl chloride by direct contact with liquid vinyl chloride.

2. When feasible engineering controls are not effective for exposure control, employees will use appropriate Personal Protective Equipment (PPE) and respiratory protection equipment provided by the company at no charge.

2.2 Written Plan

1. Site/facility Management must develop a written exposure control plan for the specific VC hazards at each site/facility. The written plan must address the following issues as required by OSHA in Title 29 CFR Part 1910.1017 and/or Title 29 CFR Part 1926.1117:

   a. Employee Information and Training
   b. Establishment of Regulated Areas
   c. Contaminant Specific Hazard Communication
   d. Exposure Assessment
   e. Monitoring Observation Procedures
   f. Engineering and Work Practice Controls
   g. Respiratory Protection
   h. Protective Work Clothing and Equipment
   i. Housekeeping
   j. Hygiene Facilities and Practices
   k. Medical Surveillance & Medical Removal Program
   l. Recordkeeping and Documentation
   m. Emergency Situations
   n. Information from Regulatory Appendices

2. Templates for such exposure control plans are available upon request from the Saxon Manager of Industrial Hygiene.

3.0
GLOSSARY

"Action level" means a concentration of vinyl chloride of 0.5 ppm averaged over an 8-hour work day.

"Authorized person" means any person specifically authorized by the employer whose duties require him to enter a regulated area or any person entering such an area as a designated representative of employees for the purpose of exercising an opportunity to observe monitoring and measuring procedures.

"Emergency" means any occurrence such as, but not limited to, equipment failure, or operation of a relief device which is likely to, or does, result in massive release of vinyl chloride.

"Fabricated product" means a product made wholly or partly from polyvinyl chloride, and which does not require further processing at temperatures, and for times, sufficient to cause mass melting of the polyvinyl chloride resulting in the release of vinyl chloride.

"Hazardous operation" means any operation, procedure, or activity where a release of either vinyl chloride liquid or gas might be expected as a consequence of the operation or because of an accident in the operation, which would result in an employee exposure in excess of the permissible exposure limit.

"Polyvinyl chloride" means polyvinyl chloride homopolymer or copolymer before such is converted to a fabricated product.

"Vinyl chloride" means vinyl chloride monomer.

Permissible exposure limits:

- Employees may be exposed to VC at concentrations greater than 1 ppm averaged over any 8-hour period, and
- Employees may be exposed to VC at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes.
- Employees may not be exposed to VC by direct contact with liquid VC.
1.0 PURPOSE

To establish the minimum requirements to protect employees from the hazards associated with abrasive blasting operations.

2.0 REQUIREMENTS

2.1 General

1. In order to eliminate the health hazard associated with silica based abrasives, and to minimize the generation of hazardous waste, non-mineral based abrasive blast media shall be used whenever possible, e.g., steel shot, baking soda, glass beads, carbon dioxide.

2. The EH&S Department shall conduct a review of MSDS for all abrasive blast media(s) prior to the use of the material. Blast media containing silica and/or toxic metals, such as lead and arsenic shall not be used.

3. Conditional use of potentially toxic blast media may be granted by the Division EH&S Office subsequent to review of the material, its intended use, and protective measures to be employed.

4. Appropriate personal protective equipment shall be used by individuals performing the abrasive blasting and those personnel working in the vicinity of the operation who may be exposed to dust and/or rebounding blast media.

5. Management of spent waste blast media and blasting debris shall be in accordance with client requirements and/or Federal, State and Local regulations.

6. Waste abrasive blast media and blasting debris shall not be permitted to accumulate in or around the abrasive blasting cleaning operation. Routine clean-up of debris shall be maintained during the operation. Clean-up shall be accomplished using methods that minimize generation of fugitive dust and personnel contamination. Clean-up should include the use of HEPA filter vacuums and wet methods. Personnel involved with debris clean-up shall use PPE that is appropriate for the task.

7. Blast cleaning nozzles shall be equipped with an operating valve which must be held open manually and will shut off automatically when released by the operator (dead-man switch). A support shall be provided to mount the nozzle when not in use.

8. Operators of the abrasive blasting equipment shall be trained and knowledgeable in the safe use and maintenance of the equipment.

9. Respiratory equipment shall be selected, used and maintained in accordance with Title 29 CFR Part 1910.134.

10. Where feasible, abrasive blasting operations shall be conducted in an isolated area of the facility. Appropriate enclosure(s), warning barricades and signs shall be erected around the perimeter of the blast cleaning area to minimize the hazard to facility personnel and to contain the migration of rebounding and spent abrasive blast media.

11. Where not feasible to isolate the blast cleaning operation(s), e.g., tank or vessel cleaning, every attempt shall be made to control and limit personnel access into the area of operation. To the degree feasible, appropriate enclosure(s), warning barricades and signs shall be erected around the perimeter of the blast cleaning area to minimize the hazard to facility personnel and to contain the migration of rebounding and spent abrasive blast media.

12. Provision of Grade “D” breathing air shall be verified through routine, quantitative measurement of the supplied air quality, in accordance with Title 29 CFR Part 1910.94(a)(6). Only compressors equipped and verified to supply Grade "D" breathing air shall be used to provide air to supplied air respirators. Compressed breathing air shall meet at least the requirements for Grade “D” breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
o. Oxygen content (v/v) of 19.5-23.5%;
p. Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
q. Carbon monoxide (CO) content of 10 ppm or less;
r. Carbon dioxide content of 1,000 ppm or less; and
s. Lack of noticeable odor.

13. Compressed oxygen shall not be used in atmosphere-supplying respirators that have previously used compressed air.
14. Saxon shall ensure that oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.
15. Cylinders used to supply breathing air to respirators shall meet the following requirements:

   a. Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (Title 49 CFR Part 173 and Part 178);

   b. Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

   c. The moisture content in the cylinder does not exceed a dew point of -50°F (-45.6°C) at 1 atmosphere pressure.

   d. Compressors used to supply breathing air to respirators are constructed and situated so as to:

      1. Prevent entry of contaminated air into the air-supply system;

      2. Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (5.56°C) below the ambient temperature;

      3. Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

      4. Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.

   e. For compressors that are not oil-lubricated, Saxon shall ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.

   f. For oil-lubricated compressors, Saxon shall use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

   g. Breathing air couplings shall be incompatible with outlets for nonrespirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.

   h. Filters, and other air cleaning devices, on breathing air compressors shall be maintained in accordance with manufacturer’s recommendations.

   i. Where air compressors are equipped with a receiver tank, the tank shall be in compliance with all local pressure vessel requirements.

   j. When bottled compressed air is used as a source of breathing air, the air quality shall be Grade D or better. Certification of air quality shall be obtained from the supplier prior to using the air.

   k. Only compressed ambient air shall be used. Blended or mixed air is not acceptable.

2.2 Implementation

1. Hazard Recognition and Exposure Assessment
a. Prior to initiating abrasive blasting activities, an evaluation shall be made of potential hazards and of required protective controls when surface coating are known or suspected to contain hazardous components such as lead, cadmium, toxic paints or other contaminants. In such cases, spent abrasive shall be periodically analyzed to identify and quantify the contaminants present in the waste and to validate protective measures.

b. Industrial hygiene sampling and analysis shall be used to determine the extent of exposure for employees involved with, or in the vicinity of abrasive blasting operations. Exposure monitoring should be conducted when employees are subjected to silica, metals, noise, nuisance dust, gases and vapors that may be associated with the operation. Results of exposure monitoring shall be compared to Permissible Exposure Limits (PEL) that have been established by OSHA.

c. Employee exposure shall be monitored in the following cases:

1. Information or observation indicates the potential exposure to silica, metals, noise or other substances.
2. Employees complain of airborne dust.
3. An employee complains of symptoms which may be attributable to exposure to dust or other substances related to the abrasive blasting operation.
4. Production, process or control changes result in an increase in the airborne concentration of dust or there is any reason to suspect an increase in the airborne concentrations of dust.

2. Record Retention

a. Contaminant exposure records shall be retained for the duration of the employee’s employment, plus a period of thirty years.
b. The records shall be maintained in the Company archives with the Project records.
c. The records shall be made available to the employee upon request.

2.3 Training

1. Employees who may be exposed to silica or other hazardous substances during abrasive blasting operations shall be informed of the potential hazards, exposure control measures, and emergency procedures prior to their assignment to such an operation.
2. Employees shall be instructed in proper housekeeping practices.
3. Employees shall be instructed on the purpose, proper use and limitations of respirators.
4. Employees shall be instructed to inform Saxon about the development of any signs and symptoms from exposure to silica or other hazardous substances.
5. Written exposure control procedures and health hazard information shall be made available to the employee for review, upon request.
6. Employees shall be informed of the increased risk of impaired health due to combination of smoking and silica dust exposure.

2.4 Engineering Controls

1. Dust suppression procedures shall be used continuously during abrasive blast cleaning operations.
2. If applicable, when local ventilation and collection systems are used in a building, the systems shall be designed, inspected and maintained to prevent the accumulation or recirculation of dust in the workplace.
3. Measures shall be taken to ensure any discharge will not create health hazards in the outside environment, nor violate applicable air pollution regulations.
4. When mobile equipment is operated in an area of dust exposure, controls shall be provided to protect the operator from exposure.
2.5 Personal Protective Equipment (PPE)

1. PPE for employees performing abrasive blasting shall include, but may not be limited to, the following:
   - Type CE abrasive-blasting respirator;
   - Safety boots or toe guards;
   - Durable coveralls able to close at the wrist, ankles and other openings to prevent entry of abrasive dust;
   - Safety glasses;
   - Hearing protection;
   - Heavy canvas or leather apron
   - Canvas or leather gloves, with gauntlet.

2. PPE for employees working in the vicinity of abrasive blasting operations may include, but may not be limited to, the following:
   - Air purifying respirators, equipped with HEPA filters
   - Safety boots;
   - Durable coveralls;
   - Safety glasses;
   - Hearing protection.

3. Respiratory protection used during abrasive blasting operations shall be used in conformance with Title 29 CFR Part 1910.134 and the Saxon respiratory protection program.

2.6 Personal Hygiene and Housekeeping Practices

1. Food, beverages, tobacco products, chewing gum and cosmetics are prohibited in abrasive blasting work areas.
2. Employees shall be provided hygiene facilities for washing hands and face prior to eating, drinking, and use of tobacco products;
3. To the degree possible, exposed surfaces shall be maintained free of accumulations of dust, which, if dispersed, could present an inhalation hazard.
4. Dry sweeping and use of compressed air for cleaning floors and other surfaces is prohibited. Wet methods or HEPA vacuuming of surfaces shall be used.
5. Collection, packaging and disposal of abrasive blasting wastes shall be performed in conformance with client requirements and applicable regulations.

2.7 On-Site/Facility Work Areas

1. When abrasive blasting must be performed inside a building/structure without an enclosure being provided, administrative procedures shall be implemented to control access and occupancy of the area by non-essential personnel.
2. Where administrative procedures are not feasible, appropriate respiratory protection shall be provided for all employees in the area.
3. Where feasible, portable dust/debris collection equipment shall be used during abrasive blast cleaning operations.
4. When wet blasting is employed, precautions shall be taken to eliminate electrical hazards, slipping hazards, and dust hazard after evaporation of the water.
5. If dust concentrations reduce visibility or cause discomfort to unprotected employees in the vicinity of the operation, such operations shall be discontinued until the dust has been removed. If such operations must continue, non-essential personnel shall be removed from the area, and appropriate respiratory protection provided to all employees remaining in the area - provided visibility is adequate for the performance of the work.
6. Where applicable, negative atmospheric pressure shall be maintained inside of the blasting room during blasting. The room shall have a minimum exhaust capacity of one air change per minute.
7. When abrasive blasting is automated, the room shall not be entered prior to the occurrence of a minimum of six full air changes.
8. In a confined space, where abrasive blasting or a pre-existing atmosphere may cause the employee to be exposed to conditions hazardous to life and where egress may be difficult if normal body functions are impaired, the following procedures shall be followed:

   a. Confined space procedures shall govern the work.
   b. All access hatches, trap doors, etc. shall be opened before work in started to aid natural ventilation.
   c. Continuous mechanical ventilation shall be applied to the space.
   d. Other potentially hazardous materials, such as solvents, crusts of chemicals or old paint shall be considered with regard to explosion or fire potential when blasted.
   e. Type CE abrasive blasting respirator, equipped with egress air bottle, shall be utilized for respiratory protection.
   f. Adequate lighting which meets the requirements of the National Electrical Code shall be utilized.
   g. When the space is mechanically ventilated, means shall be provided to collect dust before release to the open atmosphere.
   h. Individuals working within confined spaces shall also comply with the applicable requirements of Procedure III.A.22 (Control of Hazardous Energy) and Procedure III.A.24 (Confined Space).

9. For indoor blasting performed in cabinets and gloveboxes, a negative pressure shall be maintained during the operation. The enclosure shall be as complete as practical.

10. Cleaning of interior blasting cabinets and components shall utilize wet methods and/or HEPA vacuum procedures, and appropriate respiratory protection.

11. Cabinets / gloveboxes shall be maintained in good repair, including all gasketed openings, to minimize the escape of dust.

2.8 Off-Site/Facility Temporary Work Areas

1. When employees are exposed to dust at temporary work sites, emphasis shall be placed on portable engineering controls, respiratory protection, protective clothing, and provisions for personal hygiene and sanitation.

2. Employees shall be trained to protect themselves as well as others from dust exposure.

2.9 Waste Management

Waste abrasive blast media and debris shall be collected, packaged, transported and disposed of in accordance with client requirements and/or applicable regulations.

3.0
1.0 PURPOSE

To protect employees from exposure to Naturally Occurring Radioactive Material (NORM) in the workplace and ensure the release of NORM to the environment does not adversely affect the health of employees, the public, and the environment.

2.0 REQUIREMENTS

2.01 Hazard Identification

1. Discussions with client and/or NORM radiation survey shall be conducted by the EH&S Office to determine the presence and activity concentration of NORM in system/processes where it is known or suspected to be present.

2. Radiation levels greater than the following indicate that the facility of equipment shall be considered NORM contaminated:

   a. Gamma radiation 50 micro Roentgen per-hour on contact with the item

   b. Alpha or Beta surface contamination (internal or external) (dpm = disintegration per minute)  
      5000 dpm/100 cm² average reading (alpha or beta)  
      15000 dpm/100 cm² maximum reading  
      1000 dpm/100 cm² removable contamination

3. The EH&S Department shall be notified before any interior surfaces are exposed so an internal survey can be conducted prior to maintenance to the equipment.

4. The following shall be performed where work activities involve demolition, removal, renovation, maintenance, or handling of NORM contaminated materials:

   a. An initial survey of the work area is performed to document the pre-task conditions and existing contamination. The owner shall be contacted to do the initial and internal radiological surveys.

   b. Monitoring of personnel exposure is performed to verify adequacy of the procedures and of the personal protective equipment being used.

   c. A post-task survey performed to document any changes in contamination.

   d. Approaches to work areas are posted with warning signs and barricades are erected.

2.02 Training

Employees shall be trained in the following:

1. NORM health effects
2. PPE, i.e., respiratory, protective clothing, etc.
3. Contamination control
4. Radioactive monitoring

2.03 NORM Handling

Handling, packaging, shipment, and disposal of NORM contaminated material/equipment shall be done by the NORM owner, in conformance with regulatory license conditions that are applicable to the owner.
1.0 PURPOSE

To protect Saxon employees from radiation exposure associated with radioactive instrumentation, e.g., level gauges, density gauges, thickness gauges that may be encountered during work in client facilities.

2.0 REQUIREMENTS

1. Prior to mobilization Saxon shall verify the existence, location(s) and operational status of a facility’s radioactive instrumentation.

2. Should such instrumentation exist, the site EH&S department shall coordinate with the client’s EH&S department to develop and implement radiation exposure control procedures that are specific to working in the proximity to such instrumentation.

3. In accordance with the exposure control procedures, Saxon employees shall receive training and instruction to address the following:

   a. facility source license requirements;
   b. location(s) of radioactive sources;
   c. radiation energy control procedures (lock-out/tag-out);
   d. health hazards associated with radioactive exposure;
   e. radiation exposure regulations and dosimetry requirements;
   f. exposure control procedures: time/distance/shielding

3.0
1.0 PURPOSE

To provide direction for employee radiation protection and compliance with applicable regulatory requirements during NDT operations.

2.0 REQUIREMENTS

Radioactive materials and other sources of ionizing radiation shall be used in accordance with applicable federal, state, or local laws and regulations and by applicable procedures prescribed by Saxon clients. The exposure of employees to ionizing radiation must be maintained As Low As Reasonably Achievable (ALARA). Where ionizing radiation exposure associated with NDT operations exists for Saxon employees, during subcontracted NDT or that performed by Saxon, the following requirements exist:

1. NDT operations conducted by Saxon, or specialized subcontractors, shall be performed in accordance with the Saxon Radiation Safety Program, as set forth in the Saxon Quality Programs Group – Operating and Emergency (O&E) Procedure Manual, which is incorporated by reference into this procedure;
2. In conformance with specific license conditions or federal, state or local regulations, a “local or site” Radiation Safety Officer (RSO) shall be appointed and responsible for compliance oversight of NDT operation(s). Conditional with individual qualifications and license requirements, the RSO may or may not be the Site H&S Manager;
3. The RSO shall be functionally accountable to the Saxon Manager of Industrial Hygiene;
4. Personnel conducting radiographic operations shall be trained, qualified and certified in accordance with the Saxon Radiation Safety Training Program;
5. Saxon shall ensure that a copy of the Saxon Radiation Safety Training Program has been filed with the U.S. Nuclear Regulatory Commission and all “Agreement” states in which Saxon is licensed;
6. Previously trained radiographers hired by Saxon shall, as a minimum, receive formal training in NDT operating and emergency procedures and training in the equipment used. They shall also be required to obtain a passing grade on the Radiation Safety test, the Operating and Emergency Procedure test, and a practical radiographic exposure test;
7. A qualified radiographer shall be in constant attendance whenever a sealed source is used for radiography;
8. Two radiographers or a radiographer trainer (Instructor) and a radiographer’s assistance (Trainee) shall perform radiography at temporary field locations (agreement state requirements may apply – refer to individual state licenses);
9. Qualification and training records shall be maintained on file and available for review by U.S. NRC and/or State representatives;
10. Personnel performing radiographic operations shall be inspected at intervals to ensure compliance with license requirements and conditions, applicable regulations and implementation of O&E Procedure requirements;
11. Saxon shall use only the sealed sources and radiation projectors designated in the applicable State/U.S. NRC or agreement state Radioactive Materials license;
12. A calibrated and operable survey meter shall be available and used at each site where radiography is performed. A “back-up” survey instrument shall be available at the site. In the event that both survey instruments become inoperable or deviate from calibrated operation, the NDT operation shall cease until replacement instruments are made available;
13. Appropriate and sufficient radiation surveys shall be conducted during NDT operations to ensure personnel radiation exposure is within regulatory limits;
14. Personal dosimetry shall be utilized by all personnel performing NDT. Analysis of personal dosimeters shall be performed by a laboratory which is recognized and accredited to perform said analysis;
15. Administration and management of the personnel dosimetry program shall be the responsibility of the assigned RSO;
16. Implementation and management of the personnel dosimetry program shall be consistent with regulatory requirements, and prescribed measurement and analytical procedures;
17. Posting and placarding of NDT work areas shall be in conformance with regulatory requirements and associated radiation exposure rates;
18. Administrative controls shall be utilized to control access of un-authorized personnel into NDT work areas;
19. A documented, physical inventory of licensed radioactive material shall be conducted by the RSO. Inventories shall be conducted in accordance with license conditions, or quarterly, whichever is more frequent;
20. Transportation and shipment of licensed radioactive material shall be accomplished in accordance with license condition(s), U.S. NRC and/or U.S. D.O.T. regulations, and/or the Saxon Radiation Safety Program, as set forth in the Saxon Quality Programs Group – Operating and Emergency (O&E) Procedure Manual; Employees shipping or preparing for shipment of radioactive source shall be trained with DOT 49 CFR 172.700. Training shall be completed prior to assignment and every three years;
21. Disposal of licensed radioactive material shall be accomplished in conformance with the Saxon Radiation Safety Program, as set forth in the Saxon Quality Programs Group – Operating and Emergency (O&E) Procedure Manual
1.0 PURPOSE

To provide assurance that the use of radioactive materials and other sources of ionizing radiation comply with governmental regulations and that all unnecessary exposure of employees to ionizing radiation is avoided.

2.0 REQUIREMENTS

Radioactive materials and other sources of ionizing radiation shall be used in accordance with applicable federal, state, or local laws and regulations and by applicable procedures prescribed by Saxon clients. The exposure of employees to ionizing radiation must be maintained as low As Reasonably Achievable (ALARA). Where ionizing radiation exposure exists for Saxon employees from sources that are used, maintained, or possessed by Saxon or clients, the following requirements exist:

1. Properly trained employees will be assigned as RSO
2. A radiation safety plan shall be developed for operations where potential exposure exists;
3. An emergency preparedness plan for radiation accidents shall be prepared;
4. A radioactive material disposal plan shall be developed for each operation covered by this procedure;
5. Compliance with this procedure, client requirements and the applicable federal and state ionizing radiation safety regulations shall be monitored;
6. Employees exposed to ionizing radiation sources are trained and periodically retrained in radiological safety and health;
7. Specific instructions are provided to female workers of childbearing age about their responsibility to report pregnancy promptly in order that any needed precautionary measures are taken to limit cumulative radiation exposure during pregnancy. Employees requiring specialized exposure control are identified and their exposure controlled to the degree required;
8. Administrative procedures are implemented to limit access into radiation areas to authorized personnel;
9. Personnel monitoring devices shall be provided for exposed employees;
10. Records of all survey and personnel exposure monitoring shall be retained for the time periods specified by law;
11. Employee access to exposure and monitoring records shall be provided;
12. Written notification of annual radiation dose received is provided to employees are specified by law;
13. Prompt notification is provided to employees regarding changes in operating conditions, personnel, or radioactive materials shall be provided in accordance with specific NRC or state licenses;
14. Provide immediate notification to the Saxon H&S management regarding the misplacement, theft, or fire involvement of any radioactive material or devices or any radiation accident affecting the public.
15. Ensure that Saxon employees working in an ionizing radiation environment away from Saxon facilities are adequately trained and informed of their rights of access to exposure records.
1.0 **PURPOSE**

To provide directions on preventing overexposure to RF/MW radiation in the workplace. However, these directions cannot cover all possible situation guidelines in the use of Radio Frequency and Microwave producing devices.

2.0 **REQUIREMENTS**

1. The frequency of electromagnetic fields is measured in Hz (Hertz), or cycles per second. 1 kHz (kilohertz) = 1000 cycles/second. 1 MHz (megahertz) = 1 million cycles/second. 1 GHz (gigahertz) = 1000 million cycles/second

2. "**Radio Frequency (RF) Radiation**" refers to electromagnetic fields with frequencies between 300 kHz and 300 MHz, while "**Microwave (MW) Radiation**" covers fields from 300 MHz to 300 GHz. Since they have similar characteristics, RF and MW radiation are usually treated together. As well, the lower-frequency boundary of RF radiation is often extended to 10 kHz, or even to 3 kHz, in order to include emissions from commonly used devices.

3. RF radiation is produced by devices such as radio and TV transmitters, induction heaters, and dielectric heaters (also known as RF sealers). Microwave ovens, parabolic (dish) antennas, radar devices, and diathermy applicators produce MW radiation. See Table III, "Sources of RF/MW Radiation," for more examples.

2.1 **Health Hazards**

1. The nature and the degree of the health effects of overexposure to RF/MW fields depend on the frequency and intensity of the fields, the duration of exposure, the distance from the source, any shielding that may be used, and other factors.

2. The main effect of exposure to RF/MW fields is heating of body tissues as the body absorbs energy from the fields. Prolonged exposure to strong RF/MW fields may increase the body temperature, producing symptoms similar to those of physical activity. In extreme cases, or when exposed to other sources of heat at the same time, the body's cooling system may be unable to cope with the heat load, leading to heat exhaustion and heat stroke.

3. Localized heating, or "hot spots," may lead to heat damage and burns to internal tissues. Non-uniform fields can cause hot spots, by reflection and refraction of RF/MW fields inside the body, or by the interaction of the fields with metallic implants, for example, cardiac pacemakers or aneurysm clips. There is a higher risk of heat damage with organs, which have poor temperature control, such as the lens of the eye and the testes.

4. Other hazards include contact shocks and RF burns. These can result from the electric currents, which flow between a conducting object and a person who comes into contact with it while they are exposed to RF fields. (These effects should not be confused with shocks from static electricity.)
2.2 Exposure Limits

1. Exposure limits for RF/MW radiation are designed to keep the RF/MW energy absorbed by the body below the lowest levels associated with demonstrated adverse effects, and to reduce the likelihood of contact shocks and burns.

2. Since the RF/MW energy absorbed by the body varies with the frequency of the fields and since the rate of energy absorption is difficult to measure directly, the exposure limits are expressed in terms of frequency-dependent, root-mean-square (RMS) electric and magnetic field strengths, or in power density units milliwatts per squared centimeter (mW/cm²). Power density measures the amount of radiating energy crossing a given area in a given period of time.

3. Pursuant to Health Conditions occupational exposure of the whole body to RF/MW fields, in any six-minute period, should not exceed the values in Table I.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>RMS Electric Field Strength (V/m)</th>
<th>RMS Magnetic Field Strength (A/m)</th>
<th>Power Density (mW/cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01 - 1</td>
<td>600</td>
<td>4.9</td>
<td>--</td>
</tr>
<tr>
<td>1 - 10</td>
<td>600/f</td>
<td>4.9/f</td>
<td>--</td>
</tr>
<tr>
<td>10 - 30</td>
<td>60</td>
<td>4.9/f</td>
<td>--</td>
</tr>
<tr>
<td>30 - 300</td>
<td>60</td>
<td>0.163</td>
<td>1</td>
</tr>
<tr>
<td>300 - 1 500</td>
<td>3.46</td>
<td>0.0093</td>
<td>f/300</td>
</tr>
<tr>
<td>1 500 - 300000</td>
<td>140</td>
<td>0.36</td>
<td>5</td>
</tr>
</tbody>
</table>

RMS = root mean square   f = frequency in MHz   V/m = volts per metre   A/m = amperes per metre   mW/cm² = milliwatts per square centimeter

4. In addition, workers should not be subject to RF contact shocks or burns. This can be achieved by reducing stray fields and installing appropriate insulation and grounding, or by ensuring that the electric current flowing between a worker and an object energized by electromagnetic fields does not exceed the values in Table II.

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>RMS Current (mA) milliamperes, or 1/1000 Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01 - 0.1</td>
<td>0.1 - 30.0</td>
</tr>
</tbody>
</table>

5. Table III shows which sources of RF/MW radiation may expose workers to levels in excess of Occupational Exposure Guidelines. Using an EMF direct reading monitor measurements of RF/MW levels should be carried out around sources with the potential to cause overexposure, in order to ensure compliance with the Occupational Exposure Limits. Measurements are not necessary for sources, which do not have the potential to produce exposures in excess of the Occupational Exposure Limits.
### Table III: Sources of RF/MW Radiation

<table>
<thead>
<tr>
<th>Source</th>
<th>Frequency (MHz)</th>
<th>Potential for Over-exposure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Display Terminal (VDT)</td>
<td>0.015 - 0.3</td>
<td>No</td>
</tr>
<tr>
<td>Induction Heater</td>
<td>60 Hz - 0.5 MHz</td>
<td>Yes</td>
</tr>
<tr>
<td>Dielectric Heater</td>
<td>1 - 100 (typically 27.12)</td>
<td>Yes</td>
</tr>
<tr>
<td>Diathermy Applicator</td>
<td>13.56, 27.12, 915, 2450</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Communications Transmitters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AM Radio</td>
<td>0.535 - 1.605</td>
<td>Yes</td>
</tr>
<tr>
<td>FM Radio</td>
<td>88 - 108</td>
<td>Yes</td>
</tr>
<tr>
<td>VHF TV</td>
<td>54-72, 76-88, 174-216</td>
<td>Yes</td>
</tr>
<tr>
<td>UHF Radio</td>
<td>470 - 890</td>
<td>Yes</td>
</tr>
<tr>
<td>Dish Antenna</td>
<td>800 - 15,000</td>
<td>Yes</td>
</tr>
<tr>
<td>CB Radio</td>
<td>27.12</td>
<td>Yes</td>
</tr>
<tr>
<td>Cordless Telephone</td>
<td>46 - 49</td>
<td>No</td>
</tr>
<tr>
<td>Cellular Telephone</td>
<td>824 - 850</td>
<td>No</td>
</tr>
<tr>
<td>Traffic Radar</td>
<td>10,500 and 24,000</td>
<td>No*</td>
</tr>
<tr>
<td>Microwave Oven</td>
<td>915 and 2,450</td>
<td>No*</td>
</tr>
</tbody>
</table>

### 2.3 Controlling RF/MW Radiation

1. **Engineering Controls**
   a. Sources of RF/MW radiation should be properly shielded by plywood or metal shielding, to minimize stray radiation.
   b. Devices, which can produce acute thermal injuries (e.g., industrial MW ovens), should have interlocked doors.
   c. Devices which produce high levels of stray RF radiation (e.g., induction heaters and dielectric heaters) should be operated remotely whenever possible.

2. **Administrative Controls**
   a. Exposure of employees to RF/MW Radiation shall not exceed OSHA exposure limits in 29 CFR 1910.97, Power Density 10 mW/cm² for 0.1 hr or Energy Density of 1 mWhr/cm² per 0.1 hr.
   b. Saxon EH&S site/facility professional shall monitor areas where employees exposure to RF/MW Radiation is suspected to exceed the recommended limits. Monitoring shall be performed prior to new work procedures involving RF/MW. Monitoring shall determine the exposure levels to employees and equipment.
   c. Needless exposure to RF/MW fields shall be avoided. Exposure times shall be kept as short as reasonably possible and under OSHA guidelines.
   d. Potentially hazardous RF/MW devices shall be appropriately labeled, and areas of excessive exposure around them clearly demarcated. Notices with warnings and the necessary precautions should be posted per OSHA labeling 29 CFR 1910.97.
   e. Electrically activated explosive devices shall not be placed near sources of RF/MW radiation.
f. Gas monitoring equipment shall be RF shielded too.

g. Equipment sensitive to RF/MW radiation, such as telephone switchboards or control panels, shall not be installed near sources of RF/MW radiation.

h. Only qualified personnel following standard safety procedures shall do maintenance of devices used to produce RF/MW radiation. The equipment shall be turned off whenever possible.

3. Personal Protection

When exposures cannot be reduced by the above methods, RF/MW protective suits, including head and eye protection, can be used. Conductivity of protective suits shall be verified.

4. Controlling RF Shocks and Burns

a. Metallic structures producing contact shocks should be electrically grounded and/or insulated.

b. Insulating platforms or shoes (e.g., rubber-soled shoes) can be used to reduce energy absorption and currents to ground.

c. When the above measures are ineffective or not reasonably possible, workers should wear insulating gloves.

3.0
1.0 PURPOSE
To provide requirements for laser safety.

2.0 REQUIREMENTS

2.1 General
Sites/facilities using lasers shall implement the requirements of the American National Standard for Safe Use of Lasers ANSI - Z136.1. Site programs shall integrate all laser regulations applicable to their state or country.

2.2 Responsibilities

1. Sites/facilities EH&S Professional shall function as the Laser Safety Officer (LSO) to administer the laser safety program.

2. Laser users/owners shall implement the recommendations of the LSO, ensure employees comply with program requirements, maintain lasers to the manufacturer’s specifications and update the LSO on the status of lasers under their control. Maintenance shall be performed by qualified personnel.

3. Medical surveillance shall be performed in conformance with Saxon.


2.3 Hazard Evaluations
Hazard evaluations shall be performed. The laser hazard evaluations shall be based on the laser's potential to cause injury, the environment in which the laser is used and the personnel who shall be using the laser.

2.4 Control Measures
Control measures shall be instituted to reduce the possibility of eye and skin exposure to hazardous levels of laser radiation and to any other hazards associated with lasers during operation and maintenance.

2.5 Protective Eyewear
Employees whose occupation or assignment requires exposure to Class IIIb and IV lasers beams shall be furnished suitable laser safety goggles which will protect for the specific wavelength of the laser and be of optical density (O.D.) adequate for the energy involved. Protective eyewear is an administrative control that is required when engineering controls do not eliminate the hazards.

2.6 Warning Signs and Labels
Laser warning signs shall be posted for Class II, IIa, IIIa, IIIb and IV lasers, in conformance with ANSI Z135.1.
2.7 Training

1. Laser Safety Training shall be provided to personnel prior to working with lasers. The training shall ensure that users of research and manufacturing lasers are knowledgeable of the potential hazards and control measures of laser equipment they use. Records of employee training shall be maintained. Training shall be repeated at a minimum every two years.

2. The operators shall carry documentation (certification) of training.

3. The LSO shall receive specific training on potential hazards, biological effects, control measures, applicable standards, medical surveillance, and other information pertaining to laser safety.

2.8 Non-Beam Hazards

Non-beam hazards associated with laser use shall be evaluated, and documented in the site specific Laser Safety Program.

2.9 Inventory/Tracking

The site shall maintain an accurate inventory of Class IIIb and IV lasers used in research and manufacturing operations. The user shall advise the LSO prior to laser modification as well as the status, destruction or transfer of an inventoried laser.

4.10 Classification of Lasers

1. Class I Laser that cannot, under normal operating conditions, produce hazardous levels of laser radiation. This class can include moderate or high-powered laser enclosed in a protective enclosure that prevents the laser from operating when the enclosure is opened. For maintenance, the laser system shall be treated according to the laser class of the enclosed laser.

2. Class II Low Powered, Visible Lasers which because of the human aversion reflex, do not normally present a hazard but may present some potential for hazard if viewed directly for extended periods of time. The output power cannot exceed 1 milliwatt.

3. Class IIa Low Powered Visible Lasers that are not considered to be hazardous if viewed for 1,000 seconds or less.

4. Class IIIa Lasers that emit visible radiation and are considered to be either a chronic or acute intrabeam viewing hazard depending upon irradiance and an acute viewing hazard if viewed with optical elements.

5. Class IIIb Lasers that are considered to be an acute hazard to the eyes and skin from direct radiation and specular reflections.

6. Class IV Lasers that are considered acute hazards to the eye and skin from direct exposure and from specular and diffuse reflections.

3.0
Site Section 3 Electrical
1.0 PURPOSE

To provide established criteria by which an employee can be considered qualified to accomplish identified electrical jobs or tasks. It also defines the characteristics of an unqualified person.

This procedure also identifies the elements of training required for qualification, identifies tasks requiring qualified persons.

2.0 REQUIREMENTS

2.1 Training Requirements

The training requirements contained in this section apply to employees who face a risk of electrical hazards. Such employees shall be trained to understand the specific hazards associated with electrical energy. They shall be trained in safety related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with their respective job or task assignments. Employees shall be trained to identify and understand the relationship between electrical hazards and possible injury.

1. Type of Training

Training may consist of on the job experience only, but may not consist of classroom instruction only. Personnel may gain experience by working only on de-energized equipment until they are deemed qualified to perform the intended task.

2. Emergency Procedures

Persons, including standby personnel, working on or near exposed energized electrical conductors or circuit parts, shall be trained in methods of release of victims from contact with exposed energized conductors or circuit parts and avoidance of other related electrical hazards. They shall be regularly instructed in methods of first aid and emergency procedures.

2.2 Standby Personnel

A job requiring a standby person generally requires only that the standby person have knowledge of emergency response techniques, and how to de-energize the circuit, if necessary.

2.3 Unqualified Persons

An unqualified person has little or no training or knowledge of the construction and operation of equipment or a specific task.

