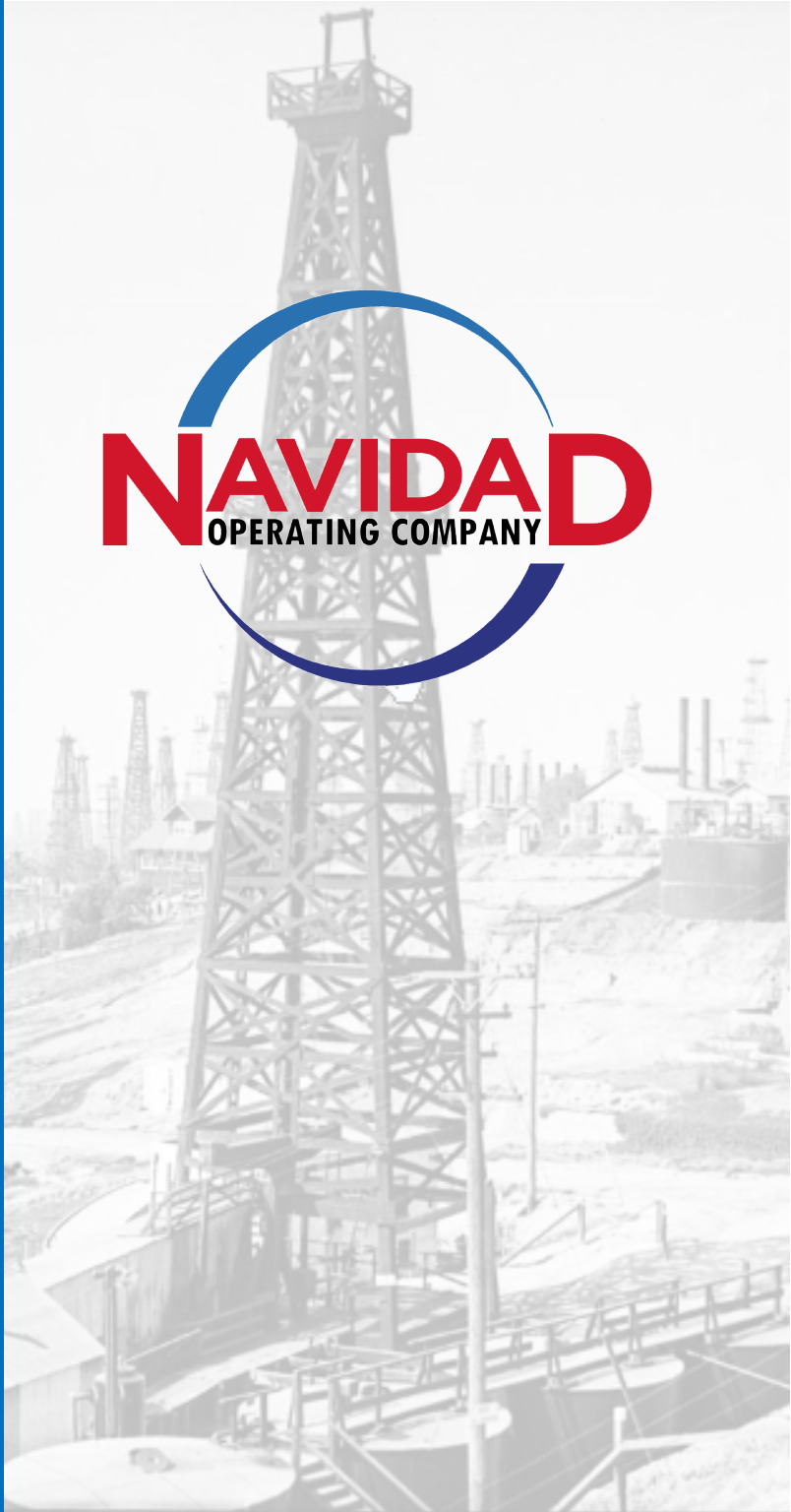
HEALTH & SAFETY HANDBOOK



NAVIDAD
OPERATING COMPANY

HEALTH & SAFETY HANDBOOK

The Health & Safety Handbook applies to all Navidad Operating Company, LLC (NOC) employees and functions as a reference for minimum rules and standards at all NOC locations and facilities. Contractors on NOC operated locations, while not Navidad Operating Company, LLC employees, are expected to adhere to the safety guidance and standards outlined in this handbook as required in the safety programs adopted by their individual employers.

The guidance in this handbook provides the minimum standards for operations conducted on NOC premises and applies to all Employees and Contractors.

Contractor rules and standards must meet or exceed the requirements of this handbook as well as any related regulatory requirements.

NOC 24-Hour Emergency Contact Line

(866) 436-0545

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RESPONSIBILITIES AND EXPECTATIONS

Mission and Vision

Navidad Operating Company, LLC values its employees, contractors and the communities in which we operate. Our goals are to be good stewards of the physical environment and to dedicate ourselves to providing a safe work environment for employees and contractors. Our vision is that by providing an organized and effective safety program, including this handbook, NOC can prevent damage to human resources, physical assets and the properties upon which we operate. All employees of Navidad Operating Company, LLC will follow this program.

This handbook provides the minimum safety standards for operations conducted on Navidad Operating Company's sites and applies to all Navidad Operating Company Employees and Contractors.

Stop Work Authority

All Employees and Contractors have the responsibility and obligation to stop work when a perceived unsafe condition or behavior may result in an unwanted event. Safety is the responsibility of each and every individual on a Navidad Operating Company, LLC operated location.

Management Responsibilities

- Demonstrate the level of Health & Safety excellence expected. Lead by example.
- Strive to provide all employees with a work environment free from unsafe conditions.
- Require that all injuries, vehicle collisions, spills/environmental releases, near hits, fires and any other unsafe conditions be promptly reported to supervision and investigated as necessary.
- Provide employees with the appropriate tools and training to successfully complete each job safely.
- Communicate to all employees the NOC Health & Safety policies and procedures as documented and provide opportunities for discussion and improvements to the program as the situation warrants.
- Enforce the use of necessary PPE by all employees.
- Discuss and Resolve unsafe behaviors as soon as they are observed.
- Analyze and appropriately incorporate Health & Safety performance metrics when evaluating service contracts.
- Require routine inspections and Job Safety Analyses (JSA) to evaluate and communicate potentially unsafe conditions prior to project commencement.
- Conduct and/or assign and document regularly scheduled safety meetings.

Employee Responsibilities

- Commit to Injury Prevention, Environmental Protection, and protecting company property the communities in which we operate.
- Understand and adhere to company policies and procedures, EHS guidelines, and standards as outlined in this handbook.

STOP WORK AUTHORITY – Stop any task/job immediately if observing an unsafe act or being in the presence of unsafe conditions. There will be no retribution for any work stoppage that occurs due to Health & Safety concerns.

- Report all injuries, vehicle collisions, spills/environmental releases, near hits, fires or unsafe conditions to supervision.
- Actively participate in regularly scheduled safety meetings and training classes appropriate to the business unit and job description.
- Wear the required PPE according to the job description and/or task.
- Assist in incident investigations as needed.
- Discuss any observed unsafe condition, behavior and/or practice with fellow workers and supervisor.
- Advise supervisor of all prescription medication(s) and over-the-counter medications that may adversely affect the employee's ability to do his or her job safely.

Any employee who knowingly commits an unsafe act or creates an unsafe condition or is a repeated Health & Safety policy offender may be discharged. Some grounds for immediate discharge in addition to those listed later in this section include:

- Fighting
- Theft
- Willful damage to property
- Removing and/or making inoperative safety guards on tools and equipment
- Removing barriers and/or guardrails and not replacing them
- Engaging in dangerous horseplay

Contractor Responsibilities

As a condition of employment/service, contractors must take all necessary precautions for the safety of all personnel at the worksite. Contractors will comply with all Navidad Operating Company safety and environmental policies, expectations, and all federal, state, and local safety and environmental laws, rules, and regulations. In addition, contractors must:

- Have a Documented EHS Program.
- Work safely and provide and use proper PPE for the job/task they have been assigned.
- Report all injuries and incidents to the Navidad Operating Company site supervisor or EHS.
- Have an active injury and illness management policy.
- Have a Short Service Employee Training and Mentoring program.
    - For High Risk Activities, there shall be no more than 2 SSEs per mentor.
- Provide Workers who are fit for duty and ensure fitness is maintained for the duration of the job. Including seasonal and weather related conditions.
- Instruct their employees in the minimum standards to work on Navidad Operating Company Location(s).
- Have a process to ensure that subcontractors meet or exceed the minimum standards, expectations, and requirements.
- Provide tools and equipment that are fit for purpose and rated for the loads, pressures, and conditions for which it may be subjected.
    - No Homemade or modified tools are permitted.
    - The use of cheater pipes and bars is discouraged.

Contact your Navidad Operating Company Site Supervisor or EHS if you have any questions or need further assistance. In some instances, a variance of requirements may be granted after EHS review on a case-by-case basis.

GENERAL EHS RULES

Environmental Health and Safety Policy

Navidad Operating Company is committed to protecting people and the natural environment in all areas where it conducts business. Accountability for a safe working environment is a core value for NOC and is the responsibility of every employee.

It is Navidad Operating Company's policy to:

- Comply with all health, safety and environmental laws and regulations.
- Cooperate with local, state and federal agencies in their inspection and enforcement activities.
- Incorporate health, safety and environmental considerations in the company's planning and operational decisions.
- Develop and communicate health, safety and environmental objectives throughout the company so that all employees understand their individual responsibilities and are appropriately trained to carry out these objectives.
- Manage operations in a responsible manner and respond effectively to avoid and/or mitigate adverse health, safety and environmental impacts associated with operations.
- In the event of a safety or environmental event, report and disclose information to governmental authorities concerning the situation so as to facilitate a prompt and appropriate response to potential public inquiries.
- Conduct periodic assessments of operations to evaluate, measure and ensure health, safety and environmental performance and compliance.
- Participate in the formulation of prudent and responsible health, safety and environmental laws and regulations that may impact operations.
- Foster constructive working relationships with health, safety and environmental organizations and agencies.
- Commit the resources needed to implement EHS policy.

The following safety rules are the minimum required and are not all inclusive of every activity conducted by NOC employees or contractors:

- NOC will enforce compliance of Health & Safety policies and practices.
- Report all injuries, vehicle collisions, spills/environmental releases, near hits, fires, unsafe condition and unsafe work practices, no matter how minor, to management.
- Hold a pre-job safety meeting to review procedures, equipment locations and emergency plans. Verify that all PPE needed is readily accessible for the project.
- Seat belts are required for all occupants during the operation of company vehicles or any vehicle being used for company business. It is the driver's responsibility to require that all passengers fasten their seat belts before the vehicle is placed in motion.
- Use handrails when ascending or descending stairways.
- Operation of equipment having a "DANGER – DO NOT OPERATE" tag is prohibited.
- Under normal operations, all operating machinery and electrical switchgear is required to have all safety guards, switches and alarms in place and functional. Lockout tagout controls are required if safeguards are to be bypassed in accordance with applicable business unit energy isolation programs.
- All isolation valves upstream of pressure relief valves must be locked or sealed open.
- Jewelry, loose clothing, unsecured long hair (below collar), and other loose accessories shall not be worn when within arm's length of rotating machinery.
- Always use correct tools and equipment for the job. Do not use damaged or incorrect tools to perform the task. Damaged tools are to be replaced, repaired or immediately discarded. Damaged tools shall be immediately tagged: "DANGER – DO NOT USE."
- Erect barricades, flags or barricade tape around areas of hazardous work, holes, floor openings, overhead work zones and exposed energized circuits. Barricades shall have signage indicating the hazard present. Overhead protection may also be utilized when applicable. Excavations must be flagged or fenced when left unattended.

- Fire extinguishers, eyewash stations and self-contained breathing apparatuses should be inspected monthly or as required. Alarm boxes, fire doors, first aid kits and all other emergency equipment must be well maintained and readily accessible. Employees will be trained in the appropriate use of equipment.
- There is NO SMOKING on any NOC drilling, workover, active producing location, gas plant and/or facility. Smoking is not permitted in any building or enclosed structure intended for employee occupancy. This includes but is not limited to the use of smoked tobacco, smokeless tobacco and any version of e-cigarette, e-cigar, e-pipes, vaporizers or other similar products under any other product name.
- Do not walk or stand on storage tanks or piping unless they are equipped with properly designed walkways and fall-protection barriers.
- Do not stand in the **Line of Fire** when opening equipment (i.e. wellhead, electrical breaker, pig launcher/receiver, bull plug, valve, etc.).
- Do not use an air hose to blow particles off of clothing, boots, hair or skin.
- The use of locking style pressure washer guns or the tying of pressure washer triggers is prohibited.

NOC 4-Gas Monitor Policy

All personnel, including employees, contractors, or other individuals must be trained and properly wear 4-gas monitors, that are properly maintained and tested within the specified intervals, while on all Navidad Operating Company "live locations" or locations not yet "live" but where used equipment has been set for future production operations.

Training

All personnel must undergo training on proper use of gas monitors and H_2S awareness on an annual basis and receive documentation certifying training completion.

Maintenance and Testing

All 4-gas monitors shall be bump tested in accordance with manufacturers recommended intervals or a written company safety program if testing interval is more frequent. Monitors should be calibrated similarly.

Wear

Proper wear of 4-gas monitor is required and should be worn between an individual's chest and nose.

Visitors

Visitors to NOC Locations may not be required to have a 4-gas monitor, but are subject to the requirements of the NOC Visitor Policy. See page 11 for additional information.

Definitions:

Live Location: Locations that are producing hydrocarbons on-site.

Bump Test:

- A bump test, also known as a functional test.
- This procedure tests the alarms and sensors of a gas detector to be sure they are functional. The test exposes the detector to a known concentration of gases that exceed the lowest alarm set-point for each sensor.
- The bump test verifies sensor and alarm functionality, but not the accuracy of the instrument (you must rely on calibration for accuracy).

Possible H_2S sources may include, but are not limited to, changing out meters, blowing down separators, tank gauging, changing out mud pump equipment, H_2S scavenger units and venting of tanks/vessels.

Drug, Alcohol and Firearm Policy

It is the responsibility of all personnel to be familiar and comply with any Drug, Alcohol and Firearm Policy specific to the individual's respective business units.

It is the responsibility of an employee of a contractor who works on NOC premises or operates or controls NOC equipment to be familiar and comply with the contractor's drug and alcohol policies, which may be obtained from the contractor's employer. Employees of contractors are also subject to NOC's drug and alcohol testing policies while present on NOC premises or while operating or controlling NOC equipment.

The following policy is the minimum standard for all employees and contractors working for NOC:

- Work-related consumption or use of alcohol is prohibited while on company property or leases. Therefore, the use, possession, concealment, sale, transportation, promotion, purchase, distribution or testing positive for alcohol or drugs while working either on or off company premises, or in company vehicles, is prohibited, and subjects the employee in violation to discharge. **THIS IS A NO-TOLERANCE POLICY.**
- NOC Employees –The company may require an employee to take a test to determine the presence of drugs or alcohol. Any employee's refusal to submit to such a test is considered a presumption that the employee would have tested positive.
- Employees of contractors –NOC may require an employee of a contractor who is present on NOC premises or who is operating or controlling NOC equipment to submit to a test to determine the presence of drugs or alcohol. Refusal to submit to such a test will result in that person being immediately removed and barred from NOC premises and equipment.
- Employees of NOC and contractors who are taking prescription medications or over- the-counter medications will inform their supervisor of this fact and of any side effects or warnings associated with taking the medication (e.g., do not operate machinery). These side effects may result in the employee being relieved of his or her duties until he or she has completed taking the medication.

- Prescriptions must be in the name of the NOC or contractor employee in possession of the medication(s). Otherwise this will result in disciplinary action up to and including discharge or, in the case of a contractor, removal from the job site.
- Any person found possessing any firearms, weapons, ammunition, drugs or alcohol on company property will be subject to being removed from the job site.

Please contact your supervisor for additional information on NOCs Drug, Alcohol, and Firearm Policy, or how to report any changes in medical status or medication.

Visitor Policy

Authorized Visitors

All authorized personnel on Navidad Operating Company, LLC's (NOC) operated locations are one of three classes:

1. Navidad Operating Company or Navidad Resource Partners (NRP) employee(s)
2. Invited Personnel
    - Personnel employed by Contractors currently on the Navidad Approved Vendor List who have a documented and active safety program
    - Invitees authorized by a member of Navidad Operating Company or Navidad Resource Partners management:
        - Non-Operating Partners
        - Authorized Mineral Owners
        - Subject Matter Experts
        - Those authorized by an agent of Navidad Operating Company's management team
3. State, Local or Federal regulatory personnel who are governed by a safety program authorized and maintained by their individual regulatory organization

At a minimum, all visitors entering NOC premises must wear the required PPE. Visitors are encouraged to wear a personal gas monitor if they have one, however it is not required. Visitors will be escorted at all times by NOC personnel or authorized contract representatives with the appropriate gas detection devices.

