Dear Employee:

ConocoPhillips Alaska, Inc., Glacier Oil & Gas, Hilcorp Alaska, Mustang Holding LLC, and Santos Ltd.; (collectively, "Companies" and individually "Company") have been working to standardize safety expectations and requirements in our operations. This publication is a product of that effort.

Our goal is to provide each of you with a safer workplace by identifying and implementing fundamental, uniform safety practices.

This Safety Handbook defines standards of conduct that must guide our day-to-day efforts. It explains your safety responsibilities and the responsibilities of your co-workers. We expect you to understand and use these safety rules while on the job. It is a requirement of employment. Following the rules is also an obligation to your coworkers, to your family, and to yourself.

Please contact your supervisor if you have any questions regarding this handbook or how it will be implemented along with specific Company safety standards and procedures in your area.

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PHONE NUMBERS
ConocoPhillips Alaska, Inc.

Anchorage
Emergency 911
Security Control Room (Emergency) 907-265-6150
Kiosk 907-265-6235
Safety/Training ..... 907-265-1129 / 907-263-4681

Kuparuk
Emergency 907-659-7300
Security 907-659-7600
Environmental 907-659-7242
Spill Response Coordinator 907-659-7997
Safety 907-659-7220

Alpine
Emergency ..... 911 or **907-670-4900**
Safety 907-670-4756
Environmental 907-670-4200
Spill Response 907-670-4586
Emergency Services Chief 907-670-4752
Security 907-670-4002
Medic (Non-Emergency) 907-670-4100

Willow
Emergency ..... 911 or 907-670-4900
Safety 907-670-1251
Environmental 907-670-1252
Spill Response 907-670-1220
Emergency Services Chief 907-670-1210
Security (Non-Emergency 907-670-1230
Medic (Non-Emergency) 907-670-1200

Alyeska Pipeline
Pump Station 1 907-659-2637

Glacier Oil & Gas - Savant Alaska LLC:

Badami: Operations Superintendent..... 907-659-1349
Control Room 907-659-1300

Hilcorp Alaska

Endicott

Emergency (on-site Direct Dial).....**911 / 6900**
Emergency (off-site or Cell)..... 907-**659-6900**

Milne Point

Emergency (On-site)..... **911**
Emergency (from off field, or cell) **907-670-3399**

Nikaitchuq

Security 909-670-8631
OPP Control Room..... 907-670-8670
SID Control Room 907-670-0760

North Star

Emergency (On Island)..... **911**
Emergency (Off Island)..... **907-670-3500**

Oooguruk

Security 907-670-6598
OTP Control Room 907-670-6523
ODS Control Room 907-670-6642

Point Thomson

Deadhorse Pad 907-685-3500

Prudhoe Bay

Emergency (On-Site) 911
Emergency Dispatch PB East 907-659-5300
Emergency Dispatch PB West 907-659-4222

Oil Search Alaska, LLC

Security / Emergency..... 907-685-4200
Anchorage Main 907-375-4600

SAFETY

Safety is identifying and eliminating or minimizing occupational safety and health risks. Management has the principal responsibility for safety, and all employees and contractors share an obligation for safety.

Guiding Principles

- Occupational injuries and illnesses are preventable.
- Safety is fundamental to the conduct of our business.
- Employee involvement, feedback, and recognition are fundamental to safety.
- Safe behavior is doing the job right.
- Workplace risk will be reduced in the following priority:
  1. Engineering controls;
  2. Administrative controls and operating practices;
  3. Personal protective equipment.
- Management is responsible for visibly and consistently establishing safety as a core value.
- Management is responsible and accountable for the safety of employees, contractors, and the general public.
- Employees and contractors are responsible and accountable for their actions.
- Employees and contractors have an obligation, without fear of reprisal, to notify management of apparent hazards, and they have the right to receive timely and adequate responses.
- All personnel have the authority and responsibility to intervene and immediately stop any unsafe acts or situations, as well as any work you observe not following procedure.

Supervisor Safety Expectations

The Supervisor is responsible for the safety of the operation. Production goals will be accomplished with safe operations. The Supervisor is expected to:

- Set an example for employees to follow.
- Know the job and have a thorough knowledge of the hazards associated with each operation.
- Communicate safe work practices to each employee.
- Hold and document periodic safety meetings.
- Report all injuries, illnesses, near misses, and incidents. Investigate where applicable and ensure corrective actions have taken place.
- Perform daily safety surveys to ensure that safe conditions exist and that safe practices are being followed.
- Ensure that employees know to report all injuries, illnesses, and unsafe conditions or practices.
- Know, support, and inform employees of Company policies and procedures.
- Ensure that all new employees receive a safety orientation prior to reporting to any work assignment.
- Ensure that all employees receive applicable training in the work practices necessary to safely perform their work.

Individual Safety Expectations

The success of any safety program is based upon each individual having a positive attitude toward safety and injury prevention. Each individual is expected to:

- Be responsible for the safe performance of the job, both for your personal safety and that of fellow workers. This includes the proper use of personal protective equipment (PPE), safety equipment, and adhering to safe work practices.

- Report promptly every injury, near miss, and incidence of fire, equipment or property damage to your Supervisor.
- Take necessary actions to stop or correct unsafe behaviors or conditions and, if appropriate, report them to your Supervisor.
- Actively participate in safety meetings.
- Assist in the investigation of incidents as requested by your Supervisor.
- Become familiar with the contents of this handbook, Company policies, and pertinent standard or safe operating procedures.
- If a work situation arises that is not covered by this handbook, consult your Supervisor.
- Never deviate from a written procedure without Supervisor or the appropriate level of review and approval.

Safe Work Expectations

The safety standards in the Alaska Safety Handbook (ASH) are intended to establish defined, consistent ways of performing work in Company operating areas. Each employee must be familiar with these safety standards, as they have a daily impact on work done.

Working safely is a condition of employment. Employees who fail to observe proper standards of conduct, or who willfully violate Company rules and/or act in an unsafe manner, will be subject to appropriate disciplinary action, which may include dismissal at the discretion of the Company.

For details please refer to the appropriate existing Company or Contractor Company HR disciplinary policies.

Lifesaving Rules

The following lifesaving rules are designed for the oil and gas industry. These clear and consistent rules recognize risks in the workplace and the proper barriers and safeguards to protect workers.

The applicable sections of this handbook are listed in black text beneath each rule.

LINE OF FIRE

Keep yourself and others out of the line of fire.

Employee Safety

Equipment Safety

Heavy Equipment Safety

PERMIT TO WORK

Obtain a valid work permit when required.

Safety Standards, Permits, Requests

Unit Work Standard

Hot Work Standard

Process Opening /Blinding Standard

CONFINED SPACE ENTRY

Obtain authorization before entering a confined space.

Confined Space Entry Standard

WORK AT HEIGHTS

Protect yourself against fall when working at height.

Employee Safety

Fall Protection Requirements / Procedures

Ladder Safety

Scaffold Requirements

LIFTING OPERATIONS

Follow safe lifting operations and do not walk under a suspended load.

Heavy Equipment Safety

Mobile Crane / Side Boom Practices

Rigging / Lifting

Low Temperature / High Wind Operation

ENERGY ISOLATION

Verify isloation before work begins.

Energy Isolation Standard

GROUND DISTURBANCE/EXCAVATION

Obtain authorization before starting ground distrubance/excavation activities.

Excavation, Trenching & Drilling Standard

Snow Removal Standard

DEFEATING SAFETY DEVICES

Obtain authorization before bypassing, inhibiting or defeating a safety protection device or equipment.

Safety Standards, Permits, Requests

Tagging & Flagging Standard

Defeated Safety Device Standard

DRIVING

While driving wear your seat belt, do not use your mobile phone and do not exceed speed limits.

Transportation

Vehicle Safety

Safe Driving Rules

Disabled Vehicle

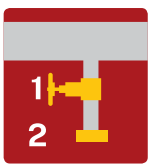
Foul Weather Contingency Plans

PROCESS SAFETY FUNDAMENTALS

The Process Safety Fundamentals (PSFs) are simple, actionable, good operating practices developed to improve process safety awareness and create discussions in the field.

These practices can be followed in most cases, but when they cannot, stop and have a discussion between your team and supervisor to determine an alternative course of action to safely complete the work.

Use two barriers for hydrocarbon vents and drains.



Follow an approved change management process prior to altering process systems (even if temporary).

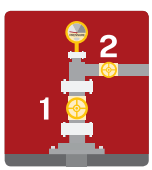
Do not leave critical draining and transfer operations unattended.

Verify for complete tightness after installation or maintenance work.

Know the condition of your safety devices. Risk assess any impairments or deferrals.

Ensure equipment is pressure-free, drained and properly isolated before starting work.

Walk the line. Verify and validate any line-up change.



Ensure effective well isolation, with at least two barriers, when working downstream of a well.

SAFETY GUIDELINES AND PROGRAMS

Note: Always be familiar with site-specific safety requirements.