2.4 Qualified Persons

A qualified person shall be trained and knowledgeable of the construction and operation of equipment or a specific task, and be trained to recognize and avoid the electrical hazards that may be present with respect to that equipment or task. Such persons shall also be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools and test equipment. A person may be considered qualified with respect to certain equipment and methods but still be unqualified for other equipment and methods. Persons permitted to work on or near electrical hazards shall at a minimum be additionally trained in the following:

1. The skills and techniques necessary to distinguish exposed energized parts from other parts of electric equipment.
2. The skills and techniques necessary to determine the nominal voltage of exposed energized parts.
3. Safe approach distances and the corresponding voltages to which the qualified person will be exposed. See Attachment III.E.19-7
4. The decision making process necessary to determine the degree and extent of the hazard, the job planning required to avoid the hazard, and the personal protective equipment necessary to safely perform the task. See III.19-7 Hazard Risk Analysis Flow Chart

2.5 TASKS

Each of the following tasks requires that the person performing the task be qualified to perform that task:
1. Work on or near exposed energized circuits or circuit parts
2. Voltage testing (see Procedure III.E.3)
3. Inserting or removing MCC starters and similar equipment into or out of de-energized equipment. Persons shall be qualified for specific equipment (see Procedure III.E.16)
4. Installing breakers in lighting panels and similar equipment; persons shall be qualified for specific equipment (see Procedure III.E.9)
5. Checking out and starting up electrical equipment (see Procedure III.E.7 & III.E.14)
6. Troubleshooting, repairing, and commissioning energized electrical equipment (see Procedure III.E.9 & III.E.19)
7. Working as a standby person
8. Establishing an electrically safe working condition (see Procedure III.E.2)
9. Inserting and removing MCC starters and similar equipment into or out of energized equipment (see Procedure III.E.16)
10. Testing and inspecting unit substations

2.6 RECORDS AND DOCUMENTATION

1. The employer shall establish and maintain the following records of training:
   a. name and employee number of each employee
   b. date of training
   c. content of training
   d. satisfactory completion of training

2. Records may consist of a computer-based program. When required, the site shall be able to produce hard-copy documentation of the current qualification status of each employee.
1.0 PURPOSE

To provide defined minimum requirements for establishing an electrically safe working condition. This procedure shall be used in conjunction with EH&S standard III.A.20 - Lock, Tag, Try and Test for the lockout/tagout-try of electrical energy sources. It is to be used to ensure that conductors and circuit parts are disconnected from sources of energy, locked/tagged-tried, and tested before work begins where personnel could be exposed to dangerous conditions.

2.0 REQUIREMENTS

1. Placing electrical equipment in an electrically safe working condition may be hazardous.

2. Any electrical circuit and conductor shall be considered energized until the source of energy is removed, at which time it shall be considered de-energized. Any electrical circuit conductor and circuit part shall not be considered to be in an electrically safe condition until all of the following steps have been completed.
   a. Identify all possible sources of electrical energy
   b. Open the disconnecting devices of each source.
   c. Where possible, visually verify all blades are open or breakers have been withdrawn to the fully disconnected position.
   d. Apply Lockout/Tagout devices

   NOTE: This step is not required for Individual Qualified employee control

   e. Use a voltage detector to verify that all conductors and circuit parts are de-energized.
   f. Applied discharge or safety grounds as required

3. All work on or near electrical equipment not placed in an electrically safe condition shall use safe work practices appropriate for the voltage and energy level.

   NOTE: Circuits with voltage less than 50 volts are not covered by this procedure, because hazards resulting from exposure to voltages in this range are limited.

2.1 Stored Energy

1. Hazardous energy may exist as stored energy in several circumstances. Stored energy shall be discharged or relieved prior to blocking and installing lockout devices.

2. Capacitors shall be discharged, shorted, and grounded in addition to lockout of the source of energy. Springs shall be released or a physical restraint shall be applied when necessary to immobilize mechanical, pneumatic or hydraulic equipment. Other sources of stored energy shall be blocked or relieved.

   NOTE: For work on battery systems also refer to Procedure III.E.10.
2.2 Voltage Detecting Instruments
The voltage detecting devices shall be rated for the voltage and suitable for the environment it will be used in. For the purpose of testing for the presence or absence of voltage, a single function voltage-detecting device should be used. Proper operation of the voltage tester shall be verified on a known source, both before and after the tests. Voltage Detecting device(s) shall be selected per Procedure III.E.3.

2.3 PREPARATION
1. Review appropriate current drawings (or other equally effective means), tags, labels, and signs to identify and locate all energy isolating devices. For electrical lockout /tagout determine that power will be interrupted by a physical break and not de-energized by a circuit interlock. Make a list of energy isolating devices to be locked/tagged.

2. Review energy isolating devices to determine if it will be possible to verify a visible open point, or if other precautions are necessary.

3. Review other work activity in the area that may be impacted by the lock out to determine if other personnel may be exposed to energy sources or electrical energy hazards. If any exposure is identified use the appropriate procedure to eliminate the hazard.

4. Identify the appropriate voltage detectors required for testing for the absence of voltage at each location to be tested and the method that will be used to determine if the voltage detector is working properly.

5. Determine the need for applying safety or discharge grounds. Some circuits or equipment require the application of safety grounds (See III.E.14). Where the possibility of induced voltage, in excess of 50 volts, or stored electrical energy exists, discharge grounds shall be applied.

2.4 HAZARDOUS ELECTRICAL ENERGY CONTROL PROCEDURES
1. Electrical equipment, such as 120-Volt lighting panels and similar equipment shall be locked as well as tagged. Some manufacturers currently do not make locking components in this class of equipment. In such instances, this equipment can not be used for lockout purposes until a locking mechanism has been installed. It is not acceptable to lock the door of the panel.

2. Where it is infeasible due to equipment design to place a lock and only a tag is used, an additional safety measure shall be taken.

3. Personnel exposed to electrical hazards shall wear appropriate personal protective equipment (PPE), as required in EH&S standard III.B. Examples are opening doors of equipment, voltage testing, and applying safety grounds.

4. Sequence of Lockout/Tagout/Try Procedures see EH&S standard III.A.20

5. Restoring the equipment and/or electrical supply to normal condition.
   a. Visually verify that the job/task is complete.
   b. Remove all tools, equipment and unused materials and perform appropriate housekeeping.
c. Remove all safety and discharge grounding equipment/conductors/devices.

d. The person who initiated the lockout/tagout shall notify all personnel involved with the job that the lockout/tagout is complete, and that the electrical service is being restored and to remain clear of the equipment.

e. Perform all required quality control tests on the equipment and electrical service.

f. Replace fuses as needed. Close and latch doors or install covers as needed.

g. Removal of lockout/tagout devices, by the person(s) who installed them, should be in reverse order.

h. Return control of the equipment to the equipment owner.

6. For complex lockout/tagout-try of electrical equipment, the person-in-charge shall identify the method for transfer of the lockout/tagout and of communication with all employees.
1.0 PURPOSE

To provide defined criteria for the selection and care of electrical test equipment and other special tools. Special tools are tools used with work on or near energized electrical equipment or services.

2.0 REQUIREMENTS

The safety of personnel working on or near energized electrical equipment is greatly dependent on the design, selection, and knowledge in use of, care and maintenance of tools and test equipment used.

1. It is recommended that the site/facility limit the selection of electrical test equipment used on the site by both manufacturer and type for ease of control and minimizing training requirements.

2. Electrical test equipment, special tools and their accessories shall be rated for the circuits and equipment to which they will be connected.

3. All electrical test equipment and special tools shall be used within the parameters of the manufacturer's recommendations and only for it's intended use.

4. Along with the above requirements the following features are required for voltage testers used for testing for the absence or presence of voltage.

   a. Single function, voltage only test devices, or
   b. Automatic mode test devices which check for voltage prior to switching to other modes (resistance, continuity, etc.), and
   c. Incorporates test leads that cannot be misconnected, for example only two jacks are present or leads are permanently connected.

NOTE: High impedance voltage testers are subject to "phantom" readings from induced voltage. Verification of the absence of voltage may be required with a low impedance voltage tester, such as a solenoid type voltage tester. Solenoid Testers may have an adverse effect on DCSs, PLCs, or similar equipment.

2.1 Non contact Voltage testers

Non-contact voltage testers may be the preferred device where contact voltage testers cannot be used, such as, testing insulated conductors prior to cutting, breaking motor leads, lighting circuits, etc. but these testers have limitations that shall be understood.

1. Non-contact voltage testers have limitations. Non-contact testers should be selected and used based upon the conditions in which it is to be used in relation to the limitations of the device. When selecting these testers review the manufacturer's information concerning the limitations of the device to be used. Listed below are some of the limitations that have been found in non-contact testers.
c. unable to sense DC voltage
d. have minimum voltages they are able to sense
e. the orientation of the device in relation to or distance from what is being tested may impact the reading  
f. phase cancellation in 3-phase multi-conductor cables may impact the reading.
g. non-contact voltage testers will not read through metal, such as conduit and metal boxes.
h. small metal enclosures may impact the reading
i. underground cables should be read at least 6” away from the earth or dirt.
j. hand position may impact reading
k. sensitive to temperature
l. will not sense induced voltage
m. may not read some frequencies, especially low frequencies.

2.2 Special Tools

1. Fuse Pullers: Only devices designed for the purpose of pulling fuses shall be used to remove and install fuses. The fuse pullers shall be of the appropriate size and style.

2. Hot Sticks: Only hot sticks that have a manufacturer's certification to withstand the following minimum tests shall be used:

   a. 100,000 volts per foot of length for 5 minutes when the tool is made of fiberglass; or
   b. 75,000 volts per foot of length for 3 minutes when the tool is made of wood; or
   c. Other tests equivalent to the above as appropriate.

3. Wood sticks shall be retested annually. Fiberglass sticks shall be retested every 5 years.

4. Hot sticks shall be inspected prior to each use. They shall be wiped clean and if any defects are found the hot stick shall be destroyed.

5. Hot sticks shall be stored in smooth interior canisters or enclosures so that they remain dry and protected from damage. Canisters located outside shall be watertight and mounted to prevent rain from entering the enclosure. Do not store hot sticks in areas where chemical or water vapors are prevalent or in areas where the humidity is high for extended periods.

6. Hot sticks shall be considered as energized while being used. Never let the hot stick touch clothing or body parts while being used. Hot sticks shall be used with the appropriate voltage rated gloves.

7. Electrical test equipment or special tools are generally not suitable for use in areas classified as electrically hazardous, such as Class I Division 2 areas. Use of this equipment requires application of the appropriate work and/or flame permit procedures to ensure the absence of flammable vapors.
2.3 Safety Ground Clusters

1. Only safety ground clusters, purchased or fabricated, conforming to ASTM F 855 shall be used.

2. Safety ground clusters shall be controlled. Ground clusters shall be numbered and a procedure established for accounting for the safety ground clusters, both installation and removal, during Lockout/Tagout.

3. Example: The person in charge of a lockout/tagout shall place a tag, indicating the location and the number of the cluster, on the lockout point for each safety ground cluster placed on the equipment. The tag shall only be removed after the safety ground cluster has been removed and verified by the person in charge.

4. Safety grounds shall be installed on the following equipment and feeders before personnel come into contact with them:
   a. feeders and equipment over 600 volts
   b. switch gear and unit substation buses
   c. 600-volt class feeders from substations
   d. all overhead electrical lines on both sides of the point of work

NOTE: Consideration should be given to where the grounds are located to eliminate potential exposure to energized uninsulated conductors.

6. Safety grounds shall be installed in a manner to achieve a zone of equipment potential grounding to protect all personnel involved.

2.4 Insulated Hand Tools

NOTE: Insulated hand tools are available in the marketplace. Although they provide some level of protection from initiating an arc flash they should not be relied upon for shock protection. Inadvertent movement may cause body contact with energized components. Insulated hand tools may provide protection against initiating arc flash if the tool is dropped or slips. They should be used when the hazard/risk analysis indicates the need for them.

2.5 Barriers

1. There are two objectives for barriers: 1. Physical separation, and 2. Insulating Barriers CAUTION: Installation of barriers requires detailed planning, as barrier placement may be more hazardous than careful execution of certain tasks.

2. Insulating Barriers can be made of voltage rated rubber products, voltage rated tape, certain plastics and composites. The material used depends upon the task; special planning may be required to ensure the proper level of protection is obtained.

3. Insulating barriers may be placed directly on energized conductors and parts to prevent inadvertent contact with body parts and tools. They shall be rated per ASTM Standards for, or above, the circuit voltage involved. An insulating barrier is normally not adequate to restrain significant physical force or to stop a puncture or cut.

4. Physical barriers shall never be placed directly on an energized part or within the prohibited boundary. They are installed to provide a physical restraint to prevent body parts or tools from getting near energized parts. Some examples of physical barriers are plywood, micarta, and Lucite.

5. Care shall be used in selecting the barrier material. There are certain rubber and plastic type materials that are conductive.

6. Cardboard shall never be used for any type of insulating or physical barrier.
7. Shock protection barriers do not afford protection from arc and flash hazards.

2.6 Training

1. Qualified personnel who have been trained in their use may only use electrical test equipment and special tools. The training may be through classroom or on the job training. The training shall include,
   a. Proper application and use of the equipment or tool
   b. Limitations of the equipment or tool
   c. Inspection of the equipment or tool
   d. Understanding of instrument indication or information provided
   e. Proper care

2.7 Inspection

1. Electrical test instruments, special tools, and all associated test leads, cables, power cords, probes, and connectors shall be visually inspected by the user for external defects or damage prior to each use. If there are visible defects or evidence of damage that might expose an employee to injury, the defective or damaged item shall not be used until any required repairs and tests have been made.

2. Electrical test equipment and special tools shall be inspected following any incident and at intervals recommended by the manufacturer. In addition to these recommendations this inspection should look for equipment that does not meet current requirements.

2.8 Storage

When not in use electrical test equipment and special tools shall be stored in a manner to prevent damage. Protective cases should be purchased with the equipment for storage purposes.

2.9 Voltage Testers

Voltage testers should be selected based upon the intended use. Several types of voltage testers exist with specific uses and limitations.

1. The following features are required for multi-meters used in measuring voltage and troubleshooting.
   a. Retractable, insulated tip test probes.
   b. Self contained fault protection or limitation devices, such as internal current limiting fuses or probe current limiting resistors.
   c. Voltage/current path from the probes is not routed through the selector-switching device.
   d. Conforms to National Consensus Standards, such as UL 1244, MIL-T-28800C.

3.0
1.0 PURPOSE

To provide established minimum marking requirements for permanent labeling, marking, and identifying electrical equipment and wiring as outlined in Saxon Standards, Occupational Safety and Health Act (OSHA), and the National Electrical Code (NEC). It includes requirements for labeling of temporary construction electrical equipment and facilities. Labeling and identification shall be a requirement at each site/facility.

It should be noted that some sites/facilities have specific procedures that are used to ensure consistency. Check site/facility procedures for additional information.

2.0 REQUIREMENTS

1. Electrical incidents and injuries can be significantly reduced if a uniform system of labeling, marking, and identifying electrical equipment and wiring is used.

2. Each site/facility shall be responsible for labeling, marking, and identification. Some of the regulations for labeling and identification outlined in TITLE 29 CFR 1910 and 1926 and the NEC are requirements to be followed by electrical manufacturers.

3. All electrical equipment identification shall agree with single-line diagrams, panel schedules, P&I diagrams, and other project documentation.

4. Labeling, marking, and identification should be a part of all electrical design construction packages and written into the specifications of each project or work request. The equipment piece names and numbers need to be selected early and shall be consistent with site practices.

5. During construction, as-built drawings depicting any changes in underground systems shall be documented and forwarded to the engineering company and the owner, and revised drawings shall be reissued.

6. Each disconnecting means for motors, appliances, and each service feeder or branch circuit at the point where it originates shall be legibly marked to indicate its purpose. The marking shall be of sufficient durability to withstand the environment involved.

2.1 Labeling Electrical Equipment and Devices

1. Unit substations or entrances to rooms with exposed energized live parts 600-volts and above shall have "Danger High Voltage - Qualified Persons Only" posted on the substation fence, screens, vault, room entrance door, or closet surrounding the equipment. All motor control center's doors should have signage "Authorized Personnel Only".

2. Metal-enclosed switch gear or metal-enclosed unit substations, transformers, connection boxes, and similar equipment rated at 600 volts and higher shall be marked with signs stating "Danger High Voltage."

3. Pull boxes, junction boxes, and termination boxes containing circuits over 600 volts shall be permanently marked "Danger High Voltage." The markings shall be on the outside of the box covers or doors and shall be readily visible and legible.

4. Isolation or disconnect switches that have no interrupting rating shall either be interlocked with load-interrupting devices or the device shall be provided with prominently displayed signs to prevent switching load current. In addition to identification, a sign shall read "Non-Load Breaking Device" and shall be prominently located on these switches.

5. Disconnect switches for electrical tools and equipment, temporary gang disconnect switches, welding system disconnects, temporary lighting racks, Square-D QMB or equal types of distribution panels, and motor control
centers shall be identified and labeled stating circuit voltage source and equipment being serviced. All receptacles on temporary racks shall be labeled with circuit voltage present at receptacles and circuit number.

6. In areas such as warehouses, shops, buildings, and manufacturing buildings where disconnect switch racks (SQ-D or equal types of distribution panels) or motor control centers are located should have the floor marked with a yellow caution line a distance of three feet immediately in front of the equipment. An alternative may be a permanent barricade installed to prevent personnel from placing material and equipment which block access to disconnect device-operating handles. Yellow safety tape may be used in place of paint for short-term installations.

7. Induction and dielectric heating equipment containing voltage of more than 250 volts shall have "Danger" labels attached. These labels shall be plainly visible whenever doors are open or panels are removed from compartments.

8. When a possibility of a backfeed exists, a warning sign shall be posted stating “Warning Backfeed Circuit Number XXXX.”

9. Equipment that contains external sources of power shall contain warning signs indicating and identifying external power sources.

10. In addition to main switch identification for MCCs, 480-volt distribution gear and medium voltage switch gear using direct markings or color can be useful in an emergency.

11. Identification of switch gear compartments should be marked on the rear cover to identify the section. To eliminate confusion if the compartment cover is removed, the switch gear compartments should be identified on the floor.

2.2 Other Considerations of Labeling, Marking, and Identification

1. Any equipment deemed to be electrically hazardous should be visibly identified as such, so that proper procedures are followed and PPE used.

**NOTE:** For a fail-safe system, it is permissible to label all non-hazardous equipment. This requires all non-label equipment to be treated as electrically hazardous.

2. Any structure, enclosure, room, or vault devoted to containing electrically hazardous equipment should be identified as such, so proper procedures are followed and PPE is used.

3. Temporary labels shall be avoided whenever possible. If temporary labels are necessary to install in lieu of permanent labels, use 1/2” or 3/4” plastic Dymo embossed labels. Do not energize or turnover any electrical equipment without fixed identification labels (permanent or temporary).

4. Metal-enclosed and metal clad switch-gear should contain a mimic bus painted, taped or metal striped on the equipment to graphically show the physical layout of bus, switches, auxiliary and potential devices contained within.

5. Each end of cable, conductors, and jumpers shall have permanent labels installed so that they are easily readable as identified on schematics and connection diagrams.

**NOTE:** The Cable and Conductor System (CCS) computer program provides labels automatically.

6. Underground direct burial cable systems shall incorporate the magnetic marker tape or high voltage directional signs, Cables Buried Directly in the Ground. The cable circuit number shall be attached to cables located in manholes in addition to the conductor phase number.
7. Underground conduit and duct banks not encased in red concrete shall be marked, identified at or above the ground surface.

8. During construction, as-built drawings depicting any changes in system shall be documented and forwarded to the engineering company and the owner.
1.0 PURPOSE

To provide information for selecting Personal Protective Equipment (PPE) when personnel are exposed to electrical hazards. This procedure shall be used with EH&S Standard III.B.

2.0 REQUIREMENTS

All PPE has an intended use and shall be used in accordance with that intent. Using PPE outside of its intended use will not afford the protection to personnel this procedure is trying to effect.

2.1 Hazards

Each hazard shall be identified and dealt with individually. PPE shall be selected based upon the hazard to which personnel are exposed. PPE designed to provide protection from electrical shock may not be adequate for protecting personnel from flash hazards. Likewise PPE designed for flash protection may not provide protection from electrical shock. Voltage rated gloves may be used for flash protection only when used with leather protectors.

2.2 Electrical Equipment Considerations

1. The condition of the electrical equipment shall be a consideration in selecting PPE.

2. The design of the electrical equipment shall be considered when selecting PPE. Electrical equipment is not designed to contain arcing faults and may not be designed with appropriate barriers to protect personnel from flash or shock.

3. Missing barriers should be reported so replacement barriers can be obtained. Barriers that have been removed for the purpose of performing a task shall be replaced. Barriers in electrical equipment shall be maintained.

4. Older equipment may not have the same level of safety features newer equipment may have. Equipment should be inspected for deterioration such as spots that have rusted out or holes.

5. Some barriers may provide shock protection but not full protection and some may provide either. Each task should be evaluated based on the condition of the equipment, the hazards involved and the task to be performed.

2.3 Shock

1. Shock hazards for 49 volts and below are not electrically hazardous. No voltage rated PPE is required. However, extra care should be taken since a jerk reaction to a low voltage shock may cause a laceration or fall. In addition inadvertent grounding or shorting of these systems may cause process upsets.

2. Personal Protective Equipment for electrical shock prevention shall be used. It shall be voltage rated for, or above, the level of the circuit voltage upon which it is being used.

3. Voltage rated PPE for electrical shock protection.

4. Talcum powder is not recommended for use on voltage rated rubber products, however Salisbury "Ten-Four Glove Dust" is a suitable alternative. Liner gloves for use in voltage rated rubber gloves are also available.

5. Gloves and sleeves of the proper class for the voltage levels to be encountered shall be used e.g.:
Class | Voltage | Type
--- | --- | ---
00 | 500 | II
0 | 1000 | II
1 | 7500 | II
2 | 17000 | II
3 | 26500 | II
4 | 36000 | II

6. Type I, made from natural rubber, is non-ozone resistant and should be avoided.

7. Type II is recommended. Type II is ozone-resistant made of any elastomer or combination of elastomeric compounds.

8. Gloves shall be stored in their natural shape. Gloves may be kept inside of protectors or in a bag, box, or container that is designed for and used exclusively for them. Sleeves may be loosely rolled lengthwise and stored inside a sleeve rollup. Gloves and sleeves shall not be stored folded, creased, inside out, compressed, or in any manner that will cause stretching or compression.

9. Line Hose and Covers shall be stored without distortion and mechanical stress in a cool, dark, dry place in a suitable box or bag.

10. Blankets shall be stored in a bag, box, container, or compartment designed for and used exclusively for them. They shall not be kept folded, creased, or compressed in any manner that will cause stretching or compression.

11. All voltage rated rubber products listed are electrically proof tested at the time of their manufacture to the values listed in the noted ASTM standards.

   NOTE: ELECTRICAL RE-TEST REQUIREMENTS (minimum)
   Gloves 6 Months
   Sleeves 12 Months
   Blankets 12 Months

12. These items shall also be electrically re-tested if a visual inspection warrants.

13. Covers, hoses, and mats shall be electrically re-tested as required when the electrical integrity is in question, after being visually inspected by a qualified person.

14. A qualified person shall visually inspect all voltage rated rubber products before each use. Proper methods of visual inspection are shown and described in the ASTM Standards listed.

15. In addition to the visual inspection, gloves shall be air tested prior to use or more often if conditions warrant. Details of the air test procedure and maximum inflation levels are in the ASTM Standard.

16. All voltage rated rubber products that have been rejected by the testing methods listed above shall be defaced, cut, or otherwise marked and identified to indicate that they are not to be used for electrical service.

17. Leather protectors for voltage rated rubber gloves shall be worn over the rubber gloves for mechanical protection. The leather protectors shall not be used for shock protection at any time.

18. Leather protectors shall be visually inspected before each use and shall be free of any holes, tears, and contamination. Also check the inside for any sharp or pointed objects.
19. Leather protectors that have been used for any other purpose shall not be used to protect voltage rated rubber gloves.

2.4 List of PPE for electrical shock protection

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
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<tbody>
<tr>
<td>Gloves, Voltage Rated Rubber</td>
<td>D 120</td>
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<tr>
<td></td>
<td>F 496</td>
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<tr>
<td>Gloves, Leather Protectors</td>
<td>F 696</td>
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<tr>
<td>Sleeves, Rubber Insulating</td>
<td>D 1051</td>
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<td></td>
<td>F 496</td>
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<tr>
<td>Blankets, Rubber Insulating</td>
<td>D 1048</td>
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<tr>
<td>Mats, Rubber Insulating</td>
<td>D 178</td>
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<td>Covers, Rubber Insulating</td>
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<td>F 478</td>
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<tr>
<td>Hose, Rubber Insulating</td>
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<td></td>
<td>F 478</td>
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<tr>
<td>Other Related ASTM Standards</td>
<td>F 819</td>
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<td></td>
<td>F 1236</td>
</tr>
</tbody>
</table>

NOTE: All the items listed above are manufactured by:
W.H. Salisbury & Co.
7520 North Long Avenue
Box 1060
Skokie IL 60077
Phone (847)679-6700

The Salisbury catalog will assist in identifying proper PPE for all applications. W.H. Salisbury & Co are not the only manufacturers of acceptable equipment.

1. Fuse Pullers

Only devices designed for the purpose of pulling fuses shall be used to remove and install fuses. The fuse pullers shall be of the appropriate size and style.

2. Hot Sticks

a. Only hot sticks that have a manufacturer's certification to withstand the following minimum tests shall be used:

   1. 100,000 volts per foot of length for 5 minutes when the tool is made of fiberglass; or
   2. 75,000 volts per foot of length for 3 minutes when the tool is made of wood; or
   3. Other tests equivalent to the above as appropriate.

3. Wood sticks shall be retested annually. Fiberglass sticks shall be retested every 5 years.
4. Hot sticks shall be inspected prior to each use. They shall be wiped clean and if any defects are found the hot stick shall be destroyed.

5. Hot sticks shall be considered as energized while being used. Never let the hot stick touch clothing or body parts while being used. Hot sticks shall used with the appropriate voltage rated gloves.

6. Hot sticks shall be stored in smooth interior canisters or enclosures so that they remain dry and protected from damage. Canisters located outside shall be watertight and mounted to prevent rain from entering the enclosure. Do not store hot sticks in areas where chemical or water vapors are prevalent or in areas where the humidity is high for extended periods.

2.5 Safety Ground Clusters

1. Only safety ground clusters, purchased or fabricated, conforming to ASTM F 855 shall be used.

2. Safety ground clusters shall be controlled. Ground clusters shall be numbered and a procedure established for accounting for the safety ground clusters, both installation and removal, during Lockout/Tagout.
Example:

The person in charge of a lockout/tagout shall place a tag, indicating the location and the number of the cluster, on the lockout point for each safety ground cluster placed on the equipment and only removed after the safety ground cluster has been removed and verified by the person in charge.

3. Safety grounds shall be installed on the following equipment and feeders before personnel come into contact with them:
   a. feeders and equipment over 600 volts
   b. switch gear and unit substation buses
   c. 600-volt class feeders from substations
   d. all overhead electrical lines on both sides of the point of work

   **NOTE:** Consideration should be given to where the grounds are located to eliminate potential exposure to energized uninsulated conductors.

4. Safety grounds shall be installed in a manner to achieve a zone of equipotential grounding to protect all personnel involved.

2.6 Insulated Hand Tools

Insulated hand tools are not considered as PPE.

2.7 Flash

1. Arc Flash Protection
   Arc flash protection shall be sufficient to protect the person from the flash hazard. In all conditions Arc flash protection is considered to be the outer most garment.

2. Hand Protection
   Gloves used for flash protection shall be long enough to cover any body parts such as the hands, wrists, and arms exposed to the flash hazard or of sufficient length to cover these parts until it overlaps other flash protection, such as the sleeve of a Nomex flash protection garment. The glove shall cover any openings in the sleeve, such as the slit for the cuff.

3. Arm Protection
   Nomex Sleeves alone are not permitted. When flash protection is required for the arms beyond the distances that a glove will provide, a long sleeve Nomex shirt, jacket, or coveralls is required.

4. Leg Protection
   A Nomex Jacket or lab coat will not provide flash protection to the lower extremities. When the hazard is located low, such as the bottom compartment of a Motor Control Center, Nomex coveralls or switch pullers pants (used with a switch pullers jacket) are required. Care shall be taken to assure the arc flash will not migrate under loose garments.

5. Body Protection
   Selection of the appropriate flash protection shall be based upon the parts of the body that will be exposed to the flash hazard and location of the hazard in relation to the position of the body. Body protection may be Nomex shirt and pants, Nomex jacket, Nomex lab coat, or Nomex coveralls. Nomex coveralls are recommended.
6. **Eye Protection**

   Face shields or windows and safety glasses shall be used to protect the eyes from potentially flying or falling objects. Safety glasses are required at all times.

7. **Head protection.**

   Employees shall wear nonconductive flame resistant head protection whenever there is a danger of head injury from electric shock or burns due to contact with exposed energized electrical conductors or circuit parts, or from falling objects. Where there is potential exposure to arc flash burns, or to flying objects, the head protection shall be supplemented by a cape, scarf, and full face shield or hood with a viewing window.

8. **Flash Protection Equipment**

   The list in III.E.5.2.4 contains samples of acceptable PPE. Other manufacturers may provide PPE that will be acceptable.

9. **Storage & Care**

   a. Flash Hazard PPE shall be stored in a manner to prevent damage from cuts, tears, or chemical damage. Flash Hazard PPE should be stored in containers, bags or lockers when not in use.

   b. Nomex clothing should be kept clean. Grease, oil, or other contaminates on the clothing may ignite in an Arc flash. Nomex clothing shall washed separately from other fabrics.

10. **Inspection**

    a. Flash hazard PPE shall be inspected prior to each use for holes, tears, cuts, contamination or deterioration. All snaps, zippers, or fasteners shall be in good working condition.

    b. Face shields shall not be cracked or broken. Face shield/hoods bands or supports shall be in good working condition.

   Any PPE found to be damaged shall not be used. Defective PPE shall be tagged defective until repaired or destroyed.

   **3.0**
1.0 PURPOSE

To provide an outlines of the requirements necessary to install, maintain, and remove temporary electrical facilities. Some examples of those facilities are new construction areas, change houses, shacks, and trailers.

2.0 REQUIREMENTS

2.1 Planning

1. A representative of the electrical craft, representatives of other major electricity users (e.g., welders), the business unit representative, and the engineer who leads the work shall meet and analyze needs, available power sources, and locations for temporary electrical equipment.

2. The temporary power distribution design to and including the unit substation should be designed or reviewed by an electrical engineer. This design should be documented.

3. If the temporary electrical service requirement is large or complex, such as uninterrupted power supply (UPS) systems on temporary construction (TC) administration buildings, seriously consider having a reputable design firm supply an appropriate design.

2.2 General Temporary Electrical Installations

1. All National Electric Code (NEC) regulations pertaining to permanent wiring also pertain to temporary wiring, except as altered or modified by Article 305 of the NEC.

2. Temporary electrical power and lighting installations shall be permitted during the period of construction, remodeling, maintenance, repair, or demolition of buildings, structures, equipment, or similar activities. The temporary wiring shall be removed immediately upon completion of the construction or the purpose for which the wiring was installed.

3. The following general precautions apply to the use of temporary wiring:

   a. Install temporary wiring so that it is not subjected to physical damage.
   b. Do not use equipment in poor condition for temporary wiring.
   c. Protect flexible cords and cables from accidental damage; avoid sharp corners and projections.
   d. When passing wiring through doorways or other pinch points, provide protection to avoid damage.
   e. When suspending temporary wiring from the building structure, use non-conductive material.

4. Protect temporary wiring from over-current according to the requirements of Article 240 of the NEC.

2.3 Services

Install electrical services according to the requirements of Article 230 of the NEC.

2.4 Feeders

Feeders shall originate in an approved power outlet or panel board. Conductors are permitted within cable assemblies or within multi-conductor cord or cable of a type identified in Table 4 of Article 400 of the NEC for hard usage or extra hard usage. If the feeder is 600-volt class, the feeder cable shall be labeled with its circuit voltage at its points of origin and destination and at points along its length in such a way that the label is visible from all viewing locations along its route.

2.5 Branch Circuits

All branch circuits shall originate in an approved power outlet or panel board. Conductors are permitted within cable assemblies or within multi-conductor cord or cable of a type identified in Table 4 of Article 400 of the NEC for hard usage or extra hard usage.

2.6 Receptacles

1. Use only ground fault circuit interrupter (GFCI) receptacles. Unless they are installed in a continuous grounded metal raceway or metal-covered cable, all branch circuits shall contain a separate equipment-
grounding conductor, and all receptacles shall be electrically connected to the equipment-grounding conductors.

2. Do not install receptacles on branch circuits that supply temporary lighting.

2.7 Ground-Fault Protection for Personnel

1. Ground-fault protection for personnel on construction sites shall be provided by a ground fault circuit interrupter (GFCI) program.
2. All 125-volt, single-phase, 15- and 20-ampere receptacle outlets that are not part of the permanent wiring of the building or structure and that are in use by personnel shall have GFCI protection for personnel.
3. Portable GFCIs are required when using receptacle outlets that are a part of the permanent wiring of a building
4. For more information on GFCI see EH&S Procedure III.E.8

2.8 Welding Equipment

For information on temporary wiring of welding equipment, see EH&S Procedure III.E.15

2.9 Temporary Lighting

Observe the following requirements when wiring for temporary lighting:

1. Use lighting levels sufficient to perform the specific task safely.
2. Protect all lamps used for general illumination from accidental contact or breakage by using a suitable fixture or lamp holder with a guard.
3. Use portable lights that have pre-molded cords and keep them in good repair.
4. Use non-conductive materials to suspend overhead cords.
5. Provide grounding as required.
6. Ensure that maximum total wattage for a 20-amp circuit is 1600 watts.
7. Use cable identified for hard usage or extra hard usage for TC stringer lighting installations.
8. Do not suspend temporary lights by their electric cords unless cords and lights are designed for this means of suspension.

2.10 Hazardous Locations

Install temporary wiring in hazardous locations to meet the classification of the area. For more information on classifications, see NEC Articles 500-503.

2.11 Guarding

For temporary wiring over 600 volts, provide suitable fencing, barriers, or other effective means to prevent access of anyone other than authorized and qualified personnel.

2.12 Construction Trailers and Metal Buildings

Provide grounding for construction trailers according to the requirements of Article 550 of the NEC. Provide grounding for metal buildings according to the requirements of Article 250 of the NEC.

2.13 Special Conditions

1. When using temporary feeds to permanent equipment and facilities, take care to control back feeds, dual feeds, and similar situations. Attach appropriate caution and warning signs to both the equipment and cables.
2. Upon completion of the job, remove any temporary underground cables. If the cables cannot be removed the cables shall be recorded on permanent site maps.

2.14 Labeling

Identify and label all disconnect switches. State the circuit voltage source and the equipment being serviced. Label all receptacles on temporary racks with the circuit voltage present and the circuit number.

2.15 Marking
In areas where disconnect switch racks, distribution panels, and motor control centers (MCCs) are located, mark the floor with yellow caution paint 3 feet (1 meter) in front of the equipment, or install a permanent barricade. This is to prevent personnel from blocking access to the operating handles. For short-term installations, use yellow safety tape in place of paint.
1.0 PURPOSE
To provide an outlines of the requirements necessary to perform checkout and startup of electrical or electrically operated equipment and facilities. It does not address the requirements for checkout and startup of mechanical or mechanically operated equipment and facilities.

This procedure shall not serve to limit personal responsibility for implementing a safe checkout and startup procedure.

2.0 REQUIREMENTS
1. After initial construction tasks have been accomplished, checkout and startup requires frequently energizing and de-energizing equipment. These changing conditions can present hazards which are not always predictable (such as process releases, rotating equipment, stored energy). Electrical checkout and startup plans should address those hazards in addition to the shock, flashburn, and equipment damage associated with electrical work.

2. Checkout and startup responsibilities should be spelled out as soon as possible after the job task/scope of work has been defined so that resources are properly trained, authorized, and available to perform checkout and startup and operate the system safely.

3. Each task should be analyzed in a way that safe conditions are assured.

4. The checkout and startup team shall understand what can happen when a circuit is initially energized. The team should elect one person to energize and de-energize circuits as necessary to checkout and startup the system. All pertinent drawings (single lines, schematics, loops, P&ID's) should be at hand.

5. If a system fails, during checkout, to operate as designed, making troubleshooting necessary, troubleshooting shall be accomplished by qualified personnel. See EH&S Procedure III.E.1, Qualifications of Electrical Personnel.