Basic required PPE, based on current oilfield safe practices, includes:

- Fire Retardant Clothing
- Hard Hat
- Safety Toed Shoes
- Safety Glasses
- Hearing Protection as required

Visitors may be issued Basic required PPE with the approval of NOC Management.

Visitors shall not be granted access to any locations where designated High Risk Activities are in progress unless written permission is given by NOC Management, with the exception of regulatory agency inspectors.

Regulatory Agencies may visit sites unannounced but are still required to don the basic required PPE. If the agent refuses to follow NOC's PPE Policy, all work should be stopped to the extent possible and may resume once the agent has left location.

Unauthorized Visitors

In the event an unauthorized visitor arrives on location, every effort should be made to safely escort them off location immediately and make notification to EHS and Management. If the unauthorized visitor refuses to leave, all work should be stopped to the extent possible and make notifications as outlined above. NOC will notify local law enforcement as necessary.

Any hostile behavior or threats from an unauthorized visitor towards personnel or the company are to be taken seriously. All personnel will stop work, make the site safe, and evacuate location. If safe to do so, collect any information about the visitor (description, license plate information, etc..) and report the incident to EHS and NOC Management.

Process Safety

Nothing is more important than the safety and well-being of our people. Successfully managing process safety protects our people, the community, and the environment by controlling the hazards inherent to our operations. Process safety is the unintentional release of energy and/or substances stored within systems such as hydrocarbons, chemicals, air, steam, fluids, and gasses. These releases have the potential to lead to gas releases, fires, explosions, and spills that could result in multiple fatalities and serious injuries, impact to the public, and even threaten the success of our business. While we are committed to personal safety, we must be equally committed in our focus and commitment to process safety.

Some examples of Process Safety incidents:

- Loss of well control/blowout;
- Excessive hydrocarbon vapors during flowback operations;
- Corrosion failure of a high pressure gas pipeline
- Overfilling storage tanks, leading to environmental impacts.

Why do you need to manage Process Safety in your work?

1. Disciplined use of our NOC work processes and procedures on every job, every day. They are in place to help manage the risk in your work.
2. We utilize a two physical barrier philosophy in Well Work to prevent Process Safety incidents. If you only have one barrier, it is very important to ensure that the barrier is in place and working at all times.
3. Know the hazards and scenarios that have the highest potential consequences in your daily work. Understand, maintain, and test the critical safeguards protecting you and your coworkers from these hazards.
4. Stop and ask for help if there is something you do not understand in the job you are doing.
5. Ask a qualified person to verify your work if doing it incorrectly could result in serious consequences.
6. When we have incidents, think about what you should do differently the next time. Talk with your supervisor about how they can help. Never think, "It can't happen here".

LIFE SAVING RULES (LSRs)

Certain tasks performed in our business pose risk of serious injury or death if not performed correctly every time. To help mitigate these events, NOC has adopted the following **Life Saving Rules**.

Work Authorization and **Safe Work Practices** are applied to all activities to help Manage Risk.

Energy Isolation, **Line of Fire**, **Hot Work**, **Confined Space**, **Working at Heights**, **Lifting and Rigging**, and **Excavation and Trenching** are each task specific, but all require work authorization and **Safe Work Practices** applied.

Non-Compliance, shortcuts, defeats, bypasses, and/or any other intentional circumvention of the LSRs without the written consent from NOC Management may result in permanent removal from NOC locations or disciplinary action including dismissal.

Work Authorization

Work authorization is the process of planning, preparing, executing, and closing out and reviewing higher-risk activities associated with the Life Saving Rules.

- Identifying and utilizing all appropriate procedures and tools throughout the task.
- Focuses on notifying appropriate personnel.
- Unless otherwise indicated, the NOC Site Supervisor is the person who authorizes the work.

Work Authorization Process.

- Verify Safe Work Practice knowledge, tools, procedures, equipment, and that properly trained personnel are on site.
- Complete the JSA and/or permit, if applicable, and make NOC Representative or Supervisor aware of the task to be performed associated with Life Saving Actions.
- Perform work as denoted in JSA Safe Work Practices and/or permit.
- Stop the work if permit conditions change and/or a deviation is made from the JSA or Safe Work Practice. Perform a Last Minute Risk Assessment and, if necessary, reauthorize permit.
- Closeout/Review is performed at the end of the task to review the work and verify that the system is safe to hand over or turn back online. Discussion is held on what went well and what could have been done better.

Performance of any Life Saving Rule Requires a "One-Up" notification to NOC Management.

Job Safety Analysis (JSA)

JSA is a way of studying a job in order to identify the hazards or potential accidents associated with each step of the job and to develop solutions that will eliminate, nullify or prevent such hazards. A JSA can help identify and eliminate potential accident causes. It is the responsibility of every NOC employee on an operated location to create a JSA prior to undertaking work whether on a company provided form or on written on a sheet of paper.

JSA Steps

There are four steps to doing a JSA:

1. Select the job to be analyzed.
2. Break the job down into steps.
3. Identify the hazards or potential accidents that could happen.
4. Develop measures to eliminate hazards.

Select the job to analyze

There are many jobs or tasks that can be hazardous to perform. To determine which jobs or tasks require a JSA, consider the following:

- Job accident frequency – jobs that have a history of many accidents are good candidates for a JSA. It is a good assumption that if a job has produced many accidents in the past 5 years, it is going to continue to do so.
- Job injury severity – jobs that have provided serious injuries are potential JSA candidates.
- Potential injury severity – some jobs have no injury history but have the potential to produce severe or crippling injuries or death.
- Newly established jobs – changes in tools, equipment and new machinery create new hazards, and as such are natural candidates for a JSA. The JSA will document the hazards and safe procedures before anyone has an accident.

Break the job down into steps

The major reason for breaking the job down into steps is so that each step can be examined for hazards and the potential for accidents. It permits the analysis to be done systematically, one step at a time, in the order the job is done. Each step in the job

process tells generally what must be done. (Use active verbs – remove, position, tighten, etc.). The details are omitted. Hazards are not listed in this process, nor are any safety precaution.

Identify the hazards (potential accidents)

Once the job is broken down into steps, each step is studied for hazards or potential accidents. The job is to identify all the hazards, whether they are part of the job environment or surroundings, or one of the worker's own doing. Record those hazards that are present or may occur as the job is performed. One of the best ways to identify job hazards is to observe the jobs as they are done.

Employees should ask questions similar to these as the task is being observed (this is a partial list; each situation may suggest others):

1. Could the worker be struck or make contact with anything?
2. Could the worker strike something or fall in any way?
3. Could an exposure or overexposure occur to any condition such as gas, heat, fumes, etc.?
4. Could a strain or overexertion occur?

Develop measures to eliminate hazards

Once all the known or observed hazards are noted, a solution should be developed for each hazard. Solutions may take any one of the following forms:

1. Job procedure solution – spell out exactly what workers are to do to accomplish the task safely.
2. Job environment solution – change some aspect of the environment to make the job safer.
3. Radical solution – a combination of the two above, but an entirely new way to do the job.
4. Reduced frequency solution – find a way to reduce the amount of repair, cleanup, wear, etc., to reduce the amount of times the task is done.
5. Assign the measures to a specific person.

References:

29 CFR 1910.132 Subpart I

Line of Fire

Line of fire is defined as being in harm's way. These hazards for our industry are identified as some of the most deadly hazards. Accidents associated with line of fire typically happen very quickly and usually have severe consequences.

LINE OF FIRE SAFETY STANDARDS:

- Always perform a Last Minute Risk Assessment (LMRA) and ensure situational awareness (see Safe Work Practices for more information on LMRA);
- Position the body to avoid being struck by moving objects, rotating equipment, vehicles, pressure releases, and dropped objects or being exposed to hazardous atmospheres or stored energy;
- Establish and adhere to designated barriers and 'no go' zones;
- Engage others when they are in the line of fire
- Identify and manage any work site hazards by notifying site supervisors;
- Establish and maintain eye contact with mobile equipment operators, keeping a safe distance; and
- Always verify equipment is shut off and isolated to prevent entanglement when working with rotating equipment.

Common Line of Fire Incidents:

- Caught in/between objects
- Struck by object or equipment
- Caught in rotating equipment
- Working Around Mobile Equipment (WAME)
- Struck by released energy

Hose and Whip Restraints

Hose Whip Restraint Systems provides an additional level of safety and helps prevent damage to nearby equipment or injury to operators near the failed hose by limiting the whip or travel of the pressurized hose after it breaks free from its hose fitting. Serious damage or injury can occur from whipping hoses, especially at higher pressures. The Hose Whip Restraint is not to be used in place of proper hose crimping procedures. The Hose Whip Restraints should be installed before the lines have been pressured up and inspected at a safe distance after the line is pressured. Restraints should be inspected regularly and replaced as needed.

Energy Isolation

This standard establishes minimum requirements for controlling energy sources during the service, repair or maintenance of machinery and equipment. These requirements will aid in preventing injury to personnel, damage to property and damage to the environment due to the unexpected energizing, start-up or release of stored energy. Sources of stored energy include electrical, mechanical (pumping units, mud pumps), hydraulic, pneumatic, compressed natural gas lines, natural gas flow lines and any other source of stored energy.

Note: Oil and gas well drilling and servicing are exempt from LOTO according to 1910.147(a)(1)(ii)(E) but are still required by NOC to implement sufficient programs to prevent unexpected energization or startup of machines or equipment or the release of stored energy that could harm personnel.

Breaking Containment

Breaking Containment is the intentional opening/releasing of energy and/or substances stored within systems such as Hydrocarbons, Chemicals, air, steam, fluids, and gasses after appropriate preparation. Breaking containment activities may consist of unbolting flanges, manways, removing screwed fittings and unions on systems such as piping, vessels, exchangers, valves, turbines compressors and pumps; opening vents or drains; and removing orifice plates and chokes, etc…

Prior to opening a system, it should be isolated from other operations and potential sources of energy vis Lockout/Tagout. This includes closing isolation valves and stopping compressors or pumps as necessary. Where possible the system must be depressurized, drained, purged, vented, flushed, etc., in preparation for safe opening.

SIMOPS must be strictly limited while breaking containment. Spill containment measures should be in place prior to opening if there is a potential for a fluid release. Use appropriate PPE to protect against hazards specific to splashing during evacuation of the container.

To mitigate injury from pressure. Good defensive body positioning to stay out of the **Line of Fire** is critical when preparing or opening equipment. Respiratory Protection should also be used as needed if toxic substances are present or could potentially be present (Benzene, H2S, Silica, etc…).

Energy Isolation Procedures

A Lockout/Tagout form will be used for all Energy Isolation tasks regardless of size or duration.

Detailed written LOTO procedures shall be developed by each operating area. It is the responsibility of Operations personnel to develop and maintain all site-specific LOTO procedures.

Note: Supervisors are responsible for performing and documenting an annual audit of the Energy Isolation program at each operating area.

Locks and Tags

Locks, tags and other LOTO hardware required by this standard must be available to workers at all times. Contractors must provide their own locks, tags and other hardware when performing LOTO.

LOTO locks and tags must not be used for any purpose other than LOTO and must include the following information:

- Condition or reason for tagging
- Date
- Equipment being tagged
- Name of person applying tag
- "DANGER – DO NOT OPERATE" or similar warning

Preparation and Installation

- The work area and equipment should be surveyed to identify isolation points and the proper methods of energy isolation.
- The machine, equipment or process must be shut down.
- Any stored hazardous energy must be isolated and relieved by closing valves, de-energizing switchgear, opening vents, disconnecting, restraining or blinding. Reviewing the most current flow or equipment diagram will assist in locating all isolation points. Blinds shall be installed when the release of combustible or toxic liquids, vapors or gases into the work area cannot be controlled.
- The energy source should be locked out through the use of locks, blinds, chaining of valves, double block and bleed systems, disconnecting pipe or by other means that prevent the release of energy.

Double block and bleed is the preferred method used on process piping where block valves are closed, locked and tagged and the bleed valve located between the two block valves is locked open to vent to atmosphere. A closed valve with a body bleed does not constitute a double block and bleed.

- The lockout device should be tagged with a "DANGER – DO NOT OPERATE," or other appropriate tag designed to conform to the company's LOTO program.

Each person doing the work shall install their own lock and tag. There must be only one key for a lock or set of locks, and that one key will be held by the locking personnel until completion. The "group lockout" method (defined as using a single lock for the group) is acceptable only where it is defined in a written document and approved by EHS.

The area must be cleared of personnel and tools before attempting to relieve any stored energy remaining in the equipment prior to beginning the work.

- The equipment should be energized (by starting and stopping before beginning the work). Verify that start/jog switches will activate equipment prior to being de-energized.

Restoration and Removal

- Only the person(s) originally attaching the lock and tag is authorized to remove the lock and tag. If this person is unavailable, the supervisor or his or her designee, after complete inspection of the affected area, may assume responsibility for removal of the lock and tag and notification of all parties.
- Only qualified personnel are allowed to start up machinery or equipment after it has been determined that no personnel are exposed to any hazards and all safety checks have been completed.

Note: In the event that shift or personnel changes occur during maintenance or repair activities, the designated NOC site supervisor must take necessary steps to maintain the continuity of the LOTO protection. This shall verify the transfer of LOTO devices between affected employees is correctly accomplished.

Restoring Equipment to Service

When work is complete and equipment is ready to be returned to service, the Energy Isolation form shall be used as a checklist for proper restoration of the space.

- All guards must be reinstalled.
- All electrical wiring must be returned to conform to electrical code requirements.
- All blind flanges or skillets must be removed and piping properly connected.
- Tools, materials and other nonessential items should be removed.
- All machine or equipment components should be inspected and verified they are operationally intact.
- Employees in the area should be notified that LOTO devices are ready to be removed.
- Personnel should verify that all employees are safely positioned or removed from the area.
- Each lock and tag from each energy-isolating device should be removed.

Personal Isolation

Personal Isolation methodologies may be used, but only in conjunction with a LOTO form documenting the isolation points in the task. Should the site need to be left unattended for any amount of time during the isolation, or at any time another person arrives on location, Locks and Tags must be applied in accordance with the requirements of this section.

Hydrates

Hydrates are commonly thought of as "ice plugs" resulting from freezing water. While water plays a role in hydrate formation, hydrates are distinct from ice as they:

- Are saturated with gas, which can create flammability and worker exposure hazards.
- Can occur above freezing conditions any time of year.
- Hydrate formation is a major hazard in pipelines.

Hydrates also form where there is a sharp reduction in pressure,

- Orifice plates.
- Partially open control valves.
- Basket strainers.
- Sudden enlargement on pipelines.
- Short radius elbows.

Hydrates can be detected by through some common symptoms in the system; which could include obstructions, increased back pressure on a system and increase the differential pressure across the obstruction. Compounding the issue, gauges and ports can be blocked by hydrates, leading to false readings.

The exact location of the hydrate or ice plug can be determined several ways. system geometry (low spots in piping), volumetric methods (flow sonic detection methods.

Differential pressure can quickly accelerate a moving hydrate sound, creating excessive forces. Moving hydrates can cause situations where restrictions (control valve), obstructions (closed tee) exist.

Even if no hydrate restrictions or blockages are detected, Steps should be taken to prevent injury by hydrate release when opening piping and other equipment. Avoiding the **LINE OF FIRE** through good pre-planning, body Positioning, and caution when breaking containment is critical.

Contact the NOC Site Supervisor if you suspect Hydrates or other pressure blockages in the system prior to breaking containment to attempt removal.

References:

29 CFR 1910.147 Subpart J, MSHA Parts 56.12016, 12017 and 14105
Prevention and Safe Management of Hydrates in Process Equipment

Hot Work

Hotwork is any work that involves Electric or Gas welding, cutting, brazing, or spark-producing or Open Flame activities within:

- 100 feet of a hydrocarbon source,
- 50 feet of vegetation,
- or other classified areas where fire or safety hazards may be present.

It is preferred that hot work be completed offsite or in an area designated by NOC supervision whenever possible.

A Hot Work Permit is required for any Hot work on an NOC location within the classified area. A designated Hot work area may be designated by NOC Management.

Other Areas where Hot Work may be needed is Welding on lines in service, hot cuts or hot-tapping requires Hot Work Permit(s).

General Hot Work Requirements

- Cutting or welding should only be performed by qualified welders.
- Proper fire prevention equipment shall be on hand, readily accessible, and nearby the work area before cutting or welding begins.
- When welding or cutting in a hazardous area, one person will be designated as a Fire Watch. This person should stand by with a fire extinguisher, be trained in its use, and have no other tasks or obligations while acting as fire watch. The fire watch must remain at the jobsite 30 minutes after completion of the hot work to ensure no re-ignitions occur.
- Cutting or welding on any derrick or load-bearing rig structure is prohibited without appropriate approval.
- No field welding is permitted on tongs, elevators, bails, blowout preventers, choke manifold or other heat-treated equipment.
- LEL monitors must be approved and properly calibrated.

The Duration of the Permit is:

- Crew change, end of shift or end of job, whichever occurs first;
- Emergency or alarm conditions will cancel the permit. A new permit must be issued by the NOC site supervisor prior to resuming any hot work.
- 30 minutes after completion of the hot work activity and cleared by the fire watch.

