



An **ExxonMobil** Subsidiary

SAFETY HANDBOOK



**The Safety and Health of our
workforce is a fundamental
value of XTO Energy.**

**We believe no business objective
is so important that it will be
pursued at the sacrifice of safety.**

**This Handbook provides the
minimum set of safety standards
for operations conducted on XTO
premises and applies to all XTO
employees and contractors.**



“The Way We Do Our Work”

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Safe Choice

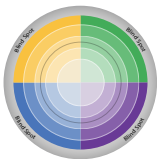
All XTO employees and contractors are challenged to make safe choices throughout all operations. Safe Choice is an enabler to engage in the challenge by understanding decision-making styles of the workforce, utilizing a heads before hands approach, and exercising fast vs. slow thinking during low and high risk operations.



Heads before hands

HEADS BEFORE HANDS

Making a commitment to use your head before your hands is a foundation for making safer choices. The most valuable asset that the workforce has to make critical decisions during low and high-risk operations is the brain.



MAKING SAFE DECISIONS

Knowledge about your personal decision-making style and recognition of when to engage in the other decision-making processes is critical to making safer choices. Decisions made can have a significant impact on your safety and the business (Analytical, Behavioral, Conceptual, and Directive).



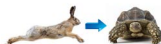
BIAS IN THE WORKPLACE

Bias is a preconceived opinion or thought that can impact daily decisions and jeopardize safety. Recognition of a bias mindset can improve the safety of operations.

Safe Choice

FAST vs. SLOW THINKING

Explores how our brains move back and forth from fast thinking to slow thinking, and when each is necessary to avoid incident and/or exhaustion.



TOOLS

The existing tools allow the workforce to make safe choices and facilitate conversations around tools that focus on using our heads before hands.



LEARNING TO MAKE SAFER CHOICES

Valuable experiences provide a resource to create conversation. Continuing to share lessons learned and observations are critical to continued improvement and advancement of XTO's safety culture.



COMMITMENT

It takes a commitment by all employees and contractors to maintain a safe place to work. The safe choices that occur on a daily basis will compound within the workforce, resulting in everyone going home safely every day.



RULES AND RESPONSIBILITIES

RESPONSIBILITIES

All personnel are required to understand and follow the requirements in the Safety and Health handbook.



XTO holds all personnel responsible to exercise **STOP WORK AUTHORITY** when unsafe conditions or actions are observed.

Management/Supervisor Must:

- Communicate and enforce ExxonMobil Corporate Policies and XTO Safety, Security, Health, and Environment (SSHE) standards and guidelines as outlined in this handbook;
- Hold and document monthly safety meetings;
- Perform Safety, Health, and Environment (SHE) assessments and promptly correct any substandard conditions or performance;
- Hold personnel accountable to SSHE expectations through the annual performance review, counseling, and disciplinary action;
- Report, investigate, and trend incidents, near misses, and observations in their Business Unit's; and
- If an XTO employee is injured, follow XTO Care Management Process.

Employees Must:

- Commit to injury prevention, environmental protection, and protecting company property/reputation;
- Understand and adhere to all ExxonMobil Corporate Policies and XTO SSHE standards and guidelines as outlined in this handbook;
- Immediately report all incidents to their supervisor;
- Actively engage and participate in SHE assessments and safety meetings;
- Promptly stop and correct any substandard work conditions or performance;



Plan work activities with coworkers, utilizing tools like JSA and **Last Minute Risk Assessments (LMRA)**, considerations for permitting requirements, work scope timelines, and identifying job site hazards;

- Properly utilize all safety equipment;
- Maintain fitness for duty; and
- Promptly notify supervisor of all safety and operations incidents, near misses, and unsafe site observations.

Contractors Must:

- Have SHE programs in place that meet or exceed XTO requirements;
- For work-related injuries, a Care Management process must be followed;
- Ensure contract employees and subcontractors understand and comply with XTO's SSHE requirements (including those listed in this Safety Handbook), as well as all governmental laws, rules, and regulations applicable to their business;
- Obtain approval or work authorization from an XTO Representative prior to commencing work and/or operating any equipment;
- Immediately report incidents (injury, spill, fire, property damage, near miss, etc.) to their XTO Representative;
- Provide their employees with and verify correct usage of safety equipment;
- Assume responsibility for subcontractors they employ to provide services to XTO;
- Confirm all contractor employees and subcontractors are properly trained and fit for duty.

Higher-Risk Contractors, as defined in OIMS System 4, (Contractor Interface), are required to have the following:

- 1. SHE Program** to outline required SHE, operational, and regulatory trainings, and roles and responsibilities of management, employees, and subcontractors;
- 2. Alcohol & Drug Program** to meet or exceed XTO's Alcohol and Drug Policy;
- 3. Incident Management Program** to provide guidance on incident reporting, investigation, and action item follow-up;
- 4. Injury and Illness Case Management Program** to outline restricted and light-duty options, and methods to prevent injuries from escalating;
- 5. Environmental Program** to address responses to and clean-up of environmental releases;
- 6. SHE Self-Assessment Program** to ensure XTO's expectations are being met;
- 7. Training & Skills Program** to ensure employees are competent in safety and operational tasks they may be asked to perform at XTO; and
- 8. Process to ensure Subcontractors** meet or exceed minimum XTO SHE expectation requirements.

Note: See OIMS System 4 for additional guidance.

RULES AND RESPONSIBILITIES

RULES

Applies to all personnel on company premises.

Personnel Safety Rules:

- No work may be started in any area or on any equipment without the knowledge and consent of the XTO Site Supervisor;
- Do not operate equipment on which you are not trained;
- Use of medications that might impair your ability to work safely must be reported in advance to your supervisor. Refer to Fit for Duty guidelines for more information;



XTO holds all personnel responsible to exercise STOP WORK AUTHORITY when unsafe conditions or actions are observed;

- Always utilize proper lifting techniques and mechanical lifting aids to reduce likelihood and severity of soft tissue injuries;
- Remove any jewelry or watches and secure loose clothing and long hair prior to close proximity of any unguarded machinery, rotating pipe, or exposed electrical equipment; and
- Suspend operations when lightning is within 6 miles or when high winds or other severe weather make conditions unsafe to operate.

Site Safety Rules:

- Horseplay or fighting is strictly prohibited on all company premises;
- Smoking and use of e-cigarettes is permitted only in designated areas;
- Climbing, standing on, or working from items such as piping or valves is not allowed unless approved through work authorization;
- Walking on and working from the top of storage tanks is not allowed unless approved through work authorization. If one must work on top of a tank, tank integrity shall be verified and proper fall protection utilized; and
- Barricade hazardous areas, such as holes in decking and work areas, trenches, overhead work areas, and hazardous storage.

RULES AND RESPONSIBILITIES

Tools and Equipment Safety Rules:

- Maintain and visually inspect tools, including safety equipment, prior to use and ensure the correct tool is selected prior to the job;
- Never operate unsafe equipment or equipment that has been tagged, "**Danger, Do Not Operate**";
- Under normal conditions, equipment must have all guards, safety switches, and alarms in place and functioning;
- Do not use plastic cups or buckets while drawing samples or pressurized hydrocarbons or blowing down equipment to prevent accidental static discharge. All containers shall be clearly labeled if left unattended.

ALCOHOL, DRUGS, AND WEAPONS

Drugs, Intoxicants, and Weapons (Refer to the XTO Alcohol and Drug Policy for additional information.)

- The illegal use, possession, sale, purchase, transfer, or being under the influence of alcoholic beverages, illegal drugs, or other intoxicants while on company business or company premises is strictly forbidden.
- The possession of firearms, explosives, or other deadly weapons, including concealed open carry permit holders, on company premises, including in vehicles or while conducting company business, is strictly forbidden. (Excludes Corporate and Business Unit Offices for firearms concealed in personal vehicles).
- Entry onto company premises constitutes consent to, and recognition of, the right of the company to conduct searches for intoxicants, illegal drugs, deadly weapons, and/or explosives.
- Violation of these policies or failure to cooperate with a search request may, for an XTO employee, result in disciplinary action and possible termination, and, for a contractor, result in removal from the company premises.

PROCESS SAFETY

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 failures 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 need to sharpen our focus on process safety.

What is Process Safety?

Process safety is the combination of people, processes, and equipment working together to keep our produced gases and liquids in the pipeline, tank, or other equipment where it is meant to be.

Why do we care about Process Safety?

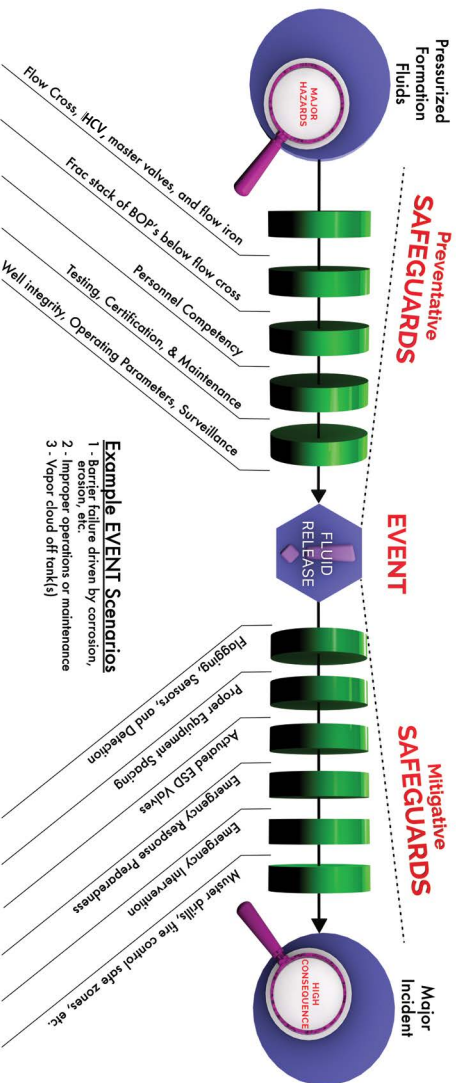
We care about Process Safety because when our produced fluids are released, bad things may happen, including fires, explosions, personnel injuries, environmental impacts, and injury to the public.

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, leading to a public evacuation or injury to a member of the public;
- Overfilling storage tanks, leading to environmental impacts.

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

1. Disciplined use of our XTO 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".



PROCESS SAFETY ACROSS XTO ENERGY

- Major Incident Consequences
- 1 - Fire/Explosion from well in proximity to people
 - 2 - Toxic release in proximity to people
 - 3 - Long duration spill/release to environment

PROCESS SAFETY

CRITICAL SAFETY DEVICE RULES

Shutdown devices, relief valves, or sensors must not be left in the blocked or bypassed position while the related system or equipment that is being protected is in operation, unless:

- Increased monitoring or surveillance is provided; or
- The facility supervisor has authorized temporary bypassing of the device.

Extensions of temporary bypasses must be authorized by the superintendent over the facility. **Document and file these authorizations locally.**

Note: See OIMS 10, Process Safety and Mechanical integrity, for additional guidance.

LIFE SAVING ACTIONS

LIVE SAVING ACTIONS OVERVIEW

Certain tasks performed in our business pose risk of serious injury or death if not performed correctly every time. To accomplish that, XTO has adopted the following Life Saving Actions.

This handbook will expand on each section in detail to be referenced through the handbook and serve as interrupters and to engage slow thinking.



Work Authorization and **Safe Work Practices** are considered the 'book-end' actions applied to **ALL** activities to manage risk.

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

LSA - WORK AUTHORIZATION

WORK AUTHORIZATION

Only do Work that is Authorized & Follow The Permit & JSA as Necessary

- Obtain authorization from XTO Site Supervisor
- Clearly describe the work scope
- Perform a pre-job safety meeting
- Complete the LMRA, JSA, and/or permit
- If the work scope changes, **STOP**, update and reauthorize the JSA and/or permit before resuming any work.



What Is Work Authorization?

The process of planning, preparing, executing, and closing out and reviewing higher-risk activities associated with the Life Saving Actions.

- Identifying and utilizing all appropriate procedures and tools throughout the task.
- Focuses on notifying appropriate personnel.
- Unless otherwise indicated, the XTO 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 XTO 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 LMRA 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 on line. Discussion is held on what went well and what could have been done better.

LINE OF FIRE

Be Aware of Your Surroundings

- Establish and adhere to barriers and 'no go' zones
- Engage when others are in the line of fire
- Position yourself to avoid:
 - Moving objects & rotating equipment
 - Vehicles/equipment
 - Pressure releases
 - Breaking containment hazards
 - Dropped objects
 - Stored energy



What Is 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 an LMRA and ensure situational awareness;
- 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

LSA - ENERGY ISOLATION

ENERGY ISOLATION

Lock, Tag, Verify & Demonstrate Zero Energy

- Develop and follow the isolation plan
- Select competent personnel for the task
- Verify and demonstrate zero energy
- Confirm equipment is back to safe operating condition



What Is **Energy Isolation**?

Energy Isolation is the act of locking and tagging, verifying, and demonstrating zero energy sources prior to starting work. When energy sources are not controlled, personal injury, property damage, and environmental damage can take place due to the unexpected release of energy.



Work Authorization required for most instances where an Energy Isolation incident could occur.

ENERGY ISOLATION SAFETY PROCESS:

Identify/Plan:

- Identify all potential energy sources.
- Use trained personnel for the specific task.



Line of Fire/Process Hazards.

- All necessary energy isolation documents needed for reference

Verify/Prepare:

- Close/open energy isolating devices to ensure energy isolation.
- Energy isolation device is secured with the use of locks and tags.
- Ensure keys are secure.
- Confirm/verify zero energy.
- Communicate to appropriate personnel that equipment has been taken out of service.

Perform Task/Execute:



Continuous awareness of Line of Fire/Process hazards

Closeout/Review:

- All work has been completed and communicated.
- Restore any bypasses and return equipment to normal operating configurations.
- Start-up system and monitor for leaks/integrity and be mindful of body positioning for Line of Fire. 
- Notify appropriate personnel equipment is back in service.

Opening Process Equipment (Breaking Containment)

Opening Process Equipment refers to the intentional opening/releasing of energy and/or substances stored within systems such as hydrocarbons, chemicals, air, steam, fluids, and gases - after appropriate preparation. Prior to opening a system, reasonable attempts to isolate energy sources and/or depressurize, drain, vent, purge, etc., must be made in an effort to minimize exposure to hazardous chemicals or pressure. This excludes routine tasks such as tank gauging.

If simultaneous operations (SIMOPS) are taking place in the immediate area, and if a hazardous atmosphere or condition could be released, SIMOPS shall be halted while opening process equipment.

Spill containment measures should be in place if there is a potential for liquid release. Proper PPE must be utilized to protect the worker from pressure and splashing. Stand to the side and use defensive body posture when opening a system under pressure. Respiratory protection may be needed if opening systems, pipes or pumps that may contain H_2S , benzene, or other hazardous chemicals.

Depressurization & Draining of Equipment

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

Prior to tightening, hammering, or working on equipment under pressure, it must be depressurized. This is true when threaded connections are part of the system under pressure. Care must be taken to not overstress connections that contain pressure.

LSA - ENERGY ISOLATION

Lockout/Tagout

Lockout/Tagout procedures must be followed prior to performing servicing and maintenance activities on equipment or processes where the unexpected energization of equipment could cause injury to a worker. Energy sources must be identified and then controlled using locking devices and/or tags before working on equipment.

Sources of energy include: electrical, mechanical, hydraulic, pneumatic, or contained pressure.

Equipment that may require lockout/tagout includes: pumping units, electric motors, engines, compressors, liquid or gas pumps, piping, vapor recovery units, water filtration systems, electrical control systems, etc.

Lockout/Tagout General Requirements:

- All locks, tags, and other hardware will be provided by XTO Energy to employees, or equivalents, and be available at all times.
- There will be only one key for a lock or set of locks that are assigned to or checked out to an employee. The employee must keep control of the key at all times.
- Each tag placed will include:
 - Name of the person who applied it;
 - Date the tag was installed; and
 - Indication of Condition to be avoided (e.g., Danger Do Not Operate, Do Not Start, Do Not Open, Do Not Close, Do Not Energize, etc.).
- Locks and tags shall not be used for any other purpose than lockout/tagout.
- Only the person who placed the lock and tag in service is authorized to remove it. Supervisors may remove an employee's lock and/or tag if:
 - The supervisor has made multiple attempts to contact the employee and receive permission to remove the lock/tag or has asked the employee to remove the lock/tag themselves;
 - The supervisor walks through the lockout/tagout package and is certain they know when, where, and why the system was locked/tagged; and
 - The supervisor documents actual and attempted communication with the employee and documents the removal of the lock/tag, communicating the removal when the employee returns to work.

LSA - ENERGY ISOLATION

- In the event of a shift or personnel change during maintenance or repair activities, the designated XTO Representative in charge shall take necessary steps to maintain the continuity of lockout/tagout protection. Ensure that procedures are adhered to and the transfer of lockout/tagout devices between authorized employees is accomplished.

Lockout/Tagout Preparation & Installation

Utilize the **Lock-Tag-Clear-Try** concept when performing Energy Isolation.