6. The checkout and startup team shall verify all design changes with the originating designer and/or engineer. All changes to design drawings shall be documented and returned to the originating designer and/or engineer for drawing revision.

7. Preferably, checkout work should be performed while the equipment and circuits are de-energized. If it becomes necessary to troubleshoot energized circuits to determine corrections needed for proper operation, the troubleshooting shall be performed by qualified persons on the checkout team. The work shall be performed per EH&S procedure III.E.9 for 120 volt systems and EH&S Procedure III.E.19 for 600 volt systems.

2.1 Checkout And Startup Plan
For each checkout or startup activity, or group of activities, a plan will be prepared by the Electrical function leader.

1. The plan should identify the person who has responsibility to coordinate mechanical and other checkout and startup teams.

2. The plan should identify the person who is responsible for authorization of electrically hazardous work.

3. The plan should identify the mechanism to be used to determine the status of checkout and startup. An example of this mechanism is marked drawings.

NOTE: AN EXAMPLE OF A TYPICAL CHECKOUT/STARTUP PLAN IS INCLUDED IN THIS PROCEDURE AS ATTACHMENT III.E.13.001.

2.2 General Precautions
1. To the extent possible, checkout shall be accomplished with the system de-energized.

2. All rings, watches, and other jewelry shall be removed. Rings that cannot be removed shall be covered with electrical tape for electrical and physical protection.

3. Clothing and personal protective equipment, appropriate for the job, shall be worn.

4. Hand tracing of wiring without electrically isolating the starter or other electrical equipment should be avoided. Note: TEST BEFORE TOUCH

5. Unknown circuits in wiring have caused fatalities. Extreme caution should be taken when working on them.

6. Persons performing checkout and startup work shall not be placed under time constraints and shall be prepared for unexpected events. Extended work hours should be evaluated for safety implications.

7. All unauthorized or unnecessary personnel shall be removed from the affected area before the power is turned on.

8. Deviation from planned activity shall be approved by the team leader and communicated to all appropriate parties before implementing the change.

9. All circuits and equipment rated 480 volts and above should be insulation resistance tested before being energized.

10. Before touching uninsulated conducting parts, absence of voltage shall be confirmed with an approved meter.

11. A lockout plan shall be identified and followed.

12. Safety grounds should be constructed and installed.

13. A procedure to control temporary jumpers should be established. Some examples of how to accomplish this is tagging the jumpers with red ribbon, keeping a written log of jumpers installed, etc.
1.0 PURPOSE
To provide requirements for using ground fault circuit interrupters (GFCIs) and some manufacturers’ recommendations.

2.0 REQUIREMENTS

1. How GFCIs Work
Under normal conditions the current in an electrical branch circuit flows equally between the hot (supply) and neutral (return) conductors. The GFCI has a sensing element that monitors the current of both these conductors. If the GFCI senses a current difference between the hot and neutral conductors of as much as five (5) milliamps, it will trip, thus opening the circuit in a fraction of a second. This protects the user of a defective tool, device, or extension cord from lethal shock.

2. Required Use
GFCIs shall be used on all extension cords and portable electric tools. Deviations, including substitution of an “assured grounding program” in lieu of 100% GFCI protection, may be authorized only by site/facility management with concurrence from the EH&S office. Portable electric lighting used in confined spaces shall operate at 12 volts maximum or 120 volts if protected by a GFCI. Low-voltage (12 V.) lighting is recommended due to the possibility of the GFCI tripping and leaving the entrants unable to see. Electric tools should not be permitted on the same circuit as lighting where 120-volt GFCI protected lighting is used, for the same reason. GFCIs shall not be used on temporary lighting circuits.

2.2 Type And Proper Use Of GFCIs
GFCIs should only be used on AC circuits. GFCI devices do not function properly on DC circuits.

1. Class A GFCIs:
   a. Are accepted as personal protection by OSHA in temporary wiring circuits.
   b. Should be plugged in as close to the circuit source as possible.
   c. Should be tested using the built-in test button before each use.
   d. Do not afford protection in the event of an open circuit neutral condition.

CAUTION: Some Class A GFCIs have an automatic reset feature and are not approved for use on Saxon sites/facilities.

CAUTION: A GFCI breaker in a panel board does not afford protection in the event of a reverse polarity circuit condition.

Note: Class A GFCI receptacles and breakers in permanently wired systems which have been tested for open circuit neutral and reverse polarity are acceptable as personal protection and afford excellent shock protection.

2. Class B GFCIs are not to be used for personal protection. They are intended for use as equipment protection.

3. Use an assured grounding program in lieu of GFCIs for magnetic base drills. The hazard created by the GFCI tripping can be greater than the shock hazard.

2.3 Testing
1. All GFCIs have a test button that proves the internal contacts will mechanically trip. The test button shall be used each time the GFCI is used. Other testing should be done per the manufacturer’s recommendation.

2. Field-fabricate portable GFCI units shall be 100% tested by a competent person for open circuit neutral and reverse polarity.
1.0 PURPOSE

To provide established minimum requirements for working on equipment energized from 120/240-volt single-phase transformers, 120/208-volt three phase transformers, and 120-volt single-phase transformers. These circuits are 120-volts to ground. The electrical tasks are performed in lighting panels, relay enclosures, distribution panels, wire-ways, instrument power panels, and terminal boxes.

2.0 REQUIREMENTS

1. Work in energized 120/240-volt equipment can be hazardous if adequate precautions are not taken to prevent contact with energized parts. The best practice is to avoid working on or near energized 120/240-volt circuits. When work is to be performed in electrical enclosures containing energized 120/240-volt circuits or parts, the requirements of this procedure shall be followed.

2. The many electrical incidents involving work around energized 120/240-volt circuits indicate the need for well understood procedures. Attempt no work until the safety planning is complete and there is assurance that it can be done safely. Personnel shall be reminded frequently that 120/240-volt AC is potentially lethal and accounts for the majority of fatalities due to electrical shock.

3. For construction and maintenance tasks use, Hazard/Risk Analysis Flow Chart as the basis for selecting personal protective equipment. Include pulling the fuse and testing for voltage, required to comply with EH&S procedure for the Control of Hazardous Energy, Lockout/Tagout/Try, and EH&S procedure for Establishing an Electrically Safe Working Condition.

2.1 Construction Electrical Tasks

1. Safety Planning

The electrical superintendent ensures that it is necessary to work on the equipment near exposed energized 120/240-volt AC conducting parts. The facility owner shall consider accepting the inconvenience of a shutdown during normal working hours or a shutdown during nights and weekends.

2. Cutting and Drilling

Cutting or drilling on or in energized cabinets and panel-boards is hazardous because it is difficult to be absolutely certain that no energized parts are being affected; therefore these tasks require planning, barricading, and authorization. If wire-ways designed expressly for holding wires have been protected with adequate temporary barriers to prevent inadvertent contact with energized parts, they may be cut and drilled.

3. Pulling Wire and Cable

Pulling wire and cable through square duct and other wire-ways into energized 120/240-volt AC panel-boards, relay cabinets, and other similar enclosures is considered a safe task for qualified persons when planned appropriately. Do not pull wire and cable in conduit containing energized conductors. Nonmetallic fish tape with a nonmetallic leader is required for pulling wire and cable in conduit. Bare ends of insulated wire should be taped.

4. Terminal Boxes

To eliminate shock hazards, carefully plan work in terminal boxes containing energized conductors. Special consideration should be given to the possibility of “common neutrals.”

5. Energized Relay Cabinets and Panel boards

Electrical tasks in energized relay cabinets, panel-boards, and similar equipment require extensive use of temporary barriers made of rubber, plywood, MICARTA, and Lucite®. The task of installing a barrier adjacent to energized parts may be classified electrically hazardous, depending on the barriers distance from
energized parts. Include the installation of the barriers in the job safety planning. Isolate, with barriers, all energized parts within reach of body parts or tools and equipment held by the person doing the work.

6. Personnel Qualifications

Assign only trained and experienced personnel who are qualified to do electrical construction tasks. Instruct the employee of any unique features of the particular equipment, including the specific actions to take in executing the task. Ensure that the employee understands the assigned task and all its safety implications.

7. Job Plan Authorization

Job planning shall be per EH&S Procedure III.A, addressing all site/facility safe work practices and Procedure III.E which covers electrical safety.

2.2 Maintenance Electrical Tasks

General maintenance electrical tasks include adjustments, testing, troubleshooting, and diagnostics that may require the equipment to be energized. To the greatest extent possible all other maintenance work such as component installation or replacement and repairs should be done with the equipment de-energized. Proper planning and authorization shall take place for each approach boundary: flash, limited, restricted, and prohibited.

Note: Employees who have worked in construction may not be familiar with maintenance electrical task procedures.

1. Personnel Qualifications

Only experienced and trained personnel who are qualified to do electrical maintenance tasks will be assigned to those tasks. The employee doing the task shall be familiar with the Saxon procedures and be able to apply these procedures without detailed job plans for each task. The employee’s safety depends upon his or her use of personal protective equipment consistent with the requirements of each task assigned.
1.0 PURPOSE

To provide instructions and information to prevent exposing an employee to shock, arc flash burn hazards, and chemical burn hazards when connecting and disconnecting ungrounded battery system cells when the total battery voltage exceeds 50 volts DC. This procedure applies to working on the batteries up to the first disconnect switch.

2.0 REQUIREMENTS

1. Working on battery systems can expose a person to shock, arc flash burn hazards, and chemical burn hazards. Working on batteries or groups of batteries is considered electrically hazardous when the group’s total voltage exceeds 50 volts DC. Transporting batteries to and from the job site shall be carefully planned to prevent spills that result in chemical exposure to personnel.

2. Carefully select the tools used to tighten the connectors to prevent short circuits. Use box-end wrenches or socket wrenches.

2.1 JOB PLAN

Before connecting or disconnecting stationary batteries with a combined voltage of over 50 volts DC, the engineer/coordinator responsible for the work shall prepare a job plan and secure approval from the Saxon representative responsible for the work. The job plan shall clearly state the work sequence and the personal protective equipment (PPE) to be worn for each step.

2.2 PERSONAL PROTECTIVE EQUIPMENT

1. While installing battery connectors and jumpers between groups of batteries, wear the following PPE as a minimum:
   a. electrically non-conducting hard hat
   b. polycarbonate face shield (flash protection)
   c. flame retardant and acid resistant apparel
   d. monogoggles (electrolyte protection)
   e. rubber boots
   f. voltage rated gloves

2. Ensure an eyewash station is located adjacent to the work area. Provide a portable fire extinguisher in the work area and provide baking soda to quickly neutralize electrolyte spills to prevent exposure to personnel and equipment damage.

2.3 PROCEDURE FOR NEW BATTERY INSTALLATIONS

1. Designate the immediate area around the stationary battery as a "Do Not Enter Area".

2. Erect a barricade around the batteries at a distance of at least 10 feet. Permit access only to those persons doing the physical work.

NOTE: Batteries under charge generate hydrogen. When planning the work assess the need for an explosibility test to constantly monitor conditions in the area.

3. Open the battery load-disconnect switch and view the visible gap between the switch contacts. Lock, tag, and try the switch in the open position.

4. Check for absence of voltage between the load side terminals and ground. An approved single function voltmeter shall be used for this voltage testing.
5. Connect the battery load disconnect switch positive (+) terminal to the battery load positive (+) terminal. Then connect the battery load disconnect switch negative (-) terminal to the battery negative (-) terminal. The positive and negative leads from the battery are physically close at the battery disconnect switch, therefore these connections are to be made before the cells are connected.

6. Connect cell groups together starting with the most positive and the most negative groups. Make the last connection the connector in the center of the battery group. Prior to connecting any 2 terminals, test for absence of voltage.

2.4 Procedure for Removing Batteries

When it is necessary to remove a battery after the group has been assembled, this sequence shall be followed:

1. Prepare a complete job plan and secure approval from the Saxon representative responsible for the work (see III.E.)

2. Use PPE according to section III.B & III.E

3. Open the battery load disconnect switch and check for a visible gap between the switch contacts. Lock, tag, and try the switch in the "open" position.

4. With the battery load disconnect switch open, test the positive (+) and negative (-) terminals to ensure the absence of voltage to ground. All battery grounds shall be removed.

5. When the battery voltage exceeds 50 volts DC, remove the center intercell connector before removing the intercell connectors of the battery being removed.

6. Install the replacement battery and replace the intercell connectors in reverse order of removal.
1.0 PURPOSE

To provide instructions and information for ensuring cable tray work safety. It is intended to prevent injuries to people, to prevent damage to facilities, and to prevent upsets to operating processes.

2.0 REQUIREMENTS

The hazards most commonly encountered while performing cable tray work are:

1. Personnel falling while gaining access or egress to the tray.
2. Personnel falling while performing work on or in the tray.
3. Damage to the cable tray
4. Damage to the cables in the tray.
5. Electrical shock from improperly grounded tray.
6. Electrical shock from cables in the tray, which have deteriorated or damaged insulation.
7. Process upset from damaging cables in the tray

2.1 Job Plan Requirements

An authorized job plan or site/facility procedure is required for work in and on cable trays when persons are to be supported by the cable tray or when persons are required to move or handle energized cable.

2.2 Job Plan Preparation

When preparing a job plan, consider using scaffolds, ladders, and powered manlift equipment. Do not support persons on a cable tray merely for expediency. Using cable trays as personnel work platforms is discouraged and is considered only after careful study indicates other means of support are not feasible and the cable tray can support the required load. The construction engineer/coordinator, a competent person, and supervisor of the work crew shall review the work site to determine the best means of support.

2.3 Purpose And Review

The job plan shall clearly state why it is necessary to use the cable tray as a work platform. The job plan shall be reviewed by the site/facility EH&Ś professional and approved by the site/facility manager. A competent person representing the electrical department shall approve the job plan only when moving or handling energized cable. The persons assigned to do the task shall review a copy of the approved plan.

2.4 Grounding

The job plan shall include an on-site inspection of the cable tray grounding system for trays with energized cable. Grounding is required to provide a ground fault return path and to drain induced voltages. It is possible to lose ground continuity in a cable tray when the tray is altered or partially removed.

2.5 Weather Conditions.

THE JOB PLAN SHALL INCLUDE THE WEATHER CONDITIONS THAT ARE ACCEPTABLE FOR CABLE TRAY WORK. RAIN OR SNOW MAY CAUSE SLICK WORK PLATFORMS. HANDLING AND MOVING ENERGIZED CABLE BECOMES MORE HAZARDOUS IN THE RAIN.
2.6 Considerations

1. Cable pulling work in existing cable trays frequently involves touching, moving, and handling energized cable. Before cable-pulling work begins, electrical supervision shall visually inspect the cable for signs of decomposition, foreign material, brittleness, cracks, nicks, and cuts.

2. If the cable system is not damaged, the cables may be handled or moved by persons wearing gloves rated for the voltage. Incidental touching, not handling, of energized cable with good insulation is permitted without voltage-rated gloves.

3. If the cable system shows signs of deterioration, the cable shall not be touched or handled under any conditions. The cable shall be de-energized before touching or handling. Prior to re-energization the cable shall be tested.

4. Arc Flash Protection

Job plans frequently require handling of energized cable that has the capability to produce an arc flash of such magnitude that a flash protection boundary would exist if a fault occurred. While handling all energized cable that falls in this category, appropriate flashburn PPE shall be worn. See EH&S Procedure III.E.5 for information on determining the flash protection boundary and the appropriate flashburn PPE.

5. Restrictions

Before any person is allowed to use a cable tray for support, evaluate the tray system to determine whether existing trays are strong enough to support personnel.

6. When working on a cable tray, the following restrictions apply:

   a. Cable tray covers are not designed to support personnel.
   b. When flame shields are installed, no persons can be supported on cable trays.
   c. Never walk on cable located inside the cable tray.
   d. Never use the vertical rungs of a cable tray as a ladder.
   e. New Cable Trays As Work Platforms
   f. When using a new cable tray as a work platform, ensure that the tray installation is totally completed and that the tray is not overloaded.

7. Existing Cable Trays As Work Platforms

When working on an existing cable tray, check the tray system for conditions that might decrease its strength (i.e., corrosion; crimps, missing or detached rungs, fasteners, or hangers; signs of stress or fatigue; rust; modifications of the tray or supports).

8. Cable Tray Work Platform Considerations

   a. Because work platform stability is of primary importance, limit work in or on the cable tray to the area near or at the support, where strength is greatest. Carefully analyze field-modified trays to determine their load-carrying capacity.

   b. When constructing a platform IN a cable tray, place solid decking, 3/4 ” minimum, directly on the rungs. Secure the platform in a way that will insure against slipping or tipping. The width of the platform shall not be less than 50% of the width of the tray itself (i.e. - 12” platform for a 24” tray). Do not place platforms directly on cables.

   c. When constructing a platform ON a cable tray, place solid decking, 3/4” minimum, directly on the full width of the stringer flanges and secure or cleat it to avoid sliding or tipping.
d. Use an appropriate fall-arrest system per site/facility policy.

e. When selecting the location for platforms, review the proximity to surrounding process conditions (i.e., process or hot piping)

f. Cable tray platforms shall be designed to prevent inadvertent cutting of or stepping on cables.

g. If the cable system shows signs of deterioration, de-energize the cable before installing the work platform on the tray. An alternative to de-energizing the cable is to cover the cable with insulating blankets or other barriers.
1.0 PURPOSE

To provide established safety requirements for dismantling, removing or rearranging (D&R) electrical conduit, cables, and conductors.

2.0 REQUIREMENTS

1. Before employees are permitted to start any electrical D&R activity, a competent person shall conduct a survey to determine the exact scope of work and the method for safely executing it. Depending upon the complexity of the work or the hazards involved, a written job plan may be required.

2. The steps in this procedure are intended to address all situations. In cases of unique nature, the competent person shall exercise good judgment in determining appropriate execution methods.

3. A qualified person shall perform electrical D&R.

4. Hazards that may be encountered while engaged in electrical D&R include but are not limited to the following:
   a. Back feeds in electrical equipment
   b. Induced voltage in cables
   c. Residual voltage in cables
   d. De-energizing the wrong cable
   e. Cutting the wrong cable
   f. Cutting through a raceway containing energized conductors
   g. Contacting energized conductors or parts
   h. Vibration of operating relays causing trips
   i. Fall hazards
   j. Incorrect labeling

5. If a cable or conductor intended to be D&R'd terminates in an enclosure containing energized components that would be impractical to de-energize, an analysis by a competent person shall be done to determine if physically removing the cable or conductors from that enclosure would result in an elevated risk of exposure to the employee. If that analysis determines an unacceptable risk of exposure would exist, the cable or conductor may be D&R'd to a point just outside the enclosure. The end of the cable or conductor that would remain shall be labeled in a way that is highly visible and each conductor individually insulated.

2.1 D&R OF CABLE OR CONDUCTORS FROM CONDUIT

1. If D&R of cable or conductors from conduit involves removing some of the enclosed conductors in a conduit while some conductors are intended to remain, all the conductors shall be de-energized, locked, tagged, tried, & tested.
NOTE: Deviation from this rule is allowed in certain circumstances only after an analysis by a competent person has determined no significant hazard to the person or disruption to equipment is likely to occur. Excessive force shall not be applied that could cause inadvertent damage to the remaining conductors or cables.

NOTE: No conductor shall be cut until it has been physically traced to an access point.

2. Cable or conductors intended to be D&R’d from conduit shall be electrically isolated per EH&S procedure III.A.20 (Lockout/Tagout-Try) and III.E.2 (Establishing an Electrically Safe Working Condition).

3. Conductors shall be disconnected on both ends prior to D&R.

4. Conductors shall be tested and absence of voltage verified at all access points (pull boxes, junction boxes, condulets, etc.) with a single function test device prior to D&R.

: Proper operation of any test device shall be verified on known source, both before and after the tests. Non-contact test devices have limitations, such as not detecting DC voltage or not detecting AC voltage through a metal sheath. The user shall be knowledgeable of those limitations.

5. After absence of voltage has been verified, starting from the voltage supply end, the conductors shall be removed to the access point and cut.

6. The above procedure shall be repeated until conductors are completely removed.

2.2 CABLE IN TRAYS

1. It is recommended out of service wiring be physically removed.

2. If it is not physically removed, minimum safe practice includes disconnecting and identifying, in a highly visible manner, cable(s) on both ends and indicating the location of the opposite end. Out of service conductor ends shall be individually insulated.

3. Although EH&S Procedure III.E.11 (Cable Tray Work) indicates applicability to energized cables, the requirements shall also apply to D&R of de-energized cables in trays.

4. The D&R task shall be analyzed to determine if induced voltage could present a hazard. An example of this would be a long run in the same tray with energized cables. In those cases where hazardous induced voltages may exist, a competent person shall analyze the job for an appropriate path forward. That analysis may be from the opposite end of the cable from the direction the D&R will be done.

5. Only reasonable force shall be applied while performing D&R of cables intertwined with cables that are intended to stay in service. Excessive force could cause inadvertent damage to other cables.

6. Tools used to cut cables shall not be positioned in a way that they may cause inadvertent damage to another cable. (I.e. – using a port-a-band saw directly above the tray may result in accidentally making contact with or being dropped on a cable in the tray) Use of insulated cutting tools is recommended.

2.3 STEP BY STEP PROCEDURE FOR D&R OF CABLE IN TRAY

1. Wiring shall be electrically isolated from its source using Procedure III.A.20 (Control of Hazardous Energy-Lockout/Tagout) and III.E.2 (Electrically Safe Working Conditions)

2. The cable shall be verified by phoning or by using a continuity meter.

3. The cable is removed from the cabinet. When the cable is not in a raceway, closing hardware shall be installed to cover the hole in the cabinet.

4. Cable removal shall be started at the voltage source end
5. If any cable in the tray is energized or has the potential to be energized, or if any cable in the tray is intended to remain in service the following applies:

6. Before the cable is initially cut as well as before any subsequent cuts are made, visual verification shall exist from the end of the cable to the point of cut. This visual verification shall be continuous along the length of cable.

**NOTE:** If the cable is intertwined with other cables or passes through walls or partitions it is impossible to have continuous length visual verification. In those cases, the cable shall be physically removed from the tray to achieve continuous length visual verification prior to cutting.

Pulling the cable back and forth in the tray by two craftspersons is not an acceptable substitute for continuous length visual verification and should never be depended upon for cable identification.

7. After all cables intended to be D&R’d are removed from the tray, the remaining cables shall be re-secured.

2.4 D&R OF CONDUIT

1. All junction box and pull box covers as well as all conduit covers shall be removed prior to conduit D&R.

2. If at all practical, the enclosed conductors should be removed prior to D&R of the conduit. If it is not practical to remove the conductors prior to conduit D&R, the conductors shall be disconnected and absence of voltage shall be verified.

3. All effort should be made to unscrew the conduit versus cutting it. If unscrewing is not practical, the following applies:
   a. Before the conduit is initially cut as well as before any subsequent cuts are made, visual verification shall exist from the end of the conduit to the point of cut. This visual verification shall be continuous along the length of conduit.
   b. All holes in equipment remaining after conduit D&R shall be plugged.
1.0 PURPOSE

To provide and identify the minimum planning requirements for safely energizing electrical equipment. The procedure applies to equipment that has been checked out and is ready to be energized.

2.0 REQUIREMENTS

Energizing electrical equipment is potentially very hazardous. Always follow these steps to help contain the energy and ensure safety:

1. Analyze the diagrams and drawings to evaluate the possibilities of creating a back feed to equipment other than the equipment being energized and to find out if temporary feeds have been installed.

2. Verify the accuracy of the drawings and the absence of temporary feeds with the facility electrical representative who knows if the equipment has been modified. Any drawings found to be inaccurate should be marked for updating.

3. If the equipment was de-energized, determine the reason and verify that the equipment is ready to be re-energized.

4. Check the operating voltage and energy levels of the equipment or system being energized to classify the work and to determine the types of voltage testers and personal protective equipment (PPE) that are required to energize the system safely.

5. Determine who will perform each of the following activities: throwing switches, voltage testing, high potential or Megger® testing, phasing, and phase rotation.

6. Notify all personnel affected.

7. Determine the test method to assure the system is clear.

8. Inspect the equipment visually to verify conditions and to ensure that appropriate labeling has been installed.

2.1 Energizing Equipment or Feeders Over 600 Volts and 600-Volt Class Distribution Equipment

The supervisor responsible for the work and other appropriate personnel, including electrical craft and facility electrical representatives, shall hold a planning meeting prior to energizing any equipment over 600 volts or any 600-volt class distribution equipment. The purpose of the meeting is to determine a scope of work and to complete the Planning Outline for Energizing Electrical Equipment. The planning outline requires the written approval of the area engineer, the electrical superintendent, and the appropriate facility electrical representative.
2.2 Energizing Utilization Equipment That Is 600 Volts or Less But Over 125 Volts-to-Ground

1. The supervisor responsible for the work and other appropriate personnel, including electrical craft and facility electrical representatives, shall hold a planning meeting prior to energizing any equipment that is 600 volts or less but over 125 volts-to-ground. This equipment includes MCCs, 600-volt class distribution panels, 480-volt motors, 480-volt disconnects, the line side of power and lighting panels, and any other equipment that has a 480-volt primary feed.

2. The meeting can cover more than one piece of equipment, such as a package or a turnover system. The purpose of the meeting is to determine a scope of work and to complete the Planning Outline for Energizing Electrical Equipment.

3. The planning outline requires the verbal or written approval of the area engineer and the electrical superintendent. The complexity of the energizing task determines whether or not the approval shall be in writing.

2.3 Energizing Utilization Equipment That Is 125 Volts-to-Ground and Below

1. The supervisor in charge of the work, and the site/facility electrical representative shall meet prior to energizing any equipment that is 125 volts-to-ground or below, such as the breakers in power and lighting panels and 250-volt class disconnect switches and related equipment. The meeting can cover work on several breakers in one panel or an entire turnover system. The purpose of the meeting is to determine a scope of work and to complete the Planning Outline for Energizing Electrical Equipment.

2. The planning outline requires the verbal or written approval of the area engineer and the electrical superintendent. The complexity of the energizing task determines whether or not the approval shall be in writing.

2.4 Using the Planning Outline

When any electrical equipment is energized, the supervisor in charge of the work shall use the Planning Outline for Energizing Electrical Equipment to review the scope of work, potential hazards, and appropriate safety precautions with the people who will do the work. All work shall be performed in the manner described in the planning outline. If the work cannot be performed according to the planning outline, stop and re-plan.
1.0 PURPOSE

To provide the minimum planning requirements for de-energizing electrical equipment.

2.0 REQUIREMENTS

Before beginning to de-energize any electrical equipment, follow these steps to ensure safety:

1. Analyze the diagrams and drawings to determine the possible location of any temporary feeds, back feeds, alternate feeds, or other external sources of power and control voltage.

2. Verify the accuracy of the drawings and the presence of feeds with the facility electrical representative.

3. Check the operating voltage and energy levels of the equipment or system being de-energized to classify the work and to determine the types of voltage testers and personal protective equipment (PPE) that are required to de-energize the system safely.

4. Determine who will perform each of the following activities: throwing switches, voltage testing, and grounding.

5. Determine the level of grounding required (Discharge grounding or Safety grounding).

6. Identify the requirements for re-verifications at each work shift, including safety grounds and tests for voltage at the points of work.

7. Identify the points where tests for voltage shall be made and the types of testers to be used. (A test for voltage is required at each point of work, and no work may be started until all points have been checked for the absence of voltage.)

8. Inspect the equipment visually to verify existing conditions and appropriate labeling.

2.1 De-energizing Equipment or Feeders Over 600 Volts and 600-Volt Class Distribution Equipment

1. Planning Meeting

   a. The supervisor responsible for the work and other appropriate personnel, including electrical craft and facility electrical representatives, shall hold a planning meeting prior to de-energizing any equipment over 600 volts or any 600-volt class distribution equipment. The purpose of the meeting is to determine a scope of work and to complete the Planning Outline for De-energizing Electrical Equipment.

   b. The planning outline requires the written approval of the area engineer, the electrical superintendent, and the appropriate site/facility electrical representative.

2. Installing Safety Grounds

   a. Installing or removing safety grounds is potentially very dangerous and may be classified as hazardous work, depending on conditions. For more information about classifying electrical tasks.

   b. Personnel who install or remove safety grounds shall be qualified according to the provisions of Procedure III.E.1.
c. Safety grounds shall be constructed and installed in accordance with the procedures. Safety grounds shall be controlled.

d. Safety grounds shall be installed on the following equipment and feeders before personnel come into contact with them:

1. feeders and equipment over 600 volts
2. switch gear and unit substation buses
3. 600-volt class feeders from substations
4. all overhead electrical lines on both sides of the point of work

2.2 De-energizing Utilization Equipment of 600 Volts or Less with More Than One Supply Source

1. De-energizing utilization equipment of 600 volts or less that has more than one supply source can be particularly hazardous because of the presence of back feeds, alternate feeds, or external sources of power. The supervisor responsible for the work and other appropriate personnel, including electrical craft and facility electrical representatives, shall hold a planning meeting prior to de-energizing any of this equipment. The purpose of the meeting is to determine the scope of work and to complete the Planning Outline for De-energizing Electrical Equipment.

2. The planning outline requires the verbal or written approval of the area engineer and the electrical superintendent. The complexity of the de-energizing task determines whether or not the approval shall be in writing.

2.3 De-energizing Utilization Equipment of 600 Volts or Less with a Single Supply Source

De-energize this equipment in accordance with the procedures outlined in Procedure III.A.20 and III.E.2. After de-energizing, and prior to starting any work on the equipment, test all points of work for the absence of voltage.

2.4 Using the Planning Outline

When any electrical equipment is de-energized, the supervisor in charge of the work shall use the Planning Outline for De-energizing Electrical Equipment to review the scope of work, potential hazards, and appropriate safety precautions with the people who will do the work. All work shall be performed in the manner described in the planning outline. If the work cannot be performed according to the planning outline, stop and re-plan.

NOTE: De-energizing electrical equipment is only one step in establishing an electrically safe working condition. For more information see Procedure III.E.2.
1.0 PURPOSE

To provide a safe method for using electric welding machines, welding and small 110/220-volt portable generators. This procedure also addresses the electrical hazards associated with electric welding and small portable generators, as well as the electrical safety training requirements for welders.

This procedure does not cover portable generators supplying voltages greater than 110/220. Generators supplying voltages other than 110/220 volts are considered to be separately derived sources and require installation according to applicable over-current protection (fuses or circuit breakers) and grounding requirements of the National Electrical Code articles 240 and 250.

2.0 REQUIREMENTS

2.1 Electrical Hazards and Training Requirements

1. The electrical hazards associated with electric welding and electric welding machines are:
   a. Shock, from both the welding machine incoming power and the welding voltages.
   b. Burn, from flash at the welding machine incoming power cable & connections.

2. Shock to a welder might be assumed to be an acceptable practice due to the frequency of shocks to welders caused by improper personal protection and awareness. This belief can and has been a fatal assumption. Shock can be avoided by using proper welding techniques and PPE. Training welders in the electrical hazards of welding and electric welding machines is a requirement of TITLE 29 CFR 1910 & 1926. Training will greatly reduce the myth that being shocked is an acceptable practice and it will prevent injury or death.

3. Welder training, awareness and the proper use of personal protective equipment can also prevent flash burn.

2.2 Welding Machine Installation

A Qualified person shall:

1. Install and inspect all electrically connected welding machine power sources at each new installation to ensure that the integrity of the conductor and their terminations are adequate.

2. Inspect welding machines that are fixed installations on an annual basis. This inspection shall address the:
   a. Insulation integrity of the supply-side conductors
   b. Adequacy of the supply-side conductor terminations
   c. Proper over-current protection for the welding machine
   d. Adequacy of the equipment grounding conductor
   e. Indications of weather or water damage.

3. Ensure that each electric welding machine is supplied from a properly sized switch with properly sized over-current protection and cable. (NEC ARTICLE 630)

4. Where power is supplied by a plug and receptacle, the supply side of the connection is a female connector interlocked to make it impossible to disconnect the plug when the main disconnect is on (energized).

5. The power supply conductors are either four-conductor cords (with ground wire included within the cord) or three-conductor cords (with an external ground wire) and the ground conductor is adequately connected to a good ground.
6. Ensure that when two single-phase welding machines are installed in close proximity to each other, they are connected to the same phase of power supply to minimize the possible differences in welding voltages due to phase relationships.

2.3 Welders shall:

1. Inspect welding leads prior to use to ensure that the insulation is not damaged and that the conductor is not exposed. Repair or discard damaged leads.

   NOTE: It is not permissible to repair by splice or tape a damage that is within 10 ft. of the end of a lead, however the lead may be cut and re-terminated to the connector.

2. Connect welding leads to the welding machine by a male plug. Ensure that the female portion of the connector is the energized part of the set.

3. Make sure welding lead connection points on the welding machine have guards to avoid accidental contact with exposed terminals.

4. Install two leads to the work location. Do not use building steel or pipelines as the return path for the welding current. When welding to building steel or pipelines, connect the return lead to the same steel part where welding is to proceed.

5. Turn off welding machine while pulling leads to a new location and in some cases until the welder is in position to make a weld. (In cases where the welder shall lie/lean on a grounded surface to perform a welding task, another person should start the machine when the welder is ready to strike an arc and begin the task.)

6. Do not support welding leads with tie wire. This practice damages the welding lead insulation. Support leads with nonconductive materials or insulated wire. Install welding leads so that they are not potential tripping hazards.

7. Eliminate the possibility of partially exposing a connection while pulling the leads. Male and female connectors of welding leads may need to be taped or otherwise restrained form separating. Welding leads should not be tied in a knot.

8. Inspect rod holders for cracked or broken insulated covers. Discard or repair insulation if found defective.

9. Remove the rod from the holder when unattended.

10. Do not weld on material or equipment suspended by a metallic support mechanism (choker, chainfall, and load line). This undesirable because of the possibility of damage to the choker or the load line. When such an operation is required, the support shall include an insulating element to eliminate the possibility of welding current flowing through the support.

   NOTE: Pipelines and equipment containing flammable or combustible materials shall not be a part of the welding path.

2.4 Various type Welding Machines Requirements

1. Portable Welding Machines

   a. A driven ground rod or case ground to building steel is not required for mechanically driven welding machines.
b. When a portable welding machine includes a receptacle for convenience power, the receptacle shall be guarded with a ground fault circuit interrupter (GFCI) if the voltage is alternating current. If the voltage is direct current, the receptacle should be disabled and not be used.

2. Multi-arc Welding Machines (this type welder is not to be confused with 6/8 pack rectifier type machines. They normally consist of one welding output source, either 500 or 1000 amp, connected to multiple grid units).
   a. Do not use multi-arc welding machines to supply welding power of different polarity from the same power source. Connect each power source to a supply only single-polarity welding. Modify each unit as needed to provide a method for connecting the welding return cable to the unit source.
   b. Use a different type of connector for each conductor function of multi-arc welding machines. For instance, the work lead should use a connector that cannot be inserted into a return lead connector. It shall be impossible to connect either the work lead or the return lead into the conductors supplying the resistor unit.

3. Dual-Polarity Welding
   a. To ensure that a person cannot contact both polarities at the same time, keep the exposed electrode holders of different polarities at least 10 feet (3 meters) from each other and from the work, or otherwise separate the electrode holders from each other and from the work by a physical barrier.
   b. Identify reverse-polarity welding machines and welding leads by color code (The reverse-polarity color code in normally red. The straight-polarity color code in normally yellow.) The welding return lead should be unmarked.

Note: Some sites/contractors use various colors to identify ownership. The color chosen should not be red or yellow.

4. High-frequency Welding Machines
   a. The potential for electrical shock is greater with high frequency welding that with direct current welding.
   b. Both the work and return welding leads from high-frequency welding machines shall be as short as possible to prevent possible radio frequency interference with electronic equipment.

2.5 Portable Generators

1. A driven ground rod or case ground to building steel is not required for portable generators.

2. The 110v convenience receptacle of a portable generator shall be guarded by a GFCI when used to supply power to electric hand tools.