Hot Work with Gas/Air Atmosphere in Vessel

Hot Work such as flame cutting, welding, grinding and sandblasting may be done on a vessel or pipe when atmospheric gas concentrations do not exceed 10% of LEL. The atmospheric measurements will be taken with the gas monitor's probe in the vessel or pipe (or as close to the vessel or pipe as possible). Employees shall not enter the vessel or pipe to perform monitoring (see the Confined Space LSR).

Procedure

1. Employee initiates Confined Space Entry Permit and submits to the NOC Supervisor or Job Representative for approval.
2. The NOC Supervisor or Job Representative reviews the job, adds precautions such as a Fire Watch, O2 levels, % LEL and qualifications of welders.

   Note: The Hot Work Permit requires that employees monitor for O2 and % LEL levels (other gases may apply) before the job begins. Periodic or continuous monitoring must be performed to verify that levels remain safe.
3. The NOC Supervisor or Job Representative then signs the permit and performs the one-up notification.

   Note: Workers cannot be in a vessel when the LEL is above 10%.
4. LEL levels in excess of 10% will cause all hot work to be discontinued immediately. The permit will be cancelled and declared null and void. A new permit must be reissued prior to the restart of work.
5. A copy of the Hot Work Permit is to be posted at the work site; other copies are maintained in the office for at least 30 days.
6. The area should be checked for changing conditions as the job is performed. This should include O_2, % LEL and toxic materials.

Cutting and Welding

- All cutting and welding equipment will be inspected prior to use.
- All ground connections should be securely made and kept in good condition to eliminate arcing.
- Oxygen and acetylene hoses should be inspected for leaks, damaged fittings, etc., on a job-to-job basis.
- Cylinders should be handled carefully. They must not be handled roughly, dropped or knocked around. They should be secured upright at all times.
- Protective caps should be placed on both full and empty cylinders while they are being moved or transported.
- The proper regulator should always be attached before using gas from the cylinder.
- Oxygen cylinder fittings should be kept free of oil and grease.
- Main oxygen and acetylene valves must always be closed and bled down after completing cutting operations.
- Welding leads are to be inspected daily by the welder for insulation breaks.
- Cutting torches must not be left unattended in tanks or void spaces because leaks could cause an explosion.
- When welding drive pipe or any object connected or supported by the block, a ground wire must be attached to prevent electrical arching of the drilling line, crown, block bearings, drawworks, etc.

  Remember: Oxygen and oil or grease products DO NOT MIX – such a combination could result in a spontaneous fire or explosion. Oxygen is not to be used to clean work area or clothes.

  Note: Refer to Business Unit Operations Manual for specific Hot Tapping Procedures.

Reference:
29 CFR 1910.252 Subpart Q
1926.350 Subpart J
MSHA Parts 56.4600, 4603, 4604, 14213 and 15007

Confined Space Entry

This standard establishes procedures necessary for preparation, entry and restoration of a confined space to be entered by employees. Examples of confined spaces may include, but are not limited to, tanks, vessels, underground meter boxes and valve boxes.

Excavations greater than 4 ft. deep may meet the definition of a confined space if they are to be entered by employees. These excavations shall be entered in accordance with the Excavating and Trenching Safety Standard.

Definitions

Attendant – An individual who is stationed outside a permit-required confined space. An attendant is required whenever a physical hazard cannot be eliminated and/or a hazardous atmosphere cannot be controlled through ventilation. The purpose of an attendant is to monitor and be in communication with the entrant in the event of an emergency or if evacuation is required.

Note: The attendant may also perform the responsibilities of an Entry Supervisor.

Confined space:

1. Is large enough and so configured that employees can bodily enter and perform assigned work; and
2. Has limited or restricted means for entry or exit; and
3. Is not designed for continuous occupancy.

Entrant – An individual who is authorized by the company to enter a confined space.

Entry – Begins when any part of the entrant's body breaks the plane of the entryway. Opening hydrocarbon vessels/tanks for gauging and inspections, without breaking this plane, will not require the completion of a Confined Space Entry Permit (providing the plane is not broken).

Entry Supervisor – An individual responsible for determining if acceptable entry conditions are present, for authorizing entry, overseeing entry operations and for terminating entry into a

permit-required confined space.

Non-Permit Confined Space – A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

Permit-Required Confined Space – A confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated;
4. Contains any other recognized serious safety or health hazard.

NOC Person-In-Charge (PIC) – A NOC company representative who is responsible for overseeing the entry into a confined space at a NOC facility and/or location. If an individual works directly for NOC he or she may represent both the Entry Supervisor as well as the NOC PIC. The PIC will sign the completed permit to authorize the Entry.

The Duration of the Permit is:

- Crew change, end of shift or end of job, whichever occurs first;
- Any gas monitor alarm or other emergency conditions caused by a hazardous atmosphere.
- Safety concerns, near miss, or an incident will also cancel the permit.

Preparation for Entry

In preparation for entry, a Confined Space Entry Permit shall be initiated and completed according to the following procedure:

1. Each space must be inspected and evaluated by a qualified individual, prior to entry, to determine potential hazards within the space. An evaluation will include atmospheric monitoring and a thorough assessment of physical hazards.
2. Atmospheric monitoring for oxygen, explosive gases/vapors and toxic gases/vapors shall be performed during the initial assessment and the results must be recorded on the

Confined Space Entry Permit. At a minimum, the following tested atmospheric hazards shall be within these acceptable levels:

- Oxygen = 19.5% – 23.5%

  Note: Oxygen content must be tested first

- Lower Explosive Limit (LEL) = < 10%
- Suspected toxic air contaminants (i.e., hydrogen sulfide, carbon monoxide, etc.)

3. If a potential atmosphere is the only hazard within the space and continuous forced air ventilation alone is sufficient to maintain the space safe for entry, then following 1910.146(c)(5) the NOC Person-In-Charge may utilize Alternate Entry and reclassify the space as a Non-Permit Confined Space; all supporting information must be documented. Depending on the task being performed, the NOC Person-In-Charge will determine the frequency and procedural intervals of when re-testing should occur.
4. If explosive gases or vapors are present within the confined space, an explosion-proof blower or air mover is required and all practical efforts shall be made to reduce these flammable gases or vapors (% LEL) to as close to zero as possible.

Note: Forced air may present a hazard if iron sulfide is present (see Fire Safety).

5. If a confined space does NOT pose an actual or potential atmospheric hazard and if all non-atmospheric hazards within the space are eliminated without entry into the space, then following 1910.146(c)(7) the NOC Person-In-Charge may Reclassify the space as a Non-Permit Confined Space; all supporting information must be documented. Examples of eliminating potential hazards without entering the space may include LOTO, blind flanges, line disconnects, double block and bleed, etc.
6. Signs, barricades, and/or personnel shall be posted outside confined spaces to notify unauthorized personnel when entry is in progress.
7. All electrical equipment utilized inside of a confined space must have a ground fault circuit interrupter (GFCI).
8. A minimum of two individuals must be present when entering a confined space.
9. If the confined space atmospheric tests are not within the acceptable limits or the physical hazards cannot be

eliminated, the space is classified as a PERMIT-REQUIRED CONFINED SPACE.

Note: Only properly trained personnel can work as an Entrant, Attendant or Entry Supervisor. Entry into a permit-required confined space requires verbal notification to the EHS Department.

10. Rescue equipment including lifelines, harnesses, air supply systems and hoists must be in use when entering all Permit Required Confined Spaces. A trained rescue team is to be available onsite along with a site-specific rescue plan.

11. If lighting equipment is required where flammable or combustible gases or liquids are present then lighting must be intrinsically safe.

Entry

Authorized personnel listed on the Permit may make entry only after preparation requirements have been met, Confined Space Entry Permit has been reviewed and signed by all personnel involved with the entry, and the permit is authorized by the NOC Person-In-Charge.

The confined space atmosphere shall be continuously monitored and recorded on the permit to identify any atmospheric changes.

Restoration

When work is complete and the confined space is ready to be returned to service, the permit shall be used as a checklist for proper restoration of the space. Additional items to consider include:

- Are all personnel out of the space?
- Are all blinds removed, vents closed, etc., per the list compiled during preparation?
- Are all equipment and tools removed?
- Are all entryways and flanges closed and sealed?
- Have start-up procedures been reviewed?

Permit Closure

NOC Person-in-Charge will sign the permit to authorize acceptance of the work, and close of the permit at the completion of the job, or when a new permit must be issued.

Program Review

Completed confined space entry permits must be reviewed no less than annually and maintained at the site office for a minimum of one year.

Reference:

29 CFR 1910.146 Subpart J and MSHA Part 56.16002

Working At Heights

Drilling, completions, and production operations are subject to the requirements of OSHA's general industry fall protection standard of 4 ft. [29 CFR 1910.23]. Construction of well pads, compressor stations, installation of pipeline and compression equipment, as well as the construction of impoundments and ponds, are subject to the requirements of OSHA's construction industry fall protection standard of 6 ft. [29 CFR 1926.502]. Fall Arrest Systems are to be used when other fall protection systems are impractical or insufficient (i.e., scaffold work requiring top and mid-rails to be removed).

Work Authorization is Required for any work where the use of fall protection is required.

General Requirements

- 100% fall protection must be maintained at all times while performing elevated work, to include the use of two lanyards if needed to allow the employee to remain anchored to one point while moving to the next point. This requirement does not apply to work being performed from portable ladders.
- The use of waist belts for fall arrest and non-locking snap hooks is prohibited.
- The double-locking hook on a self-retracting lifeline will be hooked directly into the dorsal D-ring on the back of the full body harness. The retractable spool will not be hooked into a shock-absorbing lanyard.
- Self-retracting lifelines that have been subjected to a load will be removed from service and forwarded to a manufacturer's approved repair facility for overhaul and/or inspection.
- Self-retracting lifelines will be inspected every other year by the manufacturer or his or her designated representative. Maintenance and inspection will be documented and maintained on site.

- To minimize fall distance, the tie-off or anchor points should be at the height of the D-ring or higher.
- To minimize swing falls, tie-off or anchor points should be as close as possible to directly above the head.

Fall Arrest Systems

Fall Arrest Systems shall include:

- A full-body harness with D-ring in the middle of the back situated between the shoulders and a lanyard
- An appropriate anchorage attachment capable of supporting at least 5,000 lb. static load connectors at a height greater than the potential distance of fall

The system may include a lanyard deceleration device, lifeline or suitable combination of these.

Before donning the fall arrest system, the employee shall:

- Inspect Fall Arrest components prior to each use.
- Remove from service and destroy damaged components or equipment that has experienced a fall.
- Verify that Fall Arrest equipment is not to be used to hoist equipment/materials.

If an employee is working in an area where they could fall into and be submerged in water, an approved type 1 or type 2 life jacket or buoyant work vest must be worn. Aquatic rescue equipment should be immediately available.

Ladder Safety

- When climbing up or down any ladder, personnel should face the ladder and maintain a 3-point contact with hands free of materials.
- Personnel should keep body centered between the ladder side rails (or within the width of the cleats) when climbing and while working. Personnel should not overreach or lean while working from a ladder.
- All ladders must be inspected before each use. Damaged ladders should be tagged as unsafe and removed from service.
- If work from a ladder is long-term in nature or requires heavy physical exertion, other methods such as scaffolds or personnel lifts should be used.
- Metal ladders must not be used for electrical work.

Non–Self-Supporting Ladder (Portable Extension Ladder)

- Ladder shall be positioned at a safe angle, which is typically a 4:1 vertical to horizontal ratio.
- The ladder shall be secured at the point of support to prevent movement. If a ladder cannot be secured at the top, outriggers or another employee must stabilize the ladder while it is in use.
- A portable extension ladder must extend 3 ft. (1 m) past the point of support when accessing a working surface (i.e., roof).
- Self-Supporting Ladders (Portable Step Ladders)
- A stepladder must be used with the spreader bars in the locked-down position.
- A stepladder shall never be used as a straight ladder.
- Do not stand on the top two steps of a self-supporting ladder.

Personnel Lifts

- Employees in a man-lift basket will maintain 100% tie-off to the basket.
- Employees working in a man-lift basket desiring to transfer from the basket to any other elevated surface or substructure will first tie off to the next object before removing their lanyards from the man-lift basket.
- Employees must work with both feet securely on the floor of the platform. Working with feet on a rail or working from a ladder placed in the personnel lift is prohibited.
- All entrance gates or chains must be in their fully closed position before moving the lift.
- Lift controls and the structural integrity of the lift shall be inspected/tested each day prior to use.
- Employees should never tie off to an adjacent pole, structure or equipment while working from within the personnel basket.

Scaffolds

- A Competent Person must be appointed to oversee scaffolding erection and disassembly.
- Only heavy-duty pole-and-tube and coupler scaffolds should be used.
- Scaffolding will be kept clean and in good condition. It will be inspected prior to each rig-up for cracks or other damage.
- Footing shall be sound, rigid and capable of carrying the maximum intended load. Unstable objects such as bricks, blocks or boxes must not be used. Wheels (if equipped) will be locked and chocked to prevent movement or shifting.
- Scaffold heights greater than 4 times the base must be properly secured to the working structure unless otherwise noted by the manufacturer.
- When working under a scaffold, overhead protection is required.
- Working from portable ladders on the scaffold platform is prohibited.
- Appropriate guardrails shall be utilized on all scaffolds. Toe boards must be installed on platforms or walkways that are 4 ft. (1.8m) above ground level.
- Fixed or secured portable extension ladders must be used to access scaffolding if no built-in ladders are present.

BOP Scaffolding

- Metal-type scaffolding will be used around the BOP stack to provide a stable, non-slip working surface unless other appropriate means of fall protection are provided.
- Scaffolding will be tied on both ends to the hangers/ladders that support it to prevent side movement or vibration.

Stairs

- Personnel will maintain 3 points of contact when ascending or descending stairs. Employees will not carry things up or down stairs that require more than one hand to hold.
- Sliding down handrails, skipping steps or running on steps is prohibited.

- Stairs, steps and walkways will be kept free of obstructions. Stairs, steps, walkways and handrails will be kept clean of mud, grease, dirt or other slippery materials to prevent Slip, trip, or fall hazards. Stairs or steps will be utilized whenever they are provided.
- Stairs will be bolted down or securely pinned with a pin and keeper combination so as to prevent any movement.

Walkway/Mud Pit Guarding and Grating/Cellar Covers

- Walkways and mud pit tops will be kept clear of obstructions (hoses, tools and equipment) and slip hazards at all times.
- All grating or floor plating will be kept in its proper position and secured to prevent slip, trip or fall hazards. All holes larger than 2 inches will be covered.
- All grating will be properly supported with braces.
- Sections of grating that cannot be returned to the correct position will be barricaded and flagged with caution/danger tape to re-route normal traffic until properly repaired.
- Shortcuts around fixed walkways are prohibited. All employees will take the time necessary to use established walkways.
- Employees will not climb outside of handrails to perform work or repairs unless secured with proper fall protection.
- Cellar cover will be constructed of expanded metal and placed over the top of the cellar at the start of each new well to reduce potential fall hazards.
- Wood pallets should not be used as elevated walking/working surfaces as they may contribute to slips/trips/falls and ankle injuries.

Reference:

29 CFR 1910.23 Subpart D and 19260.501 Subpart M
MSHA Part 56.15005 and 56.11027 and (MSHA Part 56.11003)

Lifting and Rigging

Lifting and Rigging is used to describe Lifting Units (Cranes, Forklifts, Telehandlers, excavators, hoist/chain blocks, winches, etc.) and lifting Gear (slings, chains, shackles, binders, etc.) that may be used independently or in tandem.

A **Critical Lift** is defined as a lift over pressurized equipment, personnel, blind lifts, tandem lifts or lifts exceeding 80% of the units lifting capacity.

Critical Lift Plan(s) must be prepared for all critical lifts.

- A critical Lift Plan can consist of legible drawings, specification, and procedures necessary to accurately access lifting unit configuration, load factors, and site factors to ensure the safety of the proposed lifting activity.
- Critical Lift plan must always be reviewed by an NOC site Supervisor or designated competent person during the tailgate safety meeting to ensure understanding by all involved.

Work Authorization is required for any mechanized lifting and rigging operation.

Personnel must be properly trained and qualified in the proper use and limitations of the equipment being used to perform the lift. Operators must maintain line of sight to the riggers/spotter(s).

STOP Stop Operations if line of sight is lost or obstructed.

Avoid the line of fire by never standing under a suspended load.

Anticipate shifting/swinging loads and potential crush and pinch points

Utilize Tag Lines to control loads and remove personnel from the line of fire.

Never Leave Unattended loads suspended in the air.

NO PART OF A BOOM, MAST, CABLE, LOAD, OR OTHER LIFTING/RIGGING EQUIPMENT IS PERMITTED WITHIN 10FT OF AN ENERGIZED POWER LINE OF ≥50KV.

If equipment does contact an energized power line, do not exit the equipment unless in immediate danger. If you must dismount, jump from the cab as far from the equipment as possible with both feet together.

Cable, Chain, Rope and Sling Safety

Breakover or lever load style binders are not permitted to be used on NOC Locations. A ratchet or safety binder should be used instead.