- Survey the work area and equipment for isolation points.
- Shut down the machinery or equipment that is to be worked on.
- Physically close, turn off, blind, or isolate any energy source that may cause the equipment to start up or, energize.
- Reviewing process flow diagrams may assist in locating isolation points.
- Do not use threaded connection points for isolation points if the threaded connection point could come unscrewed.
 - o Example Scenario: A solid body ball valve with threaded connections is used to isolate gas pressure in preparation to remove a downstream motor valve. As the motor valve is unscrewed, the ball valve also unscrews, releasing trapped pressure.
- Render safe any stored hazardous energy by relieving, disconnecting, or restraining it.
- Place a lock and tag on each energy isolation device.
- **Verify that the equipment is not operable and zero energy is achieved.**

Lockout/Tagout Group Process

Where multiple persons or work groups are involved in the isolation of energy from a system, one person must be identified as having overall responsibility for coordinating the energy isolation.

This person will ensure at least one person from each authorized group has a lock (or tag) attached to the energy isolation control device. They will also verify that all individual and group locks (or tags) have been removed prior to removing the overall control device and energizing the system.

LSA - ENERGY ISOLATION

Lockout/Tagout Process Returning Equipment to Service:

- Reinstall all guards.
- Ensure electrical wiring and systems are reinstalled and meet regulatory requirements.
- Remove all blind flanges or skillets, and reconnect piping.
- Inspect area, verifying that all equipment components are operationally intact and tools and equipment have been removed.
- Notify workers in the area that energy isolation has been removed.



Ensure all employees are safely positioned and out of the Line of Fire.

- Remove locks and tags from each energy isolation device.
- If authorized to start up machinery or equipment, commence start up.

Personal Isolation

Personal Isolations can be performed for lower risk, short-duration tasks such as taking samples, isolating instruments, replacing pressure gauges, replacing small filter cartridges or small valves, working on small inhibitor pumps, small lighting circuit jobs, and other similar jobs.

The personal isolation must provide exclusive control of the personnel performing the work. Isolations should be visible to the worker and, if not visible, the isolation point must be locked and tagged.

Key Points for Personal Isolation Consideration:

- Designed for low-risk, short-duration tasks that must be completed within 1 shift.
- Isolations should be visible to the worker and, if not visible, the isolation point must be locked and tagged.
- **Person performing the work must verify zero energy.**
- Person conducting the work must be present at all times until the isolation is removed.
- If the person conducting the work has to leave the work location; the system must be fully locked and tagged, including sealing all open-ended piping (capping, plugging, installation of flanges, etc.).

Energy Isolation Regulatory Reference:

- 29 CFR 1910.147

HOT WORK

Manage Flammable Materials & Gas Test Continuously

- Complete and follow the permit
- Confirm Hot Work Safeguards
- Remove all flammable or combustible materials
- Gas test prior to starting work and continuously monitor atmosphere
- Ensure competent Fire Watch is present when required



What Is Hot Work?

Hot work is defined as work involving electric or gas welding, cutting, brazing, or spark-producing operations in classified areas.

Work Authorization

required for any Hot Work activity in a classified area.



Classified areas are defined as:

- **Open flame** (to include welding, cutting, brazing, and grinding) within **35 feet** of any potential hydrocarbon source.
- **Other possible ignition sources** (to include but are not limited to: spark-producing devices; electrical hand tools; non-intrinsically safe electrical devices; vehicles; and open or exposed, energized electrical junction boxes) within **10 feet** of any potential hydrocarbon source.

Note: For vehicles and small mobile engines, i.e., weed eaters and mowers, a permit is not required if the area has been checked and is free of flammable vapors.

Note: Refer to the SOPs for specific spacing requirements.

Potential hydrocarbon sources may include, production facilities, pipeline connections and valves, or wellhead; rig floor and substructure, mud pumps, mud pits, degasser, stored flammables; tanks or vehicles that transport hydrocarbons, such as vacuum trucks and fuel tanks.

HOT WORK SAFETY STANDARDS:

Planning for Hot Work

- Move hot work activities away from classified areas if practical to do so.
- If hot work is required, determine what hazards may be encountered, what energy sources may need to be isolated, and which safeguards need to be put in place.

LSA - HOT WORK

- Work in classified areas using open flame, welding, hot tapping, burning, grinding, blasting, opening energized electrical boxes, portable spark producing devices, portable heaters, and non-intrinsically safe hand tools requires a written hot work permit.
- If welding on vessels, flowlines, wellheads, casing, tubing, or main structural members, ensure the welder qualifications are met.

Note: Refer to Welding & Cutting section of this handbook.



Work Authorization (Permitting)

- Fill out the top portion of the hot work permit and indicate what type of work is being performed.
- Review, perform, and check off the relevant items in the Special Precautions section of the hot work permit.
- Perform initial atmospheric monitoring using a direct reading instrument capable of LEL and oxygen measurement. Record initial readings on hot work permit.
- Hot work activity must start within 30 minutes of initial atmospheric monitoring.
- Hot work shall not be performed if LEL measurements exceed 10% at any point in the hot work process.
- Conduct a pre-job safety meeting, communicating permit requirements, energy isolation applications, initial atmospheric conditions, job positions, and responsibilities, such as Fire Watch and other pertinent information.
- Once all personnel review the permit conditions and find site preparation, atmospheric conditions, and job duty assignments acceptable, each person must sign the permit.
- The XTO Site Supervisor or designee must sign the hot work permit once they have verified all permit conditions have been met.
- Follow atmospheric monitoring requirements found in the LSA confined space section.
- The duration of the permit is dependent upon end of shift, and/or emergency conditions.

Preparation for Hot Work

Block, isolate, and depressurize sources of flammability or energy that could put the hot work area at risk of fire or explosion. This may include header piping, closed loop drains, contaminated soil, etc. Refer to the Energy Isolation section for additional guidance.



LSA - HOT WORK

- Purge, steam, wash, or otherwise clean the area in an attempt to reduce flammable vapors and gases to <10% LEL.
- Ensure needed equipment, such as fire extinguishers, additional fire protection equipment, rescue equipment, scaffolding, ladders, ventilation equipment, etc., is on site and ready for use.
- Flashing pipe during repairs is allowable if all attempts to remove flammables have been made and all sources of oxygen introduction (e.g., tanks, vents, process equipment openings, etc.) have been isolated. LMRA shall be conducted prior to flashing pipe.
- Inspect welding and cutting equipment prior to use to ensure bottles, valves, hoses, leads, etc. are in proper working order.

Fire Watch During Hot Work

- A fire watch is required to be at the work location with proper fire protection equipment for all welding and cutting operations.
- The functions of fire watch are to monitor the area for fires caused by welding and cutting, extinguishing any incipient fires, and conducting atmospheric monitoring. No other functions may be performed by the fire watch.

During Hot Work

- Review the work in progress, continuously monitor at the point of operation (and document periodic intervals, not to exceed 30 minutes) for the entire duration of the hot work activity.
- If LEL >10% is detected, the job must be shut down, the permit canceled, and no work is allowed to commence until the LEL drops below 10% and a new hot work permit is completed.

Restoration of Site After Hot Work

- Immediately inspect the work area to ensure no fire, sparks, or hot spots are present.
- Fire watch is required to stay on site for 30 minutes after hot work ceases.

Return the completed permit to the XTO Site Supervisor for record purposes and restore the area to normal operational conditions.

Hot Work Regulatory Reference:

- 29 CFR 1910.252-254

LSA - CONFINED SPACE

CONFINED SPACE

Establish & Maintain Safe Entry Conditions

- Determine if space is permit/non-permit
- Develop and follow atmospheric monitoring plan
- Assign competent personnel
- Ensure rescue plan is in place and ready to execute



What Is Confined Space?

A confined space is defined as having **ALL** of the following characteristics: 1) is large enough and so configured that a worker can bodily enter and perform work; and 2) has limited or restricted means for entry or exit; and 3) is not designed for continuous human occupancy. Some common examples of confined spaces:

- Storage tanks, mud pits, well cellars, process vessels, boilers, septic tanks, sewers, utility tunnels, pipelines, and open-topped spaces ≥ 4 feet in depth such as trenches, pits, vaults, valve boxes, electrical pull boxes, etc.

A **permit-required confined space (PRCS)** has all of the characteristics of a confined space, plus any one of the following: 1) contains or could contain a hazardous atmosphere; or 2) contains a material that could engulf an entrant; or 3) has an internal configuration which could entrap an entrant; or 4) contains any other recognized serious safety or health hazard.



Work Authorization

required for any confined space entry.

No entry is allowed in a PRCS until an XTO Superintendent has been notified and a written permit has been issued by a XTO Site Supervisor.

CONFINED SPACE SAFETY STANDARDS:

Planning for Confined Space work

- The space must be inspected and tested to ensure one of the four characteristics of PRCS is not present. If the space poses no actual or potential atmospheric hazards, and if all hazards within the space are eliminated without entry into the space, the permit may be "downgraded" to a non-permit confined space.

LSA - CONFINED SPACE

- The basis for determining that all hazards have been eliminated must be documented on the confined space entry permit.
- Where PRCs exist, the man-way/entrance shall be marked with, "Danger, Permit-Required Confined Space, Do Not Enter".
- Determine if the work can be accomplished without making entry into the confined space.
- If entry is required, identify potential hazards, what personnel may be needed, and time needed to clean or purge the space.

Space Preparation Phase

- Block, isolate, and depressurize energy sources such as gas pressure, flammable vapors, electrical, etc.
- Disconnection and blinding shall take place as close as possible to the permit space. Double block and bleed can be used as an isolation technique, if necessary. Refer to the Energy Isolation LSA for additional guidance.
- Upon opening an entrance or man-way to a confined space, post a "Do Not Enter" sign at the entrance.
- Purge, steam, wash, or otherwise clean the space of hazardous atmospheres, products, or wastes to sufficiently free the PRCs of contaminants. Dispose of waste properly.

Atmospheric Monitoring Phase

- Atmospheric monitoring instruments shall be calibrated in accordance with manufacturer instructions and bump/function tested prior to entry.
- When possible, initial atmospheric monitoring should be accomplished with the worker outside the space. If a worker must enter the space to conduct initial monitoring, a cascade work-line system or self-contained breathing apparatus (SCBA) must be required and a lifeline or other rescue equipment must be attached to the worker. See Respiratory Protection section for additional information.
- Check atmospheric conditions at various levels and/or points within the space to ensure conditions are consistent throughout the space. (**Note:** If mechanical ventilation is present, it must be discontinued when conducting initial atmospheric tests in order to establish a baseline test.)

LSA - CONFINED SPACE

- Atmospheric monitoring must be done:
 - Prior to entry;
 - Continuously during the duration of the task;
 - Documented at a minimum of 30 minute intervals;
 - After each break or interruption of work;
 - At shift change; and
 - Following a worker complaint or concern.

Authorized entrants are allowed to enter a PRCS within the following criteria:

- *Oxygen Range* - Minimum 19.5% - Maximum 23.5%
- *Lower Explosive Limit (LEL)*:
 - <10% of LEL is safe for entry without respirator.
 - >10% of LEL is unsafe for entry. Only rescue personnel may enter.
- *Toxic or Hazardous Gases*:
 - Hydrogen Sulfide (H₂S): 5 ppm for 8 hour time weighted average (TWA).
 - Benzene: 0.5 ppm for 8 hour TWA.
 - Carbon Monoxide (CO): 50 ppm for 8 hour TWA.
 - Any other atmospheric condition that is IDLH.
- *Temperature*
 - Maximum air temperature: 125°F (51°C)
 - Maximum surface or wall temperature: 140°F (60°C)
- *NORM*
 - Worker protection plan required if NORM is above 50 µR/hr.
 - Refer to the NORM section and involve your SHE Representative if NORM contamination is expected.
- If initial atmospheric monitoring indicates the presences of a hazardous atmosphere, the hazardous atmosphere must be managed to an acceptable level prior to entry. **Note:** If using mechanical ventilation, air driven or Class 1, Division 2 (explosion proof) fans must be used in an LEL environment.
- Ensure exhaust and contaminants such as carbon monoxide are not expelled into the confined space if using internal combustion engines for power.

Prior to Entry Phase (into a PRCS)

- The XTO Confined Space Site Supervisor and SHE staff must review the aspects of the job, known hazards, and roles and responsibilities with the attendant, authorized entrant(s), and rescue personnel.
- Emergency evacuation alarms, calls, or sounds must be established and communicated.

LSA - CONFINED SPACE

- Emergency evacuation equipment must be inspected, in proper working order, and immediately available at the work site.
- Fire extinguishers or other fire fighting equipment must be inspected, in proper working order, and immediately available for use when working in potentially flammable conditions.
- A safe means of entry and exit must be provided when the space is occupied.
- Ensure lighting and other electrical equipment is intrinsically safe and protected by ground-fault circuit interrupter (GFCI).
- Bond and ground equipment that could produce static electricity.

Entry Phase (into a PRCS)

- The XTO Confined Space Site Supervisor shall review the confined space entry permit for completeness, sign it to authorize entry, and post the permit in a conspicuous place at the work site.
- Entrants are authorized to enter the PRCS only after the written confined space entry permit is signed by all workers associated with the entry, and authorized by the site supervisor.
- Authorized entrants must wear a full-body harness with attached horizontal retrieval life line or, in the case of vertical entries ≥ 4 feet in depth, attached to a vertical hoisting system.
- Rescue services shall be on site while a PRCS entry is in progress.
- Once personnel enter the confined space, the "Do Not Enter" sign must be replaced with, "Danger, Confined Space Entry in Progress. No Unauthorized Entrants." The sign must be in place until the entry is complete and personnel have exited the PRCS.
- If the permitted space is left unattended, the entrance shall be blocked or secured.
- The XTO Confined Space Site Supervisor or Attendant shall terminate the permit if: 1) unauthorized personnel enter the space; 2) emergency conditions not allowed under the permit arise in or near the space; 3) a shift change takes place; or 4) operations covered by the permit are complete.

Review/Closeout

When all work is completed, the permitted space must be restored to normal operational conditions. Use the written permit as a checklist for proper restoration. The XTO Confined Space Site Supervisor will review the work and restoration of the permitted space.

Confined Space Regulatory Reference:

- 29 CFR 1910.146

LSA - WORKING AT HEIGHTS

WORKING AT HEIGHTS

Wear a Harness With 100% Tie-Off and Secure Tools & Materials

- Be competent in the use of fall protection
- Inspect all equipment
- 100% tie-off while Working at Heights
- Secure all tools and materials
- Develop and understand rescue plan



What Is the Definition of Working at Heights?

Working surfaces ≥ 4 feet is defined as working at heights and requires guardrails and/or personal fall arrest systems.



Work Authorization

required for any Working at Heights exercise.

WORKING AT HEIGHTS SAFETY STANDARDS:

- Fall arrest systems are required with any work ≥ 4 feet, where guardrails and toe boards or approved fall restraint systems are not in place. Exceptions to this rule are portable ladders, and may include truck beds and trailers when it is not reasonably feasible to employ fall protection measures.
- While working at heights it may be necessary to use dual positioning lanyards to ensure 100% tie-off, especially during transitioning from one tie-off point to another.
- Deceleration devices and/or self-retracting lanyards (SRL) should be used in combination with fall arrest systems.
- Waist-belts and non-locking snap hooks are prohibited.
- Before donning components of a fall arrest system, inspect the components for wear, tear, and functionality.
- If the components of the fall arrest system fail inspection, remove the component from service and ensure it is destroyed or rendered inoperable.
- When utilizing fall arrest systems around mobile equipment, such as a drilling rig or well-servicing rig blocks, establish safe working procedures to ensure the systems do not become entangled in the moving equipment or the worker is not pulled off their working platform.

LSA - WORKING AT HEIGHTS

- All working platforms ≥ 4 feet are required to have a self-closing gate at the ladderway access point that contains a top and mid rail. Stairways and catwalks are not considered working platforms.
- Tether tools or objects when there is a possibility of personnel working below.

- When possible establish a 'no go' zone beneath overhead work (Line of Fire).



- Do not leave unsecured objects on handrails or floors.
- When utilizing a fall arrest system, a buddy system is required for rescue purposes.
- Never use fall arrest equipment to hoist equipment or materials.
- Walking on and working from the top of storage tanks is not allowed unless approved through work authorization. If one must work on top of a tank, tank integrity shall be verified and proper fall protection utilized.

Ladder Safety:

- Must be inspected prior to use and taken out of service and either repaired or replaced if damage is observed.
- When ascending or descending a ladder, face the ladder and maintain 3 points of contact with hands free of materials.
- Metal ladders must not be used around electricity and shall be labeled, "Not for Electrical Use."
- If work from a ladder is long term in nature or requires heavy physical exertion, other methods such as scaffolding or personnel lifts should be used.
- **Portable Ladders** must be Class 1A rated with a minimum capacity of 300 lbs.
 - **Non self-supported ladders** shall be positioned at no less than a 4:1 vertical to horizontal ratio, secured to prevent movement while the ladder is occupied, and extend 3 feet past the point of support when accessing a working surface such as a roof.
 - **Self-supported ladders** must be used with the spreader bars in the locked down position, never as a straight ladder.
 - Never stand on the top two steps of a **self-supported ladder**.
- **Fixed Ladders** - all newly installed fixed ladders ≥ 24 feet shall be equipped with a personal fall arrest system.

LSA - WORKING AT HEIGHTS

Personnel Lift

- Only trained and qualified personnel are allowed to operate personnel lifts.
- If working in congested areas, utilize spotters to control foot traffic in the drop zone or guide the lift into tight spaces.
- Use only equipment that is load rated and designed by the manufacturer for personnel lifting.
- Operating instructions for personnel lifts must be made immediately available, in either written or electronic form.
- Personnel must work with both feet securely on the floor of the platform and wear a fall arrest system.
- Standing on the platform railing or working from a ladder placed in the personnel lift is prohibited.
- Entrance gates or chains must be closed or secured before moving the lift.