NOTE: Not all manufactured portable generators will function properly with GFCI's unless they are modified by installing a jumper from the neutral winding (at the terminal junction point) to the generator case. A simple test can be conducted to determine if a GFCI will operate properly. Using an approved type voltage test meter, test with the generator running, between the hot side of the receptacle to the generator case, if there is no (0) reading modification is required.
NOTE: The preferred method for installing or removing individual units from a motor control center (MCC) is with the MCC bus de-energized. When planning this task, site/facility management and craft personnel shall make every effort to perform this work with the bus de-energized. This procedure for installing or removing units shall be considered ONLY after a request to de-energize the equipment has been denied, in writing, by supervision of the equipment owner.

1.0 PURPOSE

To provide instructions for inserting and removing individual units into or from an energized motor control center (MCC). It also covers the minimum precautions necessary for a safe procedure. Plug-in busway and 600-volt class distribution panels, such as the Square D-style QMB panels, are considered (for this procedure) to be 600-volt class MCCs.

2.0 REQUIREMENTS

Removing and inserting individual units from or into energized electrical equipment are among the most hazardous operations performed by a craftsperson because the actions shall be performed without total visual inspection at each step. Additional hazards exist because, as the MCC has been in service, either the unit or the structure has undoubtedly deteriorated to some extent. Although electrical shock is a concern, most serious injuries are thermal burns caused by the intense heat of an electrical arc.

2.1 Qualification, Training, And/Or Certification

Persons performing this operation shall be qualified persons who have demonstrated an understanding of associated hazards and specific manufacturer’s equipment construction. The requirements for training are outlined in EH&S Procedure III.E.1, Qualifications of Electrical Personnel. The superintendent is responsible and accountable for training selected individuals on the specific construction details of site equipment. The superintendent maintains training records, issues certificates of completion, and maintains a list of qualified persons. Certification is valid for a twelve-month period. The performance of work of this nature may be recorded and is considered re-certification.
1.0 PURPOSE

To provide established minimum requirements for performing electrical work in electrical manholes, underground cable vaults and pits, and other confined spaces containing electrical equipment and/or cables or bus feeders.

**NOTE:** All electrical work in manholes, pits and vaults has potential hazards similar to those in general vessel and confined space entry. The requirements of EH&S procedure III.A.24 apply except when the requirements of this procedure are deemed adequate.

2.0 REQUIREMENTS

2.1 Planning and Identifying Hazards

1. When performing electrical work in manholes and confined spaces (MH/CS) (such as cable vaults or cable pits), develop a special plan to address the specific work to be performed and the necessary personal protective equipment. The plan shall also include a rescue procedure that is reviewed with personnel who will perform the task.

2. Make sure the plan identifies and minimizes the hazards that may be present when working in MH/CS. Some hazards to consider include the following:
   a. Electrical - Shock and energy
   b. Asphyxiation - Oxygen content
   c. Explosion - Vapors present and possible process releases
   d. Water/Flooding, slippery footing, and increased shock potential

2.2 Restrictions

No employee may be assigned to or enter any MH/CS without having a valid work permit and MH/CS Permit and Checklist. This permit shall be obtained and posted at the work location.

2.3 Specific Safety Requirements

1. Number of Employees - Keep the number of employees in the MH/CS to a minimum to avoid unnecessary exposure to fire, explosion, or unforeseen atmospheric hazards. Only one person should work in the MH/CS unless the task or safety concerns require more.

2. Standby Person - Assign a standby person to remain at each point being used to enter the MH/CS. He or she shall have a flashlight, and a power air horn or some other reliable method for summoning additional assistance. The standby person's sole responsibility is to be attentive to the personnel inside the MH/CS.

3. Backup - Designate an individual as a backup. The backup's prime responsibility is to be available for immediate assistance to the standby person. The standby person shall contact the backup person at least once an hour by verbal contact, two-way radio, or PA system.

4. Safety Harness - All persons entering the MH/CS shall wear a full body harness with a rope line attached to a mechanical lifting device located at the outside entrance. This device shall be capable of retrieving and lifting a comatose individual.

5. Air Pack - Consider using a five-minute air pack for personnel entering the MH/CS. The sole purpose of a five-minute air pack is to provide breathing air during the time it takes to exit the confined space and reach a safe area. Determine the need for an air pack by assessing nearby processes and their potential impact on the MH/CS. Breathing air or large portable bottles may allow more freedom in confined areas and could be an acceptable option if the conditions merit their use.
6. Asbestos Hazard - Some cable feeders contained in MH/CS are fire proofed using asbestos wrap or Transite type materials. Use special precautions when working around these materials. Avoid disturbing them and creating particle release in the atmosphere. If it is necessary to remove the materials, only trained and qualified persons should perform the removal task.

7. Insulating - Special insulating barriers and/or blankets may be required to protect personnel from adjacent energized cable systems. Determine the need for additional protection by visually inspecting the cable insulation and taped splice joints for deterioration. Mechanically protect the existing electrical cable system from damage that could occur due to the task being performed.

2.4 Special Safety Tests and Checks Required

Perform the following safety tests and checks before working in the MH/CS.

1. Analyze oxygen content continuously in the MH/CS, and record readings.
2. Test for explosive atmosphere in the MH/CS.
3. Check the hoisting device after installing it at the entrance to determine if it is suitable to lift a person's weight.
4. Check breathing air devices for charge, regulator adjustment, and mask fit-up.
5. Check air horn; have spare cartridge available.
6. Check and comply with any plant procedures or rules governing manhole entry.
7. Check for adequate lighting. If additional lighting is required, use approved low voltage transformer type or GFCI guarded circuitry.

2.5 Other Precautions and Considerations

The following guidelines apply to MH/CS:

1. Consider using forced ventilation such as Copus Blowers.
2. DO NOT USE heating or cooling units that have fuel combustion systems.
3. Wet conditions in MH/CS result in slippery footing and potential shock hazard. Consider using rubber boots and de-watering to help prevent hazards.
4. Maintain constant communication between the attendant and workers in MH/CS.
1.0 PURPOSE

To provide safety precautions that electrical qualified person(s) and non-electrical (unqualified person(s.)) should follow when working near electric lines and cables or near open substations.

This procedure does not cover the use of mobile equipment to work around electric lines, nor does it cover working near, in or on cable trays. For information on these situations, Procedure III.C.2 and III.E.11.

2.0 REQUIREMENTS

2.1 Electrical Hazards

1. Working near overhead lines or open substations is electrically hazardous. Open conductors expose workers to the risk of electrocution and flash burn. All conductors shall be considered energized until proven otherwise.

2. The first consideration prior to beginning any work near overhead lines or substation is to shut the system down and place it in an electrically safe work condition. Sometimes a short shutdown to install barriers or temporary insulation minimizes the electrical hazard and eliminates the need for a long shutdown. See Procedure III.E.2 for placing the system in a electrically safe work condition.

3. If a shutdown cannot be arranged, listed below are the requirements that shall be followed prior to beginning any task near energized overhead lines, cables or open substations.

4. A hazards risk analysis shall be made to determine the work class of the task to be performed.

5. Determine the safe approach distance.

6. Develop a plan site/facility procedure to follow while doing the work that addresses the hazards and personal protection requirements.

2.2 Tools, Test Equipment and Personal Protective Equipment (PPE) Requirements

1. Tools used when performing an electrically hazardous task near overhead lines or open substations should be of the type appropriate to reduce shock and flash hazards. See Procedure III.E.3 and III.E.5 for the type tools needed.

2. Test equipment used for testing for the presents/absence of voltage on overhead lines and open substations shall meet the criteria outlined in Procedure III.E.3.

3. Persons performing electrically hazardous work should wear dielectric-rated hard hats and the proper level of protection for all parts of the body exposed to the shock and flash hazard. For the proper level of PPE refer to Procedure III.E.3.
2.3 Specific Requirements for Non-Electrical Work

1. Non-qualified persons shall treat overhead cables without exposed conductors or circuit parts as electric lines.

2. Before starting any task, all non-qualified persons shall be briefed, by the qualified employee in charge, on the hazards and how to avoid exposure to them. If during the progress of the job the hazard conditions change, the job shall be stopped and the unqualified persons shall be given an additional job briefing to address the changes.

3. A standby person is required for all work being performed by an unqualified person doing work in an open substation. The standby person shall be a qualified person as outlined III.E.1. Examples of the type work an unqualified person might perform in an outdoor substation are:
   a. cutting/spraying weeds/grass
   b. spreading surface materials
   c. building scaffold
   d. repairing fences
1.0 PURPOSE

To provide requirements for employees working on or working near electrical equipment and services that has not been placed in an electrically safe working condition. In addition, this procedure provides requirements for outlining the minimum planning, authorization requirements, personal protective equipment, and training as well as the approach and flash boundaries.

NOTE: This procedure does not cover the electrical safety related work practices for electrical arc welding. See Procedure III.A.15, III.A.25, and III.E.15

2.0 general

2.1 Electrical Hazards

The four types of hazards associated with work on or near energized electrical equipment.

- Shock and Burn due to contact or flashover
- Electrical flash burn from arc
- Blast injury resulting from electrical arcs
- Upset or shutdown of an operating area

2.2 The Electrically Hazardous Task

The electrically hazardous task must be analyzed considering two primary hazards - flash hazard and shock hazard. These hazards are identified by using boundaries based on energy levels. Performing work inside these boundaries requires, training, planning, procedures and personal protective equipment.

Employees who work on or near exposed energized electrical conductors or circuit parts and/or perform standby duties shall be trained in methods of release of victims from contact with exposed energized conductors or circuit parts. They shall also be trained in methods of first aid and emergency procedures if their duties warrant such training.

2.3 Flash Hazard Boundary

When working on or near electrical equipment with exposed energized electrical conductors or circuit parts, the distance to the outer limit of this boundary must be determined by a flash hazard analysis based on the energy level for that part of the system. Any person inside this boundary must wear flash protection equipment to protect any part of the body exposed to the flash hazard. Attachment B-III.E.19-B may be used to make this analysis.

Note: The flash hazard boundary may be calculated in accordance with NFPA 70E 1995, Part II, Paragraph 2-3.3.3.2

2.4 Shock Hazard Boundaries

Shock hazard boundaries are divided into three categories. They are identified as "Limited Approach Boundary", "Restricted Approach Boundary" and "Prohibited Approach Boundary". To determine the minimum approach distance to an exposed energized conductors or circuit part for the shock protection boundaries. See attachment B-III.E.19-G

The following are requirements of each approach boundary.

Work inside the limited approach boundary shall be performed by a qualified person. When there is a need for an unqualified person to cross the limited approach boundary to perform a minor task, or look at equipment, a qualified person shall advise him or her of the possible hazards and ensure the unqualified
person is safeguarded. Under no circumstance shall an unqualified person be permitted to cross the restricted approach boundary.

The restricted approach boundary is the closest approach distance for unqualified person. Under no circumstance shall such unqualified person be permitted to cross the restricted approach boundary. To cross the restricted approach boundary, a person shall:

- be a qualified person
- have an approved plan
- use personal protective equipment appropriate for the conditions.
- position his or her body in a way that minimizes risk of inadvertent contact.

In some instances, work outside the restricted approach boundary, but within the person’s reach may be classified as restricted work if, in the judgment of the personnel involved, conductive objects or unguarded body parts could make unintentional contact or cross the prohibited approach boundary.

The prohibited approach boundary is the minimum approach distance to an exposed energized conductor or circuit part and is the closest point to prevent flashover. To cross the prohibited approach boundary and enter the prohibited space shall be considered the same as making contact with exposed energized conductors or circuit parts. The qualified person shall:

- Have specific training to work on energized conductors or circuit parts.
- Have a documented plan justifying the need to work inside the prohibited approach boundary.
- Perform a risk analysis.
- Have (b) and (c) approved by site management.
- Use personal protective equipment approved for working on exposed energized conductors or circuit parts that is rated for the voltage and energy level involved.

When performing work inside the prohibited boundary on systems with a voltage greater than 300 volts phase to phase or + to -, the person performing the work will be inside the flash hazard boundary. Prohibited work should not be performed on equipment with a flash hazard boundary greater than 6”. Special authorization is required to perform this work.

2.5 Electrically Non Hazardous Task

Tasks involving equipment that has been placed in a electrically safe working condition or involving voltages below 50 volts are classified as electrically non hazardous and do not require special protective equipment. At these low voltages, work on or near energized components may be performed without concern for electrocution. However, at low voltages, shock may cause a jerk reaction. Appropriate precautions should be taken if the task involves any moving machinery parts, other hazardous objects, or fall hazards. Additionally, shorting or grounding of low voltage circuits may result in equipment damage, process upset, shutdowns, electrical burns, or to explosions due to electric arcs. Electrically non hazardous tasks must be carefully planned. For information on electrically safe working condition see Procedure III.E.2.

2.6 Diagnostics

Diagnostics shall be performed only by a qualified person who is trained in the hazards of diagnostics, the proper selection and use of diagnostic test instruments, work methods and selection of the proper personal protective equipment to perform the task.
2.7 Shutdown Request

The first consideration in all electrical work is determining if the work can be done in a de-energized state. Justification for performing work on or near energized electrical equipment must be based upon an analysis of the hazards, qualification of personnel, and the reason the equipment can not be placed in a electrically safe working condition. Consider rescheduling work to the next available shutdown to avoid performing electrically hazardous work.

Each site/facility manager shall establish (with plant management) the appropriate level of plant personnel authorized to approve or deny a request for shutdown of energized electrical services or equipment.

2.8 Barriers

Consider using a barrier when work must be done while the equipment is energized. If possible, place the barrier while the equipment is temporarily shut down.

NOTE: The placement of a temporary barrier may effectively protect personnel from shock hazard, but may not protect personnel from flash hazard. Therefore, placement of a barrier may change the electrical shock hazard classification but does not always eliminate the requirements of flash protection if the task involves work inside the flash hazard boundary.

2.9 Planning

Use the Plan, Review and Authorization Matrix (Attachment B-III.E.19-I) to define the roles of personnel in planning, reviewing and authorizing tasks classified as electrically hazardous.

Job Plans

Job plans are usually of two varieties: (1) plans written specifically for a particular job, or (2) job plans that may take the form of a general procedure, a checklist or an oral job plan.

CAUTION: WORK SHALL STOP AND BE RE-EVALUATED IF IT CANNOT BE EXECUTED AS PLANNED OR IF CONDITIONS CHANGE.

Specifically written job plans must include a step-by-step outline of the work to be performed. A sketch is required to facilitate technical review.

The Electrically Hazardous Task Plan form (Attachment B-III.E.19.001) or equivalent must be used for a task requiring technical review, and is recommended for any task involving work inside the flash hazard boundary and involving voltages greater than 125 volts.

Planning Documents

When planning electrically hazardous tasks, the following documents are required:

- Hazard/risk analysis flow chart (Attachment B-III.E.19-A) is used to determine the classification of the hazardous task. Follow the appropriate path on the flow chart to resolve classification.

- Approach distances to exposed energized electrical conductors and circuit parts (Attachments B-III.E.19-E & III.E.19-F)

These charts are to be used to determine the shock and flash hazard boundaries.

Requirements checklist for electrically hazardous tasks (Attachment B-III.E.19-4) is to be used as needed to determine minimum procedural and personal protection requirements after determining the classification of the hazardous task.
Hazardous Task Authorization

Appropriate authorization shall be obtained before performing any task classified as electrically hazardous. Each site shall determine the required levels of authorization in conjunction with the levels indicated in attachment B-III.E.19-I Plan Review And Authorization Matrix. The only authorization required for testing for the presence/absence of voltage is that of the supervisor at the job line-up or Job Planning and Safety Assignment (JPSA).

The Plan, Review And Authorization Matrix (attachment B-III.E.19-D) defines responsibilities of each work class, voltage level, and energy level for:

- Plan preparation
- Review
- Authorization

Any variation to this procedure must be covered in a written procedure or approved by site management.

Job Briefing

Before starting each job, the employee in charge shall conduct a job briefing with the employees involved. The briefing shall cover such subjects as: hazards associated with the job, work procedures involved, special precautions, energy source controls and personal protective equipment requirements. Additional job briefings shall be held if changes occur that might affect the safety of the employees during the course of the work.

3.0
ATTACHMENT B-III.E.19-B

Flash Hazard Boundary

This attachment comprises a method for determining the flash hazard boundary for electrical equipment. The method is based on the size of the transformer for systems operating over 600 volts (see Table 3). For systems operating less than 600 volts the method is based on the size of transformer and the distance (length of the cable) the equipment is from the transformer (see Tables 1 & 2). These Tables are to be used for the secondary side of transformers and not intended for the primary side or utility feeders.

The flash hazard boundaries vary based on the clearing time of the protective device. The flash hazard boundaries for each transformer size has been calculated with clearing times of 6 cycles and 30 cycles. Fuses and fused substation breakers are design to clear faults within 6 cycles while molded case breakers may take up 30 cycles to clear.

The following information is needed to determine the flash hazard boundary.
- size of the transformer on the line side of the equipment
- type of protective device line side of the equipment
- distance (length of the cable) from the transformer or power source (for less than 600 volt)

To demonstrate this method the following examples are provided.

EXAMPLE 1:
Purchase Power Substation Switchgear being fed by a 10 MVA transformer. Primary of the transformer is protected by a breaker with a clearing time of 6 cycles or less. Primary of the transformer is 46 KV and the secondary is 13.8 KV.

See Table 3
10 MVA = 10000 KVA
Find the 10000 KVA transformer size.
Follow the column down to the 6 cycle clearing time row.
Flash Hazard Boundary is 7.3 feet.

EXAMPLE 2:
MCC being feed from 1500 KVA transformer. The primary of the transformer is protected by a breaker with a clearing time of 6 cycles or less. Primary of the transformer is 13.8 KV and the secondary is 480 volts.

See Table 3
Find the 1500 KVA transformer size.
Follow the column down to the 6 cycle clearing time row.
Flash Hazard Boundary is 2.8 feet.

EXAMPLE 3:
QMB Panel being fed from the MCC in the above example. MCC is being feed from 1500 KVA transformer. The QMB panel is being fed from a 200 Amp switch in the MCC and is protected by fuses. The QMB panel is located approximately 100 feet from the MCC.

See Table 1
Find the 100 foot selection under the 200 Amp listing
Follow the row across until you are under the 1500 KVA transformer size.
Flash Hazard Boundary is 29 inches.

NOTE: The Flash Hazard Boundary for a device located in a MCC is the same as that of the MCC (see example 2).

Once the flash hazard boundary has been identified use the following guidelines for determining the appropriate person protective equipment for individuals crossing or working inside the boundary. The distances shown below are the flash
hazard boundaries determined by the attached Tables. Personal protective equipment shall be determined by this boundary and must not be determined by the distance a person is working from an energized component. For more information concerning Electrical Personal Protective Equipment see B-1.26.

**ATTACHMENT B-III.E.19-C**

**Flash Hazard Boundary**

<table>
<thead>
<tr>
<th>Level</th>
<th>Flash Protection Boundary</th>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1” - 6”</td>
<td>Safety Glasses, Hard hat, Leather Gloves, Long Sleeve Shirt of Non-melting fiber construction such as Cotton.</td>
</tr>
<tr>
<td>3</td>
<td>7”- 12”</td>
<td>Safety Glasses, Hard hat, Leather Gloves, Minimum 4.5 oz. Nomex Coveralls, Polycarbonate Face Shield</td>
</tr>
</tbody>
</table>

For Transformers less than 150 KVA use the Level 4 (1” - 6”) protection.

The Flash Hazard Boundary can be calculated, using the formulas below, versus using the Tables.

\[
D_c = \text{Square Root of } (2.65 \times \text{MVAbf} \times t) \quad \text{or} \\
D_c = \text{Square Root of } (53 \times \text{MVA} \times t)
\]

Where:

\[
D_c = \quad \text{Flash Hazard Boundary} \\
\text{MVAbf} = \quad \text{Bolted Fault MVA} \\
\text{MVA} = \quad \text{MVA rating of transformer}
\]

**NOTE:** For transformers with MVA rating less than .75 multiply the transformer rating by 1.25

\[
t = \quad \text{Clearing time of protective device}
\]
## ATTACHMENT B-III.E.19-D

### Flash Hazard Boundary

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<thead>
<tr>
<th>Equip./Switch Size</th>
<th>150</th>
<th>225</th>
<th>300</th>
<th>500</th>
<th>750</th>
<th>1000</th>
<th>1500</th>
<th>2000</th>
<th>2500</th>
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</table>

* Distances shown in inches
** This is the length of the cable feeding the equipment or switch
### Flash Hazard Boundary

#### TABLE 2

Flash Hazard Boundaries*  
For Devices Less Than 600 Volt  
Protected By Molded Case Breakers  
Clearing Time 30 Cycles

<table>
<thead>
<tr>
<th>Equip./Switch Size</th>
<th>Feet from Power Source**</th>
<th>Transformer KVA</th>
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<tbody>
<tr>
<td></td>
<td>150</td>
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</table>

* Distances shown in Inches  
** This is the length of the cable feeding the equipment or switch
Flash Hazard Boundary

<table>
<thead>
<tr>
<th>Protective Device</th>
<th>Clearing Time in Cycles</th>
<th>Transformer KVA</th>
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<tbody>
<tr>
<td></td>
<td>150</td>
<td>225</td>
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<tr>
<td>Fuse</td>
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<td>MCB ***</td>
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<td>2.0</td>
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<table>
<thead>
<tr>
<th>Transformer KVA</th>
<th>5000</th>
<th>7500</th>
<th>10000</th>
<th>12000</th>
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</table>

* Distances shown in Feet

** This includes Purchase Power substations, Unit substations, and other substations or transformers with a primary voltage greater than 600

This Table does not cover the primary side of Purchase power Substation or Utility feeders.

*** MCB = Molded Case Breaker
## Shock Hazard Boundary

<table>
<thead>
<tr>
<th>Line to Line Voltage*</th>
<th>Limited Approach Boundary</th>
<th>Restricted Approach Boundary</th>
<th>Prohibited Approach Boundary</th>
</tr>
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<tbody>
<tr>
<td><strong>Buss Work Fixed Conductor</strong></td>
<td><strong>Overhead Line Movable Conductor</strong></td>
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<tr>
<td>51 to 300</td>
<td>3' - 6&quot;</td>
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<tr>
<td>301 to 600</td>
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<td>2400</td>
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* For voltages not listed, use the next highest voltage listed. Example: For 11,200 Volts - use the distances listed for 12,500 volts.
## Requirement Checklist

<table>
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**PW** - Prohibited Work  
**VT** - Voltage Testing  
**RW** - Restricted Work  
**LW** - Limited Work  
**DIA** - Diagnostic  

**PW** - Prohibited Work  
**VT** - Voltage Testing  
**RW** - Restricted Work  
**LW** - Limited Work  
**DIA** - Diagnostic  

**L1 - Voltage Level > 300 Volts**  
**L2 - Voltage Level 50 to 300 Volts**  
**Y - Yes**  
**N - No**
## ATTACHMENT B-III.E.19-I

### Plan, Review & Authorization Matrix

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**DIA** - Diagnostic
**L1** - Voltage Level > 300 Volts
**L2** - Voltage Level 50 to 300 volts

R - Reviewer
P - Preparer
A - Authorizer
TR - Technical Review
Y - Yes
N - No
ELECTRICALLY HAZARDOUS TASK PLAN
(Job Plan/Checklist)

(Complete this form, attach a denied request for shutdown, and submit for approval as per section 4.0 of this procedure)

1. **Task Classification:** (as described in attachment III.E.19-4 of this procedure)
   - Prohibited ____
   - Restricted ____
   - Limited ____
   - Diagnostic ____ (troubleshooting)

2. **Voltage Level Involved:** (as specified in attachment III.E.19-7 "flow chart" of this procedure.)
   - LEVEL 1 ____ LEVEL 2 ____

3. **Flash Protection Required:** (as specified in attachment III.E.19-2 of this procedure.)
   - YES ____ NO ____

4. **Personal/Personnel Protection:**
   NOTE: See III.B and III.E.5 for more information on PPE.

   4.1 **Approved type test equipment to be used:**
   NOTE: See III.E.3 for more information on test equipment.
   - Voltage Sensing, Contact ________________ Non-contact ________________
   - Voltage Measurement ________________ Current Measurement ________________
   - Thermographic ________________ Phasing ________________
   - Other ____________________________________________________________

   4.2 **Type of hand shock protection required: voltage rated with protectors,**
   - Class "OO" ____ Class "O" ____ Class "1" ____ Class "2" ____
   - Other ____________________________________________________________

   4.3 **Flash Protection Required:** body part protection level:
   - Total Body Protection ______________________
   - Eye Protection __________________ Hand Protection __________________
   - Head Protection (face, neck and chin) ________________________________
   - Foot and Leg Protection ________________________________
   - Other ____________________________________________________________

   4.4 **Barriers:** to prevent contact with exposed conductor
   - Voltage Rated Blankets ________________ Voltage Rated Hose ________________
   - Physical Guard ______________________________________________________
   - Other ____________________________________________________________
4.5 Other Protective Equipment And Considerations:

- Guarded/Insulated Tools ____________
- Insulate Worker From Ground ____________
- Hard-Hat/Safety Glasses ____________
- Chemical Protection _________________
- Safety Grounds _________________
- Discharge Grounds _________________
- Fall Protection _________________
- Non Conductive Ladders _________________
- Other __________________________________

4.6 Securing Work Area:

- Barricades ________________
- Signs _________________________
- Standby Person(s) ______________
- Other _________________________

If standby person is checked list duties
(A standby person is required for all work classified as "prohibited").

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. Equipment On Which Work Is To Be Performed:

- Operating Voltage(s) ____________________________
- Manufacturer _________________________
- Model _________________________
- Condition __________________________________

Visual Inspection Findings, is there adequate:

- Working space yes ______ no ______
- Lighting yes ______ no ______
- Access/Egress yes ______ no ______
- Labeling yes ______ no ______

If any above answers are no, explain corrective action to be taken
________________________________________________________________________
________________________________________________________________________

6. Verification Of Information: references used to prepare the plan

- Single Line Diagram # ____________________________
- Schematic Diagram # ____________________________
Other documentation: ______________________________________________________

Are there any backfeeds? yes _____ no _____
Are there any external power sources? yes _____ no _____
Have any errors in the drawings been identified? yes _____ no _____

If any above answers are yes, explain corrective action to be taken _____________________
_____________________________________________________________________
________________________________________________________________________

7. **Step-By-Step Written Plan Of Work Or Site Procedure Covering This Type Work.**

CAUTION: Work must stop and be re-evaluated if it cannot be executed as planned, or if conditions change.
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If more space is needed, attach additional pages also, attach a sketch or drawing if clarification or technical review is required.

8. **Emergency Response Information:**

Nearest Phone Location ______________________________________________________

Emergency Response Telephone Number ________________________________________
Fire Extinguisher Location _____________________________________________________

CPR Trained Person _________________________________________________________

Other Communication Needs________________________________________________


   **Title**   **Signature**

   Lead Engineer   ______________________________

   Electrical Superintendent   ______________________________

   Site Safety   ______________________________

   Regional Specialist   ______________________________

   ______________________________   ______________________________

   ______________________________   ______________________________

   ______________________________   ______________________________

   ______________________________   ______________________________

   ______________________________   ______________________________

10. **Job plan review with person(s.) performing work.**

    Worker(s.) signatures

    ______________________________   ______________________________

    ______________________________   ______________________________

    ______________________________   ______________________________

   *Where a signature is not required, mark N/A
1.0 PURPOSE

To provide the minimum requirements for working on energized MCC starters; variable speed drives or switches; disconnects and related devices, including 600-volt class distribution panel boards and 600-volt class plug-in buss-ways.

Both construction and maintenance tasks are covered in this procedure. Construction tasks include modifications, additions, and removal of electrical parts. Maintenance tasks include diagnostics, troubleshooting, and testing after the facilities are in operation.

This procedure does not include installation or removal of motor starters and other plug-in units; see Procedure III.E.16, Inserting or Removing Units from Energized Motor Control Centers or Similar Equipment.

2.0 Requirements

1. Working on energized electrical equipment is dangerous and should be avoided if possible. Because of wide variations in the construction of the equipment among manufacturers and the models of the same manufacturer, each task is to be reviewed to determine the shock and flash hazard boundaries. Refer to Procedure III.E.19, Work on or Near Energized Electrical Services and/or Equipment.

2. The special hazards associated with these electrical tasks intensify the need for thorough safety planning. Each job shall be analyzed carefully and critically to ensure that safe conditions are secured before work begins. No work should be attempted until there is assurance that it can be done safely. Potential injuries include both electrocution and flash burns.

2.1 Construction Electrical Tasks

1. The site/facility manager will assure there are no prudent means to avoid working on the equipment with the bus energized. The alternatives to be considered are:

   a. Shut downs during off-hours
   b. The facility owner accepting the inconvenience of a shutdown during normal working hours.

2. The facility owner must demonstrate that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limits. Supervision and the facility owner shall concur in writing that there is no other way to accomplish the task. The task will proceed only if employee safety is assured.

   NOTE: The facility owner shall be aware that this task requires special planning and procedures to minimize the hazards and that this type of task has a history of personal injuries and incidents and a history of damage to equipment resulting in production outages.


4. Cutting and drilling on energized cabinets and cubicles is hazardous because it is difficult to be absolutely certain that no energized parts are affected. These tasks will not be performed except on wireways that are protected with adequate temporary barriers to prevent inadvertent contact with energized parts.

5. Pulling wire and cable into MCC wireways that contain no exposed energized parts is considered a safe task for qualified persons when planned appropriately. A qualified person shall inspect the MCC to ensure that is has no exposed energized parts. The qualified person shall also inspect to ensure the existing cables in the wireway are free from cracks, chips, or nicks. Taping the ends of all cable pulls as well as using non-metallic fish tape is required.
6. The Hazards/Risk Analysis Flow Chart III.E.19-A shall be used to identify the need for PPE (personal protective equipment). III.E.19-H is the Requirements Checklist for electrically hazardous tasks which details the proper PPE for each task.

7. The tasks covered in this procedure may include exposure to shock, arc, and flash burn via open doors or covers. PPE is required until a test for the absence of voltage confirms there are no energized parts in the compartment and a visual inspection confirms the line side terminals are covered to prevent contact.

8. All personnel within the flash hazard boundary must wear PPE per Procedure III.E.5. It is suggested that a barricade or some other effective means of notice be erected or placed 10 feet from the flash hazard boundary to prevent unauthorized and unprotected personnel from entering the hazard zone.

2.2 Maintenance Electrical Tasks

General maintenance electrical tasks include testing, troubleshooting, repairs, component replacements, and adjustment of equipment that has been in operation. Inspection and adjustment of mechanical interlocks or linkage pose an increased hazard due to spring failure and broken parts normally protected from accidental contact. When doing maintenance electrical tasks, the person’s safety will depend upon knowledge of the potential hazards involved, knowledge of good job practices and procedures, and wearing personal protective equipment consistent with Procedure III.E.19. Maintenance electrical tasks should be performed with the equipment de-energized to the greatest extent possible.

1. Safety planning is a must! Proper planning and authorization must take place for each approach boundary: flash, limited, restricted, and prohibited. Job Planning & Safety Assessments shall be consistent with Procedures III.E.1, III.E.2, III.A.20, and III.E.19.

2. MCC starter maintenance can be accomplished safely. All personnel with the flash hazard boundary shall wear flash burn PPE per III.E.10. Shock protection shall be consistent with III.E.19. When testing fuses, the circuit shall be de-energized, the fuses tested to verify the absence of voltage, and condition of the fuses shall be determined by performing a continuity check on the de-energized fuses. Do not test energized fuses by checking for voltage across them.

3. Motor starter overhauls are best performed with the MCC buses de-energized. Tightness of bus connections can then be checked and deficiencies corrected. Starter component replacement may require the removal of the starter from the MCC. The requirements of III.E.16 shall be followed when removing and installing these units.

4. Troubleshooting and testing energized VSDs is hazardous. Many tests and adjustments require the drive to be energized, thereby exposing the person to shock and a possible arc flash.

5. Site/Facility personnel will be responsible for identifying the flash hazard boundary for each VSD.

6. Personnel troubleshooting and adjusting energized VSDs shall participate in job pre-plan preparation. The requirements of III.E.19 shall be satisfied for all work on these units.

7. Energized 277/480-volt power and lighting panels. All work shall be processed using the hazard/risk analysis flow chart in III.E.19 to determine the work class and degree of hazard.

8. Thermograph analysis and other non-contact tasks. The presence of energized conductors and parts are hazards even when the task is observation-only. Before exposing any energized bus or other electrical components, be certain to wear all necessary personal protective equipment as required in III.E.19.

9. Personnel qualifications for electrical tasks shall be evaluated. Only qualified personnel shall be assigned to perform electrical maintenance tasks.

10. Personal protective equipment shall be selected by utilizing Procedure III.E.19.
11. The tasks covered in this procedure may include exposure to shock, arc, and flash burn via open doors and covers. PPE is required until a test for the absence of voltage confirms there are no energized parts in the compartment and a visual inspection confirms the line side terminals are covered to prevent contact.

3.0
Site Section 3F
1.0 PURPOSE

To provide requirements necessary to ensure all required elements of the OSHA Process Safety Management of Highly Hazardous Chemicals have been met prior to assigning employees work in a process area.

2.0 REQUIREMENTS

2.1 Saxon Owner Provided Information

1. Saxon Management shall obtain from the facility owner, information on the known potential fire, explosion, or toxic release hazards related to Saxon’s work and the process, as required by 29CFR 1910.119 paragraph (h).

2. Saxon Management shall obtain from the facility owner, information on the applicable provisions of the emergency action plan as required by 29 CFR 1910.119 paragraph (n).

3. Saxon Management shall obtain information from the facility owner regarding safe work practices to control the entrance, presence and exit of contract employees in covered process areas. Employees shall be trained in these safe work practices.

2.2 Training Requirements

Saxon shall use information provided by the facility owner to develop a training program that will consist of the following elements:

1. Saxon Management shall ensure that each employee is trained in the work practices necessary to safely perform the job.

2. Saxon Management shall ensure that each employee is instructed in the known potential fire, explosion, or toxic release hazards related to the job and the process, and the applicable provisions of the emergency action plan.

3. Saxon Management shall ensure that each employee has received and understood the required training. Training shall be documented with the name of the employee, date and means used to verify that the employee understood the training.

4. Saxon Management shall ensure the employees follow the safety rules and work practices of the facility.

5. Saxon employees shall be instructed to advise the Saxon EH&S Department of any unique hazards presented by the employee’s work, or of any hazards found by the employee.

6. Where Saxon employees are involved in the operation of a process, additional training may be necessary as required by TITLE 29 CFR PART.1910.119.
2.3 Process Hazard Analysis

1. The facility owner should have performed a process hazard analysis or hazard evaluation on process operations as required in 29 CFR 1910.119. The process hazard analysis should address the following:
   a. The hazards of the process
   b. The identification of any previous incident with likely potential for catastrophic consequences in the workplace.
   c. Engineering and administrative controls applicable to the hazards.
   d. Consequences of failure of engineering and administrative controls.
   e. Facility citing.
   f. Human factors.
   g. A qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees in the workplace.

2. Information gained during the hazard analysis shall be obtained by Saxon and used in developing a facility specific training program.

3. In the event that the facility owner has not or will not perform the process hazard analysis, Saxon shall be responsible to ensure the analysis is performed. One or more of the following methodologies can be used in conducting the hazard analysis:
   a. What-If/Checklist
   b. Hazard and operability study
   c. Failure Mode and Effects Analysis
   d. Fault Tree Analysis
   e. An appropriate equivalent methodology
Section 4 Fire Prevention
1.0 PURPOSE

To provide requirements for preventing and controlling fires.

2.0 REQUIREMENTS

2.1 General

1. To prevent ignition hazards, electrical wiring and equipment shall be installed in accordance with the National Electrical Code (NEC) and National Fire Protection Association (NFPA).

2. Smoking shall be prohibited in areas where fire hazards may exist, and “No Smoking” signs shall be posted.

3. Before any hot work is permitted material such as paper clippings, wood shavings or textile fibers on the floor, the floor shall be swept clean. Where practicable, all combustible shall be removed from worksite. Where relocation is impracticable, combustibles shall be protected with flameproof covers or non-flammable guards or curtains.

4. An alarm system shall be established as a part of the emergency preparedness plan to alert all employees at the site/facility in the event of an emergency. The alarm system should include lights, horns, sirens, or other appropriate devices to ensure that every employee is aware of a fire emergency.