Employees should utilize these tips for proper cable, chain, rope and sling safety:

- Do not damage machines or any soft surfaces of the load with the lifting apparatus.
- Avoid sharp bends in slings and wire rope and protect slings from sharp edges and abrasions.
- Avoid sudden jerks when lifting or lowering loads.
- Set loads down on proper blocking – never directly on a sling.
- Do not side load.
- Maintain an angle between the sling and the horizontal greater than 45 degrees to reduce stress on the sling.
- Do not stand or walk under suspended loads.
- Never stand or step over any line that is under stress.
- Do not leave suspended loads unattended at any time. Use tag lines of sufficient length to control the lift.
- Slings not in use must be properly stored.
- Chain hoists and snatch blocks should not be fastened to girts because bending of the girts will weaken the derrick.
- Keep hands, fingers, feet and other body parts from between the load line or sling and the load. Do not attempt to guide a load with hands on the sling.

Inspection Process

- Operations supervisors will maintain manufacturer and third-party-load test records for all rigging materials in service requiring annual load tests.
- Only qualified employees shall make inspections.
- Inspect all rigging equipment before each use.
- Identification tags shall be on all slings. This tag will identify working load limits for the sling, along with other information pertinent to safe use.
- Cables, wire ropes, shackles, chains, slings, hooks and other devices that do not meet the inspection criteria shall immediately be removed from service. Frayed or damaged nylon slings shall be cut and discarded.

Rigging Equipment

- Know the safe carrying capacity of sling chains, wire rope, hoists and other lifting apparatus and do not overload them.
- Immediately destroy defective lifting equipment to prevent further use.
- Do not tie knots in sling chains, rope slings or wire cables to shorten them.
- Do not place bolts or other material between links of chain to shorten or splice it.
- Do not lift or hoist any object of unknown weight.

Shackles

- Never replace the shackle pin with a bolt. Use only the proper size fitting pin.
- Never use a shackle if the distance between the two eyes has spread to where the original pin can no longer be used (i.e., the shackle bolt cannot be threaded so that it makes contact with all thread surfaces provided in the eye).
- All pins must be straight and all screw pins must be completely seated.
- Do not side load the shackle.
- Destroy all shackles that are worn in the crown area or pin by more than 10% of the original diameter.
- Do not use a screw pin shackle if the pin can roll under the load, unscrew and release the load.

- Shackle pins should be secured with safety wire to prevent the pin from unscrewing, especially when in the derrick or in other overhead work.
- Bolt Type Anchor Shackles (BTAS) should be used to secure all overhead equipment such as hoist sheaves.

Rigging of Wire Rope Clips

Be sure to use the proper number of wire rope clips when attaching, and make sure they are placed so that the U-bolt is on the short or "dead" end. The saddle should be placed on the long or "live" end. ("NEVER SADDLE A DEAD HORSE")

Refer to Figure I on the next page.

Wire rope removed from service will be destroyed to prevent further use. Used wire rope will only be used for stripping drill pipe when it is placed inside of a bolstered tubulars basket. Used wire rope will not be used on standard drill pipe racks.

Wire-rope clamps or factory-poured swedges will be used to create an eye in wire rope rigging.

Wire-rope clamps should be properly sized, torqued and spaced for the diameter of the wire rope used.

Flemished, plaited eyes will not be used on any wire rope rigging.

Protruding tails or bitter ends of wire rope strands on slings and bridles will be taped or blunted.

Wire rope will be removed from service and not be used if there are (10) broken wires in (1) rope lay or (5) broken wires in any (1) strand.

Wire rope will not be used if it shows signs of excessive wear, corrosion or defect.

Diameter of Rope (Inches)	Number of Clips	Distance Between Clips
7/16" or less	2	2-3"
1/2" - 5/8"	3	3-4"
¾" - 1"	4	5-6"
1-1/8" - 1 - 1/4"	5	7-8"
1 3/8" or larger	6	9 "

Figure I

Application of Wire Rope Clips

Correct Method – U-bolts of clips on short end of rope (No distortion on live end of rope).

Wrong Method – U-bolts on live end of rope (This will cause mashed spots on live end of rope).

Wrong Method – Staggered clips: Two correct and one wrong (This will cause a mashed spot on live end of rope).

Reference:

(29 CFR 1926.552 Subpart N, MSHA Part 56.16007, and NOC Lifting and Rigging Standard)

Manual Lifting / Back Safety

When lifting or moving loads, employee shall assess the weight, bulkiness of the item and the route of travel. Proper lifting techniques should be used. When the load is too heavy for one person to lift, the employee shall ask for assistance or use a mechanical lifting device.

Below are proper lifting techniques for employees to utilize:

- Keep feet apart – one alongside and one behind the object to be lifted. Feet should be comfortably spread to give stability.
- Keep back arched. An arched back means the spine, back muscles and body are in correct alignment.
- Grip the object with the whole hand, both the palm and fingers
- Keep elbows and arms tucked to side of body. This reduces fatigue in chest and arm muscles and is the position where the most power can be generated for lifting. This position also helps control the center of gravity of the body.
- Keep head high and chin tucked in.
- Keep body weight (center of gravity) directly over feet. Start the lift with the thrust of the foot behind the object being lifted. Lift with legs and bring the load close to the body for the most efficient carrying position. Lift smoothly, without jerking or twisting.
- To raise an object above shoulder height, first lift to waist height.
- To change direction, turn the entire body, including the feet. DO NOT twist body at the waist while lifting.
- Do not carry an object that is too big to see over or around.
- For objects that are too large or bulky to be carried by one person, use proper moving equipment or get help.

Excavation and Trenching

This standard applies to all excavations 4 ft. (1.2m) in depth or more and intended for worker occupancy. In addition to the following steps, a **Confined Space Entry** Permit may be required for personnel entry into such excavations that have the potential for hazards (i.e., atmospheres, cave-ins) that cannot be controlled, or serious safety hazards that cannot be eliminated. All excavations must meet or exceed OSHA requirements found in 29 CFR Part 1926 – Subpart P – Excavations, or MSHA Part 56 (for mining activities).

Work Authorization is Required for any Excavating or Trenching operation.

Definitions:

Benching – A method of protecting employees from cave-ins by excavating the sides of a trench to form one or a series of horizontal levels, or steps, usually with vertical or near-vertical surfaces between levels.

Competent Person – One who is formally trained and capable of identifying existing and predictable hazards, soil types in the surroundings or working conditions that are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.

Excavation – Any man-made hole, cavity, trench or depression in an earth surface formed by earth removal.

Shoring/Trench Box – A structure such as a metal, hydraulic, mechanical or timber shoring system that supports the sides of an excavation and is designed to prevent cave-ins.

Sloping – A method of protecting employees from cave-ins by excavating to form sides of an excavation that is inclined away from the excavation. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure and application of surface loads.

Soil Classification System – Denotes classification used by the National Bureau of Standards.

Soil Classifications:

- Stable Rock – Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
- Type A Soil – A cohesive soil with an unconfined compressive strength of 1.5 tons/ ft (tsf) (14.6 Mg/m2) or greater. Examples: clay, silty clay, sandy clay, clay loam, silty clay loam, sandy clay loam, caliche and hardpan. (If a soil is fissured, subject to vibration or previously disturbed, it is considered Type B or C.)
- Type B Soil – A less cohesive soil with an unconfined compressive strength greater than 0.5 tsf (4.9 Mg/m2) but less than 1.5 tsf (14.6 Mg/m2). Examples: angular gravel or crushed rock, silt, silt loam, sandy loam and dry rock that is not stable.
- Type C Soil – The least cohesive soil with an unconfined compressive strength of 0.5 tsf (4.9 Mg/m2) or less. Examples: gravel, sand, loamy sand, submerged soils or freely seeping soils and submerged rock that is not stable.

Note: The thumb penetration test can be performed by a Competent Person to estimate the unconfined compressive strength of cohesive soils.

- Type A soils can be readily indented by thumb only with great effort.
- Type B soils can be penetrated by thumb approximately halfway.
- Type C soils can be easily penetrated several inches by the thumb and can be molded by light finger pressure.

Excavation and Trenching General Safety Rules

Before digging, drilling, or excavating, call the appropriate utility locating service. Calling 811 in all states will connect the caller with that state's buried utility locate dispatch for marking underground utilities. Most One Call agencies require a minimum of two business days to locate buried utilities before mechanized digging, drilling or excavation can commence.

Excavations more than 4 ft. (1.2 m) deep are to be considered confined spaces and may require a permit for safe entry.

The following provisions shall be reviewed:

- Excavated soil, materials or equipment that could pose a hazard by falling or rolling into an excavation shall be stored and/or retained at least 2 ft. (0.61 m) from the edge of the excavation. If excavations endanger the stability of adjacent structures (building, walls, or other structures), support systems shall be provided
- Soils can become unstable from heavy equipment operation in the vicinity of the excavation.
- Guardrails or barricades should be used to mark the limits of the work area. Any time a trench is left unattended in populated areas, use guardrails or barricades sufficient in size to prevent unintentional entry.
- An employee shall not be directly underneath the operating equipment while it is being lowered or raised in an excavation or trench.
- Employees exposed to public vehicular traffic must wear reflective/high-visibility warning vests.

Procedure

1. Each excavation must have someone formally trained and designated as a competent person; that person will conduct and document daily inspections (more often if needed) if personnel will be required to enter the excavation.
2. Additional inspections are required after significant rainfall or freeze/thaw occurrences.
3. No individual(s) will be permitted to enter an excavation unless it is deemed necessary.
4. Before opening any excavations, personnel shall:
    - Determine the location of utility installations, such as sewer, telephone, fuel, power lines, water lines, pipelines or any other underground installations.
    - Utilize the "one-call" or appropriate notification system to contact utility companies and other affected parties. Advise of proposed work prior to the start of actual excavation. Municipalities or other regulatory agencies may require permits.
5. Excavations, 4 ft. deep or greater involving entry require ladders, steps or ramps located so that no more than 25 ft. (7.6 m) of lateral travel is required to exit the excavation.
6. The walls of the excavation are to be protected from caving-

in by one of the following:

- Shoring
- Sloping or benching (Note: Benching is only allowed on A and B Soil.)
- Trench boxes (shields) – If used must extend a minimum of 18 inches above the vertical side of any excavation.
- Some other equivalent means approved by a registered professional engineer from the state where the excavation is located.
- Sloping or benching for excavations greater than 20 ft. (6 m) deep must be designed by a Registered Professional Engineer.

Mechanical excavation is not permitted within 24 inches of a marked line and shall be performed either by hand, or utilizing an appropriate method to safely expose the line. Examples of this include utilization of a hydrovac or third party daylighting service.

Note: If the excavation requires a person's head to be below ground level, appropriate precautions shall be in place to address hazardous atmospheres. If the excavation is less than 4 ft. in depth and personnel entry is necessary, cave-in protection may be required if the soil exhibits unstable soil characteristics or the slope is less than 2-1.

Maximum Allowable Slopes for Excavations

Soil or Rock Type	Horizontal/ Vertical	Less than 20-ft. (6 m)
Stable Rock		(90 degrees)
Type A	3/4:1	(53 degrees)
Type B	1:1	(45 degrees)
Type C	1.5:1	(34 degrees)

Reference:
(29 CFR 1910.650 Subpart P and MSHA Parts 56.3400, 3401and 3430)

Safe Work Practices

What Are **Safe Work Practices**?

The written practices outlining how to perform specific tasks that reduce risk of injury to all personnel. These written practices can be found in this Safety Handbook and Standard Operating Procedures (SOPs). Safe Work Practices apply to ALL Life Saving Action tasks.

SAFE WORK PRACTICES SAFETY STANDARDS:

- Review and understand the processes laid out in this Safety Handbook that apply to specific tasks prior to starting any work.

Never deviate from the approved work authorization.

- Observe and engage to ensure others working in close proximity understand the site and safety expectations.

- Identify local documents associated with LSRs, and ensure they are understood and how they apply to the upcoming task.

Last Minute Risk Assessment

GENERAL SAFETY STANDARDS

This section is intended to provide NOC employees with a general set of guidelines to reference when company operations are being conducted. To reference specific procedures for an individual operation, refer to the specific business unit best management practices. If a copy of these practices should need to be obtained, contact EHS or the NOC Site Representative.

During operations, the NOC Site Representative/Supervisor shall implement the NOC EHS Program and is responsible for coordinating with the contractor's supervisor. The NOC Site Representative or Supervisor will verify that the rig crew and all service employees are familiar with NOC standards, rules, policies and procedures.

The contractor and his or her supervisors are responsible for implementing the safety requirements of their company and NOC. Any conflict with NOC standards or policies shall be brought to the attention of the NOC Site Representative.

General Precautions

- All employees arriving at the location shall immediately notify and sign in (if available) with the NOC Site Representative/Supervisor.
- All vehicles, other than authorized service vehicles, will be parked by backing into a pre-designated area located a safe distance from operations being performed.
- All employees working on NOC locations shall utilize appropriate PPE for the task being performed.
- For both critical and non-routine operations, a pre-job safety meeting shall be held to review procedures, equipment and emergency plans.
- Emergency equipment shall be appropriately stationed, identified and readily accessible before a task can begin.
- SDSs for all chemicals being utilized on location shall be maintained and readily accessible.
- All employees working on NOC locations shall utilize equipment in a manner consistent with its intended purpose.
- High-reaching equipment shall not be used within 10 ft of a power line.
- Open flames or heat-producing task performed within 100 ft of an area where combustible and/or flammable vapors or

liquids could reasonably exist requires a Work Permit.

- Proper precautions shall be taken when working with high-pressure lines to minimize employee exposure.
- All pressure equipment shall be mounted, tested and maintained according to the Original Equipment Manufacturer (OEM) and/or to meet appropriate regulatory standards.
- Where necessary, place barriers, signs and/or equivalent measures to ensure that unauthorized employees will not enter high pressure areas.
- Unnecessary equipment and/or employees shall be removed from the immediate area during critical operations.
- Any equipment with a potential for stored energy shall be properly locked and tagged before maintenance can be performed.
- No employee shall be allowed under a suspended load for any reason.
- Every employee working more than 4 ft. above the walking/working surface shall utilize appropriate fall protection.
- Housekeeping shall be maintained throughout the location.
- Spills of any kind will be addressed immediately to minimize environmental impact.
- Spill containment shall be used under equipment to minimize environmental impact.
- All incidents will be immediately reported to the NOC Site Representative/Supervisor.

Personal Protective Equipment

The following rules identify required PPE for all employees and contractors. Loaner equipment may be provided for visitors at the location. The NOC onsite job representative should be consulted in advance to determine availability.

ALL PERSONNEL ARE REQUIRED TO DON THE MINIMUM BASIC PPE WHILE ON NOC LOCATIONS:

- Hard Hat
- Safety Glasses
- Safety Toed Shoes
- Fire Retardant Clothing
- 4-Gas Monitor

Additional Job specific PPE may be required. Please consult your supervisor if unsure.

Visitors to NOC Locations may be subject to different PPE requirements pre-approved in writing by management. Please see the Visitor Policy for more information.

Head Protection

- Approved hardhats are to be worn in field operations and other designated areas where there is exposure to overhead danger from falling objects or from electrical shocks and/or burns. Protective headwear shall meet the requirements of the American National Standards Institute (ANSI X889.1-1969).
- Newly acquired hardhats shall meet the minimum requirements set forth by ANSI Z89.1 1997 (Type 1 or 2 – Class E Hardhats).
- No modifications or alterations of the shell or support harness are permitted.
- All hardhats that are damaged or expired, according to the manufacturer's recommendation, shall be immediately discarded.

Reference:

29 CFR 1910.135 and MSHA Part 56.15002

Eye Protection

- Safety eyewear must meet or exceed ANSI Z87.1 and shall be worn in field operations and other designated areas.

- ANSI-approved eyewear is to be worn over non–ANSI-approved eyewear or those not having side shields.
- Avoid the use of contact lenses while working with chemicals. If contact lenses are worn, special precautions such as wearing goggles must be taken.
- Dark-tinted glasses specifically designed for cutting will be worn by the welder at all times when using an oxygen-acetylene torch. Dark-shaded safety glasses are not an acceptable alternative.
- Welding helmets fitted with #10 filtered lenses will be worn by the welder. The welder's fire-watch or work assistant will wear welders #5 filtered cutting lenses at all times when electric arc welding.
- Splash-proof chemical goggles will be worn when handling hazardous chemicals liquids or powders or when exposed to chemical fumes. Examples include cleaning with chemical solutions or solvents and handling or mixing chemicals.
- Clear-lens safety glasses shall be worn while working inside buildings and during night-time operations (dusk – dawn).
- Although fogging is a known problem while wearing eye protection, employees are expected to stop the activity, clean their eye protection and then continue on with the activity. Fogging does not relieve the employee of the responsibility for wearing eye protection when appropriate.

Reference

29 CFR 1910.133 and MSHA Part 56.15004

Face Shields

- Face shields will be worn over safety glasses any time there is exposure of flying debris or splashing particles. Examples:
    - Changing tong dies
    - Hammering on high-tensile steel (like chain links)
    - Using bench grinders or portable disk grinders
    - Chipping, filing, buffing
    - Spraying with a high-pressure paint or water gun
- Although face-shield fogging is a known problem, employees are expected to stop the activity, clean the face shield and then continue on with the activity. Fogging does not relieve the employee of the responsibility for wearing the full-face shield when appropriate.
- Face shields are not to be substituted for eye protection. Safety glasses must be worn in conjunction with face shields at all times.