Scaffolding

- A competent person must be appointed to oversee scaffolding erection and disassembly.
- Scaffold must be inspected by a competent person and documented before use. Tag must be affixed to scaffold.
- Use only heavy-duty pole and coupler scaffolds.
- Scaffold footing shall be sound, rigid, and capable of sustaining the maximum intended load. Unstable objects such as bricks, blocks, or boxes must not be used for scaffold footing.
- Scaffold heights greater than 4 times the base width must be properly secured to the working structure.
- Working from portable ladders on the scaffold platform is prohibited.
- Guardrails shall be utilized at any height. Toe boards must be installed on platforms that are ≥ 10 feet above ground level or walkways that are ≥ 4 feet above ground level.
- Fixed or secured extension ladders must be used to access scaffolding.
- Follow manufacturer instructions/requirements when building or reinforcing scaffolding.

Working at Heights Regulatory References:

- 29 CFR 1926 Subpart M
- 29 CFR 1910 Subpart D
- 29 CFR 1910.67

LSA - LIFTING AND RIGGING

LIFTING & RIGGING

Use Certified Lifting Gear & Stay Clear of Suspended Loads

- Inspect equipment/gear prior to use
- Document Critical Lifts & follow the plan
- Assign competent personnel for lifting, rigging and signaling
- Control the lift area and pathway - stay out of the Line of Fire



What Is Lifting and Rigging?

The term used to describe Lifting Units (cranes, forklifts, excavators, hoist/chain blocks, and winches) and Lifting Gear (components used between the lifting unit and the load, slings, chains, shackles) that may be used simultaneously or individually.

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

Critical Lift Plans must be prepared for "Critical" lifts

- A Critical Lift Plan can consist of legible drawings, specification, and procedures as necessary to accurately access lifting unit configuration, load factors, and site factors to ensure the safety of the proposed lifting activity.
- The Critical Lift Plan must always be reviewed by an XTO Site Supervisor or designee during the toolbox talk to ensure understanding by those involved.

Work Authorization

required for any lifting and rigging operation.



LIFTING AND RIGGING SAFETY STANDARDS:

Prior to any Lifting or Rigging activities, personnel must be trained and qualified in the proper use and limitations of equipment and have a complete understanding of hand signal meanings, if utilized.

LSA - LIFTING AND RIGGING

Lifting Standards

- Only use trained and qualified personnel when performing lifting and hoisting activities.
- Inspect all lifting equipment prior to operation to ensure all components are functioning properly. Immediately remove defective equipment from service and report to the XTO Representative.
- Never exceed the rated capacity of equipment and rigging.
- Reduce the likelihood of a failure by knowing the actual or close approximate weight of an object as well as the size, shape, and center of gravity.



Operators must maintain line of sight to the riggers/spotter. Stop operations if line of sight is lost.

- Avoid the Line of Fire by never standing, walking, or placing body parts under a suspended load. Employees are considered to be under the load if the load is above their waist and within arm's length.
- Anticipate shifting/swinging loads and potential crush points that could put an individual at risk of injury from potential Line of Fire situations.
- Utilize tag lines (Hands Free Technique) to control loads and remove personnel from potential Line of Fire situations.
- If working with any lifting equipment, NO PART OF A BOOM, MAST, CABLE, LOAD, OR OTHER LIFTING/RIGGING EQUIPMENT IS ALLOWED WITHIN 10 FEET OF AN ENERGIZED POWER LINE of ≤ 50 kV. See the Electrical Safety section for additional guidance. For distance calculations ≥ 50 kV, consult a qualified electrician.
 - If equipment contacts an energized power line, do not dismount the mobile equipment unless immediate danger, such as fire, is present. If one must dismount, jump from the equipment, landing as far away from the equipment as possible with feet together.
- Never leave unattended loads suspended in the air.

Rigging Standards

- Use only properly rated slings, wire rope, chains, clevises, lifting points, etc., for rigging applications.
 - Verify wire rope rigging is marked with date of manufacture, serial number, and load rating.
 - Prior to using lifting slings and chains, load capacity tags and test certifications must be identified and readily available.

LSA - LIFTING AND RIGGING

- 2-Part shackles (Screw Pin or Round Pin Type) shall not be used for “permanent” or “extended duration” rigging situations, or in any application where the pin can roll under load and unscrew. In these situations, a 4-Part shackle must be utilized.
- Refer to manufacturer’s rating tables prior to using rigging because the capacity of the sling changes based upon angle and method of attachment.
- For Non-Standard Rigging (NSR) situations, caution should be taken when rigging loads without predetermined/designed anchor points where the center of gravity is unknown as these loads could shift unexpectedly.
- Protect rigging from sharp edges and surfaces that may cause abrasions or cuts.
- Avoid sharp bends in rigging.
- Never tie knots in wire rope or slings to splice or shorten them.
- Never place bolts or other materials in chains to splice or shorten them.
- Attach cable clips properly. When attaching U-bolts to a wire rope, ensure the saddle is on the live side and the U is on the dead side. Never saddle a dead horse.
- Always set loads on proper blocking; never directly on rigging.
- Designate a rigging storage area on the vehicle or in the shop to reduce likelihood of accidental damage.
- Contractors are responsible for their personal rigging.

After rigging is complete and before lifting is initiated STOP and perform a Last Minute Risk Assessment and emphasize personnel being out of the Line of Fire.



Note: Refer to Mobile Equipment Safety Standards section for more information.

Lifting and Rigging Regulatory References:

- 29 CFR 1910.178
- 29 CFR 1910.179
- 29 CFR 1910.180
- 29 CFR 1910.184
- 29 CFR 1926.251

LSA - EXCAVATION AND TRENCHING

EXCAVATION & TRENCHING

Get Authorization Before Digging or Entering Excavations

- Only dig where marked
- If in doubt, **STOP DIGGING**
- Stand back from edge of excavation
- Never enter excavations without authorization
- If in doubt, **GET OUT OF EXCAVATION**



What Is **Excavating and Trenching**?

Terms used to describe operations that require a man-made cut, cavity, trench, or depression in the earth's surface utilizing heavy duty equipment.



Work Authorization

required for any excavating or trenching operation.

COMMON EXCAVATING AND TRENCHING TERMS:

A **Competent person** is one who is trained and qualified to identify existing and predictable hazards in the surrounding, working conditions which are unsanitary, hazardous, or dangerous to employee and who has the authority to take prompt corrective measures to eliminate them.

A **Spotter** is a trained individual who is responsible for observing the excavation from a viewpoint that is otherwise restricted from the view of the operator.

- The spotter will have no other duties and must refrain from distractions during active excavation and maintain a viewpoint that is otherwise restricted from the equipment operator.
- The spotter has the authority and responsibility to shut down the excavation process when any recognized hazard is observed.
- Consider using additional flagmen where pedestrian traffic or other hazards exist beyond the spotter's capability.

Soil Types and Slope Classifications:

Soil Types:

- **Stable Rock** is natural mineral matter that can be excavated with vertical sides and remains intact while exposed.

LSA - EXCAVATION AND TRENCHING

- **Type A soil** is cohesive with an unconfined compressive strength of 1.5 tons/sq. ft. Examples include clay, silty clay, sandy clay, caliche, hardpan, etc. If soil has been previously disturbed, Type A soil shall be considered Type B or C.
- **Type B soil** is less cohesive and compressive strength of > 0.5 tons/sq. ft. Examples include silt, silty loam, unstable dry rock, gravel, etc.
- **Type C soil** is least cohesive strength of < 0.5 tons/sq. ft. Examples include sand, submerged soils, freely seeping soils, etc.

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

MAXIMUM ALLOWABLE SLOPES FOR EXCAVATIONS

Type	Horizontal : Vertical	Angle (<20 ft. deep)
Stable Rock	0:1	90°
A (clays)	0.75:1	53°
B (loams)	1:1	45°
C (sands)	1.5:1	34°

Slope Classifications:

Sloping, benching, shoring, trench boxes, or other means designed by a registered professional engineer are required to be in place when personnel are in the excavation.

- Benching is only allowed for class A or B soils.
- If excavation is >20 feet deep, cave-in protection must be designed by a Registered Professional Engineer.

EXCAVATING AND TRENCHING SAFETY STANDARDS:

Planning/Preparation

Prior to opening any excavation or trench, utilities and underground installations that may be encountered during excavation work must be located and marked.

- Utilize the required state utility location notification systems. **(ONE call)**

LSA - EXCAVATION AND TRENCHING

- Follow local and state/provincial laws to ensure locate requests are approved and active/current prior to commencing excavation.
- Mark underground utilities with pin flags, paint markings, or stakes at intervals no more than 20 feet.
- Advise underground installation owners of proposed work schedule.
- Where equipment may accidentally contact power lines, signage and/or flagging will be used as a “standard” to indicate proximity of power lines in all work areas.
Note: For more information refer to the Electrical Safety section of this handbook.
- Where soil conditions do not allow for probing, means such as hydro-vac or pneumatic-vac must be used to expose the utility. Hydro-vac is considered as mechanical excavation and requires ONE call.

Execute

- A company representative must be present prior to excavating within 15 feet of a known underground utility.
- When approaching a known utility, excavate parallel to the shallowest underground utility until the utility is exposed. Stop mechanical excavation no closer than 24 inches from underground utilities and probe to locate utility.
- When a utility is located, the company representative may crumble off the soil or hand dig to fully expose the utility.
- Engineers shall be consulted if the excavation compromises the stability of structures. Structural support systems may need to be installed.
- Barricades or guarding systems shall be used to mark the boundaries of the excavation and prevent accidental entry or falls.
- Where ground has been previously disturbed or when working near utilities, spotters must be utilized and do the following:
 - Never use a cell phone or other distracting device while performing duties.
 - Stay in the view of the operator at all times. If spotter is out of view, operations must cease.
 - Observe the excavation from a different angle than the operator, looking for signs of underground utilities.
 - Use a probe rod to detect proximity of underground utilities/structures.
 - Do not allow an operator to get within 2 feet of utilities/structures.

LSA - EXCAVATION AND TRENCHING

- **Stop work and assess hazard with operator/supervision when any hazardous condition is recognized.**



- Personnel working in close proximity to vehicular traffic must wear high visibility, reflective vests.

Where personnel enter excavations ≥ 4 feet, the following must be met in addition to the requirements noted above:

- A competent person shall make daily inspections of excavations prior to the start of the work shift. This person has the authority/responsibility to modify shoring/trenching or work methods as necessary to provide greater safety.
- The competent person must stop work and ensure safe guards are applied where hazards, such as wall crumbling, cave-in, water accumulation, buckling, etc., are identified.
- **The competent person or supervisor must determine whether or not worker entry is needed prior to workers entering an excavation.**
- Prior to allowing personnel to enter the excavation, a competent person must inspect the excavation and deem it safe for entry.
 - Inspections must be made daily, prior to starting work shifts and after environmental events such as rainstorms.



- Excavations can be classified as confined spaces and may require permitting if flammable, toxic, or oxygen deficient atmospheres exist or if the excavation walls could collapse and trap a person. See **Confined Space** for more details.



- Steps, ramps, or ladders must be placed so that a worker does not have to travel more than 25 feet to exit the excavation.

- When lowering piping or equipment into an excavation, ensure personnel are not in the Line of Fire.



- Protect workers from potential ground or surface water hazards that may cause trench collapse or drowning concerns.
- Equipment, soil, and other material must be kept a minimum of 2 feet from the edge of the excavation.
- Soil that may contain hydrocarbon or other toxic contamination shall be stored in an area that will not create fire, inhalation, or other hazards.

Excavation and Trenching Regulatory References:

- 29 CFR 1926 Subpart P

LSA - SAFE WORK PRACTICES

SAFE WORK PRACTICES

Review & Understand Them - Do Not Deviate Without Approval

- Review Safety Handbook and identify Safe Work Practices
- Verify understanding - utilize checklists
- Have Safe Work Practices readily available for review during the task
- Use at the work site and do not deviate without approval



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 LSAs, and ensure they are understood and how they apply to the upcoming task.

COMPRESSED GAS CYLINDERS

GENERAL SAFETY STANDARDS:

- Never accept damaged or improperly labeled cylinders.
- Cylinder contents must be properly labeled; do not rely on color of the cylinder to identify the contents.
- Secure cylinders at all times.
- Always keep cylinders away from direct flames, heat, and ignition sources.
- Utilize proper lifting cradle for cylinders and never attempt to lift by the valve or protective cap.
- Avoid rough handling or striking of cylinders.
- Shut off cylinder before attempting repairs if a leak is suspected.
- Discharge leaking cylinders outdoor only and away from personnel and ignition sources.
- Never stand in the Line of Fire when installing/removing regulators and gauges.

Usage:

- Cylinder valves must have a handle or other shut off mechanism when in use.
- Utilize a properly sized and rated regulator to reduce cylinder pressure to working pressure.
- Never use oil or grease to lubricate valves or attachments used with compressed oxygen.
- Threads on fittings must correspond to cylinder valve outlets.
- Check-valves or flame-arrestors must be in-line whenever oxy-acetylene (or similar systems) are utilized.

Storage:

- When not in use, valves must be closed and protective caps installed, regulators must be removed from cylinder unless it is designed to be capped, or the cylinder is properly secured.
- Do not store oxygen cylinders within 20 feet of combustible materials or fuel gases unless divided by a 5 feet fire resistant wall rated for 30 minutes.
- Always store cylinders in an upright and secured position.
- Always store empty and full cylinders separately.

Compressed Gas Cylinder Regulatory References:

- 29 CFR 1910.101
- 29 CFR 1910.104
- 29 CFR 1910.102
- 29 CFR 1926.350

GENERAL SAFETY STANDARDS

ELECTRICAL SAFETY

Employees and contractors shall not perform any work on electrical equipment except for those tasks they have been specially trained or qualified on.

Qualified and Authorized Personnel have demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations that requires documented safety training (NFPA 70E), every three years.

Only Qualified and Authorized Personnel are allowed to install, maintain, or repair electrical equipment or work on energized circuits ≥ 50 V.

ELECTRICAL SAFETY STANDARDS:

- Only personnel trained to recognize electrical hazards can work with specific electrical equipment or services.
- Unqualified personnel are allowed to use electrical tools and equipment, but they are not authorized to open energized equipment and access the live components, such as junction boxes, breaker panels, etc.
- Always utilize PPE and insulated tools with the appropriate rating for the electrical hazards.
- Never wear personal conductive items such as rings, necklaces, watches, eye wear, and other jewelry while working around open, energized equipment.
- Qualified and Authorized personnel shall complete a JSA before performing work on or troubleshooting energized electrical equipment ≥ 50 V, as per the new 2018 NFPA 70E standards.

Work Site Electrical Requirements



Always utilize energy isolation procedures to eliminate electrical hazards prior to performing service or maintenance on electrical equipment.

- Consider all electrical conductors, including power lines, energized until zero energy is verified through testing.
- Electrical equipment warning labels are required to be in place on items such as switchboards, panel boards, control boxes, control panels, and motor control panels. Labels must contain the nominal voltage of the system, arc flash boundary, and minimum PPE requirements.

GENERAL SAFETY STANDARDS

- No part of a crane, boom, mast, derrick, gin poles, or other equipment is permitted within 10 feet of energized power lines rated 50 kV or below, unless specifically qualified or authorized.
 - o For every kV above 50 kV, add ½ inch of distance to the minimum 10 feet requirement.

Electric Tools and Equipment

- Ensure portable tools have ground fault circuit interruption [GFCI] or double insulation.
- Never use conductive ladders around energized electrical equipment.
- Inspect electrical tools, cords, PPE, and testing equipment prior to each use. Anything defective must immediately be removed and tagged out-of-service until replaced or repaired.
- Do not utilize extension cords for permanent service.
- Replacement fuses shall be properly sized and rated, utilizing appropriate fuse pullers.
- Never render an electrical interlock system inoperable.

Electrical Safety Regulatory References:

- NFPA 70E
- 29 CFR 1910.137
- 29 CFR 1910 Subpart S
- 29 CFR 1910.269

GENERAL SAFETY STANDARDS

FIRE PREVENTION AND RESPONSE

- Conduct monthly visual inspections of fire extinguishers. Maintain them according to manufacturer's specifications.
- Ensure the fire extinguishers are readily available.
- Inspect and maintain flame arresting equipment monthly, including in-line and air-intake flame arrestors (see API RP 12N).
- Always follow lighting procedures when lighting direct-fired heaters.
- A Hot Work Permit is not required for lighting direct fired heaters if the area has been checked and is free of flammable vapors outside the fire box.
- Reduce the likelihood of electrostatic spark generation by electrically bonding containers and transfer lines.
- Do not store wood, paper, trash, and other class "A" fire materials in process areas.
- Always ensure adequate barriers and/or safeguards are in place between ignition sources and areas where flammable or combustible liquids or gases or other class "B" fire materials are located.
- Never use an open flame to check for hydrocarbon leaks.
- Utilize solvents and chemicals designed for the task to clean tools and equipment. Never use gasoline or diesel as a cleaner.
- Transport gasoline and other flammable or combustible chemicals in approved containers that are labeled with the name of the contents.
- Never place gasoline or other hazardous chemicals in a vehicle or mobile equipment passenger compartment.

FIRE RESPONSE STANDARDS:

- SUMMON HELP before attempting to fight a fire.
- Assess the situation:
 - Is there a threat to human life?
 - Is there a threat to the environment or company assets?
 - Can the fire be safely extinguished using the tools immediately available?