5. Evacuation routes shall be established per the evacuation plan.

6. For fire extinguisher placement refer to Procedure IV B.

6.2 Temporary Buildings

Buildings located within another building or structure shall be constructed of either non-combustible material or combustible material having a fire resistance of not less than one (1) hour.
1.0 PURPOSE

To provide direction in the proper use of fire extinguishing equipment.

2.0 REQUIREMENTS

The site/facility manager or designee is responsible for implementing the requirements of this procedure.

2.1 Fire Classifications

Fires are classified as Class A, B, C, D, or Special, depending upon the types of materials involved. These classifications are defined as follows:

1. Class A - Fires in ordinary combustible materials such as wood, cloth, paper, trash, rubber, and plastic.
2. Class B - Fires in flammable liquid, oil, grease, tar, oil-base paint, lacquer, and flammable gas.
3. Class C - Fires involving energized electrical equipment or systems, resulting in the extinguishing media conducting electricity. (When electrical equipment or systems are de-energized, extinguishers for Class A or B fires can be used safely.)

2.2 Extinguisher Classifications and Ratings

All types of extinguishers are not equally effective against all classifications of fires. Therefore, extinguishers are rated according to the classification and size of the fires against which they are effective. Extinguisher ratings are found on the extinguisher label. A rating consists of a letter indicating the classification of fire on which the extinguisher is effective and a rating number indicating the relative extinguishing effectiveness. The significance of the rating number varies with the classification of fire for which the extinguisher is rated. The following rating criteria are used:

1. For extinguishers rated for Class A fires, the rating number indicates relative effectiveness, the higher the number, the more effective the extinguisher. The minimum recommended rating for extinguishers rated for Class A fires is 2A.
2. For extinguishers rated for Class B fires, the rating number represents the average size (in square feet) of the fire the extinguisher could put out.
3. No number is used for extinguishers rated for Class C fires, because Class C fires are essentially either Class A or B fires involving energized electrical wiring and equipment.

2.3 Hazard Classifications

The materials in a building or area present hazards of varying potential. These hazards are classified. As follows:

1. Light or Low Hazard - A room or area where, considering the amount of combustible material or flammable liquids present, fires of small size should be anticipated (e.g., change trailers, toilet trailers, and general storage).
2. Ordinary or Moderate Hazard - A location where, considering the amount of combustibles or flammable liquids present, fires of moderate size should be anticipated (e.g., temporary construction offices and most shops).
3. Extra or High Hazard - A location where, considering the amount of combustibles or flammable liquids present, fires of severe magnitude should be anticipated (e.g., carpenter shops and storage areas for flammable liquids and lumber).

2.4 Extinguisher Requirements
Use only UL-listed extinguishers. Mark extinguishers and extinguisher locations, indicating the suitability of each extinguisher for a particular classification of fire.

2.5 Building and Occupancy Protection

Requirements for fire extinguisher protection are divided into two categories: building protection and occupancy hazard protection. Provide fire extinguishing equipment to protect both the building structure (if it is combustible) and the occupancy hazards inside it.

1. Building Protection - For building protection, provide fire extinguishers rated for Class A fires or greater, as required by applicable building codes.

2. Occupancy Protection - For protection against occupancy hazards, provide fire extinguishers rated for Class A, B, C, or other fire potential as appropriate. Requirements may vary from section to section of a single building. Determine the occupancy hazards, as well as the proper ratings of necessary fire extinguishers, of each room or section. Classify rooms or sections as light hazard, ordinary hazard, or extra hazard, using the following tables to determine extinguisher requirements.

### Extinguisher Requirements for Class A Hazards

<table>
<thead>
<tr>
<th>Class A Rating Shown on Extinguisher</th>
<th>Maximum Travel Distance to Extinguishers in Feet (m)</th>
<th>Maximum Area to be Protected per Extinguisher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Light Hazard sq. ft. (m²)</td>
<td>Ordinary Hazard sq. ft. (m²)</td>
</tr>
<tr>
<td></td>
<td>5-A</td>
<td>10-A</td>
</tr>
<tr>
<td>1-A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2-A</td>
<td>75 (23)</td>
<td>6,000 (557)</td>
</tr>
<tr>
<td>3-A</td>
<td>75 (22.9)</td>
<td>9,000 (836)</td>
</tr>
<tr>
<td>4-A</td>
<td>75 (22.9)</td>
<td>11,250 (1,045)</td>
</tr>
<tr>
<td>6-A</td>
<td>75 (22.9)</td>
<td>11,250 (1,045)</td>
</tr>
<tr>
<td>10-A</td>
<td>75 (22.9)</td>
<td>11,250 (1,045)</td>
</tr>
<tr>
<td>20-A</td>
<td>75 (22.9)</td>
<td>11,250 (1,045)</td>
</tr>
<tr>
<td>40-A</td>
<td>75 (22.9)</td>
<td>11,250 (1,045)</td>
</tr>
</tbody>
</table>

### Extinguisher Requirements for Class B Hazards - General Area Protection

<table>
<thead>
<tr>
<th>Type of Hazard</th>
<th>Basic Minimum Extinguisher Rating</th>
<th>Maximum Travel Distances to Extinguishers in Feet (Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>5-B</td>
<td>30 (9.1)</td>
</tr>
<tr>
<td></td>
<td>10-B</td>
<td>50 (15.2)</td>
</tr>
<tr>
<td>Ordinary</td>
<td>10-B</td>
<td>30 (9.1)</td>
</tr>
<tr>
<td></td>
<td>20-B</td>
<td>50 (15.2)</td>
</tr>
<tr>
<td>Extra</td>
<td>40-B</td>
<td>30 (9.1)</td>
</tr>
<tr>
<td></td>
<td>80-B</td>
<td>50 (15.2)</td>
</tr>
</tbody>
</table>
Extinguisher Requirements for Class C Hazards

Class C extinguishers are required wherever energized electrical equipment is located. Since a Class C fire itself is either Class A or Class B (involving ordinary combustible material, flammable liquids, or flammable gases), the extinguishers are sized and located as for a Class A or B hazard.

Types of Extinguishers Approved for Types of Hazards

<table>
<thead>
<tr>
<th>Class A Hazards</th>
<th>Class B Hazards</th>
<th>Class C Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartridge-operated water or antifreeze</td>
<td>Carbon dioxide*</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>Stored pressure water or antifreeze</td>
<td>Dry chemical</td>
<td>Dry chemical</td>
</tr>
<tr>
<td>Wetting agent</td>
<td>Multipurpose dry chemical (ABC)</td>
<td>Multipurpose dry chemical (ABC)</td>
</tr>
<tr>
<td>Foam</td>
<td>Halon 1301</td>
<td>Halon 1301</td>
</tr>
<tr>
<td>Loaded stream</td>
<td>Halon 1211</td>
<td>Halon 1211</td>
</tr>
<tr>
<td>Multipurpose dry chemical (ABC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump tank water or antifreeze (Halon 1211')</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Certain sizes are not classified or acceptable to meet requirements.

2.6 Extinguisher Placement

1. Placement - Place extinguishers in conspicuous locations, along normal paths of travel, and near exits. If the extinguishers are not readily visible, use wall markings, signs, or lights to identify their locations.

2. Accessibility - Extinguishers shall be readily accessible. Keep the space in front of and below extinguishers clear at all times. The floor area beneath extinguishers may be marked as a reminder to keep the area clear.

3. Supports - Hang extinguishers on hangers, brackets, or other equipment furnished by the manufacturer, or place them on shelves. If an extinguisher weighs less than 40 pounds (18.1 kilograms), the top of the extinguisher shall not be more than 5 feet (1.5 meters) above the floor. If it weighs more than 40 pounds (18.1 kilograms), it shall not be more than 3.5 feet (1.1 meters) above the floor. The clearance between the bottom of the extinguisher and the floor shall never be less than 4 inches (10.2 centimeters).

2.7 Inspection

Properly trained personnel shall inspect extinguishers at least monthly. The monthly inspection shall include the following items at a minimum:

1. Location (Is the extinguisher in its designated place?)
2. Rating (is it adequate for the occupancy hazards in the area?)
3. Access (is it unobstructed?)
4. Visibility (Is it conspicuous? Are wall markings, signs, or lights in place to direct people to its location?)
5. Operating instructions on the nameplate (Are the instructions legible? Do they face outward?)
6. Seals (Are the seals unbroken?)
7. Tamper indicators (Are the tamper indicators intact?)
8. Fullness (Can the fullness be determined by reading the gauge indicator or by weighing or hefting the extinguisher?)
9. Physical condition (is the extinguisher free from corrosion, leaks, and clogs?)

Attach inspection tags to each extinguisher indicating the dates of purchase, inspection, testing, and recharging and the initials of the inspector. In addition to the tag, a colored tape may be used to indicate that an extinguisher has been inspected.

2.8 Testing and Maintenance

1. Establish periodic testing programs to ensure that extinguishers are in proper operating condition. Only properly trained personnel, preferably fire extinguisher vendors should maintain extinguishers.

2. At the conclusion of testing or maintenance work, attach a tag to the extinguisher showing the date and the signature of the person who performed the service.

2.9 Testing Intervals

1. Annually - Each year, recharge soda acid and foam extinguishers and weigh others according to the manufacturers' instructions. Inspect the body, hose, and nozzle of the extinguisher, and examine the dry powder.

**NOTE:** Testing is not necessary for stored pressure units unless a loss of pressure or other conditions indicate need, however, units mounted in vehicles or otherwise subject to mechanical packing should have their powder examined.

2. Every Five Years - Every five years, test the pressure parts of all extinguishers except Halon 1301 extinguishers; dry chemical extinguishers with braised-brass, mild steel, or aluminum shells; and dry-powder extinguishers for metal fires.

3. Every Six Years - Every six years, empty dry-chemical, stored-pressure extinguishers and examine working parts for operability.

4. Every 12 Years - Every 12 years, test the pressure parts of Halon 1301 extinguishers; dry-chemical extinguishers with braised-brass, mild steel, and aluminum shells; and dry-powder extinguishers for metal fires.
1.0 PURPOSE

To provide requirements for the proper storage of flammable and combustible materials.

2.0 REQUIREMENTS

2.1 Flammable Liquid and Gas Storage

1. All gases and liquids should be considered flammable unless the label clearly indicates that no such hazard exists. Conditions change so rapidly that extreme care is necessary whenever flammable liquids or gases are being used. Flammable liquids and gases can be ignited by open flames, sparks, or excessive heat. It is necessary to consider each of these factors when setting up safe storage facilities for these items. Oxygen cylinders shall be separated from all fuel gases by a distance of 20 feet (or a five-foot ½ hour firewall).

2. No other equipment or materials shall be contained in the area where flammable or combustible liquids or gases are stored. This is especially true for compressed gas and petroleum products.

3. All areas for storing of flammable liquids and gases shall be designated as such, and “No Smoking” signs shall be posted. DOT labels are required on all shipping/transporting containers. Combustible or flammable materials shall not be stored within 20 feet of any fuel gas or oxygen cylinder storage area.

4. The “No Smoking” rule shall be vigorously enforced. These areas shall always be located so that local fire protection will always have access to the material.

5. Only approved metal containers shall be used for storing flammable liquids, and each container shall have an emergency-venting device. All bulk containers from which flammable liquids are dispensed shall be grounded. When transferring flammable liquids, the dispensing container shall be bonded to receiving container.

6. Above ground storage tanks shall have spill containment capable of controlling 110% percent of the capacity of the tanks. Spills in the diked area shall be cleaned up. (Earthen dikes shall be sealed /lined for each controlled area.)

2.2 Petroleum Product Storage

1. Bulk storage of fuels shall be discouraged at all sites/facilities. Off site fuel trucks shall be used whenever possible. If off site fuel trucks are not possible, fuel storage containers shall be restricted in size to 660 gallons capacity per container and/or 1320 gallons capacity total. If these limits have to be exceeded, government agencies have to be notified and Spill Prevention Control Countermeasures plans developed.

2. Petroleum products delivered to the site/facility and stored in drums shall be protected during handling to prevent loss of identification through damage to drum markings, tags, etc. Legible DOT labels shall remain on the bulk containers until the container is empty or removed. Unidentified petroleum products may result in improper use, with possible fire hazard, damage to equipment, or operating failure. Drums shall be protected to prevent any physical damage or weather deterioration.

3. The storage area is to be diked to prevent the spread of accidentally released material. The diked area shall be able to contain 110% percent of the contents of the largest container and shall prevent the petroleum product from being absorbed into the soil. Spills shall be cleaned up and removed in accordance with the ES&H Procedure V.B.

2.3 Bulk Storage Areas

1. A 20-pound, Type B fire extinguisher shall be posted between 25 feet and 75 feet from the bulk storage area.

2. Storage Tanks shall be grounded.
3. Storage tanks and the container to be filled shall be bonded.

4. Storage tanks shall be vented.

5. Storage tanks shall have an automatic shut off on dispensing hoses.

6. Storage tanks shall have some form of impact protection from vehicle traffic.

7. Storage tanks shall be at least 25 feet from buildings.

8. The storage area for flammable materials shall be posted as a “No smoking” area.

9. Any open flame work in the area shall be under a Hot-Work/Flame permit.

3.0 ATTACHMENT A REFERENCES

TITLE 29 CFR PART 1926.150
TITLE 29 CFR PART 1926.152
1.0 PURPOSE

To provide established requirements for using flame-resistant tarpaulins and welding curtains as protection against welding flash, sparks from grinding operations, and fires caused by weld splatter.

2.0 REQUIREMENTS

2.1 Flame-Resistant Materials

1. Welding curtains, drop cloths, and other materials used to protect people, products, materials, or equipment shall be made of flame-resistant cloth.

2. Polyethylene or other plastic welding curtains and drop cloths shall be made of flame-resistant materials and shall have a flame spread classification of 0-25 rating. Examples of flame-resistant fabrics include Nomex®, Kevlar®, and flame-retardant treated (FRT) cotton.

2.2 Welding Curtains

1. The use of welding curtains is required during welding and grinding operations to limit the exposure of others to welding flash or sparks, and may be required in operating areas.

2. Use translucent, flame-resistant welding curtains that filter ultraviolet radiation. They provide sufficient protection while permitting adequate light to the work area.
1.0 PURPOSE

To provide instructions for selecting, installing, and maintaining the gas- and oil-fired heating equipment used in construction.

2.0 REQUIREMENTS

2.1 Installation and Maintenance Considerations

1. Site/facility management shall designate a individual to ensure proper clearances between heating systems and combustible floors, walls, and tarpaulins are met, according to the manufacturer's specifications. Unless otherwise designated, a minimum of 36 inches of clearance is required on the sides and rear. The heater shall be placed on an insulated material or 1” of concrete unless the heater is designed to be placed on wood.

2. Monitor the atmosphere to ensure sufficient oxygen is available, and provide proper ventilation of toxic or explosive fumes.

3. When using portable heaters in operating areas, ensure that hazardous chemicals do not exist in the atmosphere.

2.2 Stationary Oil Heaters

1. Carefully level the stationary oil heaters according to the manufacturer's instructions, and attach the heaters to the floor, or otherwise secure them in position.

2. When using a gravity tank or portable pump, install a cut-off valve in the piping close to the tank or pump discharge.

3. Position fill pipes and cut-off valves so they are readily accessible.

4. Install vent pipes in a way that directs the draft constantly upward while the heater is operating. Refer to the manufacturer's recommendations for proper installation methods.

2.3 Stationary Natural or LP Gas Heaters

1. Install a regulator with an automatic shutoff valve between the gas source and a stationary gas heater.

2. Locate tanks or bottles outside the building or enclosure, install them on a solid foundation, and properly secure them. Place a rigid barricade around tanks or bottles to prevent accidental contact.

3. Gas piping shall enter the building or enclosure at the point nearest the heater.

4. Vent heaters properly according to the manufacturer's recommendations.
2.4 Portable Heaters

1. Use oil or gas forced-air heaters as the preferred portable heating source.
2. To avoid the possibility of fire, keep combustible materials away from portable heaters.
3. Consider the safety implications of placing portable heaters near personnel.
4. When setting up a portable heater, consider ventilation, air content (fumes and adequacy of oxygen), and the proximity of combustible materials.
5. For refueling, use UL-approved safety cans equipped with flash screens, pouring spouts, bonding wire and self-closing lids. To prevent spills, use a funnel when filling the fuel tank.
6. Shut off heaters at least 10 minutes before refueling them.
7. Place a portable fire extinguisher within 10 feet (3 meters) of the heater.

2.5 Salamanders

1. Use salamanders only when no other heating appliance is appropriate, and then only to cure concrete or masonry work. Never use salamanders to heat buildings or personnel, and never place them on scaffolds.
2. Place salamanders no closer than 5 feet (1.5 meters) from walls, woodwork, or other combustible material. If fireproof insulation is installed, only a 9-inch (23-centimeter) minimum clearance is necessary.
3. Secure salamanders in place to prevent them from tipping. When used on a combustible floor or on frozen ground, place salamanders on an appropriate base of fire-resistant material (a sandbox with 3 inches [7.5 centimeters] of sand, extending 18 inches [46 centimeters] past the sides of the salamander).
4. Designate specific persons to install and service salamanders.
5. Salamanders shall be attended during operation, and shall not be refueled or lighted while hot.
1.0 PURPOSE

To provide established requirements for all potential sources of ignition including all open flame/hot work activities such as welding, cutting, heating, and the use of spark producing tools.

2.0 REQUIREMENTS

2.1 General

Before open flame/hot work is permitted, the individual responsible for authorizing the hot work operations shall inspect the area. He/she will designate precautions to be followed in granting authorization to proceed in the form of a written permit.

1.2 Written Procedure

1. Each site/facility shall develop a written procedure concerning open flame/hot work permits based on site conditions. The procedure should meet the following requirements.

   a. Define responsibilities to ensure safe-working conditions for all employees involved.
   b. Establish requirements for completing, distributing, posting, and retaining permits.
   c. Define permit time and boundary limitations.
   d. Establish requirements for fire watch.
   e. Establish requirements for spark & slag containment.
   f. Fire fighting training for fire watch and person(s) involved in hot work activities.

2. Do not begin work in any area without a complete and authorized open flame/hot work permit, unless supervision agrees that a permit is unnecessary. An authorized flame/hot work permit may be required when work involves flames, sparks, or high temperature producing tools or equipment. Such equipment may include internal combustion engines, electrical tools, motors, and any spark-producing device. For permit see Appendix B.
OPEN FLAME/ HOT WORK PERMIT

DATE________________________

PERSON REQUESTING____________ TITLE____________ CRAFT _____________

WORK TO BEGIN_______am WORK TO END_________p.m.
(Date/Time) (Date/Time)

WORK LOCATION________________________________________

EQUIPMENT CLASSIFICATION____________ OR AREA____________

WORK DESCRIPTION (Be Specific)________________________________

SAFETY PRECAUTIONS

_____ Perform Explosivity Check ( %) _____ Barricade Area

_____ Oxygen Content ( _____ %) _____ Post Signs

_____ Clear Area of Flammable Materials _____ Ground Equipment

_____ Use Fire Watch _____ Cover Drains/Trenches, etc.

_____ Provide Fire Extinguisher (Type _____) _____ Contain Sparks/Slag, etc.

_____ Provide Water at Job _____ Place Shield Under/ Around Work

_____ Keep Area Wet _________ Use Respiratory Protection

_____ Ensure Adequate Ventilation _________ Use Nonsparking Tools

_____ Purge System _________ Wear Special Clothing

_____ Restrict Tools

Other Instructions:_____________________________________________________

______________________________________________________________

Client (Optional) ______________________________ Area

Craft Superintendent ____________________________________________

EH&S Professional______________________________________________
Section 5 Enviro
1.0 PURPOSE

To provide guidance related to the prevention of any discharge of oil into navigable waters or adjoining shorelines.

2.0 REQUIREMENTS

1. A SPCC plan must be prepared by all site/facilities subject to the following criteria:

2. The facility must be non-transportation related and,

3. The facility must have an aboveground storage capacity greater than 660 gallons in a single container or an aggregate storage capacity greater than 1,320 gallons or a total underground storage capacity greater than 42,000 gallons and,

4. There must be a reasonable expectation of a discharge to navigable waters or adjoining shorelines.

5. The regulations require the SPCC plan be written by the owner or operator of the facility or their authorized environmental consultant, engineer or scientist. The owner/operator or special circumstances might require Saxon to produce a SPCC plan.

6. The regulations require the SPCC plan to be certified by a registered Professional Engineer. By certifying the SPCC plan, the Professional Engineer, having examined the facility, shall attest that the SPCC plan has been prepared in accordance with good engineering practices.

7. Oil storage includes all containers storing oil. The capacity of the containers (maximum volume) must be considered and not the actual amount of product stored in the container (operational volume). Oil storage containers include, but are not limited to:

   a. Tanks
   b. Containers
   c. Pails
   d. Drums
   e. Quart containers
   f. Transformers
   g. Oil-filled equipment
   h. Mobile or portable totes

8. Under the SPCC regulations, oil is defined as "oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged spoil and oily mixtures." This also includes non-petroleum oils, animal and vegetable oils.

3.0
1.0 PURPOSE

To provide requirements for the prevention and quick clean-up response to small-scale spills of chemicals.

2.0 REQUIREMENTS

The site/facility shall develop a written plan for the quick response to clean up small-scale spills. The plan shall address, as a minimum:

1. Evaluation of SPCC (Procedure V.A) requirements and recognize if a SPCC plan is required. If a SPCC plan is required, it will meet the requirements of this procedure.

2. Proper storage of bulk containers of chemicals.

3. Identification of potential spills and the hazards produced, e.g., hydraulic oil (environmental issues, combustible liquid, slippery), form oil (environmental issues, combustible liquid, slippery), gasoline (flammable, environmental issued, vapors), paint (environmental issues, flammable), etc.

4. Selection and training of a response team.

5. Selection, storage and transportation of clean up materials, e.g., booms, socks, absorbent material, waste containers (drums, over-pack drums, etc.), non-sparking tools, and labels.

6. Disposal of contaminated material.

2.1 Review

The site/facility spill response plan shall be evaluated annually or if a failure in the system occurs. All site/facility spill response plans shall be reviewed and approved by EH&S.
1.0 PURPOSE

To provide requirements for storm water discharges from construction sites/facilities in accordance with US EPA, State/local or appropriate governing agency permit requirements. These requirements apply to all construction sites/facilities, which involve the disturbance of five (5), or more acres. This Procedure also applies to dedicated portable concrete or dedicated portable asphalt plants located on or adjacent to a construction site/facility.

2.0 REQUIREMENTS

The Storm Water Discharge Control Program - This storm water discharge control program incorporates two principal components:

1. General Permit, and
2. Storm Water Pollution Prevention Plan

2.1 The General Permit

1. The permit is the "NPDES General Permit for - Storm Water Discharges Associated with Industrial Activity". It is a blanket permit, issued by the Federal EPA covering all 50 states, Indian lands, Federal reservations, and U.S. Territories. The terms of the permit are specified in Title 40 CFR Part 122. This "General Permit" is an NPDES permit issued under Title 40 CFR Part 122.28 authorizing a category of discharges under the Clean Water Act (CWA) within a geographical area.

2. In order to obtain a permit, a "Notice of Intent" (NOI) form must be submitted. The completed form must be signed in accordance with Part VI.G of the permit and submitted to the Director of the NPDES program at the following address:

   Storm Water Notice of Intent
   P.O. Box 1215
   Newington, VA. 22122

3. Because the CWA authorizes discharges within geographical areas, additional notifications may be required. These may include EPA Regional Offices, State agencies, local storm water control districts or other governing agency. For example, in Arizona, NOIs must also be submitted to the State of Arizona Department of Environmental Quality, Storm Water Coordinator.

4. The EPA requires that an "operator" of a construction site/facility submit the NOI for coverage under the General Permit. An "operator" is the party or parties that either individually or taken together meet the following two criteria:

   a. They have operational control over the site/facility specifications (including the ability to make modifications in specifications); and

   b. They have the day-to-day operational control of those activities at the site/facility necessary to ensure compliance with plan requirements and permit conditions (e.g., are authorized to direct workers at the site/facility to carry out activities identified in the plan).

5. EPA defines the types of operators affected by this rule as owners, developers, and general contractors. In addition, in many instances more than one party may have to submit an NOI for the same project. For example, at a given site/facility, the property owner may have operational control over site/facility specifications, while a general contractor may have day-to-day control over activities at the site/facility. In this situation, both the property owner and the general contractor must submit an NOI. Similarly, where a second operator (contractor) with day-to-day control is selected after the first operator has commenced work, the newly selected operator must submit an NOI before he commences activities on the site/facility.

6. NOIs must be submitted at least two (2) days prior to the commencement of construction activities, e.g., those activities which involve clearing, grading, or excavating affecting five (5) or more acres. Unless
notified by the EPA to the contrary, discharger’s who submit an NOI are authorized to discharge storm water from construction sites/facilities. The EPA may deny coverage under the General Permit and require submittal of an application for an individual NPDES permit.

7. A copy of the NOI or other indication that storm water discharges from the site/facility are covered under an NPDES permit and a brief description of the project must be posted at the construction site/facility in a prominent place, e.g., alongside a building permit. Submittal of the NOI is a certification that a Storm Water Pollution Prevention Plan has been developed, is available for inspection, and is in force at the project location.

8. A permittee submits a "Notice of Termination" (NOT) to EPA in two sets of circumstances:
   a. After a site/facility has undergone final stabilization and the site/facility no longer discharges storm water associated with industrial activity from a construction site/facility; or
   b. The permittee has transferred operational control to another permittee and is no longer an operator for the site/facility.

9. The NOT must be submitted using the form provided by the Director. Forms may be obtained from the same source as the NOI and are submitted to the same address (es) as the NOI.

10. The EH&S Manager can be contacted for assistance with completion of NOI and NOT forms, if necessary.

2.2 Storm Water Pollution Prevention Plan

1. Plans developed by Saxon shall be developed according to the guidance in "Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices", U.S. EPA, 1992. State, local requirements or governing agency, if applicable, must also be reflected in the Plans. A copy of the document is available upon request from the corporate EH&S department.

2. The Storm Water Pollution Prevention Plan is required by regulation. As described above, it must be developed prior to submittal of the NOI. The Plan is an integral part of the General Permit; it specifies site/facility specific conditions and controls. Development of the Plan must focus on two major tasks:
   a. Provision of a site/facility description that identifies sources of pollution to storm water discharges associated with industrial activity from the site/facility, and
   b. Identification and implementation of appropriate measures to reduce pollutants in storm water discharges to ensure compliance with the terms and conditions of the General Permit.

3. The contents of the Plan are specified in Title 40 CFR 122.26, the General Permit, EPA guidance documents, and a number of state storm water management control methodologies. Development of the Plan involves consideration of technical data including runoff coefficients, topographical aspects, meteorological history, design criteria, operational criteria, contingency planning, and a number of other considerations that insure the site/facility has been accurately characterized and the controls have been appropriately designed for the site/facility and project conditions. The design of the plan and the controls specified within it must be in keeping with "good engineering practices".
   a. Plan Contents - The Plan must include: (1) a site/facility description, (2) a description of controls that will be used at the site/facility (e.g., erosion and sediment controls, storm water management measures), (3) a description of maintenance and inspection procedures, and (4) a description of pollution prevention measures for any non-storm water discharges that exist.
   b. Site/Facility Description - Storm water pollution prevention plans must be based on an accurate understanding of the pollution potential of the site/facility. The first part of the plan requires an evaluation of the potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges from the construction site/facility. In addition, the source identification
components for pollution prevention plans must provide a description of the site/facility and the construction activities. This information is presumed to provide a better understanding of site/facility runoff and major pollutant sources.

c. At a minimum, plans must include:

1. A description of the nature of the construction activity

2. A description of the intended sequence of major activities that disturb soils for major portions of the site/facility (e.g., grubbing, excavation, grading).

3. Estimates of a) the total area of the site/facility and b) the total area within the site/facility that is expected to be disturbed by excavation, grading, or other activities.

4. Estimates of the runoff coefficient of the site/facility after construction activities are completed as well as existing data describing the quality of any discharge from the site/facility or the soil.

5. A site map indicating drainage patterns and approximate slopes anticipated after major grading activities, areas of soil disturbance; an outline of areas that will not be disturbed; the location of major structural and nonstructural controls identified in the plan; the location of areas where stabilization practices are expected to occur; the location of surface waters (including wetlands); and locations where storm water is discharged to a surface water.

6. The name of the receiving water(s) and areal extent of wetland acreage at the site/facility.

4. Controls to reduce pollution:

The Plan must describe and ensure the implementation of practices that will be used to reduce the pollutants in storm water discharges from the site/facility and assure compliance with the terms and conditions of the permit. Permittees are required to develop a description of four classes of controls appropriate for inclusion in the site/facility's plan. The description of controls must address (a) erosion and sediment controls, (b) storm water management, (c) a specified set of other controls, and (d) any applicable procedures and requirements of State and local sediment and erosion plans or storm water management plans.

a. Erosion and sediment controls: The requirements for erosion and sediment controls for construction activities in these permits have three goals: (i) to divert upslope water around disturbed areas of the site/facility; (ii) to limit the exposure of disturbed areas to the shortest duration possible; and (iii) to remove sediment from storm water before it leaves the site/facility.

b. Stabilization Practices: preserve existing vegetation, temporary or permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of buffer strips, preservation of mature vegetation. The General permits require stabilization measures to be initiated on disturbed areas as soon as practicable, but no more than 14 days after construction activity on a particular portion of the site/facility has temporarily or permanently ceased.

c. Structural Practices: These practice are designed to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site/facility. Options include silt fences, earth dikes, drainage swales, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, sediment traps, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins.

d. Storm water management: Storm water management measures that mitigate changes to predevelopment runoff characteristics assist in protecting and maintaining the physical and biological characteristics of receiving streams and wetlands. The General permits address only the installation of storm water management measures and not the ultimate operation and maintenance of such structures after the construction activities have been completed and the site/facility has under gone final stabilization. Options for storm water management measures to be evaluated include: infiltration of runoff
on site/facility; flow attenuation by use of open vegetated swales and natural depressions; storm water retention structures and storm water detention structures (wet ponds); and sequential systems that combine several practices.

e. Other controls: No solid materials, including building material wastes, may be discharged at the site/facility. Offsite vehicle tracking of sediments and the generation of dust must be minimized. Considerations include: (1) provide gravel or paving at access entrance and exit drives, parking areas, and unpaved roads on the site/facility carrying significant amounts of traffic (more than 25 vehicles per day); (2) provide wash racks or stations for trucks; (3) provide street sweeping.

f. State and local controls: Permittees are required to provide a certification that their Plan reflects requirements related to protecting water resources that are specified in State or local sediment and erosion plans or storm water management plans.

2.3 Maintenance and Inspection procedures

1. Maintenance:

Plans must contain a description of prompt and timely maintenance and repair procedures addressing all erosion and sediment control measures.

2. Inspection:

Procedures in the Plan must provide that specified areas on the site/facility are inspected by qualified personnel provided by the discharger a minimum of once every seven-calendar days and within 24 hours after any storm event of greater than 0.5 inches. Disturbed areas and areas used for storage of materials that are exposed to precipitation must be inspected for evidence of pollutants entering the runoff from the site/facility. Erosion and sediment control measures must be inspected to ensure that they are operating correctly. Locations where vehicles enter or exit the site/facility must be inspected for evidence of offsite sediment tracking. An inspection report that summarizes the scope of the inspection, name(s) and qualifications of personnel conducting the inspection, the dates of the inspection, major observations relating to the implementation of the Plan, and actions taken must be retained as part of the Plan for at least three (3) years after the date of inspection.

2.4 Non-storm water discharges:

The Plan must describe the pollution prevention measures to be implemented that will prevent the non-storm water that may be discharged from transporting sediments and other pollutants.

The Plan must:

1. Be signed by all permittees for a site/facility and retained on site/facility at the facility that generates the storm water discharge
2. Be made available, upon request, to EPA, State and local agencies.
3. Modified within 7 days of notification by EPA that it does not satisfy one or more of the minimum requirements.
4. Be kept current.

Non-Storm Water Components Authorized for Discharge by NPDES General Permits may include:

1. waters from fire fighting activities and hydrant flushing
2. waters used to wash vehicles or control dust in accordance with efforts to minimize offsite sediment tracking
3. potable water sources including water line flushing
4. irrigation drainage from watering vegetation
5. routine exterior building wash down that does not use detergents
6. pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
7. air conditioning condensate
8. springs
9. uncontaminated ground water
10. foundation or footing drains where flows are not contaminated with process materials such as solvents

2.5 Saxon performing as site/facility operator (i.e., General Contractor)

1. A Storm Water Pollution Prevention Plan shall be developed prior to any site/facility activities that will disturb soils.
2. The Plan shall be developed during the project's design, either by the client or by Saxon in the client's behalf.
3. The Plan shall be made available to bidders who will be affected by Plan provisions so that the specified controls will be clearly understood.
4. Signatures of certification to the Plan by all affected lower tier contractors and subcontractors shall be obtained prior to their submission of their Notice Of Intents.
5. Copies of the Plan must be distributed to the client and all affected contractors.
6. The Plan must be amended within 7 calendar days:
   a. When there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants
   b. To identify new contractors or subcontractors who implement measures within the Plan
7. The Plan must be amended within 14 calendar days of the release of a Reportable Quantity of a hazardous substance. Plan amendments must provide a description of the release, the circumstances leading to the release, and the date of the release.

2.6 Saxon performing as a lower tier contractor or subcontractor providing services that are affected by a Plan:

1. The Site/Facility Manager shall obtain a copy of the applicable site/facility Plan and review its contents for any services provided by Saxon that fall within the scope of the plan.
2. Provide the site/facility operator with Plan modifications, as applicable, that reflect Saxon activities.
3. Sign the Plan's "Statement of Certification."
4. NOTICE OF INTENT (NOI)
   Submit NOI using US EPA Form 3510-6. The Form must be postmarked at least two (2) days prior to soil disturbing activities and mailed, via registered/return receipt mail, to the address indicated in the form’s "Instructions".
5. Submit copies of the NOI to other agency's identified in the Plan (e.g., EPA Regional Office, State or local Director). If discharging to a separate municipal storm sewer system, submit a copy to the system's owner/operator.
6. Post a copy of the NOI at the same location where other required project permits are displayed.

2.7 Saxon as site/facility operator:
1. **Obtain copies of NOIs submitted by lower tier contractors or subcontractors.** Attach these copies to the Plan.

2. **Notice Of Termination (NOT)**

   Submit NOT (EPA Form 3510-7) to EPA via registered, return receipt mail.

   Submit NOT when:
   - Site/facility has undergone final stabilization and stormwater associated with the construction activity is no longer discharged
   - Operational control of the site/facility is transferred and Saxon is no longer the site/facility operator
   - Saxon performing as a lower tier contractor or subcontractor, has completed its activities at the site/facility.

### 2.8 Inspections

All inspections must be performed as specified in the Plan. At a minimum:

1. The **Scope** of the inspection must include:
   - disturbed areas
   - storage areas where materials are exposed to precipitation
   - structural controls
   - points of discharge

2. **Inspection Frequency:**
   - Regular or Programmed Inspections:
     - once every 7 calendar days;
     - within 24 hour of any storm event which produces greater than 0.5 inches of precipitation.
   - Monthly Inspections:
     - if site/facility is temporarily stabilized;
     - during seasonal arid period in Arid and Semi-arid areas.

3. **Inspector(s) Qualifications** - The Site/Facility Manager may appoint Inspector(s).

   Inspector(s) must be:
   - Familiar with the contents of the Plan;
   - Knowledgeable of the operation of structural controls;
   - Familiar with the site/facility layout including the location of fuel storage areas, structural controls, and discharge points;
   - Capable of assessing the condition and performance of structural controls.

### 2.9 Records Retention

The Plan and its associated records (NOIs, NOTs, inspection records, monitoring results, agency correspondence, etc.) must be retained for a period of not less than three (3) years after the date of final stabilization.

### 3.0
1.0 Purpose

To provide requirements for accumulation, storage, disposal, and recordkeeping requirements for the management of used oil.