Reference

29 CFR 1910.133 and MSHA Part 56.15014

Hearing Protection

- Hearing protection must be worn in designated high-noise areas. (85 dBA or higher).
- If the high-noise area is determined to be 115 dBA or higher, dual protection (inserts and muffs) shall be worn.
- Hearing protection shall be worn properly to verify maximum decibel protection.

Reference

29 CFR 1910.95 and MSHA Part 62.160

Hand Protection

- Employees must wear hand protection appropriate for the task when performing work that may cause injury to the hands. An example would be wearing rubber gloves when handling caustic soda, acids, soda ash and lime. Consult SDS for specific PPE requirements.

Impact Resistant Gloves shall be worn for any task where moderate to serious injury could occur to hands and fingers

  - Rolling Tubulars
  - Hammering or Assembly
  - Handling Iron or other heavy objects
  - Other tasks as warranted

- Construction type work gloves are required for, but not limited to, employees that have an opportunity to cut, pinch, hit or burn their hands. Cotton gloves are the preferred protection for these job tasks. Leather gloves will not be worn when working on rotating machine parts. No rings, jewelry or other personal accessories may be worn while working around rotating machinery.
- Electrical lineman's gloves are to be worn when working on energized electrical equipment that exposes the employee to voltages greater than 50V, except during diagnostic testing. Gloves will be replaced or tested every six months by an approved independent laboratory. Wearers of the lineman's gloves are to test for holes or leaks before each use. Defective or damaged gloves must not be used. Any glove found defective or damaged should be destroyed and replaced immediately.

Reference

29 CFR 1910.138 and MSHA Parts 56.15006 and 15007

Foot Protection

- Protective footwear is required to be worn in field operations and other designated areas.
- Management may dictate the need for special requirements (i.e., defined heel, leather, canvas, etc.).
- The protective footwear must meet or exceed ASTM F2413.
- Foot protection shall cover the ankles and have appropriate steel or composite protecting the toes.
- Foot protection shall be maintained in safe-working conditions.

Reference

29 CFR 1910.136 and MSHA Part 56.15003

Clothing

- Flame-resistant clothing (FRC) will be required for all personnel working on NOC field locations. FRC is not intended to be used in place of administration, engineering and work practice controls but to provide an added margin of protection.
- FRC shall be laundered according to NFPA 2113 requirements.
- Clothing will not be torn, baggy or ragged such that it may catch on machinery or create unnecessary exposure to the employee's torso, arms or legs.
- Pants will be full-length.
- Pants will not be tucked inside of work boots while handling chemicals, mud mixing or welding activities.

Reference

29 CFR 1910.132 and MSHA Part 56.15007

Electrical Safety

This section contains basic electrical safety practices to help prevent injuries associated with hazards arising from the use of electricity and to comply with regulatory standards applicable to electrical systems.

Safety programs used by contractors must meet or exceed all applicable guidelines of NOC's established EHS policies/procedures.

Always Utilize Energy Isolation procedures to eliminate electrical hazards prior to preforming service or maintenance on equipment.

Definitions

Arc Flash Boundary – When an arc flash hazard exists, an approach limit as a distance from a prospective arc source within which a person could receive a second degree burn if an electrical arc flash were to occur.

Limited Approach Boundary – An approach limit as a distance from an exposed energized electrical conductor or circuit part within a shock hazard.

Qualified Electrical Worker – A qualified person trained, knowledgeable and with demonstrated competency in the construction and operation of equipment or a specific work method who is trained to recognize and avoid the electrical hazards that might be present with respect to that equipment or work method. **Note:** A person can be considered qualified with respect to certain equipment and methods but be unqualified for others.

Important: A Qualified Electrical Worker is the only one permitted to perform equipment modifications, repairs and installations involving exposure to energized parts.

Unqualified Person – Persons who operate electrically powered equipment but are not trained to perform any operation or maintenance on electrical equipment or components.

Working On – Intentionally coming into contact with energized electrical conductors or circuit parts with the hands, feet or other body parts with tools, probes or test equipment, regardless of the PPE a person is wearing. There are two categories of "working on":

- Diagnostic
- Repair

Safety Training Requirements

Specific training associated with safety-related work practices and procedural requirements are presented in the NOC Electrical Safety Program. The degree of training will be determined by the job task(s) performed by the employee.

Electrical Safety Rules

- The most important principle of electrical safety is to assume that all electrical circuits are energized unless each involved worker verifies that they are not.
- Only Qualified Electrical Workers shall perform tasks such as testing, troubleshooting and voltage measuring within the limited approach boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.
- All employees are to be trained in the hazards of working on or near energized electrical equipment.
- A NOC-approved Energy Isolation LOTO program must be utilized to isolate the energy source.
- The process of de-energizing is "live" work and can result in an arc flash due to equipment failure.
- Energized work shall be permitted only when it can be demonstrated that de- energizing introduces additional hazards or increased risk.
- If energized work is required within the limited approach boundary or the arc flash boundary of exposed energized electrical conductors or circuit parts that are not placed in an electrically safe work condition, work to be performed shall be considered energized electrical work and shall be performed by written work permit only.
- Electrical tools and protective equipment must be specifically approved, rated and tested for the levels of voltage to which the employee may be exposed.
- PPE shall conform to the results of the incident arc flash

hazard analysis or standards presented in NFPA 70E.

- Un-insulated metallic items, such as rings, neck chains, watches, eyewear, etc., are not to be worn while working on or near exposed energized electrical circuits.
- Electrical equipment that is likely to require examination, adjustment, servicing or maintenance while energized shall be labeled.
- Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas containing energized conductors or circuit parts.
- Sufficient access and working space shall be provided and maintained around all electric equipment to permit ready and safe operating and maintenance of such equipment.
- Illumination shall be provided for all working spaces around electrical equipment. Electrical interlocks must not be rendered inoperative by removal, modification or destruction. Electrical interlocks may be defeated only temporarily during the performance of a specific task and must be returned to working condition immediately thereafter.
- Blown fuses shall be replaced with equal type and interrupting rating using the appropriate fuse tool and PPE.
- Fuse pullers will be used for changing electrical fuses.
- Non-conductive ladders must be used when working on or near electrical equipment or conductors. The use of metal ladders and stools is prohibited.
- Defective electrical equipment and extension cords are to be inspected and immediately removed from service if found to be unsafe until repairs or replacement can be performed.
- Portable cord and plug-connected equipment shall be inspected prior to each use and be equipped with a cord that has ground fault protection or is double insulated.
- Lighting fixtures will be kept in working order. Broken or burned out bulbs will be replaced promptly. Vapor-proof globes and guards will be placed over lights where necessary.
- Electrical equipment (including lights, radios, pagers, blowers, etc.) used within a 5-ft. radius of the well bore, shale shakers or mud pits will be explosion-proof.
- Drop cords will NOT be lowered into the well bore for light.

- Extension cord sets are not permanent installations.
- Secure extension cords to prevent tripping hazard.
- GFCIs are to be tested prior to use.
- An assured grounding program shall be established and followed if GFCI devices are not used.
- Safety grounds shall be used when working on electrical circuits and equipment.
- Non-conductive mats will be placed in front of electrical switchboards in Motor Control Centers (MCCs) and maintained in clean condition.
- All equipment will be properly grounded per manufacturer specifications.

Power Lines

- All power lines should be considered energized.
- When power lines are de-energized, they shall have safety grounds attached.
- No part of a crane, boom, mast, gin pole or machinery should be permitted within 10 ft. (3 m) of the power lines rated 50 kV or below. For energized lines rated above 50 kV, the minimum distance between power lines and the boom, mast, crane or its load must be 10 ft. (3 m) plus one half inch (1 cm) for each kV over 50 kV.

Working on Energized Electrical Equipment

Energized work shall be permitted only when it can be demonstrated that de-energizing introduces additional hazards or increased risk. If work requires that the electrical equipment be worked on while energized, the following procedures apply:

- Work on energized electrical equipment of 600 volts or more will only be conducted by a Qualified Electrical Worker with a safety observer present.
- The safety observer (certified in first aid/CPR) shall maintain direct communication with worker(s) during troubleshooting and/or adjustments to exposed energized equipment.
- Work on energized electrical equipment between 50 and 600 volts shall require a hazard identification and a risk assessment procedure that may include identifying when a safety observer is required and the training and equipment that person should have.
- Affected personnel shall be notified of the activities being performed, the location, equipment affected and duration of work.
- Use established special precautionary techniques, PPE, insulating and shielding materials and insulated tools.
- All affected personnel shall be notified when work is completed.

Only Qualified and Authorized personnel are allowed to install, maintain, or repair electrical equipment >50kV. Contact EHS for additional support.

Batteries and Battery Charging

Batteries of the unsealed type shall be located in enclosures with outside vents or in well- ventilated rooms and shall be arranged so as to prevent the escape of fumes, gases or electrolyte spray into other areas.

- Ventilation shall be provided to ensure diffusion of the gases from the battery and to prevent the accumulation of an explosive mixture.
- Racks and trays shall be substantial and shall be treated to make them resistant to the electrolyte.
- Floors shall be of acid-resistant construction unless protected from acid accumulations.
- Face shields, aprons and rubber gloves shall be provided for workers handling acids or batteries.
- Facilities for quick drenching of the eyes and body shall be provided within 25 feet (7.62 m) of battery-handling areas.
- Facilities shall be provided for flushing and neutralizing spilled electrolyte and for fire protection.
- Battery-charging installations shall be located in areas designated for that purpose.
- Charging apparatus shall be protected from damage by trucks.
- When batteries are being charged, the vent caps shall be kept in place to avoid electrolyte spray. Vent caps shall be maintained in functioning condition.

Reference

29 CFR 1910 Subpart S,
NFPA 70E 2012,
MSHA Parts 56.12001 – 12071

Compressed Gas Cylinders

All compressed gas cylinders shall be handled, used and stored in accordance with the EHS Handbook and state and local regulations.

Employees should utilize these tips for proper handling of compressed gas cylinders:

- Inspect all cylinders and Do not accept damaged cylinders.
- Keep protective caps on cylinders when not in use. When moving cylinders, protective caps must be in place.
- Keep cylinders away from direct flame, heat and sources of ignition.
- Properly secure cylinders at all times. During movement, avoid rough handling, the striking of cylinders and observe all USDOT requirements (i.e., labeling, manifest documentation, etc.).
- Cylinder contents must be properly labeled. Reject cylinders and return to vendor if not properly labeled.
- Close all valves when not in use.
- Cylinder valves must have a handle or other shutoff mechanism in place while in use.
- Regulators are to be removed from cylinders when not in use unless the regulator is designed to be capped or the cylinders are in an approved welding cart.
- Discharge leaking cylinders outdoors by opening the discharge valve slowly one fourth of a turn.
- Use proper lifting methods/devices (i.e., cradles) for cylinders. Do not lift by the valve or protective cap. Ropes and slings are not to be used for lifting cylinders.

Using Cylinders

- Never use a cylinder of compressed gas without a pressure-reducing regulator connected to the cylinder valve.
- Always close the cylinder valve before attempting to stop leaks.
- Do not use oil or grease as a lubricant on valves or attachments to oxygen cylinders.
- Threads on fittings must correspond to cylinder valve outlets.

- Check valves/flame arrestors are to be utilized on fuel gas/oxygen systems.

Storing Cylinders

- Store cylinders in an upright position at all times. Secure cylinders with chain. Store empty and full cylinders separately.
- Do not store oxygen cylinders within 20-ft. (6 m) of combustible materials or fuel gases unless divided by a 5-ft. (1.75 m) fire-resistant wall rated for one half hour.

Reference

29 CFR 1910.101 Subpart H and MSHA Part 56, Subpart L

Fire Prevention and Protection

Fire Prevention Guidelines

- Class A fire materials (paper, wood, rags, etc.) should be minimized in process areas.
- Buildings in which flammable or combustible liquids are being used must be well ventilated at all times.
- Any fire extinguisher found discharged during monthly inspections will be tagged as unsafe, removed from service and replaced immediately.
- The supervisor will be notified immediately upon a fire extinguisher being discharged.
- Access to fire detection and firefighting equipment will be kept clear at all times. Equipment will not be obstructed with pallets, tarps, mud sacks, tools, etc.
- Smoke detectors will be present and in good working order in every living quarter/ trailer. Detectors will be tested every 6 months and batteries replaced.
- Perform required atmospheric monitoring prior to and during operations that involve opening hydrocarbon vessels or tanks.
- Use "snoop" suds or intrinsically safe gas detection meters when testing for gas leaks on connections. Never use an open flame.
- Use only approved cleaning solvents.
- Transport of Class II flammable liquids (such as gasoline, diesel fuel or mixed fuel) shall be done in approved safety cans or Department of Transportation–approved containers with the contents clearly labeled.
- A safety can is an approved container of not more than 5 gallons capacity, having a spring-closing lid and spout cover, that is designed to safely relieve internal pressure when subjected to heat or flame.
- A safety can also must be listed or approved by a nationally recognized testing laboratory such as Factory Mutual Engineering Corp. or Underwriters' Laboratories, Inc., or Federal agencies such as Bureau of Mines or U.S. Coast Guard, which issue approvals for such equipment.
- Never place portable safety cans inside passenger compartments of vehicles.

- When transferring flammable or combustible liquids from barrel, tank, line or vessel to another container, the source container and the receiving container must be electrically bonded to prevent ignition due to static electricity.

Plastic cups/buckets must not be used for collection of hydrocarbon samples.

- Flammable liquid containers or aerosol cans are to be stored in flammable storage cabinets. If opened containers will not fit in the flammable storage cabinet, then remaining product must be used or appropriately discarded

Fire Response Procedures

- In the event of fire, the following procedures must be used:
- The first two minutes of a fire are the most critical for extinguishment. Assess the situation and SUMMON HELP.
- Initiate emergency shutdown (ESD) and/or activate alarm systems if available, evacuate and then secure the area. If working on a rig, the Driller or Tool Pusher will sound the rig alarm/horn to notify everyone on location of a fire.
- Only trained employees are qualified to operate fire extinguishers and equipment.
- Never fight a fire if the cause or source is not known, or if it is beyond the initial stage.
- Give direction to third-party firefighting agencies.

Firefighting Procedures

Call for Help before attempting to fight a fire.

- Assess the Risk.
    - Is there a threat to life or safety?
    - Is there a treat to the environment?
    - Can the fire be safely and successfully extinguished with the tools immediately available?
- With the wind at the employee's back, approach the fire and discharge the extinguisher at the base of the fire, sweeping the blaze while advancing.

When activating a cartridge-type fire extinguisher, NEVER PLACE YOUR BODY DIRECTLY OVER THE CAP OR CARTRIDGE AND POINT AWAY FROM OTHERS.

- After the fire is extinguished personnel must remain at the site for at least 30 minutes to ensure the fire does not reignite.
- If unable to extinguish, back away facing the fire. Stand by – at a safe distance – to verify that an extinguished fire remains extinguished and there are no flashbacks.
- After discharging or using a fire extinguisher, return it for maintenance and recharging.
- Report the incident

Iron Sulfide

- Iron sulfide Deposits formed from corrosion products and is capable of spontaneous combustion when exposed to air. Iron sulfide fires commonly occur during shutdowns or construction activities when equipment and piping are opened for inspection or maintenance.
- Before breaking containment, a safe work procedure addressing iron sulfide shall be developed, communicated and implemented where iron sulfide is likely to occur. This procedure may be addressed as part of the JSA.

Procedures should address:

- Removal of the combustibles (if possible); and,
- Removal, neutralization or wetting of iron sulfide deposits; or,
- Removal of oxygen, so that fire is unsustainable (i.e., nitrogen purging). Steaming, water washing; blinding and chemical injections (i.e., acid cleaning, chelating solutions or oxidizing chemicals) are all control methods that should be evaluated prior to the start of work. Scraps and debris (such as filters) collected from structures must be kept wet or otherwise controlled to prevent fire during transportation.

  Note: Introducing fresh air into a vessel/piping via air movers may enhance the combustion process, thus igniting flammable hydrocarbons.