GENERAL SAFETY STANDARDS

- Isolate fuel sources if they are supplying energy or fuel to the fire.
- **DO NOT FIGHT THE FIRE BEYOND THE INCIPIENT STAGE UNLESS YOU ARE TRAINED AND EQUIPPED TO DO SO.**
- Approach the fire from the upwind side if properly trained and you choose to fight it.
- If energizing a fire extinguisher, NEVER PLACE ANY PART OF YOUR BODY DIRECTLY OVER THE CAP OR CARTRIDGE AREA.
- After the fire is extinguished, stay in the area for 30 minutes to ensure the fire does not reignite.
- Assess damage and report the incident.



Fire Prevention Regulatory References:

- 29 CFR 1910.157
- API RP 12N
- NFPA 10

GENERAL SAFETY STANDARDS

OFFICE-BASED SAFETY

The information listed below may reduce the seriousness of injuries or illnesses commonly encountered in an office environment.

OFFICE STANDARDS

- Maintain awareness of surroundings and immediately report any unsafe or suspicious behaviors to your supervisor, security representative, or SSHE contact.
- Immediately report any injury, illness, near miss, or unsafe condition to your supervisor.
- Know the emergency procedures for your building or work area, including the location of fire pull alarms, fire extinguishers, and evacuation routes.
- Do not use elevators during a fire. Use the stairwells and follow exit signs out of the building. Remove high heels when traveling down stairs. Check for heat or smoke before opening a door.
- Designated floor captains shall ensure personnel have safely evacuated the floor before evacuating themselves during a drill or emergency.
- Aisles, hallways, and passages of travel must be kept clear of storage, clutter, and obstructions.
- Exits must be clearly marked and lit in accordance with regulatory requirements.
- Do not stack materials and boxes in a manner that could cause collapse or block sprinkler heads, exits, fire extinguishers, or electrical panels.
- Do not leave file drawers open and unattended. Do not overload top drawers of file cabinets as they may become top heavy and tip over when opened.
- Flammable and combustible materials must be kept in approved storage cabinets. Do not store large quantities of flammable/combustible materials in office environments.

GENERAL SAFETY STANDARDS

ERGONOMIC STANDARDS

When typing or using a computer, apply the following standards:

- Maintain neutral posture with your head up and eyes even with top of your screen.
- Occasionally look away from your screen at distant objects to rest your eyes.
- Adjust your chair height and lumbar support so your legs form a 90° angle at the knees and hips, your back maintains a natural "S" curve, and your feet are flat on the floor with your thighs supported.
- Adjust your keyboard height to allow your arms to maintain a 70° - 90° angle at the elbow.
- Avoid working in a twisted position, such as twisting to read a paper.

GENERAL SAFETY STANDARDS

PERSONAL PROTECTIVE EQUIPMENT

PPE is considered a last line of defense after all engineering and administrative controls have been exhausted. PPE outlined in this standard are based upon the XTO PPE Hazard Assessment and are to be worn by employees, contractors, and visitors when working in the specified locations or conditions outlined.

GENERAL PPE STANDARDS

Prior to entering any company premises, employees, contractors, and visitors are required to wear site-specific appropriate PPE.

Note: Contractors are required to provide appropriate PPE to their employees and visitors that meet or exceeds XTO requirements.

- All PPE must meet standards established by recognized governmental and/or industry groups.
- Care and maintenance of provided PPE is the responsibility of all employees and contractors.

Clothing Standards

At XTO site where hydrocarbons are present, fire resistant clothing (FRC), which complies with NFPA 2112 and/or NFPA 70E standards, must be worn as the outermost garment. FRC garments must be long sleeved. Clothing with non-flame-resistant synthetic fibers is prohibited at field locations.

Eye Protection Standards

- ANSI Z87.1 safety glasses with side protection must be worn at field locations/sites when outside of the vehicle or living quarters.
- Safety glasses do not replace other types of eye and face protection. Specialized PPE such as splash goggles, face shields, and welding hoods may be required based on the hazards of the work to be performed (i.e., when working with chemicals, during grinding or chipping, welding and cutting, etc.).

Flotation Device Standards

All personnel must wear a work vest/life jacket when:

- Boarding or disembarking vessels;
- Traveling in a helicopter over water;

GENERAL SAFETY STANDARDS

- Conducting platform abandonment drills; and
- Outside the cabin of a boat.

Footwear Standards

- ASTM F2413 approved safety-toed boots or shoes must be worn at field locations/sites when outside of the vehicle or living quarters.
- Visitors and contractors are responsible for supplying their own safety-toed footwear.

Hand Protection Standards

- Impact-resistant gloves are to be worn as the default hand PPE for all tasks in the field and plants other than those tasks for which specific protection is required. General work gloves (e.g., cotton, cotton knobbies, leather, etc.) without impact resistant characteristics are excluded from use on XTO locations.
- Impact-resistant gloves are not always available for tasks that require chemical resistant, heat resistant, or resistant to electrical voltage gloves.
Note: As such, some scopes of work may preclude the use of impact resistant gloves, and is the responsibility of the work team to consciously choose specialty PPE for defined tasks in pre-job planning.
- Contract companies are expected to equip their crews with impact-resistant gloves.

Head Protection Standards

- ANSI Z89.1, Class E certified hard hats must be worn at field locations/sites when outside of the vehicle or living quarters.

Hearing Protection Standards

- Hearing protection is required in areas where noise levels exceed 85 dBA time weighted average (TWA).
- Noise levels ≥ 95 dBA require double hearing protection (earplugs and earmuffs).
- Noise warning signs must be posted when noise levels exceed 85 dBA.
- Suspected high noise areas must be reported to an XTO supervisor or SHE representative for testing.

GENERAL SAFETY STANDARDS

Personal Gas Monitor Standards

Workers entering an XTO work site must wear a personal gas monitor for detection of the applicable atmospheric hazards and ensure monitors are calibrated and bump tested as per manufacturer's direction.

Note: Does not apply to visitors or guests accompanied by XTO Site Representatives.

Respiratory Protection Standards

- Engineering or procedural controls, when feasible, should be implemented to reduce airborne exposures below Occupational Exposure Limits (OELs). The use of respirators should be the last line of defense for protection from potential respiratory hazards
- When engineering or procedural controls are not feasible to adequately control respiratory hazards, respiratory protection **MUST** be used. Potential respiratory hazards include the following:
 - Oxygen-deficient environments;
 - Gas and vapor contaminants, such as hydrogen sulfide, hydrocarbons, and benzene;
 - Particulate contaminants, such as harmful dust, metal fumes, chemical mist or fog, smoke, and spray;
Example: Silica, naturally occurring radioactive material (NORM), asbestos.
 - A combination of gas, vapor, and particulate contaminants;
 - Potential exposure during emergency response activities.
- Employees who are required to wear respiratory protection must be enrolled in the company's Respiratory Protection Program, and receive training in the proper care, use, and limitations of the equipment prior to using the equipment.

Personal Protective Equipment Regulatory References:

- 29 CFR 1910.95
- 29 CFR 1910 Subpart I
- 29 CFR 1910 Subpart I App A & App B
- ANSI A14.3
- ANSI Z88.2
- ANSI Z89.1
- ANSI Z87.1
- ANSI S12.60
- ASTM F2413

MOBILE EQUIPMENT SAFETY STANDARDS

Exercise extreme caution whenever you are **Working Around Mobile Equipment (WAME)** such as cranes, excavators, forklifts, winch trucks, UTVs, and tractors to ensure you and other personnel are clear of the load and mobile equipment.



- Operation of mobile equipment is allowed only by properly trained and qualified personnel.
- For mobile equipment, use of seat belts is a requirement of all occupants whenever the vehicle/equipment is in motion.
- Certification by a registered professional engineer is required for any equipment modifications.
- Use of cell phones and other communication devices while operating mobile equipment is strictly prohibited, except when required to execute a task safely.
- Avoid steep areas that may cause the equipment to tip or become unstable.
- Where equipment may potentially contact power lines, signage and/or flagging will be used as a "standard" to indicate proximity of power lines in all work areas.
- If working with any lifting equipment NO PART OF A BOOM, MAST, CABLE, LOAD, OR OTHER LIFTING/ RIGGING EQUIPMENT IS ALLOWED WITHIN 10 FEET OF AN ENERGIZED POWER LINE of ≤ 50 kV. See the Electrical Safety section for additional guidance.
- If equipment contacts an energized power line, do not dismount the vehicle unless immediate danger, such as fire, is present. If one must dismount, jump from the equipment, landing as far away from the equipment as possible with feet together.
- Do not stand, walk, or place body parts under a suspended load. Employees are considered to be under the load if the load is above their waist and at arm's length.



MOBILE EQUIPMENT SAFETY STANDARDS

MOBILE AND OVERHEAD CRANE SAFETY STANDARDS

Crane operators, rigging personnel, and site supervisors must know and understand the following requirements prior to operating equipment, rigging up, or supervising crane activities.

- For mobile cranes, the operator **MUST** consult his load chart to determine if outriggers should be in the full out position and tires lifted off the ground during a lift. Mats or pads under the outriggers may be used for increased soil/support bearing.
- The crane operator must demonstrate competency by either showing a current certification card or explaining load limits of the crane, the load chart, how to stabilize the crane to prevent tipping, and how the lift will be accomplished. Where state requirements exist, proper state and federal licenses shall be provided by operator.
- Ensure load chart is posted on the crane and consulted to determine if the load can be lifted at the maximum required boom angle.
- Designate one person as the primary signal person. This person, and all others assisting them, shall know appropriate crane hand signals.
- **OBEY ANY STOP SIGNAL/COMMAND** that is given when a lift is in progress.



Ensure riggers/spotters stay in the line of sight of the operator and STOP operations if operator loses sight of riggers/spotters.

- Running and lifting hooks must have functional safety latches or keepers.
- Do not move mobile cranes while the winch or boom is in motion.
- Never overload or side-load a crane. If equipped, ensure overload alarms are operational.
- Utilize certified personnel lifting baskets and do not allow personnel to “ride” the headache ball.
- Operators refer to the rated capacity of the crane prior to all operations.
- Ensure rail stops are in place for trolley style cranes.
- All XTO owned cranes are to be inspected annually by a third-party inspection company.

GIN POLE AND WINCH TRUCK SAFETY STANDARDS

- Check state/local rules for wide and tall loads as an escort may be required.
- Ensure bridge overpasses, railroad tracks, overhead power lines, etc., will not be struck by the load. If pre-route work determines obstacles, an escort may be required.
- Operators must approve the attachment of the winch line or rigging prior to operation.
- Prior to the load being winched onto the truck, riggers/spotters must be clear of the load and out of the line of fire.
- Ensure load is adequately secured. Ratchet-style secure devices are preferred over chain and boomer devices.
- Double wrap smooth loads to reduce pipe slipping.
- Secure loads hanging from a gin pole to minimize swinging to prevent injury or damage to passing vehicles.
- Attach a red flag to the end of loads if any part of the load extends past the end of the truck/trailer (when traveling on or crossing roadways).
- Ensure gin poles maintain adequate clearance from power lines. See Electrical Safety section for additional guidance.
- Prior to vehicle moving, boom down gin pole when not in use.
- Do not position your body between the back of a truck and a fixed object when the truck or load is moving.



MOBILE EQUIPMENT SAFETY STANDARDS

FORKLIFTS

FORKLIFT SAFETY STANDARDS

Use of forklifts is restricted to trained and certified operators.

- Inspect and document forklift prior to use.
- Do not exceed the rated capacity of the forklift.
- Carry loads near the ground with the forks tilted back, and do not raise or lower a load while moving.
- Before loading or unloading trailers/trucks, set the brakes and/or chock the wheels on trailers/trucks.



Ensure hands-free techniques are used when lifting or transporting material. **NEVER** risk injury by attempting to manually stabilize a load.

- When loading or unloading trailers, ensure the trailer is not positioned on a slope that will allow the load to shift and fall off the trailer.
- Sufficient staves must be in place on pipe trailers to prevent the pipe from rolling off the trailer when it is unstrapped. Never unstrap loads from the downhill side.
- Do not allow personnel to ride on, stand on, or work under the forks.
- Use only approved personnel platforms properly secured to the forklift for personnel lifts.
- Utilize pallets, drum slings, and drum racks when moving 55-gallon drums or similar-sized items. Never "sandwich" the drum between the forks.
- Do not turn around on ramps or steep grades.
- When leaving the forklift unattended:
 - Lower the forks to the ground,
 - Neutralize controls,
 - Set brake or block wheels, and
 - Power engine down.

ALL VEHICLE OPERATIONS STANDARDS

Standards apply to all company vehicles, operators of heavy and lighter duty equipment, and utility vehicles. Refer to those sections for additional vehicle standards.

- Use of seat belts is a requirement of all occupants whenever the vehicle is in motion.
- Use of cell phones and other communications devices while operating a vehicle is strictly prohibited. Refer to XTO Policy for Mobile Phone Use While Driving.
- Stop driving immediately if the driver, operator, or passenger of the vehicle determines conditions are unsafe to proceed.
- Immediately report, any vehicle incidents, major or minor, that occur on XTO property or while conducting XTO business, to the site supervisor.
- All personnel are required to drive in accordance with the law and in a manner consistent with weather and road conditions.
- Alcohol and contraband are not allowed in company vehicles or on XTO locations/sites.
- Never bring a firearm in company vehicles. This rule applies to drivers and vehicle passengers.
- Never drive under the influence of alcoholic beverages or substances that impair judgement or reaction time.
- Radar detectors are not allowed in company vehicles or vehicles used for company business.
- Always insist personnel ride in designated passenger compartments of vehicles.
- Avoid backing up whenever possible.
- Attend required driver/operator training, and maintain a valid driver's license. A valid driver's license must always be in the possession of the driver/operator.
- For vehicles driving within 10 feet of a hydrocarbon source, a permit is not required if the area has been checked and is free from flammable sources.
- Inspect assigned vehicle daily prior to operation, and address any concerns prior to operation.
- Assigned vehicle drivers are responsible for the condition of the vehicle and required maintenance.

- Fire extinguishers and first aid kits provided in company vehicles are required to be inspected monthly and properly maintained.
- Do not drive a company vehicle out of the operations area without prior approval of your area supervisor.
- Store hazardous materials such as gasoline, methanol, lube oil, etc., in DOT approved containers only. Contact your SHE representative for specific information on transporting hazardous chemicals.

Utility Task Vehicle (UTV) Operation Standards

Use of All-Terrain Vehicles (ATV), i.e., four-wheelers, is prohibited on all XTO sites.

- Operators of UTVs and snowmobiles must have a valid driver's license.
- Operation of Utility Vehicles is restricted to personnel who have attended the XTO UTV Operator Course or equivalent.
 - Be trained specifically for the conditions in which they will be operating the UTV or snowmobile.
 - Be tested for competency in the specific conditions in which it will be operated.
- Review the specific manufacturer's limitations for both ON and OFF road usage prior to placing equipment in service.
- Follow roads or designated trails where they exist.
- Wear approved helmets when operating or riding on UTVs and snowmobiles. (Hard hats may be used when operating UTVs in a designated work site with roads, such as within a plant fence.)
- All vehicle operators are required to wear hearing protection if noise levels exceed 85 dba (some helmets may provide noise reduction).
- Wear seat belts where they are provided.

LOADING AND UNLOADING EQUIPMENT FROM TRUCKS/TRAILERS

Always conduct a pre-job safety meeting with all personnel on site.

LOADING AND UNLOADING EQUIPMENT OPERATIONS SAFETY STANDARDS

- To avoid the risk of severe injury and property damage, please ensure the following rules are followed.
- Check state/local rules for wide and tall loads as an escort may be required.
- Ensure bridge overpasses, railroad tracks, overhead power lines, etc., will not be struck by the load. If pre-route work determines obstacles, an escort may be required. 
- Equipment operator shall maintain line of sight of all ground personnel during loading and unloading activities and shall stop work if line of sight is lost or personnel is standing in the line of fire. 
- Before loading or unloading trailers/trucks, set the brakes and/or chock the wheels on trailers/trucks.
- No truck or trailer shall be loaded or unloaded until the brakes are set and the operator is certain the truck or trailer cannot move.
- Ratchet-style securing devices are preferred over boomers.
- Pipe trailers must have sufficient staves in place to restrain the various lengths of pipe and prevent them from rolling off the trailer when the straps are removed.
- Never unstrap a load while standing on the downhill side.
- Once tag lines are attached to load, personnel must get down from trailer prior to performing lift.

Mobile Equipment Regulatory References:

- 29 CFR 1910.178
- 29 CFR 1910.179
- 29 CFR 1910.180
- 29 CFR 1910.184
- 29 CFR 1926.251
- 49 CFR 390.5

OPERATIONS SAFETY STANDARDS

OPERATIONS SAFETY RESPONSIBILITIES



XTO holds all personnel responsible to exercise **STOP WORK AUTHORITY** when unsafe conditions or actions are observed.

All Employees, Including Contractors:

Please refer to the General Safety Standards and Life Saving Action sections as they relate to specific requirements for Operational Safety Standards.

- All personnel are required to attend, participate, and set an example of following company policies presented in safety trainings and applicable OIMS systems.
- Employees must ensure that third-party staff are familiar with XTO safety rules, policies, and procedure standards.
- Contractors are responsible for the health, safety, and associated training of their employees and subcontractors are required to meet or exceed XTO Health and Safety standards as outlined in this handbook.
- Immediately report any noncompliance activities, safety concerns, and safety incidents to the XTO Site Supervisor immediately.
- Any conflict between XTO's standards, policies, systems, or SOPs and the contractor's standards, policies, systems, or SOPs shall be brought to the attention of the XTO Site Supervisor immediately.