2.0 REQUIREMENTS

2.1 Storage

Underground storage of waste oil on Saxon sites/facilities is prohibited. Used oil may be stored in drums or above ground tanks. The container of preference is the original container if the oil is purchased in 55-gallon drums. Used oil should not be stored in containers smaller than 55 gallon drums, except under exceptional circumstances such as when 55 gallons of waste oil will not be generated, 55 gallon drums cannot be obtained, or the recycler requires storage in a smaller container.

2.2 Containers

1. 55 gallon, steel drums that meet the specifications of Title 49 CFR Subpart L (US Department of Transportation) shall be used for the storage and shipment of waste oil (liquids and solid waste). Open top drums shall not be used for collection; storage or shipment of used oil. Drums marked STC (single-trip container) or NRC (nonreusable container) shall not be used to store used oil waste. Drums may be reused if:
   a. no residues of incompatible materials are present;
   b. the drum has not contained RCRA hazardous waste(s);
   c. the drum is in good condition, e.g. no structural defects, no severe rusting, no large dents, does not leak;
   d. gaskets, retaining rings, and/or bungs are in good condition

2.3 Liquids

The original drum is the container of preference. If the original drum is not available, a closed head drum must be used. Waste oil drums should be filled to 90% of capacity, with a 10% headspace reserved to accommodate expansion of liquids.

2.4 Oil Contaminated Solid Waste

Steel, removable head, "open top" drums must be used to store waste oil solids. Drums must be filled to 100% of their capacity, e.g., no voids. Drums may be "topped off" with inert drying agent. Items that contain void spaces; e.g., oil filters, should be crushed and drained prior to placement into the drum. Oil filters should be drained and crushed in accordance with Title 40 CFR Part 261.4 (b)(13) – a “hot draining” method.

2.5 Container Markings

1. Containers used to accumulate used oil, liquids or solid wastes, must be marked:

   "Used Oil"

2. The containers shall be marked with a sequential inventory reference number.

3. If a previously used container is reused for storage of used oil, old labels shall be removed or marked out.

4. A filled drum, in addition to the requirements specified above, must be labeled with:
   a. Saxon or client's name (if client is responsible for disposal)
   b. address of generating location, e.g. project address
   c. the date the drum was filled
2.6 Disposal Prohibitions

Used oil which has become contaminated with a RCRA "listed" and/or "characteristic" hazardous waste, PCBs, cutting oils, CFCs, or halogenated solvents shall not be shipped as "used oil" to a recycler, used oil burner, collection center, marketer, transfer facility, processor or re-refiner. These materials must be managed in accordance with RCRA regulations that address management and disposal of the specific contaminant.

2.7 Mixing Prohibitions

Used oil may not be mixed with any substance, other than qualified used oils, without the written approval of the EH&S Manager. Under no circumstances will authorization be granted for the intentional mixing of used oils with hazardous wastes (except for certain ignitable hazardous wastes), PCBs, cutting oils, chlorofluorocarbons, or halogenated solvents.

2.8 Dust Suppressant

Used oil shall not be used as a dust suppressant.

2.9 Used oil Burned for Energy Recovery

1. Regulations issued by the EPA in November 1985 prohibit the burning of used oil that contains contaminants in amounts greater than those specified below:

<table>
<thead>
<tr>
<th>Constituent/Property</th>
<th>Allowable Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>5 ppm Maximum</td>
</tr>
<tr>
<td>Cadmium</td>
<td>2 ppm Maximum</td>
</tr>
<tr>
<td>Chromium</td>
<td>10 ppm Maximum</td>
</tr>
<tr>
<td>Lead</td>
<td>100 ppm Maximum</td>
</tr>
<tr>
<td>Total Halogens</td>
<td>1,000 ppm Maximum</td>
</tr>
<tr>
<td>Flash point</td>
<td>100° F Minimum</td>
</tr>
</tbody>
</table>

2. Used oil that is mixed with hazardous waste or contains more than 1000 ppm total halogens is presumed to be hazardous waste and is subject to the RCRA hazardous waste fuel requirements when it is burned for energy recovery.

3. Used oil slated for energy recovery burning shall be analyzed prior to burning in order to confirm constituent concentrations.

4. All used oil burned for energy recovery is also presumed to be off-specification and subject to hazardous waste regulation unless it is analyzed and shown to meet the specifications presented above.

5. Prior to burning, the SITE/FACILITY MANAGER shall ensure that analytical results of used oil slated for burning shall be forwarded to the EH&S Manager for review and approval.

6. A project that generates off-specification used oil which will be burned for energy recovery may only offer that oil to marketers/burners who have notified EPA of their used oil management activities and have an EPA identification number.

7. Saxon projects may also offer the used oil directly to burners who have an EPA identification number, have notified EPA of their burning activities, and who burn the oil in an industrial furnace or an industrial utility boiler.

8. Saxon site/facilities that sell off-specification used oil directly to facilities that burn oil for energy recovery must notify EPA that is a used oil fuel marketer. The project must provide written notification to EPA using EPA Form 8700-12, which is available from regional EPA offices. The project must also obtain a one-time
written notice from the burner certifying that the burner has notified EPA of its waste oil burning activities and will burn Saxon’s used oil only in an industrial furnace or boiler meeting EPA definitions.

9. Records of used oil chemical analysis, certifications, and notices must be maintained for at least 3 years.

10. Saxon sites/facilities may burn off-specification used oil in used oil-fired space heaters as long as the heaters only burn the site's/facility's used oil (i.e., used oil cannot be accepted from off-site), the heater is designed to have a maximum capacity of 0.5 million British thermal units (BTUs) per hour, and combustion gases are vented to the ambient air.

11. The site/facility manager shall ensure that applicable state air quality regulations are reviewed to determine if an air permit is required prior to burning used oil as fuel in space heaters. The EH&S Manager shall be notified in writing, by the site/facility manager of the outcome of this review.

2.10 Used Oil Mixtures/Consolidation

1. Used oil and certain wastes may be mixed prior to recycling. Prior to mixing, the site/facility shall contact the recycling contractor to assure that the materials to be mixed will be acceptable for the recycling process. Generally, the mixing of oils of varying viscosity, e.g., engine oils, hydraulic, lubricating, will not present a problem, but the acceptance criteria must be confirmed.

2. Certain hazardous wastes may be mixed with oils. Liquid hazardous wastes that exhibit the RCRA Characteristic of "ignitability" (flash point less than 140°F) may be mixed with used oil. Mineral spirits for example could be mixed with used oil.

3. These mixtures are allowed provided the total used oil/ignitable waste mixture does not result in a liquid with a flash point less than 140°F.

4. Prior to mixing used oil with ignitable hazardous waste, the project must ensure that a waste analysis is performed by an EPA accredited laboratory for the determination of flash point. Results of the analysis shall be forwarded to the Saxon EH&S Manager for review and approval. Written authorization for the mixing must be granted to the project, prior to the mixing, by the EH&S Manager.

   a. Used oil Storage: If used oil is stored in tanks of 660 gallons, or more, or if total storage capacity of oils (e.g., fuel, lubricants, hydraulic oil, etc.) at the project or facility exceeds 1,320 gallons, the used oil storage activity must be conducted in accordance with an approved SPCC plan (See Procedure V.A).

   b. Accumulation is the period of time from when wastes are first placed in the container until the container is filled. The number of accumulation containers distributed throughout a project should be minimized to the greatest extent possible without sacrificing the convenience of the "generators" or discouraging proper waste disposal. Generally, vehicle maintenance shops, or a centralized drum storage area is the only location where an "accumulation" drum should be located. As a rule of thumb, if a location on a project generates one drum per month, it should be issued an accumulation drum.

   c. Staging of Accumulation Drums: One accumulation drum for each "waste stream" shall be located at a satellite accumulation area. An "initial" accumulation drum will be provided by the Warehouse/Central Receiving for any area that requires a drum. A replacement drum will be provided when a filled drum is relinquished.

5. The Warehouse/Central Receiving Manager shall control the location(s) and management of all drums. Drums for waste accumulation must be requested from the warehouse and full drums must be returned to the warehouse (or an appropriate location determined by the Warehouse/Central Receiving Manager). When a drum is requested, the warehouse shall:

   a. select the appropriate container;
   b. label the container;
   c. assign a drum number;
d. attach a "Used Oil Accumulation Log" (Form # 56-318);
e. initiate and maintain a "drum inventory".

6. Filling the Accumulation Drum: As the drum is filled, its contents must be recorded. Each time material is added to a drum, the amount added, date, and identity of the material must be noted on the "Used Oil Accumulation" log. The log must be kept in a protected, visible, accessible location near the accumulation drum. The log may be attached to a clipboard and hung on a wall near the drum or it may be placed in a packing slip pouch and attached to the drum.

7. Filled, properly labeled drums must be transferred to a secured, centralized storage location.

2.11 Storage Area Requirements

1. The Warehouse/Central Receiving Manager shall ensure that all storage areas are inspected weekly, corrective action initiated as necessary, and that the inspections are documented. All centralized used oil storage locations shall be configured as described below:

   a. impervious, sheltered, secondary containment capable of providing storage of 110% of all stored liquids and/or the volume of the largest container;

   b. an impervious surface, free from cracks and gaps, capable of containing leaks, spills, or precipitation which has contacted the containers;

   c. unrestricted access: sufficient aisle space, i.e., minimum of three (3') foot width, capable of accommodating the passage of personnel and drum handling equipment such as drum dollies, fork-lifts, etc.

   d. capability of preventing run-on waters from entering the secondary containment system or capable of containing any run-on waters;

   e. fire protection and fire response capabilities in accordance with OSHA requirements;

   f. "NO SMOKING" signs must be posted and adequately sized fire extinguisher must be stationed within 25 feet of the drums.

   g. unrestricted ventilation;

   h. adequate supplies of appropriate spill control/response equipment;

   i. drums shall not be stacked;

   j. drums must be kept closed, i.e., lids securely fastened, all bungs installed;

   k. drums must be positioned so that the labels are unobstructed;

   l. storage of incompatible materials, e.g., combustibles, oxidizers, acids, caustics, reactives shall not occur in used oil storage areas.

2.12 Satellite Accumulation Areas

1. All satellite accumulation areas shall:

   a. be configured with rigid, sheltered, impervious secondary containment capable of containing 110% of liquids accumulated - unrestricted spills and/or leaks from satellite accumulation areas shall not be permitted;
b. Suggested: Systems are commercially available that are configured as a drum pallet with built-in secondary containment. These pallets can be moved with forklifts and can accommodate up to four drums.

c. be protected from the accumulation of precipitation and/or run-on water;

d. utilize drum-filling mechanisms to prevent spills, e.g., plastic covers that incorporate a funnel, stopper, and drainboard to allow drainage of oil filters, hoses, etc.

e. have unrestricted access: sufficient aisle space, i.e., minimum of three (3') foot width, capable of accommodating the passage of personnel and drum handling equipment such as drum dollies, fork-lifts, etc.;

f. have fire protection and fire response capabilities in accordance with OSHA requirements;

g. have "NO SMOKING" signs posted and an adequately sized fire extinguisher stationed within 25 feet of the drums;

h. have unrestricted ventilation;

i. have adequate supplies of appropriate spill control/response equipment;

j. have drums kept closed when not being filled;

k. have drums positioned so that the labels are unobstructed;

l. be positioned away from incompatible materials, e.g., combustibles, oxidizers, acids, caustics, reactives shall not occur in used oil storage areas.

### 2.13 Transportation/Disposal

1. The site/facility manager, or designee, shall research and verify used oil disposal regulations for the applicable state or governing agency in which the site/facility exists.

2. When possible make arrangements for the transportation and disposal of used oil and oily solid waste, e.g., filters, hoses, contaminated absorbent, through the commercial petroleum products supplier who supplies the project.

3. If the supplier is retained for transport and disposal of used oil, the site/facility manager shall obtain written documentation relating to the qualifications, permits, methods, etc. of the transporter and disposal facility accepting the waste. This documentation shall be obtained, and forwarded to the EH&S Manager for approval, prior to shipment/disposal of used oil from the project. Copies of the documentation shall also be maintained at the project.

4. Used oil shall not be transported off any project by Saxon employees or management.

5. Used oil transporters must have an EPA identification (ID) number. The site/facility shall verify transporter ID number(s) and that Used oil transporters who also transport hazardous wastes use vehicles that are emptied, and cleaned of hazardous wastes prior to transporting used oil.

### 2.14 Empty Oil Drums

Empty 55-gallon drums shall be returned to the Warehouse/Central Receiving. These drums may be re-used for the collection of used oil if they are of the proper configuration (closed top) and in acceptable condition. If unacceptable, they must be crushed and discarded. Discarded, empty drums should be placed with scrap metals for recycling. If this is not possible, they may be discarded with other used oil solid wastes, at the approval of the disposal facility.
2.15 Petroleum Contaminated Soils

1. Soils contaminated with used oil can generally be disposed of with other used oil solid wastes. These soils are those collected at the location of a spill, e.g., cleaned up in the area where a hydraulic hose leaked, cleaned up in area of a leaking or spilled drum, etc.

2. Where the source or extent of the contaminant is not certain, samples must be collected to determine the extent (area), depth, and identity of the contaminants. Areas potentially contaminated with petroleum products may include soils surrounding underground storage tanks, soils in the vicinity of above ground tanks that have operated for long duration, or maintenance locations where spilled materials were not promptly cleaned up.

3. Soils contaminated with petroleum are classified into certain regulatory categories depending on the constituents present and contaminant concentration. In most locations, soils contaminated at a level less than 100 parts per million (ppm) TPH (Total Petroleum Hydrocarbons) are considered "clean". Soils contaminated with TPH levels above 100 ppm but below 1,000 ppm, with a total BETX (benzene, ethylbenzene, toluene, and xylene) component less than 500 ppm may be eligible for disposal in municipal landfills. Soils contaminated at levels greater than 1,000 ppm TPH or greater than 500 ppm BETX are unlikely candidates for disposal in municipal landfills. The wastes may be classified as "industrial" rather than "hazardous" depending on applicable regulations.

4. If contaminated soils are encountered on a Saxon project, the site/facility manager shall ensure that the appropriate regulatory agency (federal, state or local) is contacted to confirm specific regulatory requirements regarding treatment and disposal of contaminated soil.

2.16 Records Retention

1. The regulations for used oil generators require only that the generator confirm that the transporter has an EPA identification number. This is not sufficient information for Saxon to verify that the waste material is delivered for proper disposal. The site/facility manager shall make a documented effort to obtain copies of records that reflect the information listed below.

2. Generally, a bill of lading, service invoice, or similar document will satisfy the regulatory tracking requirements. Some regulatory agencies may require that used oil shipments be accompanied by a manifest. If a manifest is required, the transporter or processor/recycler should be able to provide the appropriate form.

3. The site/facility manager shall verify what documentation is required within the jurisdiction of the Saxon site/facility, and shall confirm that such documentation is being utilized for used oil shipments.

4. At a minimum, the following information shall be included in all transporter-shipping documents:
   a. the name and address of the generator, e.g., Saxon or the client;
   b. the generator's EPA identification numbers, if required;
   c. the name, address, and EPA identification number of the transporter;
   d. the quantity of used oil transported;
   e. the date the used oil was transported;
   f. the signature of the generator and transporter.

5. The following records shall be maintained for a period of at least three (3) years:
   a. Waste profiles: if required by transporter, recycler, refiner, etc.;
   b. Used Oil Accumulation Logs;
   c. Drum inventory logs;
   d. Storage area inspections;
   e. Transportation/disposal documentation, e.g., bills of lading, service invoices, etc.

6. Site/Facility files related to used oil accumulation, transportation, and disposal shall be organized as follows:
a. Files should be established for each site/facility, which ultimately receives the wastes. For example, if liquids are delivered to a re-refiner and solids are shipped to a landfill, two files are required. If more than one re-refiner is used or more than one landfill receives waste, a file must be established for each re-refiner or landfill.

b. Each file should be organized into two sections.

1. Waste Profile:
   Include any documents such as service agreements, waste profile forms, analytical reports, or correspondence related to the waste stream.

2. Shipping Documents:
   File each shipping document by the chronological date of shipment. Attach the "Accumulation Log" and any discrepancy report or correspondence related to the shipment to a copy of the shipping document, e.g., manifest, bill of lading, receipts, etc.
WASTE OIL ACCUMULATION LOG

Instructions

The Waste Oil Accumulation Log provides a means of controlling and verifying the composition of a waste stream. Information reported on the log is used to classify the waste. Accurate accumulation records reduce the need for expensive sampling and analysis.

The "Waste Stream", "Drum Number", "Waste Stream #", and "Date Accumulation Began" information is provided by the Warehouse/Central Receiving at the time the drum is prepared for placement at an accumulation area.

Information provided by Warehouse/Central Receiving:

- **Waste Stream:** waste oil (liquid or solid)
- **Drum Number:** the number assigned to the drum and indicated warehouse inventory system.
- **Waste Stream #:** normally left blank. If the company providing disposal service has assigned a "waste profile" to the waste, enter the Profile Number in this blank.
- **Date Accumulation Began:** the date the drum was placed in service to begin collection of waste oil.

Information provided by Work Area Supervisor:

- **Date Filled:** the date the last deposit was made to the drum which resulted in the drum being full (90% full for liquids, 100% full for solids).
- **Material:** a general description such as "30W motor oil", # 2 diesel, or hydraulic fluid, etc. The brand name of the oil is not required.
- **Volume (gals.):** the closest approximation of the amount of the material placed in the drum. Amounts should be reported to the quarter (1/4) gallon. For example: 5 quarts should be recorded as 1.25 gallons.
1.0 PURPOSE

To establish minimum requirements for recycling programs.

2.0 REQUIREMENTS

2.1 General

1. The recycling program shall include:

   a. Site/Facility recycling.
   b. The purchase of products containing recycled materials.
   c. The evaluation of packing of incoming and outgoing materials.

4.2 Recyclable Material Identification

1. A solid waste stream analysis shall be performed. This will identify materials for which recycling is feasible. The materials identified may include but are not limited to:

   a. Paper.
   b. Cardboard.
   c. Wood.
   d. Metals.
   e. Glass.
   f. Cans.
   g. Bottles.
   h. Plastics.
   i. Precious metals.
   j. Electronics scrap, e.g., plastic computer cases, mercury waste, and glass.

2.3 Packaging

1. Whenever feasible, reusable packaging shall be used to minimize the generation of waste packaging materials.
2. Disposable packaging received from suppliers shall be recycled to the maximum extent possible.
3. Fire protection procedures shall be followed in all staging areas for recyclable materials.

2.4 Scrap Metals

1. Scrap metals shall be recycled.
2. Segregation, collection and revenue agreements with vendors shall be established to ensure maximum market-based returns.
3. A management/security system shall be established to monitor material pick-up, true weights, etc.
4. Scrap metals and obsolete equipment shall be stored to minimize stormwater exposures.
5. 

2.5 Recyclable Materials Containing Hazardous Materials

1. Recyclables collected, which contain hazardous materials, shall be collected, stored and processed in accordance with applicable client and regulatory requirements.
2. Examples may include but are not limited to:

   a. Electronic scrap.
   b. Batteries.
   c. Fluorescent bulbs.
   d. Thermostats.
3. Vendors used to process and recycle these materials shall be audited to ensure environmental compliance and minimize future liabilities.
4. Audits shall be performed by Division EH&S staff or a qualified outside vendor.
5. Audit report/results shall be forwarded to Division EH&S office for approved vendor list maintenance.

2.6 Products Containing Recycled Materials

Products containing recycled materials shall be used where pricing and quality of the product are comparable to those without recycled materials.

2.7 Metrics

1. Appropriate metrics shall be maintained to illustrate the efficiency and value of onsite recycling program.
2. Recycling metrics are required annually.
1.0 PURPOSE

To provide the minimum requirements for the proper identification, accumulation, storage, and disposal of hazardous waste. Should local requirements differ from this standard, the more stringent shall apply.

2.0 REQUIREMENTS

2.1 General

Any wastes generated by Saxon and/or subsidiaries which, according to applicable laws or regulations, are classified as a hazardous waste, or are believed to possess a risk to public health or the environment, or pose a future environmental or safety liability to the Company shall be handled according to this hazardous waste management standard.

2.2 Identification of Waste

All wastes shall be evaluated to determine if such waste is a hazardous waste. This evaluation may include, but is not limited to laboratory analysis, knowledge of the process, or review of material safety data sheets. All wastes shall be evaluated when associated materials, processes or conditions change or as required by any permits or exemptions maintained by the operation. The evaluation shall be performed, at a minimum, every two (2) years.

2.3 Generator Status

All locations are responsible for determining the site’s/facility’s generator status. A site/facility, which generates greater than 2000 pounds of waste per month, shall have large quantity generator status (LQG). A site/facility, which generates between 200-2000 pounds of waste per month, shall have small quantity generator status (SQG).

2.4 Waste Accumulation/Collection

1. All wastes shall be accumulated onsite in designated waste accumulation areas meeting these minimum requirements.

   a. Containers

      1. All containers used to store hazardous waste shall be in good condition (no dents, rust, cracks, or physically weakened), compatible with the waste, and closed at all times (unless adding or pouring waste). Containers used for ignitable or reactive waste shall be located at least 50 feet from the property line.

      2. Open top drums shall not be used for liquid waste(s). Closed top drum, with bung, shall be used for liquids.

      3. Special requirements for waste containing volatile organic compounds (VOCs) of 500 ppm (by weight) or greater: (RCRA Subpart CC Rules) See regulatory reference below.

         4. Containers greater than 25 gallons shall be DOT approved. 2. Reuse of Single Trip Containers are not allowed. 3. Satellite accumulation containers are exempt from this requirement provided that the container is kept closed. 4. Recycling units (solvent stills) are exempt from this requirement, and 40 CFR 265 Subpart AA, BB, at facilities that are RCRA-permit exempt (i.e. LQG/SGQ-only facilities). 5. Waste from cleanup or closure activities are exempt from this requirement.

   2. Daily Waste Accumulation

      a. All containers shall be labeled with the words "Hazardous Waste" and the contents of the container.

   3. Satellite Accumulation Area (SAA): All satellite accumulation areas shall:
a. Be under the control of the supervisor of the operation that generates the waste.
b. Be configured with a rigid, sheltered impervious secondary containment capable of containing 110% of liquids accumulated and prevent unrestricted spills and/or leaks.
c. Satellite waste containers shall only be opened when waste(s) are being added or removed.
d. Be protected from the accumulation of precipitation and/or run-on water.
e. Utilize drum-filling mechanisms to prevent spills, e.g., plastic covers that incorporate a funnel, stopper, and drain board to allow drainage of oil filter, hoses, etc.
f. Have unrestricted access: sufficient aisle space, i.e., minimum of three (3') foot width, capable of accommodating the passage of personnel and drum handling equipment such as drum dollies, fork-lifts, etc.
g. Have fire protection and fire response capabilities in accordance with OSHA requirements.
h. Have "NO SMOKING" signs posted and an adequately sized fire extinguisher stationed within 25 feet of the drums.
i. Have unrestricted ventilation.
j. Have adequate supplies of appropriate spill control/response equipment.
k. Have drums kept closed when not being filled.
l. Have drums positioned so that the labels are unobstructed.
m. Be positioned away from incompatible materials, e.g., combustibles, oxidizers, acids, caustics, reactives.

Suggested: Systems are commercially available which are configured as a drum pallet with built-in secondary containment. These pallets can be moved with forklifts and can accommodate up to four drums.

4. 90/180-Day Waste Accumulation

a. All containers shall be labeled with the words "Hazardous Waste", the contents of the container and the hazards associated with the wastes.

b. The area shall be conspicuously marked with a sign designating the area as a "Hazardous Waste Accumulation Area". The container shall be kept closed when not in use. All Waste Accumulation Areas shall be located on an impervious surface, and configured with a secondary containment.

c. If ignitable waste is present in the area a "No Smoking" sign shall also be posted. The waste container shall follow proper bonding and grounding procedures as required for ignitable liquids.

d. The waste container shall be inspected weekly for proper labeling, spills, leaks or deterioration of the container. The inspection and any corrective action shall be documented. An accumulation start date shall be added to each container when the first amount of waste is added to the container. When full the container shall be moved to the location’s central waste storage area, if such an area is available. The emergency telephone number shall be posted at the nearest telephone to the Hazardous Waste Accumulation Area.

5. Permitted Storage Facilities

a. Permitted Storage Facilities shall comply with the requirements of federal regulations, 40 CFR Part 264 or 265, or equivalent as well as applicable state, local or permit requirements. The location shall comply with the most stringent requirements of the permit or regulations.

2.5 Waste Minimization

Each location (except Conditionally Exempt Generators) shall develop a waste minimization plan per EPA requirements, and update the plan on an annual basis.

2.6 Transportation Requirements

All hazardous waste shall be accompanied by a hazardous waste manifest (unless exempted by the regulations) and properly marked, labeled, and placarded as stipulated by 40 and 49 CFR or other international requirements.
2.7 Emergency Planning

1. All locations subject to this standard shall implement the following:
   
a. Emergency Coordinator & Communication

   Each location shall designate a Primary and Alternate Emergency Coordinator and post emergency phone numbers near the closest phone to the hazardous waste generation, accumulation, collection, and storage areas.

b. Contingency Plan

c. If applicable, all Large Quantity Generators and TSDF facilities or equivalent shall maintain a current Hazardous Waste Contingency Plan compliant with the requirements of 40 CFR 265.50 - 56 and other applicable requirements. The plan shall be distributed to appropriate authorities via return receipt requested mail or other appropriate means to confirm receipt.

d. Emergency Response Resources

   Emergency support arrangements shall be made with emergency response resources capable of responding to a significant release of hazardous materials or wastes.

2.8 Records Retention

All records and documentation applicable to the management of hazardous waste shall be retained.

2.9 Training Requirements

1. Employees at each site/facility in the area of, or responsible for the management, handling, preparation for shipment, spill response, and maintenance of hazardous waste or hazardous waste systems shall receive appropriate training prior to assignment and on a periodic basis. All training shall be documented and retained as long as the employee is employed plus thirty years. Training requirements shall be included with each employee’s job description.

   a. Management of Hazardous Waste

   Employees involved with the management of hazardous waste in a facility shall be trained in accordance with EPA 40 CFR 265.16. Training shall be completed prior to assignment. Employees shall receive this training annually.

   b. Ship or Prepare for Shipping

   Employees shipping or preparing for shipment a hazardous waste or other hazardous substance shall be trained in accordance with Department of Transportation 49 CFR 172.700. Training shall be completed prior to assignment, with refresher training at least once every three years.

   c. Response and cleanup of spills at generator sites or Hazardous Waste Operations at TSDF Facilities

   Employees involved with response and cleanup of spills at generator sites, or Hazardous Waste Operations at TSDF Facilities shall be trained in accordance with OSHA 29 CFR 1910.120. (HAZWOPER). Training shall be completed prior to employee deployment to any spill response. Employees shall receive a refresher of this training annually.

   d. Hazardous Wastes in the Work Area

   Employees working in an area where there are hazardous wastes shall be trained in accordance with OSHA 29 CFR 1910.1200. Training shall be completed at the time of their initial assignment. Training
shall be conducted whenever a new hazardous waste is introduced into their work area or the nature of a hazardous waste has changed.

2.10 Disposal Site Requirements

All locations shall use only treatment, storage, disposal and reclamation facilities that have been approved by the Corporate EH&S Department.
Section 6 Training
1.0 PURPOSE

To provide minimum requirements for safe travel by automobile.

2.0 REQUIREMENTS

2.1 Automobile Safety

1. Automobile safety applies to rental, company owned or leased vehicles, or personal vehicles on company business.
   a. Outside of the employee’s country of residence, use public transportation (taxi, buses, or trains) when it is safe and reasonable to do so.
   b. Use vehicles equipped with supplemental restraint systems (airbags), shoulder harness, and seat belts. Wear restraints at all times, whether you are a driver or passenger. Doors should be locked while vehicle is in motion. The driver shall not move the vehicle until all passengers are properly secured.
   c. Use defensive driving techniques and always be courteous and safe. Attend defensive driving course when available.
   d. Before operating a vehicle, make sure it is mechanically sound and properly equipped with safety restraints and road emergency devices. Verify condition and operation of safety belts, lights and turn signals, mirrors, horn, spare tire, jack, door locks, tires, brakes and wipers.

2.2 Defensive Driving Tips

1. Keep the vehicle centered in the lane
2. Do not “tailgate”: use the “3-second” rule for following moving vehicles
3. Read and acknowledge traffic information signs in advance of maneuvering
4. Anticipate and recognize potential traffic problems
5. Select proper lane and speed for existing conditions
6. Anticipate where the vehicle will be in 8 to 10 seconds.
7. Signal at least 8-10 seconds before changing lanes or turning;
8. Check side and rear vision mirrors repeatedly, e.g., every 5 to 10 seconds
9. Do not stare at anything more than 2 seconds
10. Follow indicators of upcoming changes in road or weather conditions and traffic patterns
11. Plan escape routes in all situations to avoid trouble.
12. Maintain full circle of clear decision space all around the vehicle
13. Use extreme caution while passing.
14. Communicate with other drivers by using directional signals, hand signals, headlights, brake lights, flashers, vehicle positioning, horn,
15. Turn on headlights as darkness approaches, and during periods of rain, fog, snow or dust.
16. Warn drivers following behind of bad road conditions by tapping brakes so brake lights will flash.
17. While driving in city or suburbs, keep glancing ahead from building to building for pedestrians or potential problems.
18. In open country glance from side to side watching for anything unusual. Maintain reasonable speed for road conditions.

2.3 Accident Reporting

Follow site regulation if an accident occurs while on site. If an accident occurs off site report to local law enforcement, and the rental agency. Subsequent to the accident, follow the instructions in Saxon EH&S Procedures I.C Incident Notification and I.D: Incident/Near Miss Investigation.

2.4 Rental Vehicles

1. Company designated car rentals agencies shall be used at all times. Department Manager shall approve use of other rental agencies. Rental arrangements must be made through company designated travel agency. For information on “Insurance and Details for Domestic and International Rentals,” see Human Resources Corporate Standards.
2. Before driving a rental car, familiarize yourself with features of the car. Before you leave the agency, check for vehicle damage, valid inspection stickers, and valid license plate. Verify status of tire inflation and operation of headlights, brake lights, turn signals, and horn.
3. Check for contraband. If suspect material is present, bring the issue to the attention of the rental agency. Do not accept the vehicle as a rental. Do not remove suspect material from vehicle.

2.5 Personal Vehicles

Personal vehicles used for company business shall meet the general requirements in this procedure. Employee must have valid driver’s license and have automobile liability insurance consistent with their state’s laws. The company assumes no responsibility for losses or damages to an employee’s private vehicle or to the contents thereof, whether in transit or on an assignment.

2.6 Car Telephone

1. Do not place calls while driving
2. Answer incoming calls only if traffic conditions allow the distraction.
3. Do not attempt to make written notes while driving.
4. When you answer a call, leave the highway at the earliest opportunity. Limit the conversation while driving. Inform caller you must pull off the road before conversing.
5. If you cannot safely leave the road, ask the caller to call later or call them back when conditions are favorable.

2.7 Driving In Inclement Weather

1. Always consider the following guidelines while driving in inclement weather.
   a. Avoid driving in inclement weather whenever possible.
   b. When fog is encountered reduce speed and use low headlight beams or fog lamps.
   c. Use headlights during weather that creates limited visibility.
   d. Slow down to reasonable speeds during rainstorms; use headlights; where possible, be alert for the possibility of hydroplaning and loss of control.
   e. If temperatures fall below freezing be aware of black ice. Bridges freeze before roadways.
   f. Driving during an ice storm should be avoided whenever possible. If you are required to drive during a ice storm consider the following:
      1. Use headlights, wipers, and front and rear window defrosters.
2. Use chains or studded tires to increase traction
3. Drive slowly; allow additional distances for stopping and maneuvering.
4. Double check intersections before proceeding, other drivers may not be able to stop.
5. Use extra caution before crossing bridges; if bridge is ice covered avoid sudden braking or sharp turns. Sudden movements may cause loss of control and skidding.
g. Do not drive during tornado warnings, seek shelter and monitor radio for sightings.
h. When high winds are encountered consider the wind loading on large trucks or light vehicles; be alert for flying objects and projectiles that winds may produce.
1.0 PURPOSE

To provide company travelers and meeting planners with information to identify safety deficiencies in motels, hotels, and meeting facilities. This standard will provide identification of accommodations offering the minimum acceptable degree of safety.

2.0 REQUIREMENTS

1. Company travelers shall become familiar with this procedure. Use it to evaluate hotels/motels and the degree of safety.

2. Company meeting planners should also become familiar with this procedure to evaluate meeting areas. The safety of meeting attendees should be greater than concern for cost or location. Personnel who arrange overnight accommodations should evaluate selected hotels/motels in order to ensure safety of company travelers.

2.1 Hotels and Motels

1. Two exits shall be accessible from guestrooms in different directions. The distance from the room door to nearest exit should not exceed 100 feet (30 meters) or 150 feet (45 meters) if building is protected with automatic sprinklers.

2. Corridors and stairways shall be continuously illuminated. Facilities with 26 or more rooms should provide emergency lighting unless each guestroom has direct exit to outside at ground level. Exit doors should have illuminated exit signs. If exit signs are not visible, illuminated direction signs to exit should be provided.

3. Stairways - All exit stairways in buildings over one story should be enclosed by fire resistant walls and self-closing fire doors. Stairway doors should allow re-entry from stairwell to the interior of the building, or have an automatic release activated by the fire alarm system. Exit stairways shall not be used for storage.

4. Sprinkler systems – complete sprinkler systems, including in guestrooms, offer the most dependable protection. Sprinkling systems in corridors and service areas are less desirable but still offer significant protection.

5. Guestroom -Doors between rooms and hallway should be self-closing. Transoms (small window directly above door) between hallways and sleeping room are undesirable. Existing transoms should be in closed position and covered with non-combustible material.

6. Smoke Detection system -Corridors should have smoke detection system connected to alarm system. Smoke detection in each guestroom is highly desirable.

7. Fire Alarms - Audible fire alarm or public address system should be provided to alert building occupants unless structures are less than 4 stories and each guestroom has a direct exit to outside. Fire alarm pull stations should be centrally located for easy access.

8. Service Areas – Areas containing high pressure boilers, refrigeration equipment, transformers, cooking equipment, and service equipment subject to fire or explosion should be isolated from exits an by fire-resistant walls and fire doors.

9. Electrical Wiring – If Lights, television or other electrical devices blink or work intermittently, contact hotel/motel management. Blinking lights indicate faulty wiring, which may cause electrical fire.

10. Elevators - Elevators are not to be used during fires or other disasters.
11. Safety Equipment and Reporting Fires - Check fire extinguisher for up-to-date inspection tags, test smoke detector, see if fire hoses are maintained. Know how to report fires and summon fire personnel.

12. Recreational Facilities – Do not swim or use hot tub alone. Follow hot tub safety instructions. Do not use hot tub if you are consuming alcohol, using medication, or have any medical condition that could be aggravated. Pregnant women should be aware using hot tubs could be potentially dangerous and should be avoided.

13. Security – Never leave valuables in hotel room. It’s a good idea to leave TV or radio on even if room is not occupied. Always keep door locked. Remember to take the key out of the door lock when you leave.

14. Medical/First Aid – Find out how to contact medical personnel and how to get first aid treatment. Do not try and handle emergencies alone. If necessary, ask colleague or hotel personnel to call emergency services.

15. Personal Preparedness
   1. Travelers may want to include a survival kit in their luggage. The kit could include the following:
      a. Room Key
      b. Small First Aid Kit
      c. Flashlight
      d. Identification cards, e.g. health insurance, passport
      e. Cellular phone
      f. Medicines
      g. Money
   2. Upon arriving at motel/hotel review the facility’s emergency action plan and identify evacuation routes from assigned room(s). The “survival kit” should be located such that it can be removed and carried away in the event of an evacuation.

2.2 General Safety Evaluation

1. Due to the complexity of fire and safety problems, and variations in code requirements, a simple scoring system is not practical. The hotel/motel and meeting facilities safety evaluation form will be helpful in clearly identifying unsafe facilities.
   a. Examples of serious fire and safety concerns are listed below:
      1. Single or unprotected exits in multiple story hotels or motels
      2. Lack of an alarm system
      3. Lack of automatic sprinkler systems
      4. Locked or Blocked exits
      5. Slippery pavements
      6. Improper surfaces in pool or sauna areas
      7. Unsanitary or poorly maintained bathrooms, pool areas, or exercise equipment.