Reference

29 CFR 1910.155 Subpart L and 1926.150 Subpart F
MSHA Part 56, Subpart C

Hand Tool and Power Tool Safety

- Tools will be used for their intended use only. Employees are expected to take the time necessary to get the correct tools.
- No Homemade Tools shall be used at any time.
- Tools will be inspected before use. Tools that are in an unsafe condition (Mushroomed, Cracked Handles, Dirty or Worn jaws and Heels, Cut or Damaged Cords, etc.) will be tagged and taken out of service. Only tools that are clean and in good condition will be used.
- Purpose-built pail lid removers will be used for removing lids from 5-gallon containers. Pocketknives and utility knives will not be used for this purpose.
- Power tools will be properly grounded or manufactured with double-insulated casing.
- Power tools with trigger-locking devices that provide continuous operation are permitted, provided turnoff can be accomplished by a single motion of the same finger used to turn power on. This applies to portable drills and grinders with disks greater than a 2-inch diameter.
- If fitted with an "on/off" switch, a power tool will not be plugged into its power source until the switch is first verified to be "off."
- Grinders must have guards in place.
- Grinders will be fitted with disks rated at proper speeds and intended for the material being ground. The rated speed of the grinder must not exceed the speed of the grinding disk.
- Handheld grinder disks should be a quarter inch or thicker. Worn or damaged disks will be replaced immediately.
- Clamps or vises will be used to hold all work dressed by handheld power tools. Employees will not attempt to hold the work using their free hand or a foot.
- Bench grinders without protective shields and adjustable tool rests will not be used. Tool rests will be adjusted to one eighth inch from the face of the grinding wheel.
- Grinding on the side of a bench-mounted grinding wheel is prohibited. The side of a grinding wheel shall not be used for grinding unless the equipment and wheel are designed for such use.

- A face shield will be worn over standard safety glasses by anyone operating or standing near the flying debris from a portable or bench-mounted grinder.
- No adjustments to a portable grinder or other hand tool will be made with the tool plugged into power (i.e., to install a new grinding disk or to replace a drill bit in a hand drill).
- Electrical power tools will be secured by unplugging from the power supply, then wrapping up the cable. An energized extension cord or cable shall not be wrapped up.
- Pneumatic tools with trigger-locking devices that provide continuous operation are permitted, provided the hand tool is also fitted with a positive holding accessory. If the hand tool does not have the handhold device, the tool must be fitted with a constant pressure control switch that will shut off when pressure is released.
- Air pressure will be bled off any air-powered tool prior to disconnecting the hose.
- Air supply hoses will be properly pinned with a keeper pin at all crow's foot connections and safety cable between hose and air supply.
- Air supply hoses will have a safety whip check (lanyard) on all quick-connect lines that is properly sized to prevent the hose from whipping.
- All power tools will be unplugged or removed from their air supply upon completion of work.
- All power tools will be unplugged or removed from their air supply prior to making any adjustments to the tool.
- Tools connected to a power source will not be left unattended.
- Compressed air outlets and hoses for air-powered (pneumatic) tools will not be pointed at another person or used to clean off boots or clothing while they are being worn.
- Maintain high standards of orderliness by returning tools to their proper storage place. Tools shall not be left lying about.

Reference:

29 CFR 1910.242 Subpart P
1926.300 Subpart I
MSHA Part 56, Subpart M

Dropped Objects

Dropped Objects pose a serious risk of significant injury, fatalities, and equipment damage in industries across the globe. Personnel working at heights, with the potential of other personnel critical equipment to be underneath shall have all tools tethered using appropriate restraints. Personnel shall also establish no-go zones in areas where overhead work is being performed using tape, barricades, signage, and other appropriate means of communication.

No employee should be under a suspended load unless load has specified designed safety restraints in place. No-go zones should be established in areas where overhead loads are present or will be present using tape, barricades, signage, and other appropriate means of communication. Please see the **Lifting and Rigging** LSR for additional Information

A copy of the DROPS Recommended Practice is available online, or NOC will provide a copy upon request.

Reference

DROPS Recommended Practice, issue 2, March 30, 2020

Office Safety

In addition to other procedures/precautions in this manual, the following safety precautions should be followed when working in an office environment. There may be other site-specific procedures or requirements, so check with the EHS Department or Facility Operations.

Precautions

- Each employee shall be familiar with the location of the fire alarm pull station nearest their workstation.
- Each employee must become familiar with the appropriate evacuation route for his or her workstation. Evacuation routes for each floor and building area are clearly marked in prominent locations.
- During fire alarms, Emergency Wardens should make last-minute searches of their assigned areas to verify that all employees are evacuated. Employees are expected to help the Emergency Wardens by clearing the area quickly. If an Emergency Warden requests employees to leave an area, they must do so!
- During evacuations, DO NOT USE ELEVATORS! Employees must use the stairwells, following the nearest exit signs and evacuation drawings. Check closed doors for temperature and smoke before opening.
- All passageways, entryways, aisles, storerooms, service rooms and work areas must be kept clean, orderly, sanitary and well maintained with no obstructions.
- Aisles and hallways shall remain unobstructed for evacuation and immediate access for fire response personnel and equipment.
- Flammable and combustible materials or residue in buildings or operational areas must be kept to a minimum. These materials should be stored in metal safety cans or storage cabinets that meet Underwriters Laboratories, Inc. or Factory Mutual standards.
- Material/boxes (limited in height) must be stacked without blocking sprinkler heads, fire exits, fire extinguishers, electrical control panels, etc.
- File drawers and desk drawers shall not be left open. Do not overload top drawers such that cabinets may tip over.

Workstation Ergonomics

Employees should utilize these tips to prevent stress-related injuries:

- Adjust chair height so that upper legs are horizontal and feet are flat on floor.
- Adjust chair to sit up straight and obtain proper back support.
- Avoid tilting or turning head to view the computer monitor.
- Avoid tilting head to hold the telephone receiver between head and shoulder.
- Verify that forearms and wrists are level.
- Avoid resting hands, wrists or arms on hard or sharp edges.
- Verify that computer table is just below forearm/wrist height.
- Verify that the workstation provides adequate legroom.
- Keep arms resting comfortably at sides and shoulders relaxed.
- Place keyboard and mouse at comfortable distance from the body.
- Place frequently used items within easy reach.
- Place document holders at the same height and distance as the computer monitor.
- Alternate tasks to break up extended periods on the computer.

MOBILE EQUIPMENT SAFETY STANDARDS

Vehicle and Motorized Equipment

Workers who operate motorized equipment on behalf of the company are responsible for the safe operation of that equipment. Motorized equipment can include forklifts, cranes, backhoes, bulldozers, etc. The company has established the following minimum requirements for the operation of motorized equipment.

General Precautions

Whenever there is a safety concern, the operator will have the authority to stop and refuse to handle loads or continue operations as safety dictates.

- Only qualified employees shall operate motorized equipment. The individual training will be specific to the type of equipment and the applicable regulatory agency requirements.
- All affected utilities are to be identified and notified using the One-Call system before beginning any excavation work or use of heavy equipment.
- An operator must perform a 360-degree walk-around before operating equipment.
- No equipment shall be operated when any part of that equipment can encounter overhead lines. Employees must maintain a minimum of 10 ft. clearance from lines. (See Electrical Safety section of this handbook.)
- Before moving tall equipment, employees should review travel route for low-hanging power lines and other low-clearance structures.
- Ground employees should maintain a safe distance from operating equipment and establish eye contact with the operator before approaching.
- When climbing onto or down from any piece of equipment, the operator must maintain 3 points (e.g., 2 hands and 1 foot) of contact with the equipment or with the equipment and the ground. The operator should not jump from the equipment to the ground.
- Employees shall not be allowed to ride on or work off any part of the equipment unless specifically designed for personnel.

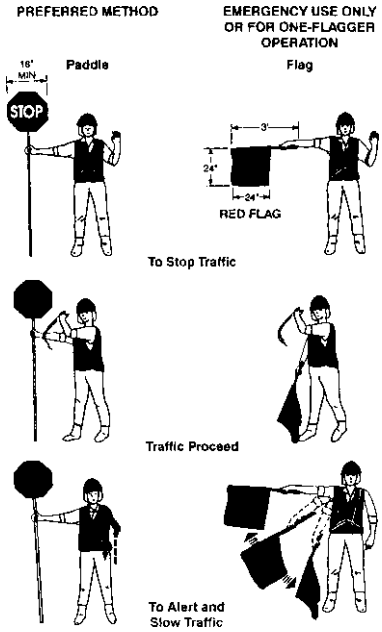
- Ground employees shall be notified when the operator's visibility is obstructed in any direction. Spotters should be used to assist the operator in such cases.
- No employee shall move or allow construction equipment and/or vehicles to be moved on any access roadway or grade unless that roadway or grade is constructed and maintained to safely accommodate the movement of the equipment and/or vehicles involved.
- All equipment shall be operated in a manner that will not cause injury to the operator or fellow workers. If conditions are present which may injure or harm a worker (i.e., muddy conditions, lightning, mechanical problems, etc.) equipment operation must be suspended until the problem is resolved.
- Wheels of trucks and rubber-tired heavy equipment must be chocked when parked for long durations or on inclined grades.
- All powered or motorized equipment shall be left in a zero-energy state during breaks and at the end of the shift. All hydraulic and auxiliary power systems shall be de-energized. Buckets, lifts, forks, blades, etc., shall be lowered to the ground before being left unattended.
- No machinery or equipment shall be stored or left temporarily near a highway- grade crossing in such a manner as to interfere with the sight distances of people approaching the crossing.
- Prior to beginning work, contractors must establish a designated equipment storage area that meets company and local authority approval.

Work Zone Safety

Employees in field operations are sometimes required to set up work zones near public roads. Drivers are to position vehicles as far off the road as possible before setting up the work zone.

These work zones shall be set up in accordance with the appropriate local, state and federal regulations. Refer to the Department of Transportation Federal Highway Administration Manual for Uniform Traffic Control Devices (MUTCD) on procedures for obtaining basic uniformity of traffic control devices. These precautions typically include setting up cones and warning signs, proper communications systems and flagging signals, reflective worker's vests and strobe lights on vehicles. The following signs/flagging signals (Exhibit II) should be used when directing traffic in work zones.

Figure II



Reference:

(23CFR Subchapter 924 and 49 CFR Subchapter 571 and MSHA Part 56.9100)

Vehicle Safety

NOC and its subsidiaries have established the following policy to govern the safe and responsible operation of motor vehicles. It applies to vehicles owned, controlled or leased by NOC ("company vehicles") and, except where noted, to personal vehicles or rental cars while being used for company business.

Compliance with this policy is a condition of employment; violation of this policy can result in disciplinary action up to and including termination. Supervisors will provide drivers the NOC Driving Standards and additional policies and programs as applicable.

Drivers must obey federal, state and local laws and regulations and are expected to exercise due care and good judgment.

In the event of a conflict between laws and this policy, laws take precedence over NOC policy, procedure or process.

Drivers must also:

- Drive defensively – plan for distracted drivers, road hazards, dangerous conditions, etc.
- Adjust speed for road conditions.
- Check mirrors frequently.
- Maintain safe following distance.
- In the case of field-related activities, apprise your supervisor of your route.
- Properly maintain vehicle to include safety features and emergency equipment.
- Be fully fit to drive and follow company work hour policy.

Drivers are REQUIRED to:

- Be authorized by NOC to operate company vehicles and trained in a NOC approved driving program.
- Enforce correct seat and shoulder belt use among the driver and all passengers AT ALL TIMES when vehicle is in motion.
- Secure transported materials inside and outside of the vehicle.
- Obey posted speed limits and road instructions.
- Report vehicle damage to your supervisor, no matter how

minor; report incidents to authorities as required by law.

- Perform a pre-trip 360-degree walk-around inspection on company and rented vehicles.
- Report to your supervisor all traffic citations received while operating a company vehicle.
- Report to your supervisor all incidents that occur while operating any vehicle covered by this policy.
- Report to your supervisor immediately any drug- or alcohol-related citations.

Drivers are PROHIBITED from:

- Using company vehicles for personal use outside of incidental errands.
- Tampering with or attempting to bypass a vehicle safety feature such as proper seat and shoulder belt positioning, supplemental restraint system, seat and shoulder belt indicators, in-vehicle driver feedback systems, etc.
- Being under the influence of alcohol or drugs, to include drugs that contain warnings regarding driver impairment, while driving.
- Smoking in company or rental vehicles. Please reference the NOC *Drug, Alcohol, and Firearm Policy* for more information.
- Transporting alcohol, illegal drugs or firearms in company vehicles.
- Manipulating phone, laptop, GPS, or other electronics devices while driving a vehicle covered by this policy, other than responsible hands-free cell phone or two-way radio use. *
- Using company-issued electronics, other than responsible hands-free cell phone use*, while driving any vehicle.
  - NOC drivers shall avoid using cell phones devices while driving. If a cell phone must be used, it must be in a limited, hands-free, responsible and safe manner that does not distract the driver. Passengers shall also avoid cell phone use that distracts the driver. Under no condition are drivers required to use electronic communication devices while driving.

Mobile and Overhead Cranes

These guidelines apply to all employees who erect, use, operate and disassemble cranes. All employees that work in the vicinity of cranes shall abide by the policies and procedures set in this handbook or by the Business Unit.

- Crane operations must be supervised by a competent and qualified person.

Only Qualified and Authorized personnel are allowed to operate Cranes and be utilized as riggers and signal persons. Contact EHS for additional support.

- The site where cranes will be operated will be evaluated for hazards, including electrical hazards, ground conditions, pinch points and other conditions within the swing radius of the crane that may be operated.
- A JSA must be completed and communicated with employees that are working around crane operations before any crane may be operated.
- Cranes will be inspected daily, monthly and annually according to manufacturer's specifications.
- Critical and engineered lifts must have a documented lift plan in place.
- Lifts must not be made until the weight of the lift is identified and the weight is confirmed to be within the crane and rigging capacity.
- Taglines are required on every pick where controlled pivoting could occur.

Taglines

- Employees involved in material handling will work all suspended loads with a tagline unless otherwise prescribed by a written procedure.
- Taglines will be attached to the end or corner of a load before it is lifted.
- Taglines will be constructed of sash cord, half-inch rope or 1-inch nylon strap and free of knots or hooks. Sisal rope or soft line is prohibited.
- Chains, cables and fall-protection lanyards will not be used for taglines.
- Taglines will not be wrapped around the hand, wrist, waist or any part of the body.
    - Taglines will be of sufficient length such that no part of the person's body will be under the load at any time.
    - Employees will not stand on or in the eye of a tagline.
    - A snub line from the load to the tail of the truck may be used in lieu of a handheld tagline to minimize swinging while transporting a load across location.
    - Employees are considered to be standing under a suspended load if close enough to touch the suspended object with their hand while it is above the waist.

Reference:

29 CFR 1926.550 Subpart N and MSHA Part 56.16007

Forklifts

Although forklifts are indispensable tools for moving heavy objects, their operation and proper maintenance require special precautions and training. The use of forklifts is restricted to trained employees that have been authorized by their supervisor to operate the forklift.

Forklift operators must be certified through proper training and have a skills evaluation test at least every three years. Refresher training is also required whenever one of the following occurs:

- The operator is involved in an incident or a near hit.
- The operator has been observed operating the equipment in an unsafe manner.
- The operator has been determined in an evaluation to need more training.
- There are changes in the workplace that could affect safe operation (i.e., different types of paving, reconfigured storage racks, new layout with narrower aisles or restricted visibility).

Forklift Standards

- Employees must complete an inspection checklist before each use. This includes checking for warning and safety devices. Any deficiency must be reported to supervision.
- Seat belts shall be used when operating forklifts.
- To prevent movement, brakes should be set and the wheels blocked on a trailer or truck that is being loaded or unloaded.
- When the forklift is not in use, the forks must be resting on the ground.
- Only loads within the rated capacity of the forklift should be handled.
- Loads should be carried low, with forks just off the ground and tilted back with the center mass of the load in the center of the forks.
- Do not allow any person to stand or walk under elevated forks, whether loaded or empty.
- 55-gallon drums should be secured and then moved on pallets, a drum rack, in a basket or with a drum- handling extension. Drums shall not be moved by "sandwiching"

them between forks.

- Do not use a forklift to raise people for overhead work without an approved, load-rated platform equipped with forklift-compatible attachments. A pallet is not suitable for this purpose.
- Forklift shall be properly shut off before an operator exits the equipment.

Reference: 29 CFR 1910.178 Subpart N and MSHA Part 56.16016

Gin-Pole & Winch Truck Operations

- The surroundings must be surveyed for power lines and other obstructions prior to initiating gin-pole, crane or lifting operations.
- Gin-pole truck drivers will not drive within 10 ft. of a power line. In the event a driver contacts a power line with his gin-pole, the driver will remain in the truck and avoid touching any metal objects until power lines have been de-energized. No one in the vicinity of the truck will touch the vehicle until the power lines have been de- energized"
- All employees will maintain a safe buffer zone of 10 ft. from any load that is lifted or tail-boarded on a truck or trailer.
- The winch truck operator will take signals from one designated flagger at all times.
- Anyone may signal an emergency stop during winch truck operations.
- Winch truck operators will minimize the height of suspended loads during transport. Loads will be kept close to the ground.
- Winch truck operators and swampers will not lift any load with lifting slings or rigging that creates a 45-degree or lesser angle with the load. All loads will be properly rigged prior to lifting.
- Employees will not walk or position themselves under suspended loads or between the load and the tailboard of the truck.
- Winch truck operators will not leave the winch controls while a load is suspended.
- Winch truck operators will wear the proper PPE any time they leave the cab of the winch truck.
- Cotton or leather gloves will be worn by anyone handling a winch line or wire rope sling.
- Employees will stand to the side and out of the "line of fire" when releasing chain binders.
- Only ratchet-type binders will be used by NOC trucking operations.