OPERATIONS SAFETY STANDARDS

COMPRESSION SAFETY STANDARDS

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

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



GENERAL SAFETY STANDARDS

Safe Work



- 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.

Line of Fire



- 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.

Compression Regulatory References:

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

OPERATIONS SAFETY STANDARDS

DRILLING AND WELL SERVICING SAFETY STANDARDS

The intent of this document is to provide XTO Site Supervisors, local field personnel, and contractors with a set of minimum safety standards to use when drilling or conducting workover, well servicing, and stimulation operations on XTO properties. The XTO Site Supervisor shall ensure that the rig crew and all service personnel are familiar with the XTO standards, rules, policies, and procedures.

Contractors are fully responsible for providing applicable PPE and adequate safety training to assure compliance with all state and federal regulations, industry standards, and XTO's safety policies. Further, contractors must ensure their equipment is maintained in a safe working order per manufacturer's specifications and inspected regularly. Contractors must train their crews to properly operate the equipment brought to XTO's sites, within its rated capability and consistent with the manufacturer's safety recommendations.



XTO holds all personnel responsible to exercise **STOP WORK AUTHORITY** when unsafe conditions or actions are observed.

XTO has Standard Operating Procedures that must be adhered to for certain higher-risk activities.

GENERAL SAFETY STANDARDS



Safe Work

- Always ensure rigs are properly leveled and secured prior to commencing work.
- All gasoline, propane, natural gas engines, and diesel engines without positive air shutoff must be 75 feet from any flammable source except diesel engines with positive air shutoff must be no closer than 20 feet to any flammable source.
- Test anchors according to the manufacturer or API 4G.
- Flag guy wires for visibility and ensure they are in place prior to commencing work.
- If a base beam is utilized for guying, ensure it is certified for the derrick.

- If a vehicle must be driven inside the guy line perimeter of a well service rig, a spotter must be used to ensure the guy wires are not hit.
- Conduct swabbing, snubbing, and hot oiling operations during daylight hours or where adequate lighting is provided.
- Never pull $\geq 80\%$ of rig capacity without anchoring the carrier.
- Secure and test the rig pump, lines, and other pressure-rated equipment before use to ensure it meets minimum working requirements.
- Full Opening Safety Valve (TIW), with valve handle, must be on the floor, accessible, operational, and in the ready (open) position.
- The derrickman should not ascend into the derrick until after the initial pull to unseat the rods, tubing, etc., has been made.
- Never move blocks while personnel are ascending or descending the derrick.
- Riding the blocks up or down is prohibited.
- Always clear the floor of nonessential personnel when pulling stuck rods, tubing, or drill pipe.
- Clear the area of nonessential personnel prior to raising or lowering the derrick. Do not stand in the fall path of a derrick being raised or lowered.
- Keep the rig floor clean and clear of tools and equipment not in use.
- No trash, unpermitted fluids, or debris may be put in a reserve pit or flow back tank.
- Suspend operations when lightning is within 6 miles, or high winds or other severe weather makes conditions unsafe to operate.
- Identify electrical lines and other overhead hazards and mitigate prior to moving a rig and/or rigging up.
- Equipment is not allowed within 10 feet of energized electrical lines that are rated $\leq 50\text{kV}$. Greater than 50kV requires additional distance and contact of local utilities for guidance.

OPERATIONS SAFETY STANDARDS



Energy Isolation

- Lock Out all energy sources such as electrical, mechanical, hydraulic, pneumatic, or contained pressure.
- Isolate energy sources prior to pulling rods, tubing, or performing other work where energized equipment such as electrical sub pumps, pumping units, etc., are in use.



Working at Heights

- Consult the Working at Heights LSA standard in this handbook if work is performed at heights ≥ 4 feet.



Hot Work

- Refer to the Hot Work LSA standard in this handbook when performing hot work.
- Locate Hot Oiler 75 feet upwind from flammable sources. Anything less than 35 feet requires a Hot Work Permit.
- Hot oilers should be equipped with flame arrestors.



Line of Fire

- Secure high pressure lines with appropriately sized restraints to prevent whipping should the line break or come loose.
- Identify, barricade (where practical), and communicate areas where personnel are prohibited during operations.

Drill and Well Servicing Regulatory References:

- Refer to the Standard Operating Procedures (SOPs) within OIMS System 2, Drilling and OIMS System 3, Completions & Well Work for additional guidance.

OPERATIONS SAFETY STANDARDS

PERFORATION AND STIMULATION SAFETY STANDARDS

The service company providing perforation services is responsible for providing procedures that protect life and property on the work site.

Review of written perforation procedures by the XTO and service company site supervisors prior to commencing perforation work is required. Hazards should always be properly identified and mitigated. XTO is in the process of revising OIMS System 3 (Completion and Well Work) to include standard operating procedures for perforating and explosives safety.

GENERAL SAFETY STANDARDS

Safe Work



- Post signs at site entrances warning of explosives in use and radio silence as required.
- Establish a safe distance for low wattage (less than 5 watts) radio transmitters based on the (1) detonator type and the (2) number of radios in use. A minimum distance of 50 feet for radio silence is required unless using approved radio frequency (RF) safe detonators.
- If noncontrollable higher wattage RF devices are in the area, develop a plan for the use of specific RF Safe Detonators.
- Conduct stray voltage test and ensure equipment is properly bonded and/or grounded in accordance with service company procedures. **Stray voltage must be below 0.25 volts unless using approved high voltage RF Safe Detonators.**
- Mitigate potential static electricity induced hazards. Hazards from static electricity that can be present from approaching electrical storms, blowing dust, or snow should be evaluated and proper precautions taken.
- The check fire procedures should only be performed when the cable head and tool string is in clear view of the person applying the power (prior to attaching to an unarmed gun).
- The service company will have a designated "Explosive User in Charge" who is responsible for gun arming and disarming. The safety key that is used to lockout the cable circuit in the Wireline Unit must remain outside the Unit until the explosive device is deployed below 200 feet in well. The same safety procedure is followed before pulling guns out of the hole above 200 feet.

Line of Fire



- Only essential personnel are allowed in the designated area(s) where guns are being assembled, staged, and armed.

OPERATIONS SAFETY STANDARDS

SIMULTANEOUS OPERATIONS (SIMOPS)

SIMULTANEOUS OPERATIONS (SIMOPS)

SIMOPS takes place when operations between two different departments or entities are conducted in close proximity of each other and the combined risk is significantly higher than the risk associated with single operations. Examples include drilling and completion, production and mid-stream operations, well work and facility construction, etc. Always conduct a pre-job safety meeting with all parties impacted by SIMOPS.

GENERAL SAFETY STANDARDS

SIMOPS conflicts must be resolved by evaluating the combined operation risks and looking for methods to reduce the highest risks. Confirm which site Superintendent has overall responsibility for overall site safety during SIMOPS.



Safe Work

- Establish and agree on a method of communication between work teams affected by SIMOPS.
- Define the conditions and restrictions, if any, under which SIMOPS may be safely performed and communicate these with the work teams.



Work Authorization

- Coordinate planned activities with the supervisors of the work teams that may be affected by SIMOPS.
- Ensure work permits are completed as required by the nature of individual tasks.

OPERATIONS SAFETY STANDARDS

TANK GAUGING SAFETY STANDARDS

GENERAL SAFETY STANDARDS

Safe Work



- Utilize external gauging systems, when available, to reduce the need to climb tanks or be exposed to potentially harmful chemicals such as H_2S or Benzene.
- Always stand on the upwind side if opening a hatch or vent.
- Ensure H_2S warning signs are posted and legible where the concentration of H_2S exceeds 10 ppm. Reference the H_2S section in the Industrial Health Standards section for more detail.

- Be aware of body position (Line of Fire) when Opening Process Equipment, as vapors could contain benzene.



- Always wear appropriate respiratory protection and personal LEL monitors if a hazardous environment exists.
- Descend a tank immediately if an electrical storm arises and take appropriate shelter.
- Utilize designated pathways and/or step overs when crossing secondary containment walls or berms.
- Always close production tank thief hatches after gauging is complete.

Working at Heights



- Walking on and working from the top of storage tanks is not allowed unless approved through work authorization. If one must work on top of a tank, tank integrity should be carefully checked and proper fall protection utilized.

Fire Prevention:

- Never utilize any ignition source, like a lighter or non-intrinsically safe flashlight, when gauging tanks.
- Reduce the likelihood of static electricity as a potential ignition source when gauging tanks by considering the following:
 - Touch a conductive surface with your bare skin prior to opening a hatch where a flammable atmosphere may exist.
 - Bond gauging tools by clipping the tool or maintaining metal-to-metal contact to conductive surfaces while gauging.
 - Bond conductive surfaces that could produce an arc gap (e.g., the transport truck/trailer should be bonded to the production tank prior to loading/unloading).
- Prior to opening the thief hatch, personnel shall make physical contact to a conductive surface, at a safe distance from the vapors, to reduce the likelihood static induced fire.

OPERATIONS SAFETY STANDARDS

TANK LOADING AND TRUCKING SAFETY STANDARDS

GENERAL SAFETY STANDARDS



Safe Work

- Driver/operator must be in direct control during loading and unloading operations.
- Before loading or unloading trailer/trucks, set the brakes and/or chock the wheels on trailers/trucks.
- Prevent spills and leaks by tightly closing valves and caps.
- Ensure all drips are collected and there is no oil or water spilled on the ground.
- Always shut load valves if loading or unloading is interrupted to prevent leaks or spills.

Fire Prevention:

- Never use an open flame when loading or unloading tanker trucks.
- Areas where trucks load or unload produced water or liquid hydrocarbon are designated "No Smoking Areas."
- Ensure conductive surfaces are properly grounded and bonded when loading or unloading to prevent the buildup of static electricity during fluid transfer of potentially flammable liquids.
- Each transport vehicle should be equipped with at least one operable dry chemical fire extinguisher.

WELDING AND CUTTING SAFETY STANDARDS

GENERAL SAFETY STANDARDS

Safe Work



- Avoid breathing fumes generated from welding or burning.
- Ensure exit/entry routes are not blocked by welding leads, hoses, tools, etc.
- Inspect leads, grounds, clamps, machines, hoses, and gauges daily and do not use equipment needing repair.
- Ensure fittings, couplings, and connections are tight and not leaking.
- Utilize ventilation systems or respiratory protection to avoid the buildup of or inhalation of welding, burning, or cutting fumes.

Work Authorization



- Always ensure proper energy isolation has been performed and verified ZERO energy prior to starting a job.
- Consult an engineer if the pipe OD is ≥ 12.75 inches, wall thickness is ≥ 0.75 inches, and the yield strength is $\geq 42,000$ psi.

Fire Prevention:

Prior to starting any welding, cutting or burning work:

- Remove flammable or combustible materials that could catch fire.
- Locate a dry chemical fire extinguisher near the work area.
- Immediately inspect the work area to ensure no fire, sparks, or hot spots are present.
- Fire Watch is required to be at the work location with proper fire protection equipment for all welding and cutting operations.
- Fire Watch is required to stay on site for 30 minutes after hot work ceases.
- Ensure closed loop or open drain systems are blinded or safe to prevent fire in these systems.

OPERATIONS SAFETY STANDARDS

PPE:

- Reference the Welding (Metal) Fumes section of the Industrial Health Standards for specific PPE requirements.

Type of Welding Requirements

XTO Site Supervisor is responsible for ensuring the welder is properly qualified and certified prior to commencing work. Refer to the list below for specific codes that apply to the type of work to be performed.

Required Certifications for Welding:

- Pressure Rated Vessels – ASME section IV or VIII codes, requires a welder to be certified to ASME Boiler and Pressure Vessel Code Section IX.
- Gas Plants, ASME Boiler, and Pressure Vessel Code Section IX.
- Flowlines, gathering lines, or transmission lines – ASME Boiler and Pressure Vessel Code Section IX or API 1104.
- Wellheads, casing, or tubing – ASME Section IX for pressure containing components. Welders must be API 1104 or AWS D1.1 certified.
- Welders on major structural members must meet API 1104 or AWS D1.1 specifications. Main structural members include, but are not limited to, deck beams, boat landing, derricks, and pumping unit supports.
- Any equipment not captured above – should be performed by a competent welder approved of by the XTO Site Supervisor.

Note: Refer to Welding (Metal) Fumes, Industrial Health Standards section more information.

INDUSTRIAL HEALTH STANDARDS

Industrial hygiene is the anticipation, recognition, evaluation, control, and prevention of hazards from work that may result in injury, illness, or affect the well-being of workers. Health and Safety hazards include chemical, physical, biological, and ergonomic stressors.

Note: All Industrial Hygiene programs, including exposure monitoring, are to be stewarded through SSHE IH department.

ASBESTOS

Where is Asbestos commonly found?

Asbestos **MUST** not be installed in new facilities. However, it is commonly found in existing gaskets, valve and pump packings, thermal insulation, roofing materials, floor coverings, mastics, asbestos cemented roofing panels, and partitions (transite).

What happens with prolonged exposure to Asbestos?

Breathing asbestos fibers increases the risk of asbestosis (scarring of lungs), lung cancer, and cancer of the chest cavity lining (mesothelioma). People who work with asbestos and also smoke have a significantly increased risk of developing these conditions.

ASBESTOS SAFETY STANDARDS

- A comprehensive survey must be completed by Central SSHE IH of the entire facility to determine if Asbestos Containing Material (ACM) is present on site.
- Each site where asbestos is found **MUST** implement an Asbestos Operations and Maintenance (O&M) program.
- Work with Central SSHE IH to develop a site-specific and job-specific asbestos control program.

If ACM is suspected or known to be present on site, inform workers of:

- The methods for identifying ACM materials.
- The type and location of ACM on-site.
- The methods of preventing exposure to asbestos fibers.

INDUSTRIAL HEALTH STANDARDS

ASBESTOS

- Before working with or disturbing any suspect ACM:
 - Take samples for positive identification prior to disturbing any suspect materials.
 - If the content of the material is unknown or cannot be verified, assume the material is ACM and take appropriate precautions to protect workers.



! WARNING Removal or disturbance of ACM or working near friable ACM without adequate controls in place may result in a risk of inhaling airborne asbestos fibers.

Types of Asbestos

ACM is typically classified into two categories: friable and non-friable.

- Friable asbestos can be pulverized or crumbled by hand and can readily release asbestos fibers into the atmosphere. Example: Thermal insulation.
- Non-friable asbestos includes bound materials that cannot be pulverized or crumbled by hand and do not readily release asbestos fibers into the atmosphere. Example: Floor tile, gaskets, transite pipe, roofing materials, and asbestos-cemented roofing panels and partitions (transite).

Removing Friable ACM

Removal of friable asbestos **MUST** be conducted only by qualified (trained and certified) asbestos abatement workers.



! WARNING Avoid disturbing friable ACM where possible because it can release asbestos fibers if not handled properly. Do not use power tools, and avoid drilling, grinding, pulverizing, or any other activity that might generate asbestos fibers.

Removing Non-Friable ACM

Non-friable ACM can be removed by following the procedures outlined in the XTO Asbestos Management Program. Removal of intact asbestos spiral wound gaskets is allowed.

Asbestos Regulatory References:

- 29 CFR 1910.101
- 29 CFR 1926.1101

BENZENE

What is Benzene?

Benzene is a naturally occurring, colorless, volatile liquid hydrocarbon, often found in crude oil, natural gas, and produced water.

Where is Benzene commonly found?

Exposure can occur when benzene is released in the atmosphere from operations. The following are common identified release points for possible benzene exposure: fugitive emissions from thief hatches or vents during tank gauging (refer to the Operations Tank Gauging section), changing an amine filter or a filter in a glycol dehydrator, changing out H₂S scavenger towers, leaks in processing equipment and sumps.

What happens with prolonged exposure to Benzene?

Acute benzene exposure can cause central nervous system depression. Long-term exposure can result in depression of the blood-forming system and may increase risks associated with anemia and leukemia.

How do we mitigate exposure to Benzene?

- Sample hydrocarbon streams and equipment to determine if benzene is present.
- Identify and communicate the risks to all personnel on site when Benzene is identified.
- XTO will provide training to employees on the hazards of Benzene and how to eliminate or mitigate their exposures.
- Contractors are responsible for training their personnel on the hazards of Benzene.
- Be aware of body positioning (Line of Fire) when Opening Process Equipment, as vapors could contain Benzene.
- Any industrial hygiene exposure sampling needs to be under the direction of SSHE IH group.
- If Benzene is identified on site above the OEL, and cannot be eliminated, use of respiratory protection is required.

OCCUPATIONAL EXPOSURE LIMITS (OELS) FOR BENZENE

PPM	Exposure	Time
1	Short Term Exposure Limit (STEL)	15 min.
0.5	8 Hour Time Weighted Average (TWA)	8 hr.

Note: Refer to the XTO Energy Benzene IH Program for more information.

Benzene Regulatory Reference:

- 29 CFR 1910.1028

INDUSTRIAL HEALTH STANDARDS

HAZARD COMMUNICATION

Purpose: This section serves as the written hazard communication (HAZCOM) program for XTO. XTO has established a standard to ensure that all employees exposed to hazardous chemicals are aware of the specific hazards presented by the chemicals and are trained to protect themselves from the dangers that these chemicals might pose.

What is HAZCOM?

HAZCOM, better known as the "Right to Know" Standard, allows employees the right to know what hazards might be associated with chemicals that they may encounter in the workplace.