2.3 Meeting and Conference Facilities

1. The fire and safety concerns for hotels and motels generally apply to meeting and conference facilities. In addition, evaluate room set up, evacuation procedures, and exhibit areas for safety.
   a. Room Setup
      Do not block fire exits or aisles. The National Fire Protection Association recommends that there be no more than 7 seats between an aisle and walls. A room with more than 200 seats should have fixed seats or fastened to each other.
2. Evacuation Procedures

a. Inform participants where fire exits are located and how to evacuate in an emergency. Plan emergency evacuation before starting meeting. Assign responsible person to supervise evacuation for each room.

b. Exhibits shall not block or obstruct exits.

c. Comply with local fire codes and remove any packing or excess material before exhibit opens. Prohibit smoking in all areas.

2.4 Tips for surviving a hotel fire

1. Hotel and motel fires kill hundreds of occupants each year. Experience shows that fatal fires occur in first-class hotels and large motel chains; they are not restricted to older, run-down buildings. Careless smoking is the greatest single cause of hotel fires. Arson has been responsible for almost 20% of hotel fires. It is therefore important to be ready for a fire and to know what to do if one occurs. The following tips were extracted from various articles and fire reports.

a. Upon arriving at your room, locate the nearest exit stairways. Count the number of doors between your room and the nearest stairway door. If you have to feel your way to an exit stairway in the dark, this information may save your life.

b. Before you retire, place your room key and eyeglasses within easy reach, and learn how to lock and unlock your door in the dark.

c. If you are awakened by smoke, noise, or an alarm, don’t stand up; the smoke level may be just off the floor. Grab your key, crawl to the door, and feel the knob and upper part of the door. If the door is hot, stay in your room. If the door is not hot, open the door slowly and check the hall. If the hall is full of smoke but clear near the floor level, crawl to the exit, hugging the wall on the exit side of the corridor. DO NOT USE ELEVATOR:

d. If you remain in your room, try the telephone to notify the desk of your predicament. Stuff wet towels around the doors and ventilator if smoke is coming in.

e. If the room fills with smoke, open the window. Do not break window except as a last resort. Wave and yell for help.

f. If you are more than one story above the ground, do not try jumping. You may be seriously injured or killed by the fall. It is usually better to remain in your room.

g. Experience shows that most hotel fire victims either jumped to their deaths, died in corridors of smoke inhalation, or were trapped in elevators that stopped on the fire floor.

h. Above all remain calm and think.
1.0 PURPOSE

To provide directions to avoid dangerous situations during travel, and ways to get help and use of self-defense.

2.0 REQUIREMENTS

1. All employees should familiarize themselves with this procedure. When scheduling trips consider hotel locations and layovers in train and subway stations. If possible, plan travel itineraries so that you do not travel alone.

2. Protecting yourself involves more than just physical self-defense skills; it also involves how to avoid trouble.

15.1 Avoiding Trouble

1. Learn to recognize potential problem situations, and learn to avoid those situations. Always be aware of what’s going on around you.

   a. Walking Alone In A Public Place

      1. Ignore anyone who is bothering you; do not be polite or encourage conversation. If person persists tell person to leave you alone in a loud and angry voice. If this does not work, walk towards a crowd of other people. Avoid being cornered or isolated.

      2. If you are being followed, look for a safe place where a telephone and other people are available. Ring the nearest doorbell or go to public building or store. If you are followed by someone in a car, turn and walk the opposite direction. If the driver persists or becomes obscene, write down license plate number, and call police department. It is always best to walk facing traffic.

2. Walking Alone At Night

Do not walk alone at night unless absolutely necessary. Avoid areas where assailants may be hiding, such as shrubbery, dark passageways, and spaces between parked cars. Walk on outside of sidewalk, away from buildings. Avoid parked cars with occupants. Avoid groups loitering on corners. If you are being followed knock on the nearest door and ask for help. In an emergency, break a window if you get no response from knocking on the door. Just get attention; do not worry about the damage.

Walking Do’s and Don’ts

Do:

1. Avoid deserted streets, parking lots, parks, and short cuts.
2. Use well lighted streets
3. Walk close to curb facing oncoming traffic
4. Have your keys ready before you get to your car
5. Carry a whistle, and use it if you suspect danger
6. Be aware of your surroundings, especially footsteps, voices and cars that keep passing you
7. Dress so you can run if necessary.

Don’t:

1. Daydream; stay alert to suspicious-looking people.
2. Overload your arms, rendering yourself defenseless.
3. Walk through a group; walk around them or cross the street.
4. Hitchhike

3. Driving
a. Even when you are not alone, it is good practice to keep all car windows up and doors locked. Stay on well-traveled, well-lighted roads at night (e.g., expressways and interstate highways.) Keep your car in good mechanical condition. Check the condition of rental cars, and ask for a replacement if you are not satisfied. Keep the car’s gas tank filled with enough gas (at least one-quarter tank) so you do not get stranded.

b. Keep doors locked and the passenger-side windows up, and run the seat belt through the handles of your briefcase or purse. When you pull up behind someone at a light, maintain enough distance so that you can easily steer around the car in front of you if you are threatened.

c. If someone harmlessly taps your car from behind, do not get out of your car. If the “tap” is enough to cause damage, you can reasonably assume it was an accident and the driver is not trying to lure you out of your vehicle. Nonetheless, let the person come to you, roll your window down just enough to talk, and then use your judgment about getting out. If you are in an isolated area, it would be better to drive to a service station or police station.

d. If asked to stop by a police officer in a deserted area, ask for him or her to follow you to a populated, well-lighted area (e.g., a service station or police station.) Cases have been reported in which people impersonated police officers. Do not be embarrassed by being overcautious. Know the location of police stations; if you feel you are being followed, drive to the closest one. If you are in a strange town, drive until you find a police officer.

e. NEVER PICK UP HITCHHIKERS.

4. Leaving the Car

When you fill your car with gas at a self-service pump, use a restroom, or go into a convenience store, always take the keys out of the ignition, and take your purse or wallet with you. It’s a good idea to fill up in the daylight at a familiar station. Keep all windows up even if you are going to stand beside the car.

5. Parking

a. Park as close to your destination as possible, and try to park in a well-lighted area. If you park in the daylight but will return to your car after dark, notice the location of light poles, and park as close to one as possible. Park only in well-lighted areas at night. If someone approaches, stay in the car with the doors locked until he or she leaves. If you are trapped, honk your horn in quick, short burst. Do not be afraid of annoying people; your aim is to get attention. In many locations, a parking lot attendant must accompany you to your car if you request it. This is good practice, especially at night.

b. In parking garages, park near the office where the attendants stay. In unattended garages, park near the street exit to minimize the distance you must walk inside the garage. Don’t assume that a person sitting in a car is waiting to pick someone up. That person may be dangerous, especially if he or she is not near an entrance or is between you and the entrance.

c. When you park at your workplace, park where a security guard can see you. Make an effort to walk past the guard, wave, and smile to help the guard associate you with your car. In a large parking lot, get in the habit of making a mental note (write it down if you must) of exactly where you are parked, e.g., in the West Lot, Row A. This practice will keep you from randomly looking for your “lost” car.

d. When leaving the car, lock all doors, and lock valuables in the trunk. (It is better not to leave valuable items in a car; a hotel safe or room is preferred.)

e. Try to return to your car with a co-worker, especially after dark. This buddy system is probably the best security of all. As you approach your car, glance under it and inside it, checking the seats and floor for uninvited passengers. (If someone is there, go to a safe place to get help.) Have your keys ready before you reach the car, get in quickly, lock the doors immediately, and roll up the windows.
6. Vans

If possible, avoid parking next to vans. Assailants sometimes hide inside or underneath vans. Vans are particularly good for concealing attacks since victims can be shut inside the vehicles before an individual in the area can observe anything suspicious.

7. Road Emergency

If your car starts to sputter on the highway, try to continue driving to an emergency phone. Try not to stop on the shoulder if possible. If you are stranded on the shoulder, pull well off to the side of the road, turn on your emergency blinkers, tie a white rag or handkerchief to the antenna, and raise the hood (the universal sign of distress). Stay in the car with the doors locked. Wait for police or a tow truck. If a stranger stops to offer help, ask him or her to summon the police. Do not accept a ride from a stranger, and do not start out on foot.

8. Public Transportation

On public transportation – buses, trains, and subways – stay out of nearly empty cars and keep away from loitering groups of people and vagrants. If possible, sit near the conductor or motorman.

9. Hotels and Motels

a. Hotels and Motel room theft is a possibility in any town, so take precautions. Leave valuables at the desk instead of in the room. Do not wear valuable jewelry while traveling – it can draw attention to you as a potential victim.

b. Always lock the windows and door. Use the security latch; do not rely on a chain lock. Keep entrance lights and a night light on and the shades drawn at night. When you leave, turn on a room light and the radio or TV to simulate occupancy. Let no one, except those you trust, know you are alone. Check all visitors through the peephole before opening the door. Do not allow anyone in without first verifying the person’s identity.

c. When returning to your room, if you suspect someone has broken in, do not go into the room alone. Use the nearest phone to call security or the police. If you believe you are being followed in a hallway, do not unlock your door. Go to the lobby, or wait until the suspicious person has passed.

10. Elevators

a. Evaluate elevator occupants before you enter. If only one person or a suspicious looking group is in the elevator, do not take that elevator. If you are on your way up from the first floor, do not ride with the elevator down to the basement first. It is better to wait for the next car than to take a chance.

b. Be cautious of suspicious individuals entering an elevator. If in doubt, exit the elevator when they get on. Try to stand near the buttons, and if someone bothers you, push as many buttons as you can, including the alarm button.

11. Restrooms

Observe the people in a restroom when you enter if you feel they are loitering or look suspicious leave immediately.

2.2 Handling Unavoidable Trouble

When trouble cannot be avoided, you can handle the situation better if you have considered how to react.

1. When Confronted by an Assailant

Try to stay calm. The assailant will be less likely to attack if you appear in control and self-confident. Most assailants are interested in valuables, not in attacking you. They usually become violent only if frustrated by
your actions or lack of valuables. Do not try to negotiate, bargain, or detain your assailant. Give up your purse, wallet, and valuables if that is what is demanded. Do not risk your life by trying to withhold them. Do not carry large sums of money. You may conceal most of your money on your person, but have $25 to $50 in a wallet to satisfy an assailant. A frustrated mugger may become violent if you have no money or valuables to offer. If you sense an attack, do as you are told and avoid upsetting the assailant. Especially if a weapon is involved, cooperate until you can escape or summon help.

2. Defending Yourself

Escape is the main objective of self-defense. Throw the attacker off guard or incapacitate him or her long enough to escape. You should not try to win the fight – only to get away. Anything you can do to give yourself a head start is a form of defense. It might be as simple as throwing something in the face of the attacker or screaming “Fire!” and running to put distance between you and the attacker as quickly as possible. Surprising your attacker will help you to gain the advantage. Doing the unexpected may give you extra time or put off the attacker completely.

2.3 Additional programs on personal safety, local police departments are usually willing to supply speakers and information about local programs.
1.0 PURPOSE
To provide the minimum standards for safe international and domestic travel.

2.0 REQUIREMENTS
Travel safety is extremely important to the company. Because of the high amount of travel there is a potential for accident or injury to employees while traveling.

2.1 Medical Information
1. While traveling be sure to carry the following medical information.
   a. Medical alerts or other communication of any special personal medical conditions and a list of medications you are taking.
   b. Proper I.D., medical insurance cards and emergency notification phone numbers
   c. Be sure information has been updated and is on file in the office

2.2 Air Transportation
1. All employees traveling on company business shall travel with approved air transportation companies. This includes helicopter service and charter service.
2. Prepare for any potential emergencies by listening to the flight attendants safety orientation. Locate the nearest emergency exit, and follow attendant's instructions if any emergency should occur.
3. Use caution while entering or moving around in the plane, use handrails and be cautious of low head clearances. Always use caution when opening storage compartments, because contents may shift during flight. Keep your seat belts fastened at all times while in your seat.
4. If you have a medical condition be prepared to communicate this to the flight attendant. Pack medications in your carry on luggage.
5. In the event of a highjacking, follow these guidelines to save your life.
   a. Maintain a low profile and avoid making eye contact with the highjackers.
   b. Listen carefully and follow the highjacker's instructions.
   c. Do not argue with the highjackers.
   d. Do not volunteer to do anything, especially to serve as a spokesman.
   e. Do not display authority, disdain, or arrogance.
   f. Do not hide or attempt to withhold the items highjackers demand.
   g. Do not ask for special permission to do anything, consume liquids in moderation to avoid trips to restroom.
   h. Do not converse with other passengers unless absolutely necessary.
   i. Accept food and beverage from highjackers, and consume at your own discretion.
   j. Accept alcoholic beverages from highjackers but do not consume.
   k. Remain calm and conserve your energy, track highjacker's movements and note where emergency exits are located.
   l. Prepare yourself for questioning by the highjackers. Give reasonable answers to explain why you are traveling and any personal effects you have in your possession.
   m. If you are questioned, try to be as truthful as possible without revealing information that might cause highjackers to become angry and cause violence.
   n. Do not give political opinions.
   o. Do not make comments against their cause.
   p. If highjackers ask for an opinion, state that you are not knowledgeable enough to comment. If highjackers wish to talk about their cause listen, but do not agree or disagree.
   q. Do not discuss your thoughts, opinions or, plans with anyone on the plane.
   r. Use Isometric exercises or deep breathing to remain calm.
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s. Keep the floor area in front of you clear. You may have to crouch if violence should erupt. Try to have a coat or blanket handy to cover your head.
t. If gunfire erupts crouch as low as possible and remain there until you are sure it is safe to sit up.
u. Follow the instructions of the rescue team completely and without reservation.
v. The decision to escape must be based on careful analysis, of your situation. Evaluate the danger and all options available. If you believe you can escape safely, make your move quickly.

5.3 International Travel

1. Security
   a. Saxon employees traveling overseas on company business. Saxon will track the status of all the employees and their dependents while they are traveling on business in foreign lands.
   b. National Security travel advisories and threat briefings at no extra cost to international travelers.
   c. Contact Corporate Safety for more information concerning security and safety while traveling in foreign countries.
   d. Upon arrival at the international destination contact Jim Reimer or country representative for proper tracking.
   e. International travel will be restricted in sensitive areas around the world. Check with management before scheduling travel to potential problem areas. Some of the minimum precautions for international travel are listed below.
      1. If you are traveling to a potential problem area, request a trained driver.
      2. Arrange to be met by the national representative of the country you are visiting. Instruct them not to use paging signs carrying your name or the name of the company. Make different arrangements for your rendezvous.
      3. Avoid carrying any medications or drugs that are not in their original prescription bottles, which provide a complete description of the drug.
      4. Use air routes that avoid areas experiencing difficulties.
      5. Use traditionally neutral foreign carriers and lesser-known airports.
      6. Obtain foreign currency or travelers checks before leaving point of origin.
      7. Contact travel agency to obtain required inoculations for country visiting.
      8. Obtain instructions on how to secure competent medical care for the country you will visit.
      9. Obtain membership card for the INTERNATIONAL SOS ASSISTANCE SERVICE CENTER. You will automatically receive a card with your international tickets when you use a Saxon travel agency.
     10. Make all reservations through approved company travel agency for details concerning foreign travel and safety requirements for the country you plan to visit

2. Packing
   a. Follow the precautions listed below when traveling to foreign countries.
      1. Have a photocopy of your passport and credit cards or a record of the numbers when you travel for easy replacement if necessary.
      2. Use a new, unstamped passport if the country visiting warrants, or if the passport shows extensive foreign travel or travel to a controversial country. You can get a second passport from the DEPARTMENT OF STATE to use in controversial countries.
   b. Do not carry the following items on your person or in your briefcase:
      1. Business cards of associates in the defense industry.
      2. Identification cards that associate you with the military, police, political party or veterans group.
      3. Religious magazines or books written by controversial authors.
4. Expensive jewelry or jewelry with company logo.
5. Personal financial records (including check book or passbooks)
6. Letters having sensitive information
7. Company literature
8. Do not transport weapons, fireworks, explosives, aerosol repellents, narcotic substances, or alcohol.
9. Do not carry any prescription medicine without a current prescription.

c. Some additional tips for international travel are:

1. Arrive at the airport well in advance of your departure, and check your luggage at the airline ticket counter.
2. Wait in the VIP lounge or beyond the security check.
3. Identify the emergency exits in the waiting room.
4. If you are unable to wait in private area, observe sitting arrangements before selecting a place. Avoid congregating large groups especially Americans. Avoid large expansions of glass. Face away from glass whenever possible.
5. Wait near a structural support column or wall. Avoid any equipment in which a bomb could be hidden.
6. If airport officials order an evacuation, take position in the center of the group.
7. While in flight, avoid sitting in the front of the plane. Maintain a low profile, and do not call attention to yourself.
8. Do not provide information about the company or travel plans to fellow travelers.
9. If you arrive at your destination and your contact person is not there, return to the security area and have them paged.
10. Carry a card listing local emergency numbers such as police, fire, hospital, U.S. Embassy and local company representative.
11. Avoid street-corner moneychangers and do not display your currency.
12. Never leave your passport, credit cards, or other valuables unattended in your room.
13. If possible, avoid using public transportation, use hotel and airport vans and well-advertised cabs.
14. Travel with a companion whenever possible.
15. Avoid large limousines and cars with flags or distinguishing decals.
16. If trouble occurs, remain calm and try to leave the area unnoticed.
17. If you need help contact your designated contact or the U.S. Embassy. If no U.S. representative is available, get help from officials from Australia, Canada, or the United Kingdom.

3. International Car Rental

Use rental cars only in special situations, the risks of accidents is greater and is multiplied by the drivers lack of familiarity of traffic laws and highway systems. If you must drive plan to get an international drivers license.
Section 7 Glossary
Accident/Incident - an unintended occurrence that either caused or may have caused personal injury, property damage, or interference with the execution of the project.

Accumulation Areas - locations where containers are stationed for the collection of a waste.

Accumulation Point – an area onsite at which hazardous waste can be accumulated for up to 90 days without a permit. At an accumulation point, any amount of hazardous waste can be collected and stored providing no container remains in the accumulation point storage over 90 days. If hazardous waste is added to a container at the accumulation point, the 90 day limit for the container begins as soon as the waste is first added to the container.

Acetylene - Acetylene is an unstable gas when compressed above 15 psig. Acetylene cylinders are filled with a porous material and saturated with liquid acetone. Acetylene, when pumped into the cylinder, dissolves in the acetone and is held in a stable condition. If the acetylene cylinder is stored or used in the horizontal position, the acetone may leak out, leaving an explosive mixture of acetylene. For this reason, all acetylene cylinders must be stored and used in the vertical position.

ACGIH - American Conference of Government Industrial Hygienists - A governmental group of Industrial Hygienists who sponsor testing of a variety of substances to determine at what levels people can safely work. This organization is devoted to the administrative and technical aspects of occupational and Environmental health. Each year, ACGIH publishes the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices.

Action Level - The level set by OSHA in substance specific standards, which triggers certain requirements, typically training and medical surveillance.

Adequate Ventilation - Ventilation (natural or mechanical) that maintains contaminant levels below OSHA action levels (if such levels exist). If action levels do not exist a value of one-half the TLV or PEL, whichever is lower, will be substituted.

Administrative Controls - Control measures requiring human actions to implement.

Agreement State: A state that has been authorized by the NRC to exercise regulatory authority over the possession and use of radioactive material that otherwise would be regulated by the NRC. Such states include California, New Hampshire, and Rhode Island.

Anchorage point - A secure point of attachment for lifelines, lanyards, or deceleration devices. The anchorage shall be capable of withstanding the forces specified in this procedure.

Approved – (a) approved by the authority having jurisdiction; (b) Tested and listed as satisfactory jointly by the Mine Safety and Health Administration (MSHA) of the U. S. Department of Labor and the National Institute for Occupational Safety and Health (NIOSH) of the U. S. Department of Health and Human Services.

Arid Area - Areas with an average annual rainfall of 0 to 10 inches

Attendant - an individual stationed outside of a confined space assigned to monitor the confined space entry process and perform all of the attendant’s duties.

Audiogram - a chart, graph, or table resulting from an audiometric test showing an individual’s hearing threshold levels as a function of frequency.

Audiologist - a professional, specializing in the study and rehabilitation of hearing, who is certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners or agency having authority.

Automatic Pressure Relief Devices – Devices included in a high-pressure waterjet system to provide a way of automatically limiting the system pressure. Automatic Pressure Relief Devices can be of several types:

a. Automatic Pressure Regulating Valves;
b. Bursting and rupture discs, when set in proper holder;
c. Bypass Valves; or
d. Pressure relief Valves

An *Automatic Relief Valve Device* should be mounted close to the discharge outlet of the pressurizing pump, since the pressure at this point is the highest in the system. The location will allow a more immediate reduction in pressure, without retaining higher pressure in downstream components of the system.

**Background Level** - Radiation from natural terrestrial and cosmic sources and/or naturally occurring concentrations of radioactive materials including global fallout. The term background level does not include radiation from machine or material sources subject to this procedure.

**Barricade** - a sign, a barrier, orange traffic cones, highly visible tape, painted ground markings, etc. Barricades are used to signify warning, caution, danger and to prevent or restrict access to the area. Barricades may be permanent or temporary barricades.

**Baseline audiogram** - the audiogram against which future audiograms are compared

**Behavior Safety Team (BSP)** - a team of craft employees trained in observing, documenting and coaching/correcting unsafe acts and conditions. The number of observers will vary depending on project size.

**Blast area** - area in which explosive loading and blasting operations are being conducted.

**Blaster** - person or persons authorized to use explosives for blasting purposes.

**Blasting agent** - any material or mixture, consisting of a fuel and oxidizer, intended for blasting, not otherwise classified as an explosive, and in which none of the ingredients are classified as an explosive, provided that the finished product, as mixed and packaged for use or shipment, cannot be detonated by means of a No. 8 test blasting cap when unconfined.

**Blasting cap** - a metallic tube closed at one end, containing a charge of one or more detonating compounds, and designed for and capable of detonation from the sparks or flame from a safety fuse inserted and crimped into the open end.

**Blue Book** - Recordkeeping Guidelines for Occupational Injuries and Illnesses

**Buoyant work vest** – will not keep an, unconscious persons face out of the water

**Burst Pressure** – The internal pressure within a component of a high-pressure waterjet system at which it will fail.

**Bursting or Rupture Disc** - This is normally a metal disc, held in a specially designed holder that will fail when pressure applied to it exceeds a set level. Disc can be made of different materials and are of different sizes. A proper-sized disc shall be used for a given operating pressure.

The holder shall be designed and located so that any water passing through it is not directed at an operator or other components of the high-pressure waterjet system.

**Bypass Valve** – Valve that can be adjusted by the operator, either manually or automatically, to control the flow, and thus the pressure, of the jet stream issuing from the nozzle.

**Calibration** (for atmospheric monitoring equipment) - a process by which one documents that the atmospheric monitoring equipment is working properly and giving accurate readings. The process involves zeroing the instrument and a span check.

**Carcinogen** - a substance or agent producing or inciting cancer. These substances are listed by the National Toxicology Program (NTP) in its Annual Report on Carcinogens, the International Agency for Research on Cancer (IARC) in its Monographs, and by the Occupational Safety and Health Administration in 29 CFR Part 1926 Subpart Z, Toxic and Hazardous Substances.
**Catastrophe** - a fatality, hospitalization of three (3) or more employees, material or equipment damage exceeding $15,000.00, or significant fires.

**Catch Platform** - a platform with guard rails set up next to a fall edge to "catch" fallen employees. The platform shall be within six vertical feet of the edge with no openings an employee could fall through.

**Ceiling concentration** - The concentration of an airborne substance that shall not be exceeded.

**CFR** - Code of Federal Regulations

**Clamshell** - a crane that has a clamshell assembly. The boom and hoist is used to raise and lower a clamshell bucket.

**Chemical** - any element, chemical compound or mixture of elements and/or compounds. Examples include: cleaning compounds, lubricants, paints, fuels, welding rods, and base metals.

**Combustible Liquid** - liquid having a flash point at or above 140 °F (60 °C)

**Combustible Material** - liquids, solids, or gases that are relatively difficult to ignite (140 degrees F. or more) and that burn relatively slowly (such as paper, wood, etc.)

**Competent Person** – (a) one who is capable of identifying existing and predictable hazards in the surroundings or working conditions related to scaffolding which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. (b) an individual knowledgeable of fall protection equipment, including the manufacturer's recommendations and instructions for proper use, inspection, and maintenance; and who is capable of identifying existing and potential fall hazards; and who has the authority to take prompt corrective action to eliminate those hazards; and who is knowledgeable of the rules contained in this section regarding the erection, use, inspection, and maintenance of fall protection equipment and systems. (c) the person designated must meet two qualifications: they should have an excellent working knowledge of the respiratory protection procedures or methods and should have sufficient authority to promptly prevent and/or correct hazardous conditions.

**Consumer Products** - any product or hazardous substance meeting the definition of the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 11261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonably be experienced by consumers when used for the purpose intended.

**Control Zone** - the area between the warning line and the unprotected sides and edges of a building/structure floor or roof surface.

**Controlled Access Area** - an area that is segregated and personnel access is restricted due to the presence of potentially hazardous laser radiation.

**Controlled Worker**: Any person subject to or likely to be subject to external ionizing radiation cumulative dosages in excess of 25 mR during any work week or be exposed to airborne radioactive material in excess of 10 percent of the limits specified in 10 CFR 20.

**Crisis** - is defined as anything that can endanger the life of an employee, fall under close government or media scrutiny, significantly interfere with normal business operations, jeopardize a firm's positive image, or threaten a firm's financial or legal condition.

Specific examples are:

1. Major accident
2. Employee death through accident
3. Serious injury to an employee
4. Structure or plant failure
5. Loss of and/or damage to property above $25,000
6. Act of God; i.e., hurricane, tornado
7. Explosion or fire
8. Labor dispute--strike, walk-off, etc.
9. Improper acts by an employee; i.e., major theft, felony, etc.
10. Condition that endangers the life of our employees or the public; i.e., major chemical leak
11. Violation of a code, law, environmental act, or regulation

Criterion sound level - a sound level of 90 decibels.

Deceleration Device - any mechanism, such as a rope grab, rip-stitch lanyard, or automatic self-retracting lifeline, which serves to dissipate more energy during fall arrest than a standard line or strap webbing lanyard.

Decibel (dB) - unit of measurement of sound level.

Dedicated Portable Concrete/Asphalt Plant - A portable plant that is located on or next to a construction site and provides product only to that site.

Detonating cord - a flexible cord containing a center core of high explosives which when detonated will have sufficient strength to detonate other cap-sensitive explosives with which it is in contact.

Detonator - blasting caps, electric blasting caps, delay electric blasting caps, and non-electric delay blasting caps.

Disturbance - Activities such as clearing, grading, and/or excavations that affect the site's drainage characteristics or runoff coefficient.

Dragline is a crane that has a dragline fairlead assembly. The boom and hoist is used to raise and lower an excavator bucket. The dragline fairlead assembly is used to drag the bucket to fill it. It can be hoisted and contents dumped in another location.

Dump System – The system should be equipped with a device that will either shut down the pump, idle it to low revolutions per-minute, bypass the flow, or reduce the discharge pressure to a low level. The dump system shall be manually controlled only by the Nozzle Operator. The dump system actuator device should be shielded to prevent accidental operation. This device shall be controlled by the operator’s hand or foot and shall dump the high-pressure water stream if the operator releases it. Where the water dumped through a dump system is not immediately released to open air, but passed into a dump line, the dump line must be secured so it does not whip when activated.

Electric blasting cap - a blasting cap designed for and capable of detonation by means of an electric current.

Electric Blasting Circuitry:

Bus wire - an expendable wire used in parallel or series in parallel circuits to which are connected the leg wires of electric blasting caps.

Connecting wire - an insulated expendable wire used between electric blasting caps and the leading wires or between the bus wire and the leading wires.

Leading wire - an insulated wire used between the electric power source and the electric blasting cap circuit.

Permanent blasting wire - a permanently mounted insulated leading wire used between the electric power source and the electric blasting cap circuit.

Employee exposure - the exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
Employer's First Report of Injury – (a) A state-specific form obtainable from the project's insurance company, (b) A state-specific form developed for the use of reporting an occupational injury/illness to the state or insurance company. The forms are obtainable from the project's insurance company.

Enclosed space(s) - A space of less than 10,000 cubic feet per welder with a ceiling height of less than 16 feet.

End-of-service-life indicator (ESLI) - a system that warns the respirator user for the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Engulfment - a liquid or solid closing over an employee’s head or body.

Entrapment - a person becoming trapped because of the configuration of the confined space, e.g., a hopper.

Entrant - the employees who have been trained and authorized to enter a particular confined space.

Entry Supervisor - the supervisor who is responsible for ensuring that all training requirements have been completed and all safety precautions are implemented.

EPA - Federal and/or State Environmental Protection Agency, where applicable.

EPA Identification Number - A registration number issued by the EPA to generators, transporters, and disposal facilities. Generators of waste oil are not required to obtain an EPA identification number.

Explosives - (1) any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, that is, with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the U.S. Department of Transportation. (2) all material which is classified as Class A, Class B, and Class C explosives by the U.S. Department of Transportation.

Exposure assessment - Air sampling performed in the breathing zone of the affected employee, utilizing a properly calibrated air sampling pump connected via flexible tubing to the proper sampling media.

External Radiation Dose Standard: External ionizing radiation standard of the whole body is a cumulative maximum exposure of 1250 milliRoentgens (mR) per calendar quarter. Exposure up to 3000 mR in a calendar quarter is permitted provided the annual exposure does not exceed 5000 mR.

Facepiece - That portion of a respirator that covers the wearer’s nose and mouth in a half-mask facepiece or that covers the nose, mouth, and eyes in a full facepiece. It is designed to make a gas-tight or particle-tight fit with the face and includes the headbands, exhalation valve(s), inhalation valve(s) and connections for an air-purifying device or respirable air source, or both.

Facility Manager - The onsite Saxon Manager is responsible for all facets of operations of the site/facility. (see Site/Facility Manager)

Fall arrest system - a full body harness and lanyard which is attached to a horizontal or vertical lifeline which is properly secured to an anchorage(s).

Fall-Restraint System - an approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from falling to a lower level. When standard guardrails are selected, compliance with applicable sections governing their construction and use shall constitute approval.

Filter or air purifying element - A media component used in respirators to remove solid or liquid particles from the inspired air.

Final Stabilization -

- All soil disturbing activities have been completed and:
  - a uniform perennial vegetative cover with a density of 70% of the cover for unpaved areas is established; or
permanent stabilization e.g., riprap, geotextiles has been installed.

*First Aid* - Any one time treatment, and any follow up visit for the purpose of observation or minor injuries which do not ordinarily require medical care. First aid can be from a doctor or registered nurse. (See page 42 of the Blue Book)

*First aid log* - a continuing log of all injuries/illnesses reported to supervision.

*Fit factor* - means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

*Fit test* - the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

*Fixed Scaffolds* - includes the following: tubular welded frame scaffolds, bracket scaffolds, tube and coupler (Tube-lox) scaffolds, wood-pole scaffolds, and trestle scaffolds.

*Flame-Resistant Material* - (a) a material that burns slowly or is self-extinguishing after the external source of ignition is removed; (b) a material that is treated by incorporating chemical compounds into a textile fiber during manufacturing, or by chemically treating a textile fiber or fabric during processing or subsequent use to reduce the item's flammability.

*Flammable Liquid* - liquid having a flash point below 100 °F and a vapor pressure not exceeding 40 pounds per square inch (absolute) at 140 °F

*Flammable Material* - liquids, solids, or gases that are capable of being easily ignited, (at less than 140° F) burning intensely, or having a rapid rate of flame spread (usually dusts, fine powders, or substances that ignite spontaneously at low temperatures).

*Flexible Lance* – A flexible tube or hose section carrying water to the nozzle or nozzle manifold; normally located between the trigger or control valve and the nozzle

*Foot candle* - a unit of illumination. It is the illumination at a point on a surface which is one foot from, and perpendicular to, a uniform point source of one candle.

*Full Body Harness* - a configuration of connected straps to distribute a fall arresting force over at least the thighs, shoulders, and pelvis, with provisions for attaching a lanyard, lifeline, or deceleration device.

*Fuse lighters* - special devices for the purpose of igniting a safety fuse.

*General ventilation* - A ventilation system that adds or removes air in an attempt to dilute the concentration of a contaminant.

*Hazard Assessment* - The process of evaluating a confined space to determine what safety precautions are required for safe entry. The hazard assessment is documented on the Safe Work Permit/Confined Space Entry Permit. *Hazardous atmosphere* - (a) an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is escape unaided), injury or acute illness; (b) an atmosphere which exposes employees to a risk of death, incapacitation, injury, or acute illness. It may be caused by one or more of the following conditions:

- An atmospheric oxygen concentration below 19.5 percent (an oxygen-deficient atmosphere) or above 23.5 percent (an oxygen-enriched atmosphere) by volume
- A flammable gas, vapor, or mist in excess of 10 percent of its Lower Explosive Limit (LEL)
- A hydrogen sulfide gas concentration above 10 parts per million
- A carbon monoxide gas concentration above 35 parts per million
- An airborne combustible dust at a concentration that obscures vision at a distance of 5 feet or less
Presence of any acutely hazardous substance in an atmospheric concentration above the Permissible Exposure Limits (PEL) published in Subpart D of 29 CFR 1926.55. If a contaminant is not published in Subpart D, consult Material Safety Data Sheets, or other authoritative sources.

Any atmospheric condition recognized as Immediately Dangerous to Life or Health (IDLH) as specified by the National Institute of Occupational Safety and Health (NIOSH).

**Hazardous Chemical** - any chemical, which is a physical hazard or a health, hazard.

**Hertz (Hz)** - unit of measurement of frequency, numerically equal to cycles per second.

**High Efficiency Particulate Air (HEPA) filter** - A filter capable of trapping and retaining at least 99.97 percent of monodispersed particles of 0.3 microns in diameter.

**High Pressure Hose** – A flexible hose that can be used to carry water and/or other fluids from one part of the high-pressure waterjet system to another. The hose should have a burst rating of a minimum of 2.5 times the intended working pressure it is certified for use at by the manufacture. The high-pressure hose should be tested at 1.5 times working pressure.

**High Pressure Waterjet Systems** – High Pressure Waterjet Systems are water delivery systems that have nozzles whose function is to increase the speed of liquids. Solid particles or additional chemicals may also be introduced, but the exit in all cases will be a free stream.

The system shall include the pump, hoses, lances, nozzles, valves, safety devices, and attached heating elements or injection system.

High-pressure waterjets are used in several ranges of pressure. The following divisions are made to clarify these ranges:

- **High Pressure Water Cleaning** – The use of high pressure water, with or without the addition of other liquids or solid particles, to remove unwanted matter from various surfaces, and where the pump pressure is between 5,000 psi and 30,000 psi.

- **High Pressure Water Cutting** – The uses of high pressure water, with or without the addition of other liquids or solid particles, to penetrate into the service of a material for the purpose of cutting that material, and where the pump pressure is between 5,000 psi and 30,000 psi.

- **Pressure Cleaning** – The use of pressurized water, with or without the addition of other liquids or solid particles, to remove unwanted matter form various surfaces and where the pump pressure is be low 5,000 psi.

- **Pressure Cutting** – The use of pressurized water, with or without the addition or other liquids or solid particles, to remove unwanted matter from various surfaces, and where the pump pressure is below 5,000 psi.

- **Ultra High Pressure Water Cleaning** – The use of high pressure water, with or without the addition of other liquids or solid particles, to remove unwanted matter from various surfaces, and where the pump pressure exceeds 30,000 psi.

- **Ultra High Pressure Water Cutting** – The use of high pressure water, with or without the addition of other liquids or solid particles, to penetrate into the surface of a material for the purpose of cutting that material, and where the pump pressure exceeds 30,000 psi.