General Safety Rules

No job is so important that you cannot take time to do it safely.

1. Any Company or contract employee who works unescorted at the various field-operating areas or is North Slope assigned shall complete, at a minimum, the Alaska Safety Alliance (ASA) North Slope Training Cooperative (NSTC) Unescorted Course (or equivalent training approved by NSTC Operators Group) and the North Slope Orientation (NSO) prior to arrival at their assigned location. Training is available from the Alaska Safety Alliance. Any person physically working on equipment or driving Company vehicles would generally require the “unescorted or BOP+NSO” training requirements regardless of local oversight. On completion of this course, personnel will be issued an official Alaska Safety Alliance card, which is required for issuance of a Company badge.
2. All non-facility assigned personnel shall get approval and sign in at the facility Control Room or designated location before proceeding into any process area or right-of-way. Contact the facility Control Room for access procedures.

   Personnel shall also sign out upon completion of work or whenever leaving the facility.
3. Devices that are not certified as intrinsically safe – including but not limited to cell phones, watches, earbuds, lights, and any other electronic or battery powered devices – must not be used or powered up in classified areas unless allowed by Company policy.
4. No work shall be started on any equipment without the knowledge and consent of the person responsible for that area.
5. No equipment shall be operated unless the operator has received proper training on that equipment.

6. All equipment shall be positioned in such a manner that ensures the equipment's exhaust does not enter buildings or occupied areas.
7. Compressed air shall not be applied to clothing or personnel. Compressed air used for cleaning purposes must be reduced to less than 30 psi and must have effective chip guarding and personal protective equipment in place.
8. Only compressed air shall be used for pneumatic tools in accordance with manufacturer recommendation.
9. An atmospheric test must be conducted prior to using pneumatic/hammer wrenches in a classified area.
10. Serious accidents have occurred because the injured personnel were wearing jewelry, loose clothing or long, unrestrained hair. These injuries may have been caused by contact with hazards such as moving machinery, energized electrical systems, hot surfaces, or less obvious events like catching rings when climbing equipment.

    The following guidelines are to be followed to prevent injuries whenever working at an operations facility, site or shop area:

    - Finger rings, metal-banded wrist-wear, and other conductive items shall not be worn when performing live electrical work.
    - Necklaces or medallions shall be removed or tucked inside clothing so as not to create a hazard.
    - Rings shall be removed, taped up or gloves worn over if a catching hazard exists.
    - Unrestrained long hair shall be controlled whenever working around rotating/moving equipment.
    - Precautions shall be taken to ensure loose clothing or accessories do not pose a hazard whenever working around rotating equipment.
11. Fire extinguishers, alarm boxes, fire doors, air packs, eyewash stations, and all other emergency equipment shall be maintained in good working order and kept clear of obstructions.

12. For air and ground travel to/from and on the North Slope, personnel shall carry the following from October 1 through May 1 or as weather conditions warrant: heavy coat, warm shoes, hat that covers the ears, and gloves or mittens.
13. Personnel or work crews involved in work outside of a facility shall have radios or other means of communication in their possession.
14. Running in work areas, except during an emergency, is prohibited.
15. Avoid distractions such as texting, web browsing, or reading email when walking to maintain "eyes on path."
16. When ascending or descending stairways, use the handrail, and take one step at a time.
17. All work will be risk assessed to identify the hazards, evaluate the risks, and specify control measures.
18. Understand facility alarms and know a safe emergency exit path to the assembly area from your work location.
19. Fighting and horseplay are strictly prohibited on Company property.
20. Illegal substance and alcohol use or possession is prohibited while on Company property. All personnel must notify their Supervisor, as directed in company policy, if taking prescription medication that may inhibit their job performance. Prescription drugs should be kept in the original container.
21. All visitors shall adhere to site-specific PPE requirements.
22. Many wells on the North Slope are experiencing subsidence around the wellhead that can lead to surface holes. When working on or near wellheads, be alert for potential gravel subsidence areas. If this occurs, immediately vacate the area and report subsidence locations to the responsible Supervisor for that work area. Restrict access to area until appropriate measures can be taken.
23. If lightning or thunder occurs, suspend all outside activities and immediately seek shelter inside.

24. All hose connections in pressure service will be positively secured.
25. Chain operators on valves shall be equipped with safety cables/lanyards or similar safety restraint systems.
26. In-service bolting tasks involving the tightening, loosening, or removing flange bolts that are pressurized or still contain process gas or liquids can pose a serious hazard. All in-service bolting (hot, skip, and four or half bolting) shall be conducted utilizing your specific company standards or recognized industry practices.

Industrial Hygiene (IH) Program

The goal of the Industrial Hygiene Program is the prevention of worker exposures to harmful agents in the workplace. Key elements are anticipation, recognition, evaluation, and control of workplace health hazards.

The operating companies have established industrial hygiene programs to assure safe, healthful, and productive working environments for all personnel. Details can be found in each Company's HSE policies, procedures, and HSE management systems. IH services and programs include:

- Pre-job safety and health analysis
- Project design review
- Management of change review
- Workplace surveys and investigations
- Engineering controls evaluation and design
- Work practices and administrative controls
- Ergonomic assessments
- Health hazard exposure evaluations – chemical, physical, biological agents
- Hazard communication – safety data sheet (SDS) systems, chemical inventories, new chemical evaluations
- Laboratory chemical hygiene program
- Superfund Amendments Re-authorization Act (SARA) and Toxic Substance Control Act (TSCA) compliance

- PPE and respiratory protection programs
- Chemical agent hazard control programs for benzene, hydrogen sulfide, lead, asbestos, etc.
- Physical agent hazard control programs for noise, radiation, naturally occurring radioactive material (NORM), etc.
- Bloodborne pathogens program
- Emergency response support
- Worker health training
- Contractor health and safety coordination/assurance

Process Safety Management (PSM)

The objective of the PSM program is to mitigate catastrophic releases of the highly hazardous chemicals defined in the OSHA regulation 29 CFR 1910.119. Company specific programs to address the requirements for PSM compliance shall be followed for PSM covered processes.

Office and Camp Safety

Introduction

In addition to the other procedures/precautions in this handbook, the following general safety precautions should be followed when working in an office.

Orientation

Personnel reporting to any Company Office/camp complex, offshore location, or vessel for the first time shall receive a site safety orientation. This orientation will be documented and retained per company policy.

Precautions

1. All personnel shall be familiar with activation of the emergency alarm system and fire extinguisher(s) nearest to their workstation and living areas.
2. All personnel shall become familiar with the appropriate evacuation route(s) and assembly area(s) for their workstation or living area. Evacuation routes for each floor and building area are clearly marked. Use the stairwell closest to your workstation or living area to evacuate.
3. During fire alarms, Floor Wardens/Security Officers shall make last-minute searches of their areas to ensure all personnel are evacuated. Help the Floor Wardens/Security Officers by clearing the area quickly, and aid them if requested. If a Floor Warden/ Security Officer requests you to leave an area, do so! If a door is closed, check carefully for high temperature or smoke before opening. Close all doors on your way out.
4. During evacuations, do not use elevators. Use the stairwells, following the exit signs and evacuation drawings. If immediately available, take your wallet, prescription medications, government-issued identification, and keys with you. Dress appropriately for current weather conditions. Evacuate to your assigned assembly area.
5. Personnel with a disability/condition that would preclude their ability to evacuate shall inform their Floor Warden or Security. During evacuations, seek shelter in a stairwell and await the arrival of Security or Fire Department personnel for assistance.
6. Become familiar with the proper procedures to follow during any type of emergency and participate in all evacuation/disaster drills.
7. Keep all passageways, entry ways, aisles, storerooms, service rooms, and work areas clean, orderly, sanitary, and well maintained, with no obstructions. Eliminate all tripping hazards from the work place. Aisles and hallways should provide unobstructed movement and immediate access for fire protection personnel and equipment.

8. Keep flammable or combustible material and residue to a minimum. Store in approved metal safety cans and storage cabinets. When disposing of flammable, combustible or hazardous material, ensure that all appropriate safeguards and regulations are followed.
9. Report all spills immediately.
10. Erect barricades around hazardous areas. Never disregard them, even though the danger may not be apparent.
11. Safely stack material/boxes no closer than 18 inches to the plane of sprinkler heads. Do not block access to fire exits, fire extinguishers, electrical control panels, etc.
12. File drawers and desk drawers should not be left open. Do not overload drawers or shelves so that file cabinets or bookcases can tip over. Keep heavy files in lower drawers. Secure file cabinets and bookcases to wall or each other.
13. To avoid creating an electrical hazard, do not overload circuits. Check with Building Operations prior to acquiring any non-standard office electric equipment (small appliances, space heaters, electric kettles, etc.). Routinely check the condition of power cords and plugs.
14. Always use an approved ladder or stool to get articles out of reach from the floor. Do not use a chair or other makeshift device to reach high places.

Fire Protection

Response Procedures

In case of fire, the following procedure should be used:

1. Summon emergency response by whatever means available.
2. Isolate all fuel sources and/or threatened facilities if it can be done safely.
3. Do not use a fire extinguisher unless you have been trained in its use. Do not fight a fire beyond the incipient stage unless you are trained and equipped

to do so as a part of a fire department/brigade or emergency response team. Do not fight a fire before alerting someone else.

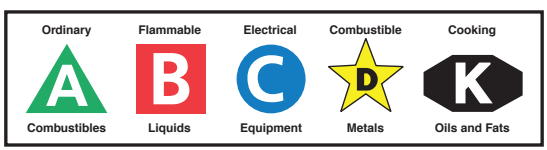
4. Fire fighting should be limited to trained personnel and must be conducted within the limits of the individual's training and experience.

Suppression Equipment Available

Fire extinguishing methods at Company facilities include but are not limited to:

1. **Fire Extinguishers**

   Some portable fire extinguishers are of primary value on only one class of fire; some are suitable on two or three classes. None are suitable for all five classes of fire. Portable extinguishers carry markings indicating classes of fires on which they should be used. Color-coding is part of the identification system.



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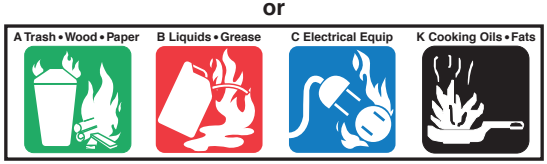


The Supervisor or designee of a facility where fire extinguishers are located shall be responsible for inspection, maintenance, and recharging. Inspections may be accomplished by any trained individual approved by the facility supervisor.

The monthly inspection includes the following elements:

- Confirm that the extinguisher is in the correct location, mounted in the cabinet or hanger correctly and is available for use.

- The extinguisher is unobstructed and visible from any location in a room or space. If the extinguisher itself is not visible, a sign shall be placed that identifies the location.
- Operating instructions on each extinguisher are legible and facing outward.
- Safety seals and tamper indicators are not broken or missing.
- Pressure gauge reading or indicator is in the operable range or position.
- Initial and date the inspection tag or appropriately document/record in electronic files.

2. **Water**
   - Hose Streams
   - Automatic Sprinkler System
   - Fire Response Vehicles
   - Fine Water Mist
   - Foam
3. **Gaseous Agents**
   - Extinguishers
   - Fixed Systems (includes Halon, FE13 and Novec 1230)

Detection and Suppression Equipment Available

Numerous types of fire, smoke, and gas detectors are installed in Company facilities. Employees are responsible for understanding the type of detection, suppression and associated alarms in their work and living areas.

Evacuation/Emergency Procedures

All Company facilities have specific emergency and evacuation procedures. If you are not sure as to your specific role or action, check with facility management prior to proceeding with any work.

EMPLOYEE SAFETY

Personal Protective Equipment (PPE)

Eye and Face

Personnel shall wear eye protection when working in process areas, construction locations, or other areas where there is radiation, chemicals, or any other identifiable or suspected eye or face hazard. This shall include personnel who are in vehicles on gravel roads unless otherwise exempted by Company policy.

Activities or conditions that create flying particles, such as sanding, scraping, grinding, chipping, buffing and blasting require impact-type goggles or safety glasses that provide a tight seal around the eye area and a face shield. Workers within 20 feet of others performing these tasks are required to wear the same level of eye protection unless barriers (i.e. welding screens or curtains) are in place to control the exposure.

Prior to removal of eye protection, measures for decontamination must be in place whenever activities that create flying particles, such as sanding, scraping, grinding, chipping, buffing and blasting are conducted.

All eye protection must meet the requirements of ANSI Z87.1. Safety glasses shall have side shields.

Personnel may wear contact lenses if the lenses are used in conjunction with approved eye protection equipment.

Personnel shall wear chemical-type goggles and face shield when handling chemical products that present an eye or face hazard or are present in the immediate vicinity where these chemicals are being handled. Refer to the SDS.

Respiratory Protection

When engineering and administrative controls cannot effectively control exposure to airborne contaminants, respirators shall be used.

Employees shall use respiratory protection in accordance with their company's Respiratory Protection Program.

When wearing a respirator, facial hair must be trimmed (no more than 24 hours beard growth) to prevent interference between the sealing surface of the face-piece and the face, or interference with valve function. Some examples of facial hair that interfere with the respirator's seal include goatees, large moustaches, and long sideburns.

Head Protection

Personnel shall wear Class E hard hats meeting the requirements of ANSI Z89.1 when working in process areas, construction areas, or areas where an overhead hazard may be present. Climbing style safety helmets that meet these requirements are permitted. Metal hard hats are not allowed.

Foot Protection

Employees shall wear protective footwear when working in process areas or other areas where there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole, or where exposed to electrical hazards.

Protective footwear shall meet the requirements of ASTM F2412-11, "Standard Test Methods for Foot Protection," and ASTM F2413-11, "Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear," and any additional standards associated with the person's job, i.e., chemical exposure, electrical exposure.

Extreme cold weather boots not meeting the ASTM Standards may be permitted in cold weather conditions for those individuals who must work outdoors for extended periods.

Shoes with heels are recommended for personnel whose jobs require them to climb ladders with round rung steps.

Traction devices are required for outside work where snow or ice is present. Refer to Company policy for additional guidance.

Electrical Protection

Personal protective equipment for electrical workers shall comply with 29 CFR 1910.137 and NFPA 70E.

Personnel working on energized circuits of 50 volts or greater shall not wear the following types of fabrics, either alone or in blends: acetate, nylon, polyester, or rayon unless the fabric has been rated to withstand the conditions that may be encountered by the employee.

Hand Protection

Employees shall use appropriate hand protection when hands are exposed to hazards such as skin absorption of harmful substances, lacerations, abrasions, punctures, vibration, or chemical or thermal burns.

Hearing Protection

Employees shall use hearing protection (earplugs or muffs) when exposed to noise greater than 82 dBA. Double hearing protection (earplugs and muffs) is required when exposed to noise levels exceeding 100 dBA.

Signs will be posted in areas exceeding 82 dBA indicating hearing protection is required, and signs will be posted in areas exceeding 100 dBA indicating double hearing protection (earplugs and muffs) is required.

All employees exposed to noise of 85 dBA or above (82 dBA 12-hour equivalent) on the job will be included in the Company Hearing Conservation Program.

Audiometric testing and screening, noise monitoring and employee training will be conducted in accordance with the Company Hearing Conservation Program.

Protective Clothing

Employees shall wear protective clothing, including arctic gear and flame resistant clothing (FRC), as mandated by a workplace hazard assessment. FRC shall be worn as the outermost garment except when other personal protective clothing is required or appropriate (e.g. chemical resistant suits, disposable protective suits, welders leather, personal flotation devices, etc.).

High visibility clothing must be worn as the outermost layer on the upper body while working outdoors. Refer to Company policy for site-specific requirements.

Material Lifting/Handling

Engineering solutions or mechanical lifting methods are preferred hazard controls and shall be considered prior to using manual lifting/handling techniques. Make an effort to accurately determine the weight of the load before attempting to lift or handle it. All tools or ropes used to manually manuever, lift, lower, or carry a load shall be rated for the load and inspected for damage prior to use.

Fatigue Management

Fatigue is associated with an increase in both health and safety risks. Employees often work in safety-critical positions, operating heavy machinery, and under harsh environmental conditions where 24/7 operations are common. Follow your Company's fatigue management guidelines.

High Wind Conditions

For any outside work scheduled when the wind speed exceeds 40 mph, a safety time out/task hazard assessment shall be conducted to determine if the work is of such a high priority that it should be performed in such severe conditions.

Cold Weather Protection Guidelines

When the wind chill is in the 5-minute frostbite section of the Wind Chill Chart (page 188), a safety time out/task hazard assessment shall be conducted to determine if outside work should be performed.

Cold Related Injuries

The best defense against cold related injuries is to prioritize and limit outside work during temperature and wind chill extremes and use the correct PPE. Pay special attention to protection of the face, head, hands, wrists, and feet. Gloves with gauntlets should be used to prevent exposed skin areas between the jacket and gloves.

Hypothermia

Hypothermia is the lowering of the body core temperature to the point where it is no longer functioning properly. Symptoms include intense shivering, poor coordination, stumbling, loss of memory, thickness of speech and drowsiness. Hypothermia is insidious, and left untreated, may result in collapse and death.

Dehydration, or the loss of body fluids, occurs gradually in the cold environment and may increase the susceptibility of workers to cold injury due to a significant change in blood flow to the extremities. Warm, sweet drinks and soups should be taken to the work site to provide caloric intake and fluid volume. Certain medication or drugs such as nicotine or caffeine, because of their diuretic circulatory effects, can increase susceptibility to the cold. Workers with a cold, flu, or certain diseases (i.e., diabetes, or heart, vascular, or thyroid problems) may be more susceptible to the winter elements. Becoming exhausted or immobilized, especially due to injury, can accelerate the effects of cold weather.

It is important to note that most hypothermia cases are reported during cool weather.

Treatment

Prevent further heat loss, contact emergency services, and transport as soon as possible as directed to a medical facility.

Frostbite

Frostbite is the freezing of body tissue. It may range from minor injury ("frost nip") to complete freezing of an extremity. Untreated frostbitten areas will first become reddened, and then become gray or white, particularly on exposed ear lobes, cheeks, or nose. Left untreated, the skin becomes numb and dead white. Watch co-workers for signs of frostbite.

Treatment

Transport as soon as possible to a medical facility.

Housekeeping Practices

1. All passageways, entry ways, aisles, stairs, storerooms, service rooms, and work areas shall be kept:
   - Clean and unobstructed;
   - Free of ice, or treated with sand, etc., to prevent slipping injuries.
2. All waste and debris shall be removed from the work area and recycled or disposed of properly.
3. Spills shall be reported and cleaned up promptly in accordance with environmental and safety guidelines.
4. Aisles shall be clear and unobstructed to allow for immediate access with fire protection equipment.
5. Cords, cables, or hoses should be routed overhead or underneath the grating rather than across doorways or walkways.
6. The area around buildings and unit operating areas shall be kept clean and free of unnecessary materials.
7. Flammable liquids in buildings or operating areas shall be kept to a minimum and stored in approved metal containers
8. Rags or waste containing combustible or flammable materials shall be put into approved, labeled metal safety waste cans immediately after use. Waste cans shall be emptied on a regular and frequent basis.
9. Outside food waste receptacles must have lids and be stored in a manner so as not to attract animals.
10. Inside food waste receptacles shall be emptied daily and kept clean and sanitary.

Fall Protection Requirements/Procedures

Where practical, a fixed or mobile work platform with handrails, mid-rails and toe boards should be considered before utilizing a fall arrest system.

1. The following requirement applies specifically to construction in conformance with OSHA regulation 29 CFR 1926, which defines "construction work"

as “work for construction, alteration, and/or repair, including painting and decorating.” For example, having to make alterations to a system in order to replace a valve is considered construction work.

100% continuous fall protection is required at all times when there is a fall potential greater than 6 feet. Each employee on a walking/working surface with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall restraint or arrest systems.

All other work is addressed by 29 CFR 1910, General Industry. Every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing on all open sides except where there is entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toeboard wherever, beneath the open sides persons can pass, there is moving machinery, or there is equipment which falling materials could create a hazard.

Facilities have been designed and constructed so that walking and working surfaces meet this requirement. However, temporary platforms erected for O&M activities also must have standard railings if the platform meets the OSHA criteria requiring fall protection for 4 feet or greater. The 4 foot distance does not apply to fall arrest systems

2. Work on roofs with slopes/pitch less than or equal to 4 in 12 (vertical to horizontal) with unprotected sides and edges shall require fall protection in the form of guardrail system, safety net system, travel restraint system, or personal fall arrest system.

   When work is performed at least 6 feet from the edge a designated area maybe used when performing work that is both infrequent and temporary.

3. Work on roofs with slopes/pitch greater than 4 in 12 (vertical to horizontal) with unprotected sides and edges 6 feet or more above lower levels shall require fall protection in the form of guard rail systems with toe boards, safety net systems, or personal fall arrest systems.

4. Full body harness is required for protection from falls. Body belts are not acceptable as part of a personal fall arrest system. They are acceptable as body positioning devices when a worker needs to be supported on an elevated vertical surface to work with both hands free. Additionally, only locking-type snap hooks shall be used; D-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds.
5. Personal fall arrest systems consist of multiple components including full body harness, lanyard, deceleration device, and anchorage (anchor point).
6. An anchorage means a secure point of attachment for lifelines, lanyards, or deceleration devices. Anchorage shall be capable of supporting at least 5,000 pounds per employee attached; or as part of a complete personal fall arrest system that maintains a safety factor of at least 2 and is operated under the supervision of a qualified person.
7. Guardrails, electrical conduit, floor grating, scaffold members, and fire suppression piping shall not be used as an anchorage for a personal fall arrest system. Scaffold erection crews may be able to tie off to scaffold members if no other anchor point is feasible. Prior to use, a qualified engineer must approve process piping to be used as an anchorage.
8. Personal fall arrest systems shall limit maximum arresting force to 1,800 pounds and be rigged such that an employee can neither free fall more than 6 feet (1.8 m) nor contact any lower level.
9. Lanyards and vertical safety lifelines shall have a minimum breaking strength of 5,000 pounds. Each employee shall be attached to a separate vertical lifeline.
10. Lanyards shall not be tied back to themselves unless the lanyard is specifically designed and rated by the manufacturer for this configuration.
11. Horizontal lifelines for fall protection applications shall be designed, installed, and used under the supervision of a qualified person as part of a complete personal fall arrest system.

12. Ensure a rescue plan and appropriate equipment are in place to minimize suspension trauma in the event of a fall arrest system deployment.
13. Personal fall arrest systems shall be visually inspected (records not required) prior to use. Defective components shall be removed from service.
14. Personal fall arrest systems shall have a documented inspection at least annually by a qualified inspector and color coded according to the table on page 194.
15. Personal fall arrest systems and components subjected to impact loading shall be removed from service immediately.
16. Positioning device systems shall be rigged such that an employee cannot free fall more than 2 feet (0.61 m) and be secured to an anchorage capable of supporting at least twice the potential impact load of a fall, or 3,000 pounds, whichever is greater.

Dropped Objects

1. Assess the fall potential of all tools and equipment being used at height prior to starting the task and put controls in place to stop them from falling. Controls may include:
   - Tool lanyards
   - Positively securing equipment
   - Ground sheets or matting on gratings
   - Safety screens on scaffolds or platforms
   - Safety netting
2. An exclusion zone of suitable barriers shall be placed below overhead work, for the duration of the task, where there is a risk of a dropped object.
3. Exclusion zone dimensions shall consider the size, weight, object configration and the potential for the object to bounce or be deflected during or after the fall.

Working Over or Near Water

1. Employees working over or near water where the danger of drowning exists shall be provided with U.S. Coast Guard-approved personal flotation devices (PFD) or buoyant work vests. When 100% continuous fall protection is used to prevent employees from falling into the water, life jackets or buoyant work vest are not required.
2. Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects, which would alter their strength or buoyancy. Defective units shall not be used.
3. Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.
4. At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.
5. Prior to starting work over non-grounded ice conduct an assessment to ensure work can proceed safely.

Smoking

In accordance with Company smoking policy, smoking, including the use of electronic cigarettes, is allowed in designated areas only.

All other areas within production, process, drilling, and construction areas or on offshore locations/vessels are “No Smoking” areas. Refer to the Company smoking policy for further details.

It is prohibited to use or carry any lighters or matches in any production facility or on a drill site or well pad except in designated smoking areas.

EQUIPMENT SAFETY

Electrical Cable Demolition (50 volts or greater)

1. Ensure independent verification of the correct cable prior to starting work.
2. Special consideration will be used for demolition of existing cables to ensure the correct cable is cut. Only cut cable sections that are visible. If not visible use a visual indicator (plastic zip-tie, nonconductive ring, etc.) to slide along the cable to be demo'd. Cuts should be made behind the visual indicator when possible.

Electrical Hazards & Requirements

1. Only qualified and authorized personnel shall repair, install, or adjust electrical equipment.
2. All personnel working within the Restricted Approach Boundary and the Arc Flash Boundary (reference NFPA 70E) shall use appropriately rated gloves, safety glasses, face shields/hoods, hearing protection, properly rated boots and insulated tools. Arc rated clothing shall be worn to meet the Arc Flash Hazard present as designated in NFPA 70E. These individuals shall be qualified to do this work.
3. When electric-driven equipment becomes unsafe to operate, it shall be locked and tagged out immediately.
4. A Hot Work Permit is required to install or use temporary, non-explosion proof electrical equipment in a classified area.
5. Inspect all extension cords or plug-connected hand tools for any sign of damage or missing parts prior to use. Tag defective appliances and turn in for repair.
6. All portable electric tools and lights shall be used with ground fault circuit interrupters (GFCI) or be included in an assured grounding program. Low voltage lights may be used in lieu of lights with GFCI.

7. Always maintain the minimum NEC required clearance in front of all switchgear, motor control centers, and electrical panel boards (breaker panels) for access. If this clearance is not present, the equipment must be appropriately marked with warning labels. When electrical work is required in spaces with restricted clearance, the following shall be adhered to:

   A. Equipment in the area should be de-energized; or,

   B. If equipment must be kept energized, a safe work plan shall be developed, approved by the responsible supervisor, and followed.
8. Equipment operating within 15 feet of any un-insulated power distribution system line, structure, guy wire or switch yard requires prior clearance by the appropriate Company Supervisor.
9. Only a qualified electrician may bring a conductive object closer than 15 feet to unguarded, energized overhead or un-insulated feeder lines on power structures.
10. Only authorized personnel shall be permitted in electrical distribution switchgear rooms and enclosures.
11. Power distribution switchgear shall be operated only by qualified personnel.
12. After a circuit is de-energized by a circuit protective device i.e. circuit breakers, fuses, protective relay device, vfd control panel, etc., the circuit may not be manually reenergized until it has been determined by a qualified and authorized electrician that the equipment and circuit can be safely energized. The repetitive manual re-closing of circuit breakers or re-energizing circuits through replaced fuses is prohibited. A 120 volt lighting panel breaker may be reset once by qualified and authorized person if the trip has been determined that it has been caused by an overload condition.

    Note: When it can be determined from the design of the circuit and the over-current devices involved that the automatic operation of a device was caused by an overload rather than a fault condition, no examination of the current or connected equipment is needed before the circuit is re-energized.

13. Motor overloads may be reset once after an operator has checked the motor for any unusual conditions such as hot bearings, motor, etc. Notify facility electrician of the trip.
14. Motor starts per hour shall not exceed the manufacturer's specifications.
15. Any feeder or branch circuit breaker trips shall be brought to the attention of a facility electrician. If the situation warrants, the facility electrician will notify the facility supervisors.
16. Authorized power plant operators may open and close the switchgear used as part of the routine plant operation.
17 All electrical work shall be done in accordance with the appropriate edition of:
    - National Electrical Safety Code (ANSI C2)
    - OSHA 29 CFR 1910 Subpart S, Electrical
    - OSHA 29 CFR 1926 Subpart K, Electrical
    - National Electrical Code (NFPA 70)
    - Standard for Electrical Safety in the Workplace (NFPA 70E)
18. Any work on energized equipment greater than 50 volts shall follow established Company energized work practices and utilize an Energized Electrical Work Permit.

    Qualified persons shall be allowed to perform diagnostic testing, troubleshooting, voltage measuring, etc., without an Energized Electrical Work Permit, provided appropriate safe work practices and personal protective equipment are used.
19. Any work directly on energized circuits (nominal rating 480/277 volts or greater) requires two qualified electrical personnel as defined in your company's Electrical Safety Program. Diagnostic testing, troubleshooting, or voltage measuring may be accomplished by one qualified electrical person for voltages less than 600 volts.

20. Electrical cables and/or extension cords should be run overhead or underneath the grating, and not run on the ground or deck.
21. Cable trays used for routing and support of utility wiring are prohibited from being used as work platforms. Personnel are not to climb onto or work from cable trays.
22. Portable ladders used for electrical work shall have nonconductive side rails.

Steam Hazards and Guidelines

Each cleaning or purging application utilizing steam to eliminate a process equipment flammable atmosphere will require a written specific procedure that is reviewed by Engineering and a Company Safety Representative.

General Safety Considerations

PPE considerations need to be assessed to protect workers from burns from hot surfaces or contact with steam.

The exiting steam and waste can form an ignitable mixture once it combines with the outside air. It is important to eliminate ignition sources near the tank/pipe/vessel such as vehicles, heaters, etc. and monitor the wind direction. The steam plume exiting a vessel, tank, or pipe can contain high levels of hydrocarbons including benzene. Caution must be used to ensure that employees, offices, or air intakes are not in the path of the plume. Always place barricades and or visible signs as needed.

Follow the Fired Heater Standard in this handbook for staging and setting up fired steam generator units.

Contraction and expansion must be considered for all types of equipment and coatings due to rapid temperature changes. This can affect tanks, vessels, or pipelines. The way equipment is secured and allowed to move must also be considered. This is especially true when using both steam and nitrogen to purge systems.

Consideration needs to be given to the possibility of heating NGLs within vessels or pipelines. Once heated, NGLs can produce large amounts of vapor. It is a good practice to flush equipment with diesel prior to steaming so that the NGLs are diluted, producing a less volatile mixture.

Ensure that the steam nozzle and tank/vessel are bonded together and grounded to prevent static discharge during operations.

Follow all energy isolation procedures to prepare the equipment for cleaning or purging.

Environmental Considerations

All solid and liquid waste streams should be managed and disposed of in accordance with the Alaska Waste Disposal and Reuse Guide (Red Book) or with Company policy. Some waste streams may require sampling and lab analyses to determine the proper disposal option. Environmental should be contacted prior to generation of wastes.

Appropriate spill prevention procedures should be developed and implemented prior to any steaming operation. All spills must be reported per Company procedures.

The force of the exiting steam may produce misting containing hydrocarbon residue. Provisions for mist containment must be considered.

If a tank is to be steamed it must be determined if the tank is a double walled tank. It is critical that there be a vent between the inner and outer wall of the tank. Usually this vent is located on the upper outer wall of the tank. If no vent is located on the tank, steaming cannot be performed as severe damage to the tank could result. If repairs to the tank walls need to be performed, additional atmospheric testing must be done inside the tank and in the space between the inner and outer wall.

Barricade Guidelines

1. Always erect barricades around hazardous areas. Post a highly visible sign at the barricade identifying the hazard.

2. Barricade signage, flagging and tagging should match the hazard identified (i.e. danger, caution, etc.) and identify the purpose, date installed and contact information.
3. Permission for entry into barricaded areas must be granted by person in charge.
4. All barricades shall be promptly removed after the hazard is eliminated.
5. Identify any opening or gate used for egress.
6. Appropriate lighting shall be provided at all times.
7. Mark open holes or excavations well to adequately warn personnel in the event the hazard should later be filled or covered with snow.
8. Temporary floor openings, manhole openings and trapdoor floor openings without covers shall be guarded by removable railings when not constantly attended by someone.
9. During well servicing operations, adjacent unprotected wellheads shall be barricaded to prevent inadvertent contact with moving equipment.
10. Temporary wall openings shall be guarded where there is a drop of more than 4 feet.

Ladder Safety

1. **Select the right ladder for the job.**
   - The use of wooden ladders is prohibited.
   - Make certain the ladder is strong enough for its intended use by reviewing the load rating on the ladder.
   - Choose a ladder that is long enough to ensure work can be done safely.
   - The side rails of through or side-step ladders shall extend at least 36 inches above the top of the landing platform.
2. **Inspect the ladder before you use it.**
   - Look for loose, damaged or missing rungs, steps, rails, braces, screws, hinges, bolts, nuts or other hardware.

- Report deficiencies to your supervisor and remove defective ladders from service immediately.
- Ensure straight ladders have safety feet.
- Never use a defective ladder.

3. **Using ladders.**
   - Use a barricade or guard to prevent unexpected collisions. Lock or block any adjacent door.
   - When blocking an emergency exit, ensure the ladder is continually attended. Whenever the worker leaves the area, clear the emergency exit path.
   - Keep the area around the ladder base uncluttered.
   - Place the ladder base on a solid, level surface.
   - Ensure stepladders are fully open and spreaders are locked before use.
   - Position a straight ladder at a 4 to 1 ratio. That means the base of the ladder is 1 foot away from the wall or other vertical surface for every 4 feet of the ladder's height to the upper support point.
   - When using a ladder to climb onto a roof or platform, allow the ladder to extend at least 3 feet beyond the roof edge or other support point.
   - To avoid shifting, secure the ladder by holding or tying down straight ladders as close to the support point as possible.
   - Never lean a ladder against an unstable surface.
   - When working from a ladder:
     - At heights of 6 feet or greater, use fall protection when feasible.
     - Maintain balance by centering your body between the ladder rails.
     - Do not reach or lean unless you can keep your belt buckle between the ladder rails. If this is not possible, move the ladder so you can work safely.
   - When moving ladders 8 feet or greater in length through any process area, consider using two people to prevent inadvertent contact with equipment and possible soft tissue injury.

4. **Fixed Ladders.**

   For fixed ladders that extend more than 24 feet above a lower level ensure:
   - Each fixed ladder installed before November 19, 2018 is equipped with a personal fall arrest system, ladder safety system, cage, or well.
   - Each fixed ladder installed on or after November 19, 2018, is equipped with a personal fall arrest system or a ladder safety system.

5. **Climb and descend ladders cautiously.**
   - Face the ladder and use both hands.
   - Carry tools in a tool belt, or raise and lower them with a hand line.
   - Check ladder rungs and the bottoms of your shoes for slippery substances.
   - Do not climb higher than the second tread from the top on a stepladder or the third rung from the top on a straight ladder.

6. **Ladder storage.**
   - Do not store ladders in aisles or walkways.
   - Ladders should be stored properly to prevent accidental displacement and damage.

Tool Usage

Many accidents associated with tool use can be prevented if the following rules are observed:

1. Keep all tools in good condition.
2. Inspect couplings, hoses, and hose connections of pneumatic tools each time you use them. Make sure they are in good condition, properly attached and secured.
3. Disconnect electric and air tools from their power source when using the chuck key or when not in use. Remove battery packs from portable tools prior to changing bits, blades, saws, etc.
4. Keep grinding wheels in good operating condition. The gap between the grinding wheel, the tool rest, and

the tang must never exceed 1/8 inch. Do not grind on the side of a grinding wheel. Grind only material that is suitable for use with the grinding wheel.

5. Always use the right tool for the job.
6. Tools and equipment used while working at height are properly secured from falling.
7. All fixed and portable tools that are designed to have guards shall have guards in place.
8. Powered hand tools that incorporate a locking mechanism on the control switch or trigger, shall allow for a spring-loaded release of the lock by depressing the control switch or trigger itself. A separate positive on/off switch is prohibited.
9. Field fabricated or modified tools must be approved by a qualified engineer and shall only be allowed when no comercially manufactured tool is available.
10. When using striking tools such as hammer wrenches, chisels, etc., a positioning device, guard, or restraint shall be used to keep hands out of the line of fire. If using a small hammer (e.g., 8 ounce) for fine precision work, workers must complete a hazard assessment and have supervisor approval.

Cutting Tools

1. Open blade knives (except kitchen knives used for food preparation) are rarely the most appropriate tool selection for cutting. Check Company policy regarding use of open blade knives.
2. Each work group/individual shall evaluate all cutting tasks associated with an open blade knife for their respective assignments, determine the most appropriate and safest tool for each task and make sure those tools are available.

   Refer to your company's specific policy or procedure for evaluating cutting tasks.
3. For any type of cutting, the following best practices should be implemented:
   - Always cut away from the body - Line of fire.

   - Always wear appropriate hand protection (cut gloves, etc.).
   - When possible, use cutting tools that self-retract or have hidden blades.
   - Store cutting tools with blades protected from accidental contact.

Cam & Groove Fittings (Camlocks)

1. All fittings and hoses shall be rated for intended service pressure and assembled by qualified personnel only.
2. All hoses coupled with cam and groove fittings in pressurized service shall be secured in a locked position.
3. A method of verifying atmospheric pressure must be used such as bleeder valves or vents prior to disconnecting.
4. 0 – 35 psig, gas or liquid service – pre-use inspection required of hose and fittings.
5. 36 – 125 psig, liquid service only – pre-use inspection required of hose and fittings. New hoses and fittings shall be pressure tested to 125 psig prior to placing in service.
6. >125 psig usage is not permitted for cam and groove fittings.
7. Cam and groove fittings shall not be used for steam service.
8. With the exception of number 3, this section does not apply to drylock fittings.

Hose Restraints/Whip Checks

1. Gas and liquid pressurized hoses for fluid transfer or temporary flowing applications shall be positively secured at all connection points.
2. Follow manufacturers installation recommendations (hose to hose vs. hose to tool).
3. Whip checks are typically rated for pressures less than 200 psi.
4. Hose restraints are typically rated for pressures 200 psi. and above.

5. Hose restraints shall:
   - Have an affixed tag with the pressure rating of the restraint for the specific hose diameter in use.
   - Be inspected for damage prior to each use and discarded if damage is identified.
6. An assessment should be performed to determine the suitability of the chosen whip check or hose restraint for the desired service.
7. This section does not apply to engineered packages, emergency response equipment (SCBA, fire hoses, etc.), turbines, manufacturer's supplied hoses on vehicles and equipment, and aviation fuel hoses.

Scaffold Requirements

1. Scaffolds shall be designed by a qualified person.
2. Scaffolds shall be constructed under the supervision of a competent person.
3. Scaffolds that are to be used shall be inspected by a competent person for visible defects before each work shift and after any occurrence that could affect scaffold integrity.
4. Employees shall only use a scaffold that is tagged as "Ready For Use" for that day.
5. Platforms or stairs constructed of scaffold members and less than 6 feet in height for occupants to access buildings do not require inspection.
6. Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is adequately secured.
7. Never use makeshift arrangements to reach high working areas.

8. Scaffold components may be used as rigging anchor points only if the manufacturer allows this process AND the scaffold will not be set up to allow for personnel access AND each piece of the scaffold system is marked for exclusive use as rigging anchorage AND the scaffold system is visibly tagged on the work location for this purpose.
9. Ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use. Do not use cross-braces as a means of access.
10. A complete guardrail system or fall protection system is required for all scaffolds over 6 feet in height. The scaffold tag will identify when fall protection is required.

Materials Storage

Materials shall be piled or stacked safely.

1. Use blocks to prevent material from rolling.
2. Cross-tie bags and sacks when stacking, store lumber on stable foundation and cross-tie at intervals, and use racks or chocks to store pipe or bar stock.
3. Do not lean sheet metal against walls or columns, but store on edge in racks or on sleepers.
4. In areas protected by sprinkler heads, all materials shall be stored at least 18 inches below the sprinkler head plane.
5. Use or storage of Class "A" materials in classified areas should be kept to a minimum.

Structures (Portable/Temporary)

Temporarily locating envirovacs, dry shacks, office trailers, and similar structures on pads with operating facilities or other classified areas can potentially pose hazards to either the occupants of the temporary/portable structures or to the process facility and personnel. Unexpected events from adjacent production areas can impact temporary structures.

To determine the safest location in the event of an uncontrolled release, a hazard assessment shall be conducted and documented, with approval from the area/facility supervisor.

The assessment should consider at least the following items below:

- Building/structure occupancy level
- Prevailing wind directions
- Distance from flares/process and tank or vessel atmospheric vents
- Duration of temporary placement
- Adjacent process facility critical work activities
- Fire prevention and emergency response capabilities
- Required standoff from operating or process areas
- Portable building/structures ignition sources
- Location of intake and exhaust vents
- Equipment monitoring and shutdown

A similar hazard assessment shall be conducted for temporary Visqueen structures and “hooches” but does not need to be documented.

HEAVY EQUIPMENT SAFETY

Heavy equipment such as cranes, graders, dozers, rubber-tired loaders, or trucks that are rated over 5 tons gross vehicle weight will be operated only by qualified equipment operators who are assigned to operate such equipment. Operators shall meet all Company training requirements.

General Rules of Operation

1. Heavy equipment shall always be operated in accordance with the manufacturer’s operating instructions.
2. Seatbelts are required to be worn at all times while operating heavy equipment. Riders/passengers are not allowed to ride in the cab unless the equipment is designed to carry passengers.
3. Equipment operators will always assure themselves that the unit can be operated safely by making a complete functional check of the unit before using it to make a lift or use with a load.
4. Equipment operators are responsible to ensure the work area is free from obstructions or hazards. This includes maintaining the proper clearance for overhead objects.
5. If the continued safe operation of the unit is questionable, the activity shall cease until a time that the concern has been resolved by the Supervisor in charge.
6. The equipment operator shall complete a daily safety checklist for each particular piece of equipment operated.
7. All equipment deficiencies shall be reported to the appropriate maintenance group.
8. White lights that illuminate to the rear or side shall not be used while traveling on roadways, except during snow removal or convoy travel.
9. Forklifts shall travel with forks as close to the floor or roadway as practical.

10. It is prohibited that forklifts/loaders and telehandlers transport materials on main roads unless the material is properly secured or tied down with chains/binders or load rated straps.

Heavy Equipment Spotter Guidelines

Use a spotter whenever moving a piece of heavy equipment (i.e., loader, grader, vac truck, etc.) in a direction with an obstructed view, or if the vehicle has extended components (such as a boom on a crane). Blind backing is inherently dangerous and unseen obstructions may be encountered.

Good practice dictates that backing of equipment should be avoided. Routes of travel should be planned and easy-exit parking spaces selected to avoid backing. As this is not always practical, the following guidelines will be followed to avoid an incident.

Note: These guidelines are intended for the moving and placing of heavy equipment, and not for routine light duty vehicle parking at bull rails or designated parking areas without obstructions.

Prior to any backing operation the operator and spotter shall complete a 360° hazard assessment front to back and top to bottom to identify any obstructions and potential hazards/energies present in the proposed path of travel. Clear the area of people and objects, if possible, or mitigate any risk created.

Heavy Equipment Operator Responsibilities

1. Bring the unit to a complete stop (no rolling stops). Never hurry when backing or moving equipment.
2. Adjust, clean, and secure mirrors as necessary.
3. Ensure the spotter understands and utilizes the appropriate hand signals prior to equipment movement. Verbal commands alone are not adequate and will not be used exlusively.
4. Give a two blast warning on the horn just prior to backing, unless near sleeping quarters.
5. Establish visual and verbal contact with the spotter. If you cannot see or hear the spotter, do not back up!

6. Maintain eye contact with the spotter in the left or right rear view mirror at all times. Stop immediately if eye contact with the spotter is lost and exit the equipment if necessary to establish the spotter's location.
7. Place a cone behind the equipment to maintain clearance when parking equipment that later must be backed, and conduct a 360° walk around prior to moving.
8. The operator is responsible for the equipment and the load, and should stop work any time they become uncomfortable with the situation.

Spotter Responsibilities

1. At a minimum all designated spotters will be trained in the responsibilities of that function and proficient in the use of the designated hand signals. Training will be refreshed based on individual competency and/or if there is a procedural change.
2. Spotters will take precautions to remain visible (high visibility clothing on upper body, RFID, etc.). This visibility requirement extends to all personnel working around equipment traffic.
3. Communicate any observed hazards to the equipment operator.
4. Place yourself far enough behind and off to the side of the equipment to maintain a constant clear view of the operator and obstructions. Never stand directly behind. Due to the high potential for tripping, walking backwards while spotting should be avoided. If no other option is available then complete a hazard assessment of the area and mitigate any tripping hazards or obstructions prior to starting.
5. Establish visual and verbal contact with the equipment operator and maintain eye contact. When backing, maintain eye-to-eye contact in the left or right rear view mirror at all times.
6. Stop the operator if any hazards are observed or if uncertain of the direction that the equipment operator is maneuvering.

7. Signal the operator to stop if the spotter must change positions. The spotter should then reposition and when ready, signal the operator to continue.
8. Make sure no one enters the danger zone while the machinery is in operation. The danger zone is the area around the equipment where the equipment operator doesn't have full visibility during normal operation. Stay a safe distance away from all sides of the equipment.

Mobile Crane/Side Boom Practices

1. Each crane shall have a manufacturer's operating manual specific to the crane by crane serial number. The manual will include a description of all available physical lift configurations with associated load rating charts showing capacities by boom length and radius. The crane may be used for all positions and capacities shown in the charts.
2. Only one properly trained person shall signal a crane operator. For blind lifts, establish a communication plan between the spotter/signalman and crane operator. Radio communication must be through a dedicated channel.
3. The crane operator shall never start machine movement until the signalman is within sight and hand signals are understood. Obey an emergency stop signal given by anyone.
4. All cranes shall have load charts and boom angle indicators located at the crane operator's position. Offshore cranes shall have dynamic load charts installed in the cab.
5. All cranes shall have anti two-block devices.
6. A weight indicator shall be available to determine the weight of an unknown load as the load is being lifted.
7. Crane mats or timber pads shall be used on soft unstable surfaces.
8. The operator shall be in attendance in the cab any time there is a load suspended from the hook.

9. A written lifting plan is required before making critical lifts.

   Consult Company lifting policy for the definition of a critical lift. Examples of critical lifts may include:

   - Multi-crane lift
   - Personnel are lifted in a personnel basket
   - Lifts over live process lines
   - Weight of equipment being lifted is known, calculated, or estimated to be greater than 75% of the rated capacity of the equipment as determined by the load chart

   The plan shall be approved by the Safety Representative and First-Line Supervisor or their designee.
10. Never lift in-service process lines without operations and engineering approval.
11. Cranes with booms extended across process lines shall not be left unattended.
12. The use of man-baskets or personnel lifting devices shall be performed in accordance with 29 CFR 1926.1431.
13. Lifting operations where contact with overhead power lines is possible require a written lifting plan.
14. All cranes shall be inspected and tested at regular intervals according to accepted codes and requirements. Every crane shall be given a basic functional test prior to use. All cranes that are in regular service are required by OSHA to have a frequent (30 day) and periodic (annual) inspection by a qualified and designated person.
15. Cranes that have not been inspected at regular intervals shall not be used until a qualified person has completed an inspection and returned the crane to service.

Rigging/Lifting

1. Prior to making any lift, a competent person shall determine the weight of the object to be lifted, the center of gravity of the object, and the best attachment points and methods.
2. Never exceed the capacity of the weakest link in the load path, i.e., hoisting equipment, sling, shackle, turnbuckle, or shouldered eyebolt.
3. Exclusion zones must be established prior to lifting to prevent unauthorized entry into the area. These zones shall be clearly marked and actively monitored by a competent person to ensure personnel remain clear of potential line of fire and drop zones.
4. All hoisting and rigging equipment must be used in accordance with manufacturer's specifications and operating requirements. Rigging shall be done only by a qualified rigger.
5. A competent person shall conduct pre-use visual inspections of lifting devices and equipment. Signalling shall be done by a competent person.
6. Never rig from process lines without operations and engineering approval. Never rig from electrical conduit.
7. Never stand or walk under suspended loads. Do not pass suspended loads over people. Suspended loads shall be attended at all times. Always recognize line of fire hazards and have an identified means of escape should the load shift.
8. Tag lines must be attached prior to lifting the load. Hand contact must be avoided unless alternatives have been considered and determined to be impractical.
9. Riding the hook or load is prohibited.
10. A load's route of travel shall always be evaluated prior to making a lift to identify exclusion zones where a potential line of fire hazard exists due to moving or dropped objects.

Rigging Accessories and Safe Loads

The working load limit or rated capacity of a sling varies depending upon the type of hitch.

1. In cases where bridle slings or multi-leg lift assemblies with three or more legs are used to lift a load, it should be assumed that the load will be carried by only two legs.
2. Do not tie knots in sling chains, rope slings, or wire cables to shorten them. Do not place bolts or other material between links of a chain to shorten or splice it. Never repair chains with bolts or by welding.
3. Decreasing the angle between the sling and the horizontal increases the stress on the sling and the sling capacity is de-rated. Refer to the Rigging Table for the capacity of slings. The angles shall never be less than 30°.
4. Do not choke a wire rope sling on itself; use a shackle.
5. All hoisting and rigging equipment must be used in accordance with manufacturers' specifications and operating requirements. Rigging shall be done only by a qualified rigger.
6. A competent person shall conduct pre-use visual inspections of lifting devices and equipment. Signalling shall be done by a competent person.

Inspections

1. All hoisting and rigging equipment shall be visually inspected (records not required) prior to use. Defective components shall be removed from service.
2. A documented inspection shall also be made at least annually by a qualified inspector and color coded according to the table on page 194.

Low Temperature/High Wind Condition Operations

Scope

If the temperature is lower than -35° F (-20° F manlifts, scissor lifts, and man baskets only), or the wind, including gusts, is greater than 20 mph, establish a systematic approach for determining the safe operation of equipment to include evaluation of need, exposure duration and failure potential. This guidance shall apply to Company employees and contractors operating on Company premises.

Equipment

This scope applies to mechanical and hydraulic cranes, sidebooms, loaders, forklifts, manlifts, VSM drill rigs, wireline equipment, coil tubing, E-line units and drilling rigs. This type of equipment shall be operated within the manufacturer's operating requirements.

These guidelines do not apply to trucks, tractor trailers, vac-trucks or other vehicles used for routine deliveries of materials or equipment, snow removal equipment, etc.

Application

Operation of load-bearing equipment and cranes shall be reviewed for equipment limitations at or below ambient temperatures and wind velocities as described in the "Scope" section above.

The intent is not to prohibit the use of this equipment at these temperatures, but to carefully review the work, procedures, and equipment limitations.

Official temperatures shall be obtained at the nearest local weather station.

Responsibility

Regardless of temperature or wind velocity, the on-site responsible individual will suspend the lifting operation if personnel or equipment safety is questionable.

The Company Supervisor directing the project or work shall verify with the equipment operator that the lifting equipment

is rated and certified by the manufacturer for services below the existing ambient temperature and is in compliance with established contractor or unit fleet guidelines.

Any special safety precautions to be taken as a result of the weather conditions will be addressed at a meeting conducted and attended by the Equipment Supervisor or his designee, the Work Area Supervisor and the lifting equipment operator.

Individual departments may develop operating guidelines that are more restrictive than those in this document.

Review Criteria

When evaluating the safety of work at temperatures below the manufacturer's recommended operating guidelines, the following shall be reviewed:

- Hydraulic fluid – ensure that the grade of hydraulic fluid is appropriate for use in the low temperature Arctic environment.
- Pre-operational inspections shall be completed in accordance with manufacturer recommendations and shall be documented. Special attention should be placed on all hoisting mechanisms, including wire ropes and associated rigging. Any special preparations identified by the manufacturer for operating load-bearing equipment in low temperatures shall also be documented.
- Prior to performing work, a 20-30 minute warm-up period for the equipment shall be conducted. This allows a check of all moving components and ensures that appropriate hoses and seals are flexible.

Drilling Rigs

Normal drilling operations are not affected by the low temperatures due to insulated enclosures. However, these guidelines will apply during a rig move and lowering and raising the rig mast.

Documentation

Low temperature or wind velocity operating limitations/ special procedures will be documented.

COMPRESSED GAS CYLINDERS

Safe Handling, Use and Storage

Cylinder Handling

Personnel whose jobs require the handling of cylinders under pressure shall observe the following safety rules.

1. Make sure the valves are closed before moving cylinders. Use a cart, carrier, or get help. Cylinders with regulators attached shall be secured and moved on a special hand truck, otherwise the regulators shall be removed and valve-protection caps installed prior to moving.
2. Cylinders moved by a crane or derrick must be secured in a basket or similar device. Use of slings or ropes wrapped around the cylinder is prohibited.
3. Never drop cylinders or let them strike each other violently.
4. Never use cylinders for rollers, supports, or for any purpose other than to contain gas.
5. Compressed gas cylinders must be legibly marked for the purpose of identifying the gas content, either by chemical or trade name.
6. Empty cylinders must be marked “empty” or “MT” with a wired tag or stick-on label. Valves must be closed tightly and the valve protection cap installed. Do not write on sides of cylinders with chalk or markers.
7. Secure cylinders in an upright position to prevent movement during transportation.
8. Valve protection caps shall not be modified or used to lift cylinders.
9. Monitor ambient temperature to avoid overpressurization of cylinders and never apply direct heat to compressed gas cylinders.
10. Never store nitrogen cylinders in a confined, unventilated area.

11. Do not transport nitrogen cylinders in a vehicle if the driver’s cab is not segregated from the cylinder storage area.

Cylinder Use

No one shall connect/disconnect or operate fuel/gas equipment or apparatus unless they have received proper training on that equipment. There are inherent hazards associated with connecting, disconnecting and use of regulators and cutting devices.

1. Fuel gas cylinders shall be used in an upright position. All cylinders shall be secured to prevent movement.
2. Valve protection caps shall be kept on cylinders at all times, except when in service.
3. Threads on a regulator or union shall correspond to those on the cylinder valve outlet. Do not force or modify connections.
4. Never use a cylinder of compressed gas without a pressure-reducing regulator attached to the cylinder valve or manifold header.
5. Use the regulators and pressure gauges only with gases for which they are designed and intended.
6. Always close the cylinder valve before attempting to stop leaks between the cylinder and regulator.
7. Leaky cylinders shall not be used. If cylinders are found to have leaky valves or fittings which cannot be stopped by closing of the valve, the cylinder shall be taken outdoors away from sources of ignition and slowly emptied and tagged.
8. When transporting SCBA and Skat Paks in vehicles, make sure they are in a proper carrying case.
9. Never permit sparks, molten metal, electric currents, excessive heat or flames to contact cylinders or attachments.
10. Never use oil or grease as a lubricant on valves or attachments to oxygen cylinders.

11. Do not handle oxygen equipment with oily hands or gloves.
12. Compressed gas cylinders, with the exception of breathing air, fire extinguishers, and small volume aerosol cans (for example, dye penetrant), shall not be taken into confined spaces.
13. All oxygen/acetylene cutting torches shall have a flashback arrestor installed in each regulator, and a check valve installed on each torch/hose connection. No one shall tamper with the safety devices in cylinders or valves.
14. Never use nitrogen instead of compressed air (for instance with pneumatic tools).

Cylinder Storage/Maintenance

1. Oxygen cylinders shall not be stored within 20 feet of combustible gas cylinders or near any other substance where an accelerated fire could result, unless protected by a wall at least 5 feet high having a fire resistance rating of at least 30 minutes.
2. Cylinders shall be secured and stored in a safe, well-ventilated place that provides adequate protection from the elements.
3. Smoking and other sources of ignition are prohibited.
4. Empty and full cylinders shall be stored separately with empty cylinders plainly identified to avoid confusion.
5. Secure cylinders with chain, cable, or wire. Do not use rope. Do not secure cylinders to process lines.
6. Ensure all gas cylinders are secured in an upright position before performing any maintenance activities on them.
7. Small compressed gas cylinders cannot be stored in flammable lockers that contain flammable liquids.

FLAMMABLE LIQUIDS AND OTHER HAZARDOUS MATERIALS

Always refer to the SDS, New Chemical Review Request or New Chemical Evaluation before handling any new chemical. Prior to ordering any new chemicals, contact your Industrial Hygiene Department.

General Rules

1. When handling or sampling corrosives, flammables, gases, poisons, and other hazardous materials, use appropriate goggles, gloves, face shield, apron, respirator, and other necessary personal protective equipment. Safety glasses shall not replace goggles when handling hazardous materials.
2. A safe means of egress shall be maintained at all times when working with hazardous materials.
3. Know the location of safety showers, eyewash stations, and other safety equipment prior to starting work.
4. Use sample containers compatible with the type of product collected and potential pressure.
5. Any receptacle containing flammable liquids (drip cans, secondary containers, buckets, drums, etc.), which could develop a static charge shall be properly affixed with a bonding cable or hose and properly bonded prior to transfer of contents.
6. No flammable fluid transfers shall be started prior to the proper bonding of both receptacles and in accordance with the Flammable Fluid Transfer Standard, where applicable.
7. Non-metal secondary containers are prohibited for flammable liquids except for Nalgene bottles up to 1 gallon used for taking samples and shakeouts and where required by analytical procedures.
8. Ensure all secondary containers are labeled per the Company Hazard Communication Program container labeling requirements.

9. Only personnel who have been trained in the proper handling of hazardous sample containers shall transport these containers.

Radiation Safety

1. Never cross a radiation barrier.
2. Don't assume anything. Contact the Radiographic Crew or an Operator if you encounter a radiation barrier and are unclear on the location of the danger area. They monitor the Drilling or Facility channels.
3. The 2 mR zone is always posted with "Caution Radiation Area" signs.
4. The 100 mR zone is coned and/or posted with "Caution High Radiation Area" signs.

TRANSPORTATION

Vehicle Safety

Vehicle safety covers all aspects of vehicle operation, including observing speed limits, passing safely, obeying traffic signs, using seatbelts, safety glasses, yielding right-of-way to emergency vehicles and heavy equipment, remaining at the scene of an accident, and following restricted travel and foul weather procedures.

1. Drivers shall observe all posted speed limits. Drive according to conditions.
2. Citations shall be issued for traffic violations. The violator's Supervisor shall be notified and disciplinary action may result.
3. Passengers and drivers in any vehicle equipped with seatbelts are required to wear them while operating or riding in that vehicle as defined in the Company policy.

   Seatbelts are also mandatory while operating a private vehicle if it is used in the course of Company business.
4. Vehicle occupant(s) should intervene if any of the driving safety rules are not being followed.
5. Headlights shall be illuminated whenever the vehicle is being driven.
6. If persons are involved in an accident, they shall immediately notify the appropriate security department or local authorities and their supervisors as soon as possible.
7. A valid driver's license is required to operate any vehicle or equipment on a lease or right-of-way that would require such a license to be operated on public roadways. If requested by security, you must provide your license within 24 hours of the request.
8. Vehicle and equipment operators and passengers shall wear safety glasses with side shields.
9. When traveling by bus, the bus driver is required to wear eye protection. Bus passengers are not required to wear eye protection, but it is recommended that passengers in the first four rows wear eye protection.

10. Personnel are not allowed to ride on/in truck beds.
11. No vehicles or equipment shall be operated unless the operator has received proper training and is qualified to operate that equipment.
12. All vehicles and equipment shall be positioned in such a manner that ensures the equipment's exhaust does not enter buildings or vent intakes.
13. Radar detectors are not allowed in any Company operated vehicles.
14. All light duty (pickups, vans, box vans, etc.) vehicles should have an alarm to alert drivers if they try to exit the vehicle while it is in gear and running. Vehicles that do not have this capability shall be secured by appropriate means (i.e. wheel chocks, parking brake, etc.) if the driver exits the vehicle while it is running.
15. All trailers and towable equipment must have trailer lights, beacons, markers, or other means to ensure visibility in low light conditions.
16. Personnel shall not park on drill sites without permission from the area operator.
17. Parking on drill sites should be done in an organized fashion. Park in the same alignment as the first truck on the pad.
18. Every time you park and leave your vehicle, you must conduct a 360° walk-around before moving it again.

Safe Driving Rules

1. Most vehicle accidents are backing related. Drivers should park to minimize the need to back-up; spotters are required when visibility is limited such that a safe backing path cannot be determined. Reference your local requirements for backing vehicles.
2. Vehicles must safely yield to wildlife without creating additional road hazards.
3. It is the driver's responsibility to assure loads, equipment and other items transported inside a vehicle are secure and/or positioned to eliminate/minimize safety risks to the occupants.

4. Any vehicle, transport truck, heavy equipment (Loader, telehandler, forklift etc.) or semi truck transporting loads, equipment and other items on the roadway shall be tied down or secured and total weight should not exceed manufacturers specifications and legal limits for the vehicle.
5. Observe all road signs. Construction signs may change frequently, and traffic patterns may have been altered.
6. Passing is strictly prohibited in designated "no passing zones," including when encountering working equipment or slow-moving vehicles.
7. Do not follow too closely.
8. Signal your intentions. Allow other drivers time to react.
9. Keep your turn signal lights, brake lights, headlights, and windows clean.
10. Keep your fuel tank at least half full. If you get stuck and have to wait for help, you will use approximately one gallon of fuel per hour to idle the engine and keep the heater running.