GENERAL HAZCOM SAFETY STANDARDS

- XTO personnel must attend and participate in annual HAZCOM training. If they have the potential for exposure to chemicals, follow the guidelines in the safety handbook, follow Safety Data Sheet (SDS) guidance, do not use any chemical for which an SDS is not available, and report any unsafe practices or program deficiencies to their supervisor.
- Minimize employee exposure to hazardous chemicals by substituting with less hazardous products when possible.
- Chemical inventory list must be reviewed annually by an area local SHE representative.
- SDS's must be made available for all chemicals in the work place.
- XTO Field Supervisors are required to notify the contract site supervisor of any XTO chemicals that contract personnel will be exposed to during their service on site.
- Contract supervisors must notify XTO personnel of any new chemical brought onto XTO property and provide SDS.
- Before any employee or contractor handles a chemical, they should review the SDS, or label, to make certain they know the associated hazards and how to protect themselves.
- Strictly adhere to the SDS PPE requirements for the chemical being handled. Proper precautions must be taken to avoid exposure to the skin, respiratory system, mouth, eyes, etc., when handling chemicals.

New Chemical Review

- If a new chemical is being introduced a hazard evaluation must be performed.
- Utilize new Chemical Pre-screening Process Form or equivalent process.
- XTO Site Supervisor must review any new chemical SDS with affected employees.

Chemical Inventory

- Each field office, under the advisement of the area SHE representative, shall compile and maintain a current inventory list of chemicals stored or used in that workplace.
- The inventory list must be modified as new chemicals are received and chemicals are retired.

Required Labeling

Any hazardous chemical container on XTO property is required to have a legible label affixed to it in appropriate language of the country where it resides. Labels must contain the following:

- Chemical name.
- Appropriate signal word (e.g., danger), hazard statement(s), pictogram(s) and precautionary statements.
- If shipping the chemical, the label must also contain the name, address, and telephone number of the chemical manufacturer, importer, or responsible party.
- Labels must comply with the Global Harmonization Standard (GHS). Some states may have additional labeling requirements like, NFPA 704 information. Contact local SHE representative to determine applicability.
- Exceptions to labeling:
 - A hazard communication label is not required when a worker transfers a chemical into a portable container for use only during that worker's shift. The container must, however, remain under the control of the employee who made the transfer, and the product content must be identified on the container.
 - Piping and vessels which are under pressure. Check your state to ensure this exemption is allowed.

INDUSTRIAL HEALTH STANDARDS

Safety Data Sheets

- SDS's must follow the 16 element format outlined in 29 CFR 1910.1200.
- Whomever takes delivery of the chemical is responsible for obtaining and forwarding the SDS to the field office and SHE Rep.
- SDS books, or eBooks, must be readily accessible. If it's required to transport chemicals in quantities requiring placards the SDS must be in the vehicle.
- Each SDS book, eBook, shall contain an XTO authored SDS for the XTO products produced in that area.
- SDS's must be maintained for 30 years after the last use of the chemical. Retention of SDS's will be maintained by the Business Unit. See 29 CFR 1910.20(c) (5) (iii)

Informing Contractors of Hazards

The XTO Supervisor or field employee on location will inform the contractor supervisor of any XTO chemical/ product hazards that the contractor may be exposed to during their service on site. Information must include:

- Precautions to lessen risk of exposure to contractors;
- Preventative measures taken by XTO to reduce exposure;
- Location of SDS's;
- Emergency procedures, if exposed; and
- Product labeling.

Contractor supervisors' responsibilities include:

- Provide the XTO Supervisor or field employee with an SDS for each chemical brought on site.
- Explain work practices and PPE to safely handle each of the contractor's chemicals brought on site.

HAZCOM Regulatory Reference:

- 29 CFR 1910.1200
- 29 CFR 1910.1200 Appendix C (Labels)

HEARING CONSERVATION

What is a Hearing Conservation Program?

The XTO Hearing Conservation Program is designed to prevent hearing loss by identifying, and eliminating or mitigating high- noise environments. Employees exposed to a time-weighted average (TWA) of ≥ 85 decibels (dBA) in an 8-hour work period are enrolled in the XTO Energy's Hearing Conservation Program (HCP).

XTO Hearing Conservation Program (HCP)

Employees enrolled in the hearing conservation program will:

- Undergo a baseline audiometric test to establish baseline hearing for future comparison.
- Annually undergo audiometric testing.
- Attend and participate in annual hearing conservation training:
 - o Effects of noise on hearing;
 - o Selection, use, and maintenance of hearing protection;
 - o Purpose of audiometric testing; and
 - o Explanation of audiometric test procedures and results.

XTO HEARING CONSERVATION PROGRAM STANDARDS

- XTO Energy facilities with high-noise areas will be periodically assessed for continuous high-noise levels that exceed 85 dBA.
- Post warning signs for facilities exceeding 85 dBA.



- Observe posted warning signs in high-noise areas.
- Hearing protection is required to be worn by all personnel in areas >85 dBA.
- In excess of >95 dBA, double hearing protection is required (e.g. plugs and muffs). Examples include blowing down lines, some compressor work, air foam units, air drilling activities, etc.

Note: Refer to the XTO Energy Hearing Conservation Program for more information.

Hearing Conservation Regulatory Reference:

- 29 CFR 1910.95

INDUSTRIAL HEALTH STANDARDS

HYDROGEN SULFIDE (H_2S)

What is H_2S ?

Hydrogen Sulfide (H_2S) is a highly toxic and colorless gas. H_2S can occur naturally through the decomposition of organic materials, or it can be chemically induced. Regardless of its origin, H_2S is very dangerous due to its toxicity and explosive nature.

- H_2S smells like sulfur, or rotten eggs in low concentrations. **THE SENSE OF SMELL IS A POOR INDICATOR OF H_2S** because H_2S can deaden the olfactory nerves and sense of smell.
- The explosive range for H_2S is 4.3% to 46% by volume, a very wide range when compared to hydrocarbons.
- The auto ignition temperature of H_2S is 500°F.
- H_2S is highly soluble in water and liquid hydrocarbons at elevated pressures and temperatures.
- H_2S may break out of liquid solutions at atmospheric pressures and temperatures.
- H_2S burns with a blue flame and converts into sulfur dioxide (SO_2), another toxic gas.
- H_2S is highly corrosive to some metals and can lead to hydrogen embrittlement and sulfide stress cracking.

Where H_2S is commonly found?

H_2S occurs in a variety of natural and industrial settings. It is produced by bacterial reaction and decomposition of organic matter. In oil and gas operations, it is commonly found in formation production streams, when opening production equipment with liquids, during acid jobs (where iron sulfide may be present), etc.



Anytime when Opening Process Equipment H_2S can be encountered (Line of Fire).

What happens with exposure to H_2S ?

The principal concern from inhalation of H_2S is acute toxicity. Inhalation of H_2S causes paralysis of the respiratory center in the brain and can result in immediate collapse and death. Effects of inhalation depend upon exposure level and individual body characteristics.

INDUSTRIAL HEALTH STANDARDS

EXPOSURE EFFECTS MAY INCLUDE:

Eye, Nose, Throat Irritation	Coughing	Headache	Dizziness
Nausea	Olfactory paralysis	Loss of consciousness	Death

Concentration in parts per million (ppm)

Health Effects & OELs

0.003 - 0.02 ppm	Odor threshold
≥ 5 ppm	- May cause eye irritation with prolonged exposure. - Work can be performed at 5 ppm without the use of respiratory protection for 8 hours.
≥ 10 ppm	Evacuate the area immediately if an alarm sounds at 10 ppm. Reentry is only allowed if concentrations are below 10 ppm or respiratory protection is used.
≥ 100 ppm	- Quickly deadens sense of smell - Immediately Dangerous to Life and Health (IDLH)
≥ 700 ppm	Rapid loss of consciousness and difficulty breathing can occur at higher levels (>700 ppm).
≥ 1000 ppm	Death can occur within seconds at levels over 1000 ppm.

OCCUPATIONAL EXPOSURE LIMITS (OELs) FOR H₂S

PPM	Exposure	Time
5	8 Hour Time Weighted Average (TWA)	8 hr.

H₂S STANDARDS

- Recognize the characteristics and associated dangers of H₂S, when encountered or suspected.
- Safety and first aid procedures are required of all personnel working on sites where H₂S is or could be present.

INDUSTRIAL HEALTH STANDARDS

HYDROGEN SULFIDE (H₂S)

- Site supervisors will provide general instruction to workers on the use of available PPE prior to allowing access to a location where H₂S is identified.
- Follow Confined Space procedures when entering an enclosed area where H₂S may have accumulated.

Detection Devices

Personal Monitors

- Always follow manufacturer recommendations for calibration and bump testing.
- Personal H₂S monitors must be worn in the breathing zone (collar area).
- Designed to alert individuals to H₂S concentrations of 10 ppm or greater.
- Exceptions for detection devices are allowed by site visitors who are escorted by an employee wearing a monitor.
- Respiratory protection is required at all times if a reading of 100 ppm is detected in the breathing zone, and a standby person equipped with proper equipment is required.

Respiratory Equipment

Escape Units

- Designed strictly for escape from an H₂S atmosphere.
- Consist of an escape bottle with a full-face mask or over-the-head bag system.

Self-Contained Breathing Apparatus (SCBA)

- Can be used as a work unit, if necessary.
- Used by standby/rescue personnel.
- Personnel must be medically evaluated, fit tested, and trained prior to use of the respirator.
- Personnel are required to be clean shaven where the face seal meets the skin.

Supplied Air Unit

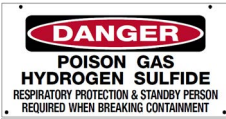
- Generally used as a work unit.
- Such units must have a positive pressure feature and must be equipped with an escape cylinder, in case the air supply is interrupted.

Note: Refer to the XTO Energy Respiratory Protection Program for more information regarding respiratory equipment.

Testing and Required Signs

- H₂S concentrations shall be measured level with the thief hatch opening on all manually gauged sour crude, condensate, and produced water tanks.
- All posted signs need to be legible and in good condition.

REQUIRED H₂S SIGNAGE BY CONCENTRATION LEVEL:

H ₂ S Concentration	Sign Placement	Sign
Opening Process Equipment with potential exposure 10 - 100 ppm	Sign visibly posted near identified exposure point and/or bottom of tank stairway	
Opening Process Equipment with potential exposure ≥ 100 ppm	8 Hour Time Weight Average (TWA)	
Pipeline carrying H ₂ S ≥ 100 ppm	Pipeline labels or markers	
Field locations with identified potential H ₂ S exposures	Signs at entrance and access points to areas and facilities	

Facility and Operation Design Requirements

- Wind direction indicator, such as a windsock, must be in place and visible at any site where H₂S concentrations exceed 100 ppm in the product stream. Drill rigs require a minimum of two wind direction indicators.
- Install external gauging systems where H₂S concentrations are known to exceed 100 ppm at the thief hatch.

INDUSTRIAL HEALTH STANDARDS

HYDROGEN SULFIDE (H_2S)

- For wells that require an H_2S contingency plan, unmanned fixed surface facilities and well sites should consider protecting against public access with fencing and locked gates. Surface pipelines are not considered surface facilities.
- Ensure adequate ventilation in areas that can have gas buildup, such as compressor stations or other enclosed structures.
- Considerations should be given to install fixed H_2S detection systems at any facility where personnel may be exposed to high concentrations of H_2S .
- Fixed H_2S detection systems shall be installed in areas where the 100 ppm Radius of Exposure (ROE) may exceed the boundary of the facility and threaten the public. The system shall have distinctive audible and visual alarms when activated. When the situation warrants, telephone or radio alarm systems shall be installed.
 - Fixed system sensors shall alarm visually at 10 ppm.
 - Fixed system sensors shall alarm audibly at 20 ppm.
 - Fixed systems shall be calibrated according to manufacturer's recommendations or as required by regulation.
 - Activation of H_2S alarms shall be treated as an actual H_2S gas release.

Drilling and Completion Operations

- All individuals working on a site where H_2S is or could be present must be trained on; the characteristics of H_2S , the associated dangers, safety procedures, first aid procedures, and what to do when H_2S is encountered or suspected.
- H_2S warning signs should be placed at the entrance of a location to warn visitors.
- The rig should be equipped with at least two wind indicating devices, with one device visible at all times.
- If H_2S is suspected, conduct a test to determine presence and concentration. Remember, do not rely upon the sense of smell, and use portable or fixed monitors.
- Provide general instruction to workers on the use of available PPE prior to allowing them to enter the location.
- When drilling or completing wells in zones where H_2S concentrations may exceed 100 ppm, a H_2S contractor with appropriate H_2S equipment must be in place and functional 1000 feet above and/or 2 days prior (whichever comes first) to entering the zone.
 - The contractor must be first aid and CPR certified, familiar with respiratory protection equipment, and familiar with H_2S operations and detection equipment.

- Each rig should be equipped with at least 3 portable or fixed H_2S detectors that have audible alarms. The detectors should be located at the trig floor, cellar area, and shale shaker/mud pits.
- Adequate ventilation should be maintained to ensure gas does not build up in work area.
- Never enter an area, such as shakers, frac tanks, etc., where H_2S may have accumulated, without evaluating the potential hazards and developing a safe entry plan.

Chemically Treated H_2S

Treating sulfide scale with hydrochloric acid can generate dangerous levels of H_2S .

- Determine the type of scale build-up prior to treating the well. If sulfide scale or iron sulfide is present, expect H_2S to be created when the well is treated.
- Check initial flow back for signs of H_2S . Elevated concentrations of H_2S do not normally continue throughout the clean-up process.
- If H_2S is detected in the flow back gas, take precautions to prevent exposure and protect personnel, and locate a fixed monitor at the flow back tank.

What are the regulatory requirements for H_2S Releases?

Occasionally H_2S is accidentally released into the atmosphere. For an accidental release of ≥ 100 lbs. of H_2S , adhere to the following:

- Contact SSHE for help calculating release quantity.
- Notify the National Response Center (NRC) or Federal authorities for outside of the U.S.
- Notify state or provincial agencies within 24 hours.
- Ensure regulatory compliance of The Clean Air Act by working with SSHE contacts to determine state and local regulations that require calculations, permits, and other information prior to testing or producing a well where H_2S is present.

Hydrogen Sulfide Regulatory Reference:

- 29 CFR 1910.1000

NORM

What is NORM?

Naturally occurring radioactive material (NORM) refers to materials present throughout the environment that are radioactive in their natural state. NORM is present in the Earth's crust and specifically in some formations from which oil and gas are produced. NORM can be present in produced fluids, especially produced water.

Where is NORM typically encountered?

NORM may concentrate in sludge and scale, produced sand, produced water, and in the ethane and propane fractions of natural gas. It is mostly likely to be found in tubulars, surface piping, vessels, pumps, and other processing equipment at some XTO company premises.

The primary route of exposure for NORM is the inhalation of gases or fine particulates containing small amounts of radioactive materials. Although less common, ingestion of contaminated particulate solids is also possible.

Where NORM is present it is important that potential exposure levels be determined, especially when the equipment is opened for inspection or maintenance.

- NORM can be detected by using external radiation measurements.
- NORM contaminated equipment and piping that exceeds state regulatory requirements shall be labeled.

NORM Worker Protection Program

When working around NORM contaminated equipment or areas all personnel must take these precautions:

- Company personnel may not enter NORM contaminated vessels. Only contractors with a state approved license from the appropriate state agency may enter a vessel or perform decontamination work.
- Never, eat, drink, smoke, dip snuff, apply sunscreen, or lip balm in the immediate work area.
- To the extent possible, avoid direct skin contact with NORM scale and sludge.

- Survey equipment in advance of planned maintenance activities to measure potential radiation exposure.
- Once equipment/piping is opened, use pancake probe to determine internal NORM concentrations.
- Remove contaminated equipment from service and vent for four hours before work commences. If the equipment cannot be left idle for four hours, shield the source by placing lead, steel, or iron between the NORM scale or sludge and personnel.
- Utilize wet methods to minimize dust generation during maintenance or dismantling activities.
- Cap, seal, or wrap NORM contaminated equipment to minimize dust generation or displacement of scale or sludge that may contaminate the surrounding soil.
- Temporary plastic ground covers are required to contain and collect any dislodged NORM contamination where there is potential for NORM to contaminate the piping or equipment storage area.
- After working in a NORM contaminated area, go through proper decontamination procedures.

Personal Protective Equipment

- Wear disposable clothing, gloves, and boot covers where contact with scale, sludges, or metal dusts contaminated with NORM is probable.
- Wear a half-face mask air purifying respirator with high-efficiency particulate air (P100) filters and goggles while performing grinding, chipping, cutting, or other operations on NORM-contaminated surfaces where dust can be generated.
- Contaminated PPE should be segregated in a drum until it's been scanned for NORM contamination.
- If any tested PPE exceeds regulatory limits, it must be handled as NORM waste.

INDUSTRIAL HEALTH STANDARDS

NORM

Removal of NORM Contaminated Equipment from Service

When equipment or piping is removed from service and has been identified as NORM contaminated, the following should be done:

- Cover all openings with plastic or another material that will prevent NORM from falling out and contaminating the area.
- If not already labeled, label the equipment or piping as NORM contaminated.
- Contact Business Unit Radiation Safety Officer (RSO) or SSHE to assist in the development of decontamination or disposal plans.
- If required, decontamination and/or disposal must be contracted out to a company holding the proper state licenses.
- If disposing or scrapping equipment/piping, perform a survey to ensure NORM levels are below disposal/scrapping limits.