- Employees releasing chain binders will verify that the object secured by the binder is stable before releasing the load. If the load is unstable, the employee will verify that the crane or gin-pole truck is tied off to the object before releasing the binders.
- Winch truck lines should not be knotted on the end.
- All loads will be tied down properly prior to transport by truck, train, boat or barge.
- All winch hooks and headache balls will be inspected daily prior to use. Hooks without a properly working positive safety latch will be removed from service.
- Truck drivers will comply with speed limits posted on highways and lease roads.

Reference:

29 CFR 1910.179 Subpart N and – 1926.550 Subpart N

Fuel Supply and Transfer

- All bulk fuel supply trucks will be fitted with a bonding/grounding strap between the truck and the fuel storage tank. The truck will be chocked and grounded prior to fuel transfer. A catch bucket will be placed under the transfer pump and hose connections.
- All fuel supply equipment, including hoses, fittings and valves, will be inspected prior to transfer. Only matching fittings with good rubber gaskets will be used. Tank vent plugs will be clear.
- Fuel truck drivers will comply with all PPE standards to include wearing of hard hat, safety glasses, shirts, long pants and appropriate hand and foot protection.
- A safety observer (NOC employee or the fuel truck driver) will be positioned near fuel transfer operations with a fully charged fire extinguisher for emergency response until the fuel transfer is complete. A safety observer will not leave the fuel transfer until the transfer is completed, secured or relieved by a qualified replacement.
- Tank readings will be taken regularly during transfer to prevent overflowing the fuel storage tank.
- Upon completion of fuel transfer, the hose will be drained in a bucket to prevent spillage.
- Any overflows or spills will be cleaned up promptly to eliminate slip hazard and minimize environmental damage.
- Fuel transfer operations will be stopped upon observing a leak. Transfer operations will not continue until the leak is repaired or eliminated.
- Gasoline-powered transfer pumps will not be used to transfer fuel, water or other fluid products from truck tanks to rig storage tanks or into truck tanks.
- Explosion-proof electrical pumps may be used to transfer fuel or other fluid products.
- Fuel truck drivers will remain with their truck during fuel transfer operations.
- All smoking (including in designated smoking areas within 100 feet of fuel transfer area) will be temporarily suspended during fuel transfer operations.

- Fuel tank levels will be determined using sight-glass tubes and/or flashlights. Fuel tank levels will not be determined using a cigarette lighter, match or other open flame as a source of light.
- Hoses used for fuel transfer will be fitted with factory-installed crimped-end connections. King nipples, boss fittings and field-installed end connections secured with wire, worm gear clamps or banding material are prohibited.
- Upon completion of refueling a forklift or other rolling stock, the person performing the task will verify that the isolation valve between the tank and the supply hose is fully closed and the hose and nozzle are properly stored.

Reference:

29 CFR 1910.178 Subpart N

OPERATIONAL SAFETY STANDARDS

Compression

Reference Energy Isolation in the Life Saving Rules section of this handbook for more detail.

Prior to any work on compression equipment, ensure you know, understand, and follow energy isolation procedures.

GENERAL SAFETY STANDARDS

- Clear the area of personnel before starting the unit.
- Never leave tools on walkways or places where vibration could cause them to fall.
- Ensure skid plugs are in place and clean up oil spills and leaks as soon as possible.
- Reinstall and secure all guards after completing work.
- Regularly inspect compressor skid and area for cracked welds, loose bolts, rubbed hoses, etc., due to vibration.

Replace broken gauges and indicators upon discovery.

- Ensure fluids in scrubbers are drained and cannot be sucked into the compressor.
- Purge compressor to ensure air is purged from the system.
- Confirm no air can be pulled into the cylinder suction through open vents or missing covers, bolts, or gaskets BEFORE opening the suction valves and loading the engine.
  - Pulling air into a compressor can cause an air/fuel mixture that, when compressed, can cause an explosion.
- Ensure relief valves are functioning properly and that blow-down piping is secured or braced.
- Prior to starting or loading a compressor, ensure suction, discharge, bypass, and vent valves are in the proper position. Never make the mistake of assuming the prior operator left valves in working order. Ensure skid plugs are in place and clean up oil spills and leaks as soon as possible.

Reference:
API STD 619-2007 (Reciprocating Compressors for Petroleum, Chemical and Gas Industry Services).

Tank Gauging

Potential exposures to hazardous vapors and explosive gases can occur during tank gauging operations. To reduce the potential exposure, the following safe operating procedure should be followed:

1. Before gauging any tank, review and/or complete the NOC JSA for this task (if applicable).
2. Read signage and warning labels to determine if the location is known to contain H2S or benzene-containing materials.
3. No smoking, open flame or spark-producing equipment (including cellular phones) may be used during tank gauging.
4. The NOC FRC policy shall be followed for protective clothing requirements associated with tank gauging.
5. Determine the wind direction. Using good body positioning, start downwind and work upwind as much as possible, opening all thief hatches to allow tanks to depressurize”
6. Wait a few minutes, again utilizing good body positioning upwind, to allow vapors and gases to vent off.
7. Thief (gauge) the tank(s).
8. Close the thief hatch(s).

Tagging and Flagging

Danger tags indicate that a hazard exists and a "DANGER – DO NOT OPERATE" tag or similar wording shall be used in the following situations:

- Valves not in normal operating position
- Defective valves, equipment or tools
- Safety or emergency equipment unfit for use

Note: For equipment undergoing maintenance, employees should refer to the Energy Isolation LSR in the handbook and local Energy Isolation Procedures.

Procedure

1. The items listed above shall be tagged in the following manner to verify proper attention.
2. The following shall be noted on the tag:
    - Condition or reason for tagging
    - Date
    - Equipment being tagged
    - Signature of person applying the tag
3. Tagging should be documented in the operations log or LOTO Log.
4. Tag should be properly attached with a nylon tie-rap.
5. If the tag is not readily visible, a flag (bright-colored ribbon) must also be attached. Flags never substitute for a tag.
6. Local personnel/supervision should be notified upon completion of the work.
7. Tags and flags should be removed after normal operating conditions are restored.

Reference

29 CFR 1910.147 Subpart J

Weather Conditions

Severe Weather

- The NOC Supervisor, or his or her designee, will monitor weather conditions and will shut down normal operations when the threat of severe weather is imminent.
- All employees will secure normal operations and leave the work area, i.e., rig floor, to take cover in the lowest area possible (ditches) upon seeing an approaching tornado. Employees will stay out of trailers or other temporary buildings.
- Upon notification of a severe storm and/or tornado, all normal operations will be suspended and the work area will be made ready for severe weather.
- If the employee is required to respond to an emergency situation during adverse operational or weather conditions, he or she will exercise due caution and maintain communications with supervisory employees or control center.
- All office employees should refer to the office emergency action plan for exit routes, muster points and additional policies regarding severe weather.

Hot Weather Environments

To reduce the risk of heat related illness, the following procedures should be followed:

- Regular consumption of water and clear fluids. When possible, provide cooled water (50°F to 60°F) to promote voluntary consumption. Do not wait until thirsty to replenish fluids (especially when working in hot environments or performing strenuous work).
- Take frequent small drinks of water since they are more effective than drinking a large amount of water all at once. Larger individuals need more water.
- The use of salt tablets for replacement of salt lost through sweating is not recommended. An adequate salt intake is best achieved by eating three salt-seasoned meals per day.
- When possible, schedule heavy workloads for the cooler hours of the day, such as early morning or late evening.
- Give frequent rest periods.

- Lower the work rate and workloads as the heat condition increases.
- When possible, workloads and/or duration of physical exertion should be less during the first days of exposure to heat; workloads should gradually increase to allow acclimatization.

Heat Exposure

Heat stress monitoring using wet bulb globe temperature (WBGT) meters should be utilized when work factors place excessive heat load on an individual. Heat stress monitoring should be coordinated through the EHS Department to determine stay times and break intervals. Heat load factors include:

- Ambient temperatures above 105 F° or high humidity above 90% or a combination of the two.
- Moderate to heavy workload (as defined by OSHA Technical Manual – Sect III, Chapter 4: Heat Stress) ranging from 200-500 kcal/hour.
- Wearing of PPE and/or FRC that reduces the evaporative cooling effect.
- Increased work intervals with fewer breaks.

Signs and Symptoms of Heat-Related Illnesses

Fainting – Immobile employees who stand in hot environments may lose consciousness due to blood pooling.

Heat Cramps – Muscle cramps of the abdomen, legs or arms.

Heat Exhaustion – Profuse sweating with pale, moist and cool skin; weakness; loss of appetite; dizziness. May also have heat cramps, nausea, urge to defecate, chills, rapid breathing, tingling of the hands or feet and confusion.

Heat Rash – Red bumpy rash with severe itching.

Heat Stroke – Headache, dizziness, stomach pains, confusion, weakness and sudden loss of consciousness; may have seizures; skin is hot and may be dry; pulse and respiration are rapid and weak.

Heat stroke is a medical emergency. Call 911 or seek immediate medical attention.

Cold Weather Environments

Overexposure to cold can cause frostbite and hypothermia. To reduce exposure to cold:

1. Use shielding from cold.
2. Rotate employees and/or take rest breaks.
3. Drink warm fluids.
4. Work during the warmest times of the day.
5. Use correct PPE, including gloves, insulated coveralls, head and face protection, layered clothing and insulated footwear.
6. Adjust workload to prevent sweating.

Frostbite is the freezing of body tissues. Symptoms of frostbite include skin discoloration (white to grayish-yellow) along with cold and numb extremities. Treatment for frostbite is as follows:

1. Cover the frostbitten area with a warm hand or woolen material. Do not rub the area. If the fingers or hands are affected, have the victim put the hand under the armpit.
2. Place the affected area in lukewarm water.
3. Let circulation re-establish itself naturally. When the frostbitten area has warmed up, gently exercise it.
4. Give victim warm, nonalcoholic beverage.
5. Never rub the affected area with snow or ice.
6. Never use hot water or heat to thaw frostbite.

Hypothermia results from prolonged exposure to a cold and wet environment and is a condition where the entire body cools and the core body temperature drops. Hypothermia can be fatal without medical help. Symptoms include severe shivering, slow irregular pulse and numbness. Treatment for hypothermia is as follows:

1. Wrap the victim in blankets or other available insulating materials.
2. Slowly warm the victim by applying heat sources such as heating pads. Be careful to avoid burns, and do not apply heat source directly.
3. Get medical help.

INDUSTRIAL HYGIENE PROGRAMS

Respiratory Protection

Respiratory protection will be provided to all employees based on hazard exposure. Any employee identified as needing respiratory protection for job responsibilities must be trained, have an annual fit test and medical evaluation and/or questionnaire reviewed by a physician. All employees wearing a respirator must be clean-shaven in the seal area of the respirator to verify a proper fit and seal.

- Respirators must be cleaned and disinfected after each use and stored in a sanitary container when not in use.
- Dust masks are NOT permitted as respiratory protection. Dust masks are NOT a suitable replacement for air-purifying, half-face respirators.
- Dual-cartridge respirators will be worn whenever spray-painting or by anyone working or exposed to atmospheres contaminated with harmful dusts, mists, smokes, sprays or vapors.
- Self-Contained Breathing Apparatuses (SCBA) will be used for entering areas contaminated with toxic gases or atmospheres that are oxygen deficient.
- Air-supplying respirator hoods will be used while sandblasting.
- Air-Purifying or Air-Supplying Respirator Hoods are strongly encouraged during welding operations.
- Air-purifying or filtration style respirators are not permitted to be used on H_2S sites where IDLH conditions could potentially exist.
- Filtration Style respirators (at a minimum) will be used when bulk loading or unloading sand operations. Dust masks are not sufficient.

Respiratory Equipment

Escape units – Designed strictly for escape from a hydrogen sulfide atmosphere.

Self-Contained Breathing Apparatus (SCBA) or Supplied breathing air unit – Generally used as a work unit. Such units must have a positive pressure feature. Supplied air units must be equipped with an escape cylinder in case the air supply is interrupted.

General Requirements

- Detection equipment must be used when working in an area where there is a possibility of hydrogen sulfide gas, especially in enclosed or below-grade areas.
- A hydrogen sulfide area must not be entered without proper training (including CPR) and authorization.
- In atmospheres immediately dangerous to life or health (IDLH level of 100 ppm or greater), a standby person(s) with suitable SCBA must be available for purposes of rescue.
- Employees should never attempt to rescue a hydrogen sulfide victim without the adequate level of training and the proper respiratory protection in the form of an SCBA or an approved air line unit equipped with an escape pack.
- Iron sulfide deposits are generally found in hydrogen sulfide areas in tanks, vessels and piping. Iron sulfide may spontaneously combust when exposed to air and should always be kept wet to prevent ignition (see Iron Sulfide, under Fire Safety).
- Wind socks shall be used in areas of known H2S.

Reference:

29 CFR 1910.134 and MSHA Part 56.15005

29 CFR 1910.94 Subpart G – Ventilation and MSHA Part 56.610

Hearing Conservation

NOC has established a Hearing Conservation Program (HCP) to protect employees against noise-induced hearing loss. Employees who are exposed or potentially exposed to a time-weighted average (TWA) of 85 decibels (dBA) or greater over an 8-hour period will be included in the HCP. These employees will undergo a baseline audiogram to establish their level of hearing and for comparison with subsequent audiograms. All employees in the HCP will be trained annually on the effects of noise on hearing, the purpose, types and use of hearing protectors, the purpose of audiometric testing, and an explanation of the test procedures and their results.

All NOC facilities shall be periodically assessed for continuous high-noise levels (85 dBA or greater). Warning signs shall be posted in areas identified as high-noise level areas. Employees are required to wear the provided hearing protection in high-noise level areas and during unusual operations. Extremely loud jobs such as blowing down lines or venting of air pressure may require the use of dual protection (ear plugs and earmuffs).

Reference:

29 CFR 1910.95 Subpart G and MSHA Part 62.150

Hazard Communication

Each chemical container on NOC property shall have a "Hazard Communication" label on it in compliance with GHS as of the effective compliance date.

- Exception to labeling – When an employee transfers a chemical to a portable container that is intended for immediate use during that employee's work shift, a hazard communication label is not required. The container must, however, remain in the possession and control of the employee who made the transfer, and the product content must be identified on the container.

The SDS must be accessible for each hazardous chemical on location. An updated chemical inventory list is maintained for each location and reviewed annually.

Before contractors begin work, NOC will inform contractor of any potential chemical hazards associated with the job or chemicals stored in the affected areas. Copies of SDSs for those chemicals will be made available upon request.

Contractors and vendors will make NOC aware of any potential chemical hazards associated with their work or materials being used on a NOC facility. Copies of SDS for those chemicals will be made available to NOC upon request.

Reference:

29 CFR 1910.1200 Subpart Z and MSHA Part 47

Working with Chemicals

- The SDS shall be referenced (prior to handling chemicals) for appropriate PPE to protect employees.
- The SDS shall be referenced for first aid response actions following a chemical exposure incident to employees.
- Spills should be promptly cleaned up as required by the SDS and/or local, state or federal guidelines using appropriate PPE and following NOC guidelines. Disposal of all cleanup materials shall be in accordance with the NOC Waste Management program.
- Chemicals or materials that produce flammable or combustible fumes/vapors shall not be stored where there is risk of creating an ignition and/or heat source.

- Transfer of flammable/combustible chemicals from bulk storage containers requires the installation of bonding and grounding connectors to prevent the generation of static electricity.
- When working with flammable/combustible chemicals or where flammable/ combustible materials have been stored, non–spark-producing tools and explosion- proof lighting shall be used.
- Chemicals should not be smelled or tasted.
- It is prohibited to eat, drink, smoke, chew gum or apply cosmetics in areas where chemicals are present. Wash hands thoroughly before conducting these activities.
- Glassware or utensils should not be used in laboratory operations to handle food or beverages.
- Food or beverages should not be in chemical storage areas or laboratory refrigerators.
- Chemicals and equipment shall be properly labeled and stored.
- No container should be received, accepted or transported that has been damaged or does not have appropriate labeling.
- Stored chemicals should be examined monthly for deterioration and container integrity.
- When chemicals are hand-carried, the container should be sealed. If handling volatiles it may be necessary to have some pressure relief to vent the vapors.
- Incompatible chemicals must not be stored near each other. Refer to the chemical's SDS for proper storage requirements.
- Spill containment devices such as containment rings or drip pans should be used to contain leaks from containers at transfer areas.

Benzene

Benzene may be present in natural gas, crude oils and gasoline. Exposure monitoring, engineering controls and PPE will accomplish the prevention and control of benzene exposure.

- PPE will be provided for NOC employees to prevent eye contact, limit dermal exposure and minimize the inhalation of vapors. PPE may include impermeable clothing, respiratory protection, chemical resistant gloves, safety glasses with side-shields, splash goggles, splash-proof face shield, chemical-resistant footwear and chemical-resistant apron.
- Employees potentially exposed to benzene levels of 1 ppm TWA (8-hour exposure) or 5 ppm STEL (15-minute exposure) must wear a half-mask respirator with appropriate cartridges as a minimum protection level.
- Food preparation, dispensing and eating are prohibited in areas where benzene- containing material is handled or exposure exists.
- The use of tobacco products is prohibited in areas where benzene-containing material is handled or exposure exists.
- No skin or eye contact is allowed. If skin contact occurs, employees will immediately wash affected body parts with generous amounts of soap and water. If soap and water are not available, employee should use a waterless hand cleaner. After handling benzene-containing material, it is recommended that hands be thoroughly washed after discarding gloves.
- If clothing should become contaminated with benzene, it should be removed immediately to prevent personal exposure and the spread of contamination to vehicles, offices, shops and homes. Rinse the potentially exposed area with generous amounts of soap and water.