**High Velocity Guns** - Stud or fastener velocity exceeds 300 fps at 6.5 feet from muzzle.

**Highway** - any street or road.

**Horizontal Lifeline** - a rail, wire rope, or synthetic rope that is installed in a horizontal plane between two anchorage points and used for attachment of a worker's lanyard or lifeline device while moving horizontally.
Hose Assembly – The hose with a suitable end coupling attached, at each end of the hose, in accordance with the manufacture’s specifications.

Immediately Dangerous to Life or Health (IDLH) - Any atmosphere that poses an immediate hazard to life or produces immediate irreversible debilitating effects on health.

Improved Operations and Maintenance of equipment and chemicals: Modifying existing equipment, methods, and chemicals by such steps as improved housekeeping and inventory control practices, system adjustments, and process/product inspections.

Inhabited building - a building regularly occupied in whole or in part as a habitation for human beings, or any church, schoolhouse, railroad station, store, or other structure where people are accustomed to assemble, except any building or structure occupied in connection with the manufacture, transportation, storage, or use of explosives.

Injury/illness - any condition that is reported to supervision that causes damage, pain or discomfort to the physical well being of an employee.

In-process recovery, recycling and reuse: Extending material life, by-product recovery, and on-site closed loop recycling.

Input substitution: Replacing the raw materials of product to use non hazardous or less hazardous substances

Internal Radiation Dose Standards: For ingested or inhaled material, the internal radiation dose standards are those levels specified by the NRC regulations 10 CFR 20.

Ionizing - Capable of causing atoms or groups of atoms to become electrically charged through gain or loss of one or more electrons

Ionizing Radiation - Alpha particles, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles capable of producing ions. The term ionizing radiation does not include sound or radio waves, microwaves, or visible, infrared or (non-actinic) ultraviolet light (>180 nm). For purposes of this standard the term radiation is equivalent to the term ionizing radiation.

Ionizing Radiation Machine - Equipment designed to produce ionizing radiation such as accelerators and industrial X-ray machines as well as equipment which may produce ionizing radiation secondary to another primary design purpose such as certain high voltage (>10KV) radar or microwave tubes, electron microscopes, and ion implanters.

Jetting Gun – The hand-operated device that is often used in manual waterjet. It is normally connected to the high-pressure system by a high-pressure hose assembly. The gun is made up of a control valve, mounted within a guard, a lance section, and then a nozzle assembly, which may include one or more nozzles. The gun may also include a gun; if the pressure is retained in the system, by using a Dry Shutoff Control Valve, then the gun is a dry shutoff gun.

Jetting Gun Trigger – The control valve has a trigger that makes it easier for the operator to control the device. This lever, or trigger, shall be designed for easy operation by an operator wearing gloves. The trigger shall include a catch or other method of lockout so that it cannot be operated until this catch is released.

Lancing – an application whereby a rigid or flexible lance and nozzle combination is inserted into, and retracted from, the interior of a pipe or tubular product.

Lanyard - a flexible line of webbing, rope, or cable used to secure a harness to a lifeline or an anchorage point usually 2, 4, or 6 feet long.

Laser - the acronym for Light Amplification by Stimulated Emission of Radiation. A device which produces an intense, coherent, directional beam of light by stimulating electronic or molecular transitions to lower energy levels.

Laser Safety Officer (LSO) - Person qualified by training and/or experience in occupational and public health aspects of lasers and designated to evaluate the radiation hazard of lasers. This person shall be qualified to establish and administer a laser radiation protection program.
Life jackets, U.S. Coast Guard approved or equivalent – will keep an unconscious persons face out of the water

Lifeline - a vertical line from a fixed anchorage or between two horizontal anchorage points, independent of walking or working surfaces, to which a lanyard or device is secured. Lifeline as referred to in this text is one which is part of a fall protection system used as back-up for an elevated worker.

Local Exhaust ventilation - A ventilation system that captures or contains contaminants at their source before they escape into the work area then exhausts them away from the work area. A typical system for welding operations consists of freely movable hoods placed as close to the welder or burner as practical to remove fumes and smoke at the source without having them pass through the worker’s breathing zone.

Lost Work Day Case (LWDC) - an injury/illness requiring an employee to miss the next scheduled or subsequently scheduled full workdays following exposure to a job related incident. The emphasis is to be placed on the employee's ability to work.

Low Velocity, High Inertia Guns - Stud or fastener velocity does not exceed 300 FPS at 6.5 feet from muzzle.

Lower Explosion Limit (LEL) - The lowest percentage of a flammable gas or vapor in the air required for ignition of the mixture. Also known as lower flammable limit (LFL).

Magazine - any building or structure, other than explosives manufacturing building, used for the storage of explosives.

Maintenance - The performance of adjustments or procedures specified by the manufacturer and performed by an qualified employee.

MAPP Gas - MAPP is a stabilized mixture of methylacetylene and has considerably fewer tendencies to backfire than acetylene. Maximum allowable use pressure is 94 psig versus 15 psig for acetylene.

Maximum Use Concentration (MUC) of filter, cartridge, or canister - The maximum concentration of a contaminant for which an air-purifying filter, cartridge, or canister is approved for use.

Mechanical ventilation - Ventilation that consists of either general mechanical ventilation systems or local exhaust systems.

Medical pathology - a disorder or disease. For purposes of this instruction, a condition or disease affecting the ear, which should be treated by a physician specialist.

Medical Surveillance - the examination of a worker’s health relating to the potential hazards associated with lasers.

Medical Treatment - any treatment, other than first aid treatment, administered to injured/ill employees for a job-related condition. Essentially, medical treatment involves the provision of medical or surgical care for injuries/illnesses that are not minor in nature.

Mercantile Occupancy - The use of a building or or any portion thereof for the display, sale, e of goods, wares, or merchandise.

Misfire - an explosive charge which failed to detonate.

Moleing – An application whereby a hose fitted with a nozzle is inserted into, and retracted from, the interior of a tube. It is a system commonly used with a self-propelling nozzle for cleaning the internal surfaces of pipes or drains. Moles can be self-propelled by their backward-directed jets or can be manufactured to be fitted with various shapes, sizes, and combinations of forward-directed jets. A mole should include, directly behind the nozzle, a section of rigid pipe or tubing sufficiently long that will prevent the mole from turning around within the pipe.

Motor vehicle - any self-propelled vehicle, truck, tractor, semitrailer, or full-trailer truck used for the transportation of freight over public highways.
MSDS - material safety data sheet - a document required by the Hazard Communication Standard by which information concerning the hazards of materials and chemicals is supplied to employees who may come into contact with those materials. The content of the MSDS is specified in section (g) (2) of Title 29 CFR Part 1926.59.

Negative pressure respirator - A respirator in which the air pressure inside the respirator-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

Near Miss - an unintended occurrence that may have caused personal injury, property damage, and/or interference with the execution of the project.

NOI - Notice of Intent for Storm Water Discharges: Associated with Industrial Activity Under the NPDES General Permit

Noise dose - the ratio, expressed as a percentage, of (1) the time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-averaged, squared A-weighted sound pressure and (2) the product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level (90 dB).

Noise dosimeter - an instrument that integrates a function of sound pressure over a period of time in such a manner that it directly indicates a noise dose.

Non-electric delay blasting cap - a blasting cap with an integral delay element in conjunction with and capable of being detonated by an impulse or signal from miniaturized detonating cord.

NOT - Notice of Termination of Coverage Under the NPDES: General Permit for Storm Water Discharges Associated with Industrial Activity

Nozzle - A device with one or more orifices through which the water discharges from the system. The nozzle restricts the area of flow of the fluid, accelerating the water to the required velocity and shaping it to the required flow pattern. Nozzles are commonly referred to as bits, tips, or orifices. The type of jet that it produces may further define the nozzle.

NPDES - National Pollutant Discharge Elimination System

Observer - a trained member of the BSP.

Occupational Injury - any injury such as a cut, fracture, sprain, amputation, etc., which results from a work incident or from an exposure involving a single incident, or one time exposure, in the work environment. (See page 37 of the blue book)

Occupational Illness - any abnormal condition or disorder other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases, which may be caused by inhalation, absorption, ingestion, or direct contact. Some examples are cramps, dermatitis, and nausea. (See page 37 of the blue book)

Odor threshold limit - The lowest concentration of a contaminant in air that can be detected by the olfactory sense (sense of smell).

Office/Facilities - Off ice space or building need or leased by Saxon.

Office Management - Persons responsible for office safety performance at the site. Office management includes but is not limited to the office manager, area manager, safety representative, and facilities manager.

Office Occupancy - The use of a building or structure or any portion thereof for the transaction of business or professional services.

Operator - A person who has been trained and has demonstrated the knowledge, skill, and experience to assemble, operate, and maintain a waterjet system.
Operator Trainee – A person not qualified, because of lack of knowledge, skill, and/or experience, to perform as an operator without supervision.

OSHA - The Occupational Safety and Health Administration. A division within the Department of Labor charged with implementing the provisions of The Occupational Safety and Health Act of 1970.

OSHA 200 log - a log of specific injuries/illnesses that OSHA requires Saxon to maintain. See Procedure I.K "Classifying Occupational Injuries/illness".

Otolaryngologist (ENT) - a physician specializing in diagnosis and treatment of disorders of the ear, nose, and throat.

Output Power - the rate at which energy is emitted from a laser. Units: watts, milliwatts

Oxygen - Oxygen itself is not flammable, but the presence of pure oxygen accelerates the combustion reaction. Oil and grease, in the presence of oxygen, become highly explosive. Oxygen must not be allowed to contact petroleum-based substances.

Oxygen deficiency - The concentration of oxygen, by volume, below which atmosphere supplying respiratory protection must be provided. It exists in atmospheres where the percentage of oxygen, by volume, is less than 19.5 percent.

PEL - Permissible Exposure Limit. Limit established by the Occupational Safety and Health Administration (OSHA) concerning the airborne concentration of a contaminant to which an employee may be exposed legally during the work shift or some portion of that shift.

Permanent barricades - are fixed, painted structures or barriers such as gates, chains, concrete fire-walls, or toe-walls. They are intended to convey a permanent warning or caution regarding entering the area. They shall indicate if specific authorization, control measures, and/or protective equipment are required.

Permissible Exposure Limit (PEL) - (a) the limit set by OSHA which triggers certain requirements in addition to those required by exceeding the action level; (b) OSHA's legally established time-weighted average (TWA) concentration of a contaminant that shall not be exceeded.

Pollution: Any hazardous substance emitted, discharged, or placed into the environment, that adversely impacts human health or the environment, and originates from operational processes.

Pollution prevention - Any practice which reduces pollution. It stresses source reduction, (e.g., input substitution, process modernization, product reformulation, and improved operation and maintenance), but also includes reuse, recycling, and treatment.

Potable Water - water that meets the quality standards prescribed in the US Public Health Service Drinking Water Standards, published in 42 CFR Part 72, or water that is approved for drinking purposes by the State or local authority having jurisdiction.

Pressure Gauge - The high-pressure waterjet system shall be equipped with a gauge indicating the pressure being developed. Gauges shall have a scale range of at least fifty-percent above the maximum working pressure of the system and should be fitted with a pressure snubber for more accurate pressure reading.

Pressure Pump - A pump that will increase the pressure of water delivered to it and deliver it into a common manifold to which either flexible hoses or rigid tubing connecting to lance and nozzle is attached. These pumps can be either mobile or permanently mounted and are most often of a positive displacement plunger style that will provide a constant flow of water at a given speed of rotation.

The pump should have a permanently mounted tag designed to provide the following information:

a. Name of manufacture;
b. Model, serial number, and year of manufacture;
c. Maximum performance in terms of gallons or liters per minute and pressure in bar or psi; and
d. An outline of recommended safety procedures.

**Pressure Relief** – The high-pressure waterjet system shall be equipped with an automatic relief device on the discharge side of the pump.

**Pressure Relief Valve** – Valve that is normally held in the closed position by a mechanical device, such as a spring. It is designed to open when the pressure in the system exceeds a set value.

**Primary blasting** - the blasting operation by which the original rock formation is dislodged from its natural location.

**Primer** - a cartridge or container of explosives into which a detonator or detonating cord is inserted or attached.

**Process Modification**: Redesign or replace existing industrial equipment and processes. Product reformulation: Reformulating or redesigning end products to be non-hazardous or less hazardous upon use, release, or disposal.

**Qualified Worker** - has training and experience in recognition and avoidance of electrical and mechanical hazards associated with working on or near exposed, operating parts.

**Qualified Person** - means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

**Radioactive Materials** - Materials of natural or synthetic origin which spontaneously emit ionizing radiation. This definition includes such materials in all forms, concentrations, and quantities above natural background level whether or not the materials are subject to licensing, registration or other permitting, are exempt or excepted under statutory codes, and whether or not the material is contained, diluted, sealed, enriched or depleted.

**Railway** - any steam, electric, diesel, diesel-electric, or other railroad or railway, which carries passengers or freight for, hire.

**Recycling** - The series of activities, including collection, separation, and processing, by which products or their materials are recovered from the solid waste stream. These materials are for use in the form of raw materials in the manufacture of products.

**Representative exposure** - measurements of an employee’s noise dose or 8-hour time-weighted average sound level that the employers deem to be representative of the exposures of other employees in the workplace.

**Reportable Incidents** - Catastrophes, OSHA recordable injuries of all levels, property loss exceeding $5,000.00, and reportable quantity spills of chemicals.

**Resistance**- Opposition to the flow of air, as through a canister, cartridge, particulate filter, orifice, valve, or hose.

**Respirator** - a device worn over the mouth or nose for protecting the respiratory tract.

**Restraint Line** - a line from a fixed anchorage or between two anchorage points to which an employee is secured in such a way as to prevent the worker from falling.

**Restricted Work Day Case (RWDC)** - an employee, as a result of a job-related injury/illness, is physically or mentally unable to perform all or any part of his/her normal assignment during all or part of the work day or shift. (See page 43 of the blue book). The emphasis is to be placed on the employee’s ability to work.

**RCRA** - Resource Conservation and Recovery Act

**Rigid Lance** – A rigid tube carrying water to the nozzle or nozzle manifold from the end of the hose or jetting gun.
Roll-Out - unintentional disengagement of a snap hook caused by the gate being depressed under torque or contact while twisting or turning.

Rope Grab - a fall arresting device that is designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the harness is attached. In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall. The use of a rope grab device is restricted for fall restraint applications.

RQ - Reportable Quantity

Safety fuse - a flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps.

Safety Monitor System - a system of fall restraint used in conjunction with a warning line system only, where a competent person as defined above under Competent Person, having no additional duties, monitors the proximity of workers to the fall hazard when working between the warning line and the unprotected sides and edges, including the leading edge of a low-pitched roof or walking/working surface.

Salamander - A portable, open-kettle type of heating device commonly used to cure concrete and masonry work.

Satellite Accumulation Area (SAA) – an area at or near the point of generation that is under the control of the operator of the process generating the waste. No more that 55 gallons of hazardous waste or 1 quart of acutely hazardous waste can be accumulated at a SAA.

Secondary blasting - the reduction of oversize material by the use of explosives to the dimension required for handling, including mud capping and blockholing.

Self-Retracting Lifeline - a deceleration device which contains a drum-wound line which may be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which after onset of a fall, automatically locks the drum and arrests the fall.

Semi-arid Areas - Areas with an average annual rainfall of 10 to 20 inches

Service life - The period of time that a respirator provides adequate protection to the wearer-for example, the period of time that an air-purifying device is effective for removing a harmful substance from inspired air.

Shall – means mandatory

Shock-Absorbing Lanyard - a flexible line of webbing, cable, or rope used to secure a body belt or harness to a lifeline or anchorage point that has an integral shock absorber or deceleration device.

Short Term Exposure Limit (STEL) - The limit set by OSHA where an employee can be exposed above the PEL for a short time, usually 15 minutes.

Shotgunning – A hand-held application whereby an assembly of a lance and a nozzle can be manually manipulated in virtually all planes of operation.

Should – means recommended

Site/Facility Manager-see Facility Manager

Site – Everything within company-owned or company-occupied property boundaries including building, building grounds, and parking lots.

Sorbent - A material which is contained in a cartridge or canister and which removes toxic gases and vapors from inspired air.
Sound level - ten (10) times the common logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals. Unit: decibels (dB). For use with this instruction, SLOW time response, in accordance with ANSI S1.4-1971 (R1976), is required.

Sound level meter - an instrument for the measurement of sound level.

Source reduction: Any practice which reduces the amount of toxic chemical usage or pollution prior to recycling, treatment, and disposal. Source reduction are "front-end" techniques that prevent toxic chemical use and the creation of pollutants in the first place. It eliminates the need for end-of-pipe treatment. Source reduction techniques include input substitution, product reformulation, process modification, in-process recovery/recycling, improved operations and maintenance of equipment and chemicals, and increased control of the purchasing, storage, management, and use of chemicals.

Sources of Ionizing Radiation: Sources include x-ray apparatus, radioactive materials or devices, and incidental sources such as ion implanters, electron microscopes, electron probes, E-Beam pattern generators, etc.

Span check - a portion of the calibration procedure during which a gas mixture of known composition is passed over the sensors of the instrument and the instrument readings are verified. This is a distinct function within the calibration mode of most atmospheric monitoring instruments.

Storm Water Pollution Prevention Plan (the Plan) - A written document that describes:
1. the sources of the pollution to storm water; and
2. measures that will be implemented to reduce pollutants in storm water.

Suspended Scaffolds - includes the following: two-point suspended scaffolds, multilevel suspended scaffolds, floats, needle-beam scaffolds, boatswain's chair, and electric hoist platforms.

Tarpaulin - Material, usually waterproof canvas or other materials, used to isolate equipment, processes, and combustible materials from spark and fire damage.

Time-Weighted Average - the average concentration of a contaminant in air during a specific time period.

TLV - Threshold Limit Values (and Biological Exposure Indices) are guidelines developed by the ACGIH to assist in the control of health hazards. The TLV's refer to airborne concentrations of substances, and it is believed represent conditions under which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

Temporary barricades - are generally erected for a specific purpose and intended for quick and easy removal. Examples are: colored tape, a sign, sawhorses, safety cones, etc.

Threshold Limit Value (TLV) - A value designated by the American Conference of Governmental Industrial Hygienists to serve as a guideline to assist in the control of health hazards.

Time weighted average sound level - that sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured

Toxic Chemical: Refers to all hazardous substances covered under the federal Comprehensive Environmental Response and Compensation Liability Act (the "Superfund" law). In most instances, hazardous substances that are on the federal Toxic Release Inventory (under Section 313 of the federal Emergency Planning and Community Right to know Act) should be targeted first, unless risks or other circumstances dictate otherwise.

Toxic Use Reduction: In-plant changes in production processes or raw materials that reduce, avoid, or eliminate the use of toxic or hazardous substances, so as to reduce risks to the health of workers, consumers, or the environment without shifting risks between workers, consumers, or parts of the environment.

Type A Fire Extinguisher - used for extinguishing combustible solids such as paper, wood, etc.

Type B Fire Extinguisher - used for flammable and combustible liquids
Type C Fire Extinguisher - used for extinguishing electrical fires

Ultraviolet Flash Burn - An ultraviolet burn to the eyes caused by exposure to electric welding and burning.

Unqualified Worker - are those workers without prior training or experience in the recognition and avoidance of electrical and mechanical hazards associated with working on or near exposed, operating parts.

Vertical lifeline - an independent lifeline secured to an upper anchorage for the purpose of attaching a lanyard or a he device. This line must be at least a ¾-inch manila rope or a ½-inch nylon rope.

Waterjet – A rapidly moving stream of water of different shapes and types exiting from a nozzle orifice. The speed of the jet depends on the pressure drop across the nozzle orifice.

- Fan Jet – A jet designed to spread out as it leaves the orifice. The divergence is usually, but not necessarily, restricted to one plane. The degree at which the jet tapers out from the center axis is often used to designate the jet produced. A typical application is for cleaning large areas requiring less energy to remove unwanted matter.
- Retro Jet – A jet that is directed in the reverse direction of motion of the nozzle. A retrojet is typically used to provide a thrust force to move the nozzle into the workpiece and to provide jets to clean in otherwise inaccessible locations. It may also be used to balance the forward jet thus providing zero thrust for underwater applications or those on scaffolding.
- Straight Jet – The straight jet exits from a circular orifice and is used to carry the maximum force to the target with the minimum of energy dispersion. A typical application is for cutting or for general cleaning of matter with higher shear and/or bond strength. A straight jet is also known as a zero-degree jet, since it is not designed to spread.

Waste Minimization - Preventing or decreasing the amount of waste being generated through waste prevention, recycling, or purchasing recycled and environmentally preferable products.

Waste oil - Waste oil ("natural" oil fractions including lubricating oil, hydraulic oil, diesel fuel, etc.) which is not contaminated with cutting oil, PCBs, CFCs, or halogenated solvents at any detectable level.

Waste oil Solid Wastes - Materials which contained or have become contaminated with waste oil from which the oil has been properly drained or removed to the greatest extent possible so that no visible signs of free-flowing oil remain. These materials include contaminated drying agent, discarded containers (55 gallon drums, 1 qt. bottles), oil filters, hydraulic hoses, etc.

Waste stream - a waste that originates from one or more sources (e.g., from a production process, service activity, equipment decommissioning, etc.). A stream is comprised of compatible materials that may be commingled for treatment, storage, or disposal purposes. Area Supervisor - Supervisory person directly responsible for a specific location or activity.

Whip Lock – A short length of wire or cable looped over each end of two hoses that are connected by a coupling. A whip lock or whip check is designed to stop the ends of the hose from whipping around if the coupling

Working Area – The area, within the barriers set up to provide warning and restrict access, in which waterjetting will take place.

Welding Curtain - A screen used for welding grinding operations to protect personnel and property from flash burns and sparks

Zero calibration - a portion of the calibration procedure during which the meter response is observed in clean room air or while administering bottled zero grade air.
Section Forms
INCIDENT INVESTIGATION REPORT
Complete All Sections Appropriate To The Incident

Section I - Project Information:

Project Name: _______________________________  Project #: ____________________
Date of Report: ________  W/C Location Code ________  Date of Incident: ______________
Project Address: __________________________________________________________________

Type of Incident:  (circle all that apply)

Vehicle Incident  □  Injury  □  Fire  □  Environmental Issue  □  Other  □

Recording Information:  (circle the appropriate item(s))

□ First Aid Only  □ OSHA Recordable  □ Non-recordable comp
□ Restricted Work  □ Lost Work Day Case  □ RQ Spill or Release
□ Vehicle, Equipment or Property Damage > $5,000  □ Fatality

Section II - Fire

Time___________  Type of Fire  A  B  C  D
Fire Brigade Response  Yes ___  No ___  Onsite ___  Offsite ___
Description of Cause ____________________________________________________________
______________________________________________________________________________
Description of Damage___________________________________________________________

Estimated Cost of Damage__________________  Injuries?  Yes ___  No ___

Section III - Vehicle/Equipment Damage

Time ____________  Injuries ?  Yes ___ No ___

Owner of Vehicle______________________  Owner’s Address______________________
Incident Happened?  Onsite  Offsite (attach copy of police investigation)
Vehicle/Equipment ID Number __________________  Injuries?  Yes ___ No ___

Description of Cause ____________________________________________________________
______________________________________________________________________________
Description of Damage __________________________________________________________
Cost of Damage________________________
Operator Name ________________ SS# __________-____-____
Is Operator Certified/Licensed/Trained Yes ___ No ___
Third Party Involved Yes ___ No ___ Name of Third Party_____________________________
Address of Third Party _________________________________________________

Section IV - Material Damage
Time___________ Injuries? Yes ___ No ___
Description of Cause ______________________________________________________
Description of Damaged Material ____________________________________________
Cost of Damage _______________

Section V - Environmental Issues
Time of incident __________ Injuries? Yes ___ No ___
Briefly describe the incident _______________________________________________
Government Agency Notified Yes ___ No ___ If yes complete section VI

Section VI - Reportable Quantity Spill of Release
Time of incident ___________ Name of Substance released ______________________
Estimated Quantity Released _____________________________________________
Name of Agency Notified (circle one)
Federal EPA State DEQ US Coast Guard Other________
Released into (circle one) Air Waterway Ground
Briefly describe the incident _______________________________________________

Section VII - Employee Information: (for multiple employees, use additional paper)
RCI Employee Yes ☐ No ☐ ☐ If Subcontractor, give name ______________________
Employee Name _______________ Date of Birth ______ SS# ____________
Address _________________________ Phone # ______________
Date of Hire _______ Hours/Day _____ Days/Week _____
Employee hours on date of incident _______ How many days since last day off? _____
Employee’s occupation when incident occurred _______________________________
Years of experience in this occupation _______________
Employee’s normal occupation _____________________________________________
Years of experience in this occupation _______________

Section VII - Accident Information
Describe the weather ______________________________________________________
Exact Location of Incident ________________________________________________
Was a **Job Planning & Safety Assignment (JPSA)** performed for this task? Yes ___ No ___

Did the employee participate in the JPSA? Yes ___ No ___

Did the JPSA address all of the hazards of the task? Yes ___ No ___

Did the JPSA address the hazards that created the incident? Yes ___ No ___

**What Job Was Being Done?** _________________________________________________

**What Step in Job Process Was Being Done?** _____________________________________

**How Often Does Involved Employee Normally Perform This Job?** ____________________

**When Was Last Time Employee Performed This Job?** _____________________________

How Did the Incident Happen? (Describe fully and in the sequence. Use additional paper if needed, include what job was being done, what step in the job process was being done, and how often the employee is involved in the task.)

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What are the Causal Factors involved with this incident.

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What Other Conditions (Structures, Equipment, Machines, Tools, Materials, Facilities, etc.) Contributed To This Incident?

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Are There Written Safety Rules or Regulations Concerning This Job?  Yes___ No ___

Are the rules clear and concise?  Yes ___  No__

Were These Rules/Regulations Being Followed?  Yes___ No ___

Was the Involved Employee Instructed In These Rules/Regulations?  Yes ___ No ___

If Yes, When? _____________________________

Names of Witnesses (Attach all witness statements and interviews) ______________________________

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________

Name of Immediate Supervisor __________________________________________________________

Location of foreman at the time of the incident ______________________________________________

Provide all photographs with captions and date with who took photograph.
Injured Employee's Statement:

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I certify that my statement in this report is true, correct, and complete to the best of my knowledge.

________________________________            ________________________________
Employee's Signature                          Date

________________________________
Witness of Signature  Date
1. Witness Statement:

______________________________________________________________________________

______________________________________________________________________________

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I certify that my statement in this report is true, correct, and complete to the best of my knowledge.

Witness Signature ____________________________ Date ____________

Witness of Signature ____________________________ Date ____________

Date: ____________________________
30. What actions have you taken and/or do you plan to take to prevent recurrence of this or any similar accident? (Number each separate action and place an asterisk by those actions already taken. A corrective action must be documented for each listed Causal Factor. Use additional paper if needed.)

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________________________________________________________________________
Section X - Site Manager

32. Any Other Corrective Actions? ____________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

33. Date all Corrective Actions Completed by ____________________________________

__________________________________________  __________________________
Site Manager's Signature                       Date
Instructions: This form is to be completed by the Site EH&S Professional and/or the EH&S Manager while interviewing the prospective medical provider.

Saxon is currently looking for a local provider of medical services for our project located in _______________________________.

As part of this process, the Company requests some information from your clinic/facility concerning your ability to meet our needs in providing world-class care to our employees.

Please answer each question or note N/A for non-applicable questions.

1. Clinic/Office name, address, and phone number:
_________________________________________________________________________________________________________
_________________________________________________________________________________________________________
_________________________________________________________________________________________________________

2. Names of Physicians
_________________________________________________________________________________________________________
_________________________________________________________________________________________________________
_________________________________________________________________________________________________________

3. Are any of the physicians Board Certified Occupational Medicine Physicians?
   Yes  No
   If yes, which one(s): _____________________________________________________________________________________

4. Please indicate the number of each of the following available on a daily basis:
   Physician’s assistants     ______
   Nurse Practitioners       ______
   Registered nurses         ______
   Licensed Practical nurses ______
   Medical Technologists     ______
   Medical Laboratory Technicians ______
   X-Ray Technicians        ______
   Examination Rooms        ______

5. Please indicate the equipment available:
   Audiometric test booth    ______
   Spirometer                ______
   EKG                       ______
   X-ray                     ______

6. Do any of the staff members hold any of the listed accreditations:
Spirometry
Yes
No
Council of Accreditation in
Occupational Hearing Conservation
Yes
No
Please attach copies of all accreditations.

7. Please indicate the calibration schedule for the spirometer and/or audiometric test booth.

_________________________________________________________________________________________________________

_________________________________________________________________________________________________________

8. Please indicate the laboratory tests that are conducted:

<table>
<thead>
<tr>
<th>Test</th>
<th>ON-SITE</th>
<th>OFF-SITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC</td>
<td>______</td>
<td>______</td>
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<tr>
<td>Chemistry Screen</td>
<td>______</td>
<td>______</td>
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<tr>
<td>Electrolytes</td>
<td>______</td>
<td>______</td>
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<tr>
<td>Urinalysis</td>
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<tr>
<td>Blood Lead</td>
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<td>______</td>
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<tr>
<td>Zinc Protoporphyrin</td>
<td>______</td>
<td>______</td>
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</tbody>
</table>

9. What methods are in place within your clinic/facility to ensure the retention of medical records for the duration of our project in this location plus thirty years?

_________________________________________________________________________________________________________

_________________________________________________________________________________________________________

10. What methods are in place to ensure that Saxon has access to those records in the event of an employee request, request of a regulatory agency, or legal inquiry?

_________________________________________________________________________________________________________

_________________________________________________________________________________________________________

11. Does the clinic/facility have established protocols for:

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respirator Physical</td>
<td></td>
<td></td>
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<tr>
<td>Bloodborne Pathogen (Post-Exposure Evaluation and Follow-up)</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Recommending Light/Limited duty for injured employees</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Approving employees for Hazardous Waste Operations</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Saxon appreciates the time taken to complete this questionnaire and provide the requested documentation.

Please include the name and phone number of the Office Manager,
_________________________________________________________________________________________________________________
_________________________________________________________________________________________________________________

For Project use only:
Provider approved __________ not approved _______ more information required _____
<table>
<thead>
<tr>
<th>Observation Categories</th>
<th>Safe</th>
<th>At Risk</th>
<th>Comments to support observations</th>
<th>PR</th>
<th>CC</th>
<th>IGF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mechanics</td>
<td></td>
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<tr>
<td>Body posture</td>
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<tr>
<td>Lifting technique</td>
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<tr>
<td>Hand and/or arm motion</td>
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<tr>
<td>Eyes on work</td>
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<tr>
<td>Protective Equipment</td>
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<td>Eye, Face, Hand, Foot</td>
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Weekly Tool Box Meeting Report

Project name:________________________________ Project number: __________

Craft:______________________________________________________________
Foreman conducting the meeting:______________________________________
Location of the meeting:____________________________________________
Date and time of the meeting:________________________________________
Names and badge numbers of those present at the meeting:
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Topics discussed:
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

Environment, Health and/or Safety questions, concerns or recommendations expressed during the meeting:
_________________________________________________________________
_________________________________________________________________

Action taken regarding the issues listed above:
_________________________________________________________________
_________________________________________________________________

All personnel in attendance shall sign the back of this report.

Route the report to the following individuals for review and signature:

General Foreman:__________________________________________________
Superintendent:____________________________________________________
EH&S Professional:________________________________________________

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<th>Badge Number</th>
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<tr>
<td>A. Hazard Assessment</td>
<td>D. Training</td>
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<td>----------------------</td>
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</tr>
<tr>
<td>1. None Performed</td>
<td>1. No training given</td>
</tr>
<tr>
<td>2. Hazard not recognized by supervision</td>
<td>2. Circumstances not addressed in training</td>
</tr>
<tr>
<td>3. Hazard not recognized by workers</td>
<td>3. Ineffective training (content or delivery)</td>
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<tr>
<td>4. Hazard identified/recognized but accepted by supervision</td>
<td>4. Significant delay between training &amp; task</td>
</tr>
<tr>
<td>5. Hazard identified/recognized but accepted by workers</td>
<td>5. Need for training not recognized</td>
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<tr>
<td>6. Hazard identified/recognized but not fully understood</td>
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<tr>
<td>7. Unqualified to identify/recognize hazard</td>
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<tr>
<td>8. Hazard created in course of work</td>
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<thead>
<tr>
<th>B. Planning</th>
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<tbody>
<tr>
<td>1. None performed</td>
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<tr>
<td>2. Insufficient planning - didn’t account for all known hazards</td>
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<tr>
<td>3. Plan not appropriate for task, unworkable</td>
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<tr>
<td>4. Unqualified to develop plan</td>
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<td>5. Circumstances were different than what was planned for</td>
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<td>6. Plan didn’t address unexpected events or emergencies</td>
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<td>7. Procedures for task not developed</td>
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<td>8. Procedures developed but:</td>
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<td>a. not understood</td>
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<td>b. not accurate</td>
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<td>c. not followed</td>
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<tr>
<td>d. unable to be followed</td>
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<tr>
<td>e. not known</td>
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<tr>
<td>f. structured to encourage deviation</td>
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<tr>
<td>g. do not address actual field conditions</td>
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<thead>
<tr>
<th>C. Communication</th>
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<tbody>
<tr>
<td>1. Inadequate communication between workers</td>
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<tr>
<td>2. Inadequate communication between supervision and workers</td>
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<tr>
<td>3. Inadequate communication between work teams</td>
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<tr>
<td>4. Conditions changed without proper communication</td>
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<tr>
<td>5. Inadequate communication to others who affected the work</td>
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<td>6. Previous similar experiences not communicated</td>
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<tr>
<td>7. Inadequate communication between management and supervision</td>
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<thead>
<tr>
<th>E. Facilities./Equipment/Tool</th>
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<tbody>
<tr>
<td>1. Faulty equipment/tool</td>
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<td>2. Poor design</td>
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<tr>
<td>3. Wrong equipment/tool for job</td>
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<tr>
<td>4. No preventive maintenance/inspection</td>
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<td>5. Improper use/application</td>
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<td>6. Ergonomic factors</td>
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<td>7. Inspection did not identify deficiency</td>
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<th>F. Management</th>
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<tbody>
<tr>
<td>1. Unqualified personnel assigned to task</td>
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<tr>
<td>2. Failure to detect/correct deviations or deficiencies</td>
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<td>3. Responsibility &amp; accountability not understood</td>
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<td>4. Authority limits not defined or understood</td>
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<td>5. Schedule or cost priority implied to supervision/workers</td>
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<tr>
<td>6. Inadequate change analysis/management</td>
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<td>7. Misalignment between management’s and worker’s perception of unacceptable risk</td>
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<tr>
<th>G. Other Factors</th>
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<tbody>
<tr>
<td>1. Weather/temperature/noise/illumination/vibration</td>
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<td>2. Physical or mental overexertion</td>
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<td>3. Personal protection equipment deficiency</td>
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<tr>
<td>4. Personnel did not comply with specific instructions</td>
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<td>5. Personnel knowingly took an unacceptable risk</td>
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Step 2: Choose the 3-5 most significant causal factors identified above.

1. 
2. 
3. 
4. 
5.
Step 3:

Causal Factor 1.

1. Why did this happen? __________________________________
   _________________________________________________________
   _________________________________________________________

2. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

3. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

4. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

5. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

6. The process improvement opportunity is:____________________
   _________________________________________________________
   _________________________________________________________
   _________________________________________________________

Causal Factor 2.

1. Why did this happen? __________________________________
   _________________________________________________________
   _________________________________________________________

2. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

3. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

4. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

5. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

6. The process improvement opportunity is:____________________
   _________________________________________________________
   _________________________________________________________
   _________________________________________________________

Causal Factor 3.

1. Why did this happen? __________________________________
   _________________________________________________________
   _________________________________________________________

2. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

3. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

4. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________

5. Why?____________________________________________________
   _________________________________________________________
   _________________________________________________________
3. Why? ___________________ 6. The process improvement opportunity is: __________

__________________________________________

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Causal Factor 4.


__________________________________________

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3. Why? ____________________________ 6. The process improvement opportunity is: __________

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Causal Factor 5.


__________________________________________

__________________________________________

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3. Why? ____________________________ 6. The process improvement opportunity is: __________

__________________________________________

__________________________________________

__________________________________________

__________________________________________