Transportation of NORM

The US Department of Transportation (DOT) regulates the transportation of hazardous materials, including radioactive materials. For areas operating outside of the US; ensure the appropriate local, state, provincial, or national regulations are followed prior to transporting hazardous and/or radioactive materials. Ensure company transporting material understands DOT requirements for the transportation of hazardous materials.

Note: Refer to the XTO NORM Management Program Document for more information.

INDUSTRIAL HEALTH STANDARDS

PAINT AND COATINGS

Purpose: To consistently identify, assess, and control worker exposure to potential health risks associated with the application and removal of paints and coatings.

Workers wear respiratory protection and PPE, selected consistent with the table below during paint and coating application and removal activities.

Paint and Coating Type	Activity/Condition	Respiratory Protective Equipment Required	PPE Required
Solvent based paints and coatings including: Epoxy Resins, Polyurethanes, Alkyd enamels/paints, Acrylic Enamels	(1) Spray Application Outdoors in well ventilated areas	Half face air purifying with organic vapor cartridge and mist pre-filter	Butyl rubber or nitrile gloves
	(2) Spray/Application in enclosed, confined or poorly ventilated areas	Full face supplied air	Butyl rubber or nitrile gloves, disposable coveralls
	(3) Brush/Roller Application Outdoors in well ventilated areas	None	Goggles or face shield for overhead work; butyl rubber or nitrile gloves
	(4) Brush/Roller Application in enclosed, confined or poorly ventilated areas	Half face air purifying with organic vapor cartridge	Butyl rubber or nitrile gloves
	(5) Paint and coating mixing and clean-up only conduct in well ventilated areas (e.g. outdoors)	None	Face shield or goggles; Butyl rubber or nitrile gloves
Latex Enamel and Paint	All	None	None
Chemical Paint Strippers	(1) Stripper application to remove paint and coatings outdoors in well ventilated areas	Half face air purifying with organic vapor cartridge	Chemical resistant gloves (Glove material should be selected bases on type of stripper selected)
	(2) Stripper application to remove paint and coatings in enclosed, confined or poorly ventilated areas	Full face supplied air	Chemical resistant gloves and coveralls (Glove material should be selected bases on type of stripper selected)

INDUSTRIAL HEALTH STANDARDS

LEAD-BASED PAINT REMOVAL

Lead-based paints and coatings **MUST NOT** be used without a risk review and management approval. In applications where suitable substitutes are not available, management may approve the use of lead-based paint as a temporary exception only.

Existing paints and coatings, including galvanized materials, **MUST** be handled as containing lead unless they are tested and found to be lead free. Use protective measures when involved in activities that disturb lead-based metals or surface coatings containing more than 0.1% lead.

Protective measures include testing, engineering controls, respiratory protection, and personal protective equipment (PPE).

If lead-based coatings are disturbed, use the following testing methods to determine if lead is present:

- Colorimetric field test kits (swabs) can be used to confirm if coatings contain 0.1% or greater inorganic lead. If multi-coating layers are present consider lab analysis to confirm presence of lead.
- Laboratory analysis is required to confirm that lead concentrations are below 0.1%.

Note: Colorimetric field test kits (swabs) will not detect inorganic lead < 0.1% (e.g. the swab will appear negative) thus a lab test is required to confirm concentrations.

Respiratory Protection

Where engineering controls do not reduce airborne lead levels below OELs, the following respiratory protection **MUST** be used (unless local air monitoring data suggest that a lower level of respiratory protection can be used):

RESPIRATORY PROTECTION REQUIREMENTS

Tasks	Open Air	Confined Space ¹
Dry Abrasive Blasting	Supplied air	Supplied air blasting helmet with a tight fitting face piece.
Hot Work	Full-Face, air-purifying respirator with high efficiency particulate air cartridges (P100)	Supplied air with tight fitting face piece.
• Use of power tools • Hand brushing/scrapping • Wet abrasive blasting	Half-Face, air-purifying respirator with high efficiency particulate air cartridges (P100)	Supplied air with tight fitting face piece.
• Cold Cutting • Chemical Stripping • Power Washing	None required	None required for lead. Follow site confined space entry requirements.

¹ Approved Engineering and Work Practice Control Options may be used to justify reduced Respiratory Protection requirements. Before revising local Respiratory Protection guidelines, consult with Industrial Hygiene.

INDUSTRIAL HEALTH STANDARDS

RESPIRATORY PROTECTION

What is the XTO Respiratory Protection Program?

The XTO respiratory protection program is designed to protect employees from airborne contaminants. Personnel are expected to wear task-specific respiratory protection when engineering and work practices alone are not enough to protect personnel from harm.

Contractors are required to provide their personnel with respiratory protection when required for the task.

RESPIRATORY PROTECTION STANDARDS

Requirements for when to wear respirators

Employees required to wear respirators must abide by the following:

- Complete an initial medical questionnaire and be cleared by a medical professional.
- Pass a fit test for the specific respirator required.
- Be trained to use the respirator and/or SCBA, if needed.
- Be clean shaven in the mask seal area to ensure a proper facial seal.
- Where practical, respirators should be assigned to individual workers for their exclusive use.

Requirements for maintenance of respirators

Employees are responsible for proper care of issued respirators and must abide by the following rules to ensure that respirators function as intended.

- Document monthly inspections and periodic maintenance per the manufacturer's recommendations.
- SCBAs are to have annual inspection per manufacturer's requirements to include testing regulator and air bottle.
- Cleaning and disinfecting respirators.
- Stored in a clean, sanitary, and accessible location out of direct sunlight.
- Stored in a manner that maintains the integrity of the respirator.

Note: Refer to the XTO Energy Respiratory Protection Program for more information.

Respiratory Protection Regulatory Reference:

- 29 CFR 1910.134

SILICA

What is Silica?

A white, colorless crystalline compound, also called silicon dioxide. Silica is most commonly found in nature as quartz; it is also the major constituent of sand.

Where Silica is commonly found?

In oil and gas operations, silica may be encountered during frac sand operations, sandblasting, concrete cutting or demolition, and grout removal.

There are seven primary sources of silica dust exposure associated with **hydraulic fracturing operations**.

- Dust ejected from thief hatches or access port on top of sand movers during refilling operations while the machines are running (hot loading).
- Dust ejected and pulsed through open side fill ports on sand movers during refilling operations.
- Dust generated by movement of on-site vehicle traffic.
- Dust released from the transfer belt under the sand mover.
- Dust created as sand drops into, or is agitated in, the blender hopper and on the transfer belt.
- Dust released from operations between the sand mover and blender.
- Dust released from the top end of the sand transfer belt (dragon's tail) on sand movers.

What happens with prolonged exposure to Silica?

Breathing silica particulates for extended periods can potentially lead to silicosis. Silicosis is a lung disease where trapped silica particles react with lung tissue, causing inflammation, scarring, and reduced lung capacity. Respiratory protection must be implemented when breathing zone concentrations are above exposure limits.

INDUSTRIAL HEALTH STANDARDS

SILICA

OCCUPATIONAL EXPOSURE LIMITS (OELS) FOR SILICA

$\mu\text{g}/\text{m}^3$	Exposure	Time
25	Respirable Crystalline Silica	8 hr. (TWA)

How to mitigate exposure to Silica?

- Whenever possible, use wet methods or local exhaust ventilation when performing grinding, cutting, or chipping activities on silica containing materials.
- Respiratory protection must be worn when performing any activities above the OEL.
- When sandblasting takes place outside of a contained system, employees near the operation must wear appropriate respirators and eye protection.
- Clear the area of nonessential personnel when performing these types of jobs that increase exposure to silica.

Common Silica tasks requiring an Exposure Control Plan (ECP), including appropriate protective measures:

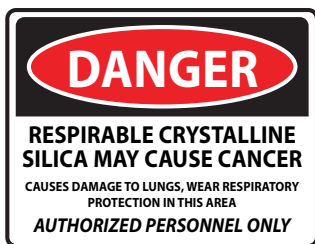
- Grouting;
- Fracking;
- Mixing dry cement; and
- Concrete work creating dust, including but not limited to jack hammering, cutting, and grinding.

Silica Safety Standards

Contract companies who have the potential for silica exposures must:

- Assess the 8-hour TWA exposure for each employee who is or may reasonably be expected to be exposed to silica that exceeds $25 \mu\text{g}/\text{m}^3$, and conduct reassessments as required.
- Notify all affected employees regarding the results of past assessments.

- Use engineering and work practice controls to reduce employee exposures to the greatest extent possible.
- Establish and implement a written ECP, and be reviewed annually.
- Establish, limit boundaries, and limit access to regulated areas as determined by exposure assessments. Signs must be posted at the entrance of regulated areas where exposures exceed the OEL of 25 µg/m³ that state:



- Provide each employee with an appropriate respirator that meets the requirements for respiratory protection under the respiratory standard and require the employees to use it while in regulated areas.
- Avoid certain housekeeping practices when cleaning up dust that could contribute to employee exposure to silica. Examples of housekeeping practices that should be avoided include dry brushing or dry sweeping, cleaning of surfaces or clothing with compressed air, etc.

Note: Refer to the XTO Energy Silica Control Plan Assessment tool to help facilitate review of contractor's program and practices.

Silica Regulatory Reference:

- 29 CFR 1910.1053

WELDING/HOT WORK FUMES

What are Welding Fumes?

Welding, burning, and hot cutting operations generate welding fumes. Metal fume components can include manganese, lead, nickel, chromium, cadmium, and zinc.

Where are the hazards (metals) commonly found?

The contaminants generated by these operations vary according to the base metal being heated and the welding rod used or the coating on the base metal. During the hot work process as the metal is being heated it vaporizes into fumes, which are easily inhalable.

What happens with prolonged exposure to welding fumes?

Some metal fumes are more harmful than others and may cause chronic systemic effects such as lung, liver, kidney, or nervous system damage, or cancer.

Exposure to zinc and other metal fumes generated from hot work on galvanized metal can lead to metal fume fever even after a short (acute) exposure.

The signs of metal fume fever resemble the flu and include:

- Sweating and shivering with fever and chills;
- Headaches and muscle aches;
- Nausea and vomiting; and
- Feeling weak and tired.

Harmful gases (carbon monoxide, sulfur dioxide, nitrogen oxides [NOx], and ozone) and oxygen-deficient atmospheres can also be present during hot work activities.

Many workers who are repeatedly exposed to welding fumes suffer from Parkinson's-like disease, "manganism," a disease which also makes it difficult to walk and move properly. Both manganism and Parkinson's disease cause tremors, shaking, and loss of muscle control.

How to mitigate exposure to metals during welding, burning, and hot cutting operations?

- Where possible use the minimum percentage of manganese in the welding rod allowed by the welding standard.
- Use ventilation to reduce potential concentrations where appropriate.
- Use respiratory protection when concentration levels exceed the OELs.

OCCUPATIONAL EXPOSURE LIMITS (OELS) FOR METALS

Metal	mg/m ³	Exposure	Time
Manganese	0.1	Inhalable Fraction	8 hr.
	0.02	Respirable Fraction	
Hexavalent Chromium	0.0002	Inhalable	8 hr.
	0.0005		STEL
Lead	0.05	Total Particulate	8 hr.
Cadmium	0.01	Total Particulate	8 hr.
	0.002	Respirable	
Nickel	0.2	Inhalable	8 hr.
Zinc Oxide	2	Respirable	8 hr.
	10		STEL

Ventilation

The movement of air to control or reduce airborne concentrations in the workplace and reduce worker exposure to airborne contaminants. There are two types of ventilation utilized by XTO.

Local Exhaust Ventilation

- Utilizes an extraction system located close to the welding fume generation to prohibit fumes to reach workers. This can be in the form of a welding bench or a trunk hose to draw the fumes away.

General Ventilation

- Fresh air is brought into the building to purge and dilute the airborne contaminants.

Respiratory Protection

XTO requires respiratory protection when concentration levels exceed the OELs.

Where there are other people working in the vicinity and/or inside the enclosure or confined space undergoing welding/burning/cutting activities, and they are at similar risk of exposure (as identified by the IH) and must adopt the same level of PPE as defined on the following page.

Regulatory Reference:

- 29 CFR 1910.1000

INDUSTRIAL HEALTH STANDARDS

Hot work Process	Open Area	Shops ¹ or Enclosures ²	Confined Space/Equipment entry ³	
			>2000 CFM/welder ⁴	<2000 CFM/welder ⁴
All Welding activities: (SMAW/MIG/TIG) and Torch Cutting	HF	HF or LEV	FF or PAPR	FF or PAPR and LEV or FF SA
Arc Gouging	FF or PAPR	FF or PAPR and LEV or FF SA	FF or PAPR and LEV or FF SA	Requires IH assessment ⁵
Abbreviation Key: HF - half-face; FF - full-face; PAPR - powered air-purifying respirator; LEV - local exhaust ventilation; SA - supplied air				

All metals (Alloy and Carbon)				
Note 1	Welding, burning, and cutting inside buildings/shops and fabrication shops (temporary and permanent) requires LEV operating with at least 100 FPM (0.5m/s) capture velocity and the capture hood positioned within 12 inches (30 cm) of the weld/burn/cut.			
Note 2	Enclosure is any space that obstructs cross ventilation (moving generated fumes away from the workers breathing zone) and has 2 sides or more i.e. field enclosure, wind breaks. Enclosures meeting this criteria must use Local Exhaust Ventilation or the specified RPE detailed above.			
Note 3	Confined space is any enclosed or substantially enclosed space not designed to be normally occupied and which could contain potentially hazardous levels of gas/vapors including welding or burning fumes. For all confined space welding, continuous monitoring is recommended for Oxygen (O ₂) and Carbon Monoxide (CO). Supplied air is required when O ₂ is less than 19.5% or exceeds 23.5% and/or if CO exceeds 25 ppm.			
Note 4	Mechanical Dilution ventilation shall be at the minimum rate of 2,000 CFM (3400 m ³ /hr) per welder. The mechanical dilution ventilation rate shall be verified quantitatively i.e. airflow testing.			
Note 5	Air arc gouging in confined spaces without sufficient dilution ventilation can result in high concentrations of welding fume, Carbon Monoxide (CO) and Ozone. Dilution ventilation is always required; an IH assessment on the adequacy of the ventilation and any supplementary respiratory protection must be completed.			

INCIDENT REPORTING

Incident Reporting Standards

This section describes the internal and external reporting requirements for incidents that occur on XTO premises. All incidents, as defined in the glossary, must be reported to your supervisor immediately.

INCIDENT NOTIFICATION MATRIX STANDARDS

Notifications are to be made based on the Actual Severity Level per the matrix below for incidents involving injury/illness to an employee, contractor, or member of the public; an environmental release or impact to wildlife; other impact to the public; a security incident; or a financial loss. See OIMS System 5 supporting documents for additional guidance for severity level determination.

Notification From		Notification To		Level 0 - 1	Level 2	Level 3 - 5
Worker / First Responder		Immediate Supervisor	IMM	IMM	IMM	IMM
Supervisor		Superintendent	NBD	IMM	IMM	IMM
		SHE Coordinator	IMM	IMM	IMM	IMM
Superintendent		Drilling Manager / Operations Manager	-	NBD	IMM	IMM
		Business Unit SHE Manager	-	NBD	IMM	IMM
Drilling Manager / Operations Manager		Production Manager / Project & Plants Manager / Business Unit GM*	-	NBD	IMM	IMM
Business Unit SHE Manager		Unconventional SSHE Manager	-	-	IMM	IMM
Business Unit GM / Production Manager		Unconventional BUS GM / Permian GM	-	-	IMM	IMM
Unconventional BUS GM / Permian GM / Projects and Plants Manager		Sr. VP Unconventional	-	-	IMM	IMM
Additional Notifications:						
Business Unit General Manager		Business Unit P&GA Contact	-	-	IMM	IMM
		Business Unit HR Contact	-	-	IMM	IMM
		ExxonMobil Risk Management	-	-	IMM ³	IMM
		Law	-	-	IMM	IMM
		Business Unit Land Contact	NBD ¹		IMM ²	
		Security	IMM ²		IMM	

INCIDENT REPORTING

Timing*	Weekends & Holidays?	Wake up at Night?
IMM (Immediate Notification)	Yes	Yes
NBD (Next Business Day)	No	No

* All notifications **MUST** be made by phone call.

- 1 = The Business Unit's Land contact should be notified for surface impacts where a landowner is involved.
- 2 = Prior to leaving the scene, the XTO Security Control Room should be called when theft of XTO property is above \$100 or when criminal activity occurs that would require law enforcement or governmental agency response/ reporting takes place on any facilities owned, leased, operated, or otherwise controlled by XTO.

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- 3 = ExxonMobil Risk Management should be notified for serious injury or fatality to an employee or third party, multiple employee or third-party injuries, local activation of an emergency response team (e.g., local Fire Department), or incidents involving local or national media attention.

* Drilling and Operations Manager should notify their immediate supervisor.

Additional Incident Reporting Notes

- For immediate notification, a telephone call is required (including nights and weekends) by listed position or delegate as soon as the incident is discovered (even though all details might not be available). Follow-up after contact is by e-mail or telephone, depending on the urgency. Frequency and timing of follow-up reports should be established during the initial notification call.
 - Actual contact **must** be made (e-mail, text, or voice mail messages **are not acceptable**).
 - If a contact cannot be reached within a reasonable time, go one level up in the organization to complete the notification.
- **Lost Time Injuries** should be communicated to Operations Manager, Business Unit General Manager and SHE Supervisor **immediately**, and **next business day** through the Sr. VP Unconventional regardless of the Actual Severity Level.
- Process Safety Events with an IRAT score of 2,000 or more should be **immediately** communicated similar to a Level 3-5 event.
- If a Level 0-2 incident has the potential to attract media coverage, the Business Unit P&GA contact should be immediately notified and engaged in the response.

XTO INCIDENT SEVERITY MATRIX (PLEASE REFER TO OIMS SYSTEM 5 FOR COMPLETE DETAIL)

Category:		Severity / Hurt Levels						
		0	1	2	3	4	5	
INJURY / ILLNESS		Near miss or incident with No Hurt	Minor Injury Injuries causing minor physical body damage	Major Injury or Illness Injuries causing significant physical body damage	Injury causing a life altering event	Injury causing a single fatality	Injury causing multiple fatalities	
ENVIRONMENTAL	Spills into Surface / Ground Water or other Environmentally Sensitive Areas	Any spill fully contained in impermeable containment & recovered	Any spill of < 1000 bbls that stays within the facility or company owned property	Spill of oil, chemical, produced water or drilling fluid getting into surface/ ground water or environmentally sensitive areas		10+ bbls 1000+ bbls		NA
	Spills into Land		Any spill > 1000 bbls with < 100 bbl of oil, chemical or drilling fluid getting outside the facility	Spill with > 100 bbls or more of oil, chemical, or drilling fluid getting outside the facility	NA			
	Gas Emissions / Releases							
	Wildlife / Habitat	See OIMS System 5 for complete detail on these environmental impacts						
	Livestock / Fisheries							
PUBLIC	No Impact	Public complaint but NO media coverage OR temp road closure	Multiple public complaints and/or single local media coverage OR secondary road closure < 24 hrs.	Extended local media coverage OR major road closure < 24 hrs.	National media coverage OR small scale evacuation > 24 hrs.	International media coverage OR large scale evacuation		
SECURITY	No Event	Site security only	Limited City/State Law Enforcement interaction	Extended City/State Law Enforcement interaction	Limited National Law Enforcement interaction	National Law Enforcement or Military Interaction		
FINANCIAL LOSS	No Loss	Less than \$100k	Between \$100k and \$500k	Between \$500k and \$5M	Over \$5M	NA		

INCIDENT REPORTING

OTHER REPORTING REQUIREMENTS

All Spills, Releases, Fires, Explosions and Well Control Incidents:

Are required to be documented in the Incident Database as soon as possible (Target - 2 business days).

Vehicle Incidents and Collisions:

- Report immediately to your supervisor any vehicle incidents or collisions involving an XTO employee or vehicle. When available, provide a copy of the police report with the first report of incident.
- Additionally, an injury report is required if an injury is sustained.
- Incidents involving third parties must be reported to ARI (800-227-2273) or appropriate vehicle leasing company, immediately with third-party information.

Property Damage

- Damage to company assets in excess of \$25,000 must be reported to ESS within 2 business days.

OSHA Notifications for SHE staff:

- Within 8 hours, notify for the death of any employee.
- Within 24 hours, notify for 1 or more employee hospitalizations, any amputation, and any loss of eye.
- Contractors are responsible for any OSHA reporting notifications.
- The OSHA toll-free number is (800) 321-6742 (OSHA). Alternatively, the nearest OSHA area office may be notified.

SHE Staff are responsible for:

- Contacting the NRC (800) 424-8802 when any oil is spilled or chemical is released into a water of the U.S., including wetlands that cause a sheen, discoloration, or emulsion in or on the water or adjoining shoreline.
- Any other environmental reporting for state or local requirements.

Supervisors or Designee are responsible for:

- Submitting an incident report through the Incident Database as soon as possible (Target - 2 business days).

Note: See OIMS System 9 and the XTO Emergency Response Plan for additional guidance. Also, refer to the incident severity matrix in the XTO incident investigation process for details regarding incident and near miss severity level.

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 as 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.	
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 Business Unit P&GA contact.



EMERGENCY RESPONSE

INCIDENT COMMANDER

Primary decision maker during an incident; has authority to order resources and reports to the Operations Manager/ Business Unit Manager. The IC is responsible for activating the Emergency Response Team (ERT) 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

Activities	Completed
Assess the incident using available information and determine immediate response objectives to protect people, environment, assets, and reputation. (Refer to PEAR Boards in Section 2 of ERP)	
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 XTO management and local authorities. Request ESG assistance if needed.	

EMERGENCY RESPONSE

Activities *continued*

Completed

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.	

Coordinate all public releases with the Business Unit P&GA contact.



Operations Manager or Business Unit Manager contact ExxonMobil Risk Management (888) 377-8778 during the following situations:

- Employee or third party fatality or serious injury;
- Multiple employee or third party injuries;
- Local activation of emergency response team; and
- Incident involving local or national media attention.

GLOSSARY - TERMS

Atmospheric Monitoring: The process of determining the presence of hazardous airborne contaminants.

Authorized Workers: See Entrants under Confined Space.

Barrier: Physical safeguard put in place to prevent a specific threat or cause of a hazardous release event, or to reduce the potential consequences if an event has occurred.

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

Chemicals: Elements or compounds that are in physical states such as gas, liquid, or solid.

Class A fire: Ordinary combustible materials (wood, paper, trash, plastics, etc.)

Class B fire: Flammable/combustible liquids and gases (hydrocarbons, oils, fuels, grease, etc.)

Class C fire: Energized electrical equipment

Class D fire: Combustible metals

Class I, Div 1: Flammable combustible materials that may exist under normal operations

Class I, Div 2: Flammable combustible materials that may exist under abnormal operations

Company Premises: Locations and property owned (or leased from others or accessed through rights secured by the Company), operated, and/or controlled by the Company.

Competent person: One who is identifying existing and predictable hazards in the surrounding, working conditions which are unsanitary, hazardous, or dangerous to employees and who has the authority to take prompt corrective measures to eliminate them.

Confined space has the following characteristics: 1) is large enough and so configured that a worker can bodily enter and perform work; and 2) has limited or restricts means for entry or exit; and 3) is not designed for continuous human occupancy.

Confined space terms continued:

Attendant (Stand-by Personnel): One or more properly equipped and trained (First Aid/CPR) person(s) stationed OUTSIDE the permitted space. The Attendant shall protect the entrants by continuously monitoring all activities within and outside of the permit space. At no time may the Attendant enter the permit space. If an emergency situation arises, the Attendant shall actively participate in a non-entry rescue by requesting emergency services, providing accurate information to rescue personnel (number of entrants, possible problems, atmospheric conditions, time of last contact, etc.) and also assist in directing the emergency situation. These shall be his only job duties while posted as a standby.

Confined Space Site Supervisor: An XTO Supervisor or an XTO employee or consultant/contractor designated as the Site Supervisor by an XTO Supervisor. The site supervisor is responsible for proper identification and preparation of the confined space to be entered. He/she should know the proper procedure for testing and monitoring the confined space to determine if acceptable or prohibitive conditions exist. In preparation for entry, a Confined Space Entry Permit must be initiated and completed according to the following procedures.

Entrants, also known as authorized workers, are properly trained and equipped personnel who are authorized by the XTO Site Supervisor to enter the PRCS. Prior to entry, the entrant(s) must be made aware of known or expected hazards, properly trained in the use of PPE, and informed of the communication techniques that will be used to communicate with the PRCS Attendant.

Permit-Required Confined Space (PRCS) has all of the characteristics of a confined space, plus any one of the following: 1) contains or could contain a hazardous atmosphere; or 2) contains a material that could engulf an entrant; or 3) has an internal configuration which could entrap an entrant; or 4) contains any other recognized serious safety or health hazard.

Rescue Service: One or more properly equipped and trained person(s) designated by the XTO Site Supervisor to rescue or remove injured or incapacitated entrants from permitted spaces. This service should be stationed on site and may be a designated employee or outside contractor who is trained in this procedure.

GLOSSARY - TERMS

Critical Lift: Defined as a lift over pressurized equipment, personnel lift, blind lift, or tandem lift >80% of the units lifting capacity.

Don/Doff: To put on or take off.

Electrical Equipment Warning Labeling: A required identifier found on items such as switchboards, panel boards, control boxes, control panels, motor control panels, etc. Labels must contain the nominal system voltage, arc flash boundary; and minimum arc rating of clothing or site-specific level of PPE. (Note: electrical equipment in dwellings (office/home) does not require labels.)

Electrical Hazard: A dangerous condition where contact or equipment failure could result in electric shock, arc flash burn, thermal burn, or blast.

Electrical Risk Assessment: An overall process that identifies hazards, estimates potential severity of injury or damage to health, estimates the likelihood of occurrence of injury or damage to health, and determines if protective measures are required. Note: Arc Flash Risk Assessment and Shock Risk Assessment are two types of risk assessment required by NFPA 70E.

Energy Sources includes electrical, mechanical, hydraulic, pneumatic, or contained pressure.

Emergency Evacuation Equipment may include, but is not limited to: full-body harness, lifeline, vertical hoist, self-contained breathing apparatus, fire extinguisher, first aid kit, etc. Appropriate rescue equipment for the PRCS entry must be staged in the immediate area in case of need.

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

Fall Arrest Systems: Consist of a properly fitted full-body harness, connectors, and anchor point all which are rated for 5,000 lbs. of force that have safety lips or snap hooks to prevent accidental opening.

Fall Restraint System: System in place to restrain workers from reaching a fall hazard.

GLOSSARY - TERMS

Fire Watch: A person on standby whose sole responsibilities are to monitor the atmosphere for flammability, inform the affected workers if conditions change, monitor the area for fires caused by hot work, and extinguish incipient stage fires. The fire watch must remain on-site for at least 30 minutes after hot work concludes to ensure no fires ignite.

Global Harmonization System (GHS): Created by the United Nations in an effort to standardize the communication of chemical hazards and adopted by OSHA in 2012. GHS standardizes safety data sheet format, labeling requirements, and training requirements throughout the world.

Hazardous Atmosphere(s): Environment that could include oxygen deficiency, oxygen enrichment, flammable environments that exceed 10% of the LEL, H₂S levels that exceeds 5 ppm TWA, CO levels that exceed 50 ppm TWA, NORM 50 µR/hr.

Hazardous Chemical: A chemical which poses a physical or health hazard.

Health Hazard: The presence of acute or chronic health effects that may affect people when they are exposed to an agent.

Hot Work: Work involving electric or gas welding, cutting, brazing, or spark-producing operations in classified areas.

Hydrocarbon: Organic compound containing only hydrogen and carbon and often occurring in petroleum, natural gas and coal. Examples include: fuels, condensate, LNG, Benzene, crude oil, methane, ethane, propane, butane, etc.

IRAT: Incident Risk Analysis Tool

Incidents that must be reported include - Injury, spills, vehicle, security related events, property damage, release, theft, fire, and near misses.

Incipient Stage: Initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers without the need for specialized PPE.

GLOSSARY - TERMS

Immediately Dangerous to Life or Health (IDLH): Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a PRCS. Examples include oxygen deficiency, flammable or toxic atmospheres, radiation, toxic chemical exposure, etc.

Isolation: Action taken to prevent the entry of hazardous materials or the creation of hazardous conditions in a permitted confined space. Examples include blanking, blinding, removal of pipe spools, double block and bleed, energy isolation, etc.

Label: A written, printed, or graphic material affixed to a container.

Ladders can be fixed or portable. Fixed ladders are typically associated with towers and tanks. Portable ladders typically consist of extension, step, or multi-purpose ladders.

Lifting Gear: Components used between the lifting unit and the load, slings, chains, and shackles that may be used simultaneously or individually.

Lifting Units: Cranes, chain blocks and winches.

Line of Fire: 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.

Lockout/Tagout (LOTO): Procedures that must be followed prior to performing servicing and maintenance activities on equipment or processes where the unexpected energization of equipment could cause injury to a worker. Energy sources must be identified and then controlled using locking devices and/or tags before working on equipment

Lockout/Tagout Group Process: Where multiple persons or work groups are involved in the isolation of energy from a system, one person must be identified as having overall responsibility for coordinating the energy isolation.

Lower Explosive Limit (LEL): Represents the lower limits at which a gas or vapor is flammable or explosive at

ordinary ambient temperatures. It is expressed in percent of gas or vapor in air by volume.

NFPA 70E: The standard to which employers are held by OSHA. Arc Flash Risk Assessment and Shock Risk Assessment are two types of risk assessment required by NFPA 70E.

Occupational Exposure Limits (OELs): Is an upper limit on the acceptable concentration of a hazardous substance in workplace air for a particular material or class of materials.

OIMS: Operations Integrity Management Systems

OIMS 2: Operations Integrity Management System – Drilling

OIMS 3: Operations Integrity Management System – Completions & Wellwork

OIMS 4: Operations Integrity Management System – Contractor Interface

OIMS 5: Operations Integrity Management System – Incident Investigation and Management

OIMS 7: Operations Integrity Management System – Safety, Health, and Work Management

OIMS 9: Operations Integrity Management System – Emergency Response

OIMS 10: Operations Integrity Management System – Process Safety and Mechanical Integrity

Opening Process Equipment (Breaking containment): The intentional opening or releasing of energy or substances stored within systems such as pumps, piping, turbines, compressors, vents, etc. Liquid or gas hydrocarbons, hydrogen sulfide, process chemicals, air and steam are examples of what could be released when these systems are opened. Examples include unbolting flanges, removing screwed fittings, opening vents, etc.

Permissible Exposure Limits (PELs): The legally enforceable limit set by OSHA, to a chemical or substance.

GLOSSARY - TERMS

Personnel Lifts: Mechanical platforms used to lift personnel to perform work. They include bucket trucks, boomed lifts such as a JLG, scissor lifts, etc.

Permit-Required Confined Space (PRCS): See Confined space

Personal Protective Equipment (PPE): Equipment designed to protect the body from injury or illness. PPE must meet regulatory and/or industrial standards, such as ANSI, to be considered authorized.

PPE Hazard Assessment: A survey of work area(s) to determine what type(s) of PPE are necessary in order to prevent injury from any potential hazard source.

Physical Hazard (HAZCOM): The presence of characteristics such as explosive, pressurized gases, flammable liquids, solids or gases, oxidizers, radioactivity, corrosiveness, etc.

Qualified and Authorized Personnel is one who has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations. They have received documented safety training (NPFA 70E) every three years. Only Qualified and Authorized Personnel are allowed to install, maintain, or repair electrical equipment or work on energized circuits ≥ 50 V.

SHE: Business Unit Safety, Health and Environment contacts.

SSHE: Central Function including Security, Safety, Health, and Environment contacts.

Safeguard: Layer of protection that either prevents an undesirable event from occurring or mitigates the consequences of such an event. Examples: physical barriers, SOPs, high-level shut down, and kill weight fluids, etc.

Safety Data Sheet (SDS): Formerly known as MSDS, is a document containing chemical hazard and handling information.

GLOSSARY - TERMS

Scaffolding: Consists of poles, tubes, pins, cross braces, and planks. It is a temporary structure put in place to work from for periods of time that would preclude the use of ladders or personnel lifts.

Self-Retracting Lanyard (SRL): A specific kind of lanyard that is used with a safety harness that utilizes inertia to activate a breaking mechanism that is part of a block unit housed inside the body of the lanyard.

Short Term Exposure Limits (STEL): The allowable average exposure over a short period of time, not to be exceeded more than 4 times a day as long as the time weighted average is not exceeded.

Should vs. Shall/Must: For the purposes of this handbook, the word "should" indicates a strong recommendation while "shall/must" indicates an XTO requirement.

Sloping: A method of protecting employees from cave-ins by inclining the sides of the excavation away from the workers. 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.

Spark-Producing Devices: Equipment that could produce an electrical spark, it includes electrical hand tools, opening of energized electrical boxes, air driver impact wrenches, etc.

Spotter: A trained individual who is responsible for observing hazards from a view point that is otherwise restricted from view by the operator. The spotter has the authority and responsibility to shut down the process when any recognized hazard is observed. Consider additional flagman/signal man where pedestrian traffic or other hazards exist beyond the spotter's capability.

Stop Work Authority: The right, responsibility, and obligation of personnel to stop work when unsafe conditions or behaviors are observed.

XTO Site Supervisor: Can be an employee or consultant/hat contractor who has been designated site supervisor by an XTO Energy Supervisor

NOTES

SAFETY COMMITMENT

While Risks Exist, We Believe:

- Each of us has a personal responsibility for our safety and the safety of others.
- No job is so important that it will be pursued at the sacrifice of safety.
- Job planning and preparation are required to prevent accidents and injuries.

MAKE SAFETY YOUR PRIORITY.

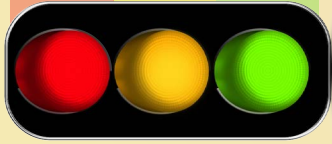


Please sign and date that you have read and understand the sections of this Safety Handbook that apply to your job.

Signature & Date:

Add Personal Safety Commitment that enforces your drive towards safe choices and safe teachings:

LAST MINUTE RISK ASSESSMENT



STOP & IDENTIFY THE RISKS

- Look around & review the job steps.
- What are the hazards?
- What is the worst thing that could happen?

THINK THROUGH THE HAZARDS

- How do I manage these hazards?
(*Job Knowledge, Training, Proper Tools, PPE...*)
- Involve co-workers.

ACT TO REDUCE THE RISKS

- Take necessary action to ensure the job is done safely!

LAST MINUTE RISK ASSESSMENT

WHEN TO CONDUCT A LMRA?

- When there is any doubt in your mind about the safety of the job.
- At job site prior to starting work.
- Before changing jobs during the day.
- When job conditions change.

For non-routine work activities or unusual circumstances, consider conducting a more thorough risk analysis





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