Reference

29 CFR 1910.1028 Subpart Z

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is a chemical asphyxiant and irritant gas that can cause loss of consciousness or death at high concentrations and may be present in some NOC operations; Table 1 identifies health effects associated with acute exposure to H_2S.

Physical and chemical properties of H_2S:

- Highly toxic, colorless gas.
- Heavier than air.
- Flammable with an explosive range from 4.3% to 46% by volume.
- Corrosive to metals and can also lead to hydrogen embrittlement and sulfide stress cracks.
- Smells like rotten eggs in low concentrations.

Note: Do not rely on the odor to detect H_2S, as it quickly deadens the sense of smell.

Acute Exposure Effects of H_2S	
Concentration of H_2S in parts per million (ppm)	Physical effect
0.003-0.02	Odor threshold is effected.
1-5	May be associated with nausea, tearing of the eyes, or headaches
Above 20	Conjunctivitis and lung irritation
Below 100	Quickly deadens the sense of smell
Above 100	Considered Immediately Dangerous to Life or Health (IDLH) by NIOSH
Above 500	Attacks respiratory center in brain causing loss of consciousness within 15 minutes
Above 1000	Immediate unconsciousness and death if not revived promptly

Silica

Commonly found on Oil and Gas sites associated with large volumes of sand, also sometimes referred to as proppant, is used in the hydraulic fracturing process, sandblasting, and location construction processes. Prolonged exposure to respirable silica through inhalation can cause silicosis, which is a debilitating, life-threatening disease. It is NOC's policy to control employee silica exposure through engineering controls when feasible. Types of controls that may be used depending on the circumstances are vacuum systems, filters, skirting, misting systems and enclosed systems.

Exposure zones will be set up to restrict employee access to these areas. The minimum requirement is that employees inside these zones will wear an approved respirator with a P100 air-purifying cartridge.

Periodic monitoring is conducted to evaluate silica exposure of employees working in hydraulic fracturing operations.

Other common Oil and Gas operations commonly associated with risk of Silica Exposure include:

- Sandblasting
- Grouting
- Fracking
- Cement Mixing (including soil cement)
- Concrete Work that creates dust including Sawing, Jack Hammering, Crushing, and grinding

A Silica Exposure Control Plan, which includes mitigations, should be developed for tasks where exposure to Silica may be greater than the OSHA Permissible Exposure Limit (PEL) of an 8-Hr TWA of 50µg/m^3. Contact the EHS department for assistance.

Reference

29 CFR 1910.1053

Sandblasting

Employees must follow the Respiratory Protection policy.

- Hose operators will wear blasting hoods with an outside air supply. Keep the eye shield clean and free of dust, fog, etc.
- Gloves, long-sleeve shirts and proper foot protection with foot guards must be worn while sandblasting.
- Never use a sandblaster without an assistant to watch the valves and hoses.
- Workers assisting with sandblasting must also wear proper protection.
- If sandblasting where a fall hazard exists, safety harnesses and lanyards must be worn and used.
- Before using sandblasting equipment, employees must make certain that air hose couplings are safety-clipped together. Air supply hoses will have a safety whip check (lanyard) on all quick-connect lines that is properly sized to prevent the hose from whipping.
- Point the nozzle at the object to be blasted. Bleed the air pressure off the lines before breaking the hose.
- The nozzle shall have a fully functional dead-man switch that has not been disabled.
- Protect rotating equipment from sand intrusion.

Lead

Employees performing maintenance activities that can potentially disturb lead-containing products such as paints or coatings must meet the minimum requirements set forth in the Lead Management Program. An action level of 30 cubic micrograms per cubic meter of air as an 8-hour TWA has been established for lead.

General Lead Requirements

- Before a contractor begins work, NOC will inform the contractor of any potential lead issues associated with the job. Contractors shall have their own program, which shall include job procedures, training, PPE, certifications/license, etc.
- Lead-containing products will not be purchased unless non–lead-containing products are unsuitable.
- Only trained employees can remove lead-containing material.
- Unknown coatings shall be tested before their removal to determine safe work practices and the appropriate level of personal protective equipment required for the job (i.e., respiratory protection and protective clothing).
- Qualitative lead test kits should be used for testing paints and/or coatings prior to work commencement.
- To minimize the potential of lead products becoming vaporized by heat, painted and/or coated surfaces should be removed before any hot work operations are performed. Removal should be a minimum of 6 inches surrounding the working area.
- Chemical removal methods should be used when applicable to reduce potential exposures.

Reference

29 CFR 1910.1025 Subpart Z

Naturally Occurring Radioactive Material (NORM)

Naturally occurring radioactive material (NORM) occurs in nature and concentration levels can be enhanced through the production of both oil and gas. NORM is primarily brought to the surface through "Piggy Backing" of larger compounds or with produced water. Dramatic changes in pressure, temperature and turbulence causes particulates to precipitate out and to form a scale. This scale is usually deposited into equipment such as produced water tanks, separators, coalescers, dehydrators, flow lines, tubing, pumps, filters, etc. and is usually located at bends, turns, changes in pipe diameter and at the bottom of the vessels.

The NOC NORM Management Program shall be followed by all NOC employees to verify that facilities are monitored to preclude employee exposure to NORM at elevated levels. Minimum requirements for NORM control measures are set forth in the NORM Management Program.

If the presence of NORM is suspected, NOC employees will reference the NORM Management Program. The program requires confirmatory radiation surveys on the affected equipment in addition to recurrent periodic surveys of NOC facilities. If survey results show elevated radiation levels as described by the NORM Management Program, then the equipment and/or material shall be treated as NORM-contaminated and special labeling, storage and disposal procedures shall apply.

All safe work practices and employee protection protocols shall be designated by individual Worker Protection Plans based on the activity and the specific radiation levels of a given facility. The Worker Protection Plan shall also specify site posting requirements, employee dosimetry, additional survey requirements and disposal of NORM-contaminated materials to licensed waste facilities. The Worker Protection Plan shall be submitted to the respective state's (or local authority's) Department of Health for review prior to employees being exposed to NORM.

Radiation Safety

- Any employee who is to operate a radioactive device requires radiation safety training and must be familiar with and have access to NOC's Radiation Safety Program.
- All employees working with densitometers are required to take a Radiation for Authorized User course.
- All employees who work in proximity to a densitometer are required to take a Radiation Awareness Course.
- A Radiation Safety Officer (RSO) will conduct radiation device inspections by leak testing.
- Qualified RSOs are the only individuals permitted to ship or receive radioactive devices.

Weed and Pest Control

The following guidelines should be followed regarding herbicide and pesticide use:

- Do not use any herbicide or pesticide unless it is approved for use by the EHS department.
- Do not use any herbicide if it contains arsenic or 2-4D.
- Do not use any herbicides on any pipeline segment or company facility that is adjacent to or intersects creeks, streams, drainage ditches, rivers, or livestock areas or is in a highly populated areas.
- Use only licensed contractors to apply herbicides or pesticides. Over-the-counter products, such as Roundup, do not require licensed applicators.
- Notify the EHS Department of proposed herbicide and pesticide application where project approval is required.
- If an outside contractor is applying herbicides or pesticides, obtain a copy of the SDS from the contractor prior to application of the substance.
- Follow the manufacturer's directions concerning the use and application of all herbicides and pesticides.
- Use appropriate PPE while working with herbicides or pesticides.
- Verify that empty herbicide and pesticide containers are not reused for any purpose other than the original use.
- There may be specific landowner requirements for application of herbicides or pesticides on lands belonging to the Bureau of Land Management, the state, or tribal lands.

Use of Approved Herbicides and Pesticides

1. Advise persons handling, applying or working around herbicides and pesticides, or areas where they have been applied, that the herbicides and pesticides are being used and contain hazardous chemicals.
2. Maintain a copy of the SDS document for the herbicide or pesticide product at the site or work location where it is being used.
3. Maintain records of applicator contractor licenses on site.
4. Encourage each employee to read the SDS document in order to become familiar with product characteristics.
5. Employees who will be handling herbicides or pesticides are required to read the SDS document.

Asbestos

NOC has established an Asbestos Management Program to control potential exposures to asbestos-containing materials (ACMs) in its facilities. Employees performing maintenance activities that can potentially disturb ACM must interface with EHS to coordinate a plan of action. Removal activities may also require notification of proper regulatory agencies.

General Asbestos Requirements

- ACMs that may be encountered on NOC facilities could include transite siding/ roofing, building or pipe insulation, gaskets, floor and ceiling tile, window caulking and pipe coating. These materials are assumed to be asbestos unless documentation and/or testing proves otherwise.
- Before a contractor begins work, NOC will inform the contractor in writing of any potential asbestos hazards associated with the job. Contractors shall be licensed in the state in which the work is to be done and shall have a formal ACM removal program that includes job procedures, training, PPE and certifications/license requirements.
- Asbestos products will not be purchased unless non-ACM products are unavailable.
- All asbestos removal (including repair/O&M jobs) will be supervised by a formally trained Competent Person. Only trained and licensed employees (as applicable to the region) can remove ACM products.
- Eating, drinking, smoking or chewing is prohibited in any contaminated work areas.
- Contact/inhalation with ACM material can be avoided by the use of protective clothing such as gloves, coveralls, rubber boots, respirators and eye protection.
- Employees should thoroughly wash exposed skin areas that may have been exposed to ACM before eating, drinking, smoking or chewing.

Reference

29 CFR 1910.1001 Subpart Z

Personal Flotation Devices

Appropriate Personal Floatation Devices (PFDs) shall be worn by all NOC employees engaged in work over water. To meet U.S. Coast Guard requirements, a boat must have a U.S. Coast Guard-approved Type I, II, III or V life jacket for each person aboard. Boats 16-ft. and over must have at least one Type IV throwable device as well.

Reference

29 CFR 1926.106 and MSHA Part 56.15020

INCIDENT REPORTING

Agency Inspection Procedures

When an inspector from any federal, state or local agency with EHS jurisdiction arrives, employees having the initial contact should:

- Verify the inspector's credentials and agency involved (local, state, tribal or federal).
- Determine basis/purpose/type of inspection.
- Notify a supervisor and the EHS Department immediately.
- As appropriate, conduct and document an EHS orientation for the facility.
- Defer inspection until supervisor arrives. If unable to contact, proceed.
- Follow all safety procedures during inspection (PPE, rules, etc.).
- Maintain detailed record of inspector's activity.
- Record same physical measurements and take same photographs as inspector.
- Permit review of records related only to inspection.
- Avoid answering question(s) that are not understood. Ask Clarifying questions as needed.
- Request abatement recommendations in closing conference.

Note: Employee has the right to refuse to be interviewed and the right to request the presence of a NOC representative when participating in an OSHA or MSHA inspection.

Internal Incident Notification Process:

All injuries, spills, fires, vehicle accidents, process safety events, thefts, property damage, and near misses (including contractors), will be reported immediately to the NOC site supervisor. In the event an incident occurs, NOC will prioritize response needs based on the acronym PEAR:

P – People. We protect People First.

E – Environment.

A – Assets

R - Reputation

When an incident occurs, employees should:

1. Determine the incident type.
2. Call 911 if necessary.
3. Make initial telephone notifications to NOC Management.
4. Submit a report into the online database within 48 hours of the event.

The Site Supervisor is responsible to ensure that all pertinent information is collected and reported to NOC Management, and the Triage Line (if applicable). An investigation will be conducted for all events with an Actual Severity or Potential Severity Level 3 or higher, and at the discretion of NOC Management Team. In the cases of high severity events, all personnel should be removed from location, and the site preserved for investigation.

All Events should be reported in the Online Database within 48-hours.

Severity Matrix

Health and Safety

Level 1&2 – No Hurt and Minor (First Aid) Injury/Illness

Level 3 – Significant Injury or Illness requiring Medical Attention

Level 4 – Fatality Accident

Level 5 – Multiple Fatality Accident

Environmental and Regulatory

Level 1 – Fluids Release Staying in containment

Level 2 – Fluids Release staying on Location, Gas Release to Atmosphere

Level 3 – Fluids Release leaving location

Level 4 – Fluids Release with receptor impact, Significant Gas Release.

Level 5 – Fluids or Gas Release with Public or Sensitive Area Impact, or any event that garners media attention.

External Notifications

Reporting Notifications to External Agencies will be made by the EHS Program Manager or a member of the NOC Management Team.

OHSA

- Employee Death – 8 Hrs
- Employee Hospitalization, Amputation, Loss of an Eye – 24 Hrs
- Contractors are responsible for OSHA reporting for their employees.

NRC

- Oil or Chemical is released into a water of the US, including wetlands that cause a sheen, discoloration, or emulsion.
- Release of Hazardous Substances >RQ

RRC

- Oil Spills into Navigable Waters
- Oil Spills >5bbls
- Hazard Substances >RQ threshold (consult EHS)
- Fires or Lightning Strikes
- Non-routine Gas releases which poses a danger to the public.

Injury/Illness Management

Navidad Operating Company will facilitate any work accommodation issued by a medical professional resulting from a work-related injury or illness.

Documentation of a "return to work" release must be furnished to the EHS Program Manager or acting Program Manager from the attending physician before an employee with a restricted duty or lost-time injury returns to work.

Note: Telephone notifications need to be made to the EHS Program Manager, acting Program Manager, or a member of the NOC Management Team as soon as practicable. Text Messages, Emails, or other forms of indirect communication are not adequate for initial reporting.
Telephone Contact must be made.

Contractors

All Contractors who perform work on NOC facilities are required to have an Injury Illness Management Policy, which includes a 24-hour triage service.

Contractors are required to provide a copy of the completed contractor incident report for incidents occurring on NOC locations or conducting business for NOC where the contractor may be stewardable by NOC.

Emergency Response

Upon identifying or being made aware of an emergency, employees must take immediate action to ensure the safety of personnel, the community, and the environment.

First Responder

Defined is the first person to discover or take a report of an emergency; this can be field or office personnel. **The First Responder is the On-Scene Incident Commander until he or she is relieved.**

FIRST RESPONDER EMERGENCY CHECKLIST

Activities	**Completed**
Ensure the safety of personnel, the community, and the environment. Call 911 or the appropriate local responder system if people are injured or the community threatened.	
Alert other personnel in the immediate vicinity by appropriate alarms, radio, or other communication. Summon help if needed.	
Evacuate the area immediately if there is a fire, explosion, or health risk due to hazardous or toxic chemicals.	
Report the incident immediately to your supervisor. If they cannot be reached, contact the next level of supervision. 24-Hour Emergency Line:**(866) 436-0545**	
Shut down operations in progress, if safe to do so. Eliminate all sources of ignition and secure area.	
Establish security, identify Hot, Warm and Cold Zones to protect the public and keep them at a safe distance.	
As soon as practical, prepare a complete and accurate report of the incident and actions taken.	
Maintain a personal activity log.	

Do not make any Public Statements. Refer all News media inquiries to the VP Projects or the NOC Executive Team.

Incident Commander

Primary decision maker during an incident; has authority to order resources and reports to the Executive Team. The IC is responsible for activating the Emergency Response Plan (ERP) to respond to the emergency.

Major responsibilities include:

- Protecting life and property;
- Performing command activities (establishing control and incident command post);
- Controlling personnel and equipment resources; and Establishing and maintaining effective liaison with outside agencies and organizations.

Incident Commander Emergency Checklist

Assess the incident using available information and determine immediate response objectives to protect people, environment, assets, and reputation.	
Staff & document the incident command organization chart, keeping it within the optimal span of control. Place org. chart and safety plan on situation display board.	
Review and reestablish, if needed, Hot, Warm and Cold Zones with Safety Officer.	
The incident command post (ICP) may be located in the Warm Zone. • ICP should provide safety and the physical assets needed to manage the incident. • Ensure critical information is displayed and/or available in the command post. • The IC spends most of their time in the ICP.	
Establish Unified Command if outside agencies assist.	
Ensure Planning Section Chief responsibilities are met.	
Establish and conduct at least two Operational Meetings per day.	
Provide relief for members of the organization.	
Notify NOC management and local authorities. Request ESG assistance if needed.	
Fill liaison officer position within command staff if government agencies are involved.	
Review and approve initial, interim, and final reports prior to submittal to regulatory agencies.	
Maintain personal activity log of incident. Ensure other Sections maintain logs as well.	

Notes

Safety Acknowledgement

I _____acknowledge that I have received, read and understand the contents of this Health Safety & Environmental Handbook, which serves as a reference for the minimum rules and standards for Navidad Operating Company, LLC.

_____
Signature of Recipient/Date

2023 Edition

24-Hour Emergency Contact Line
(866) 436-0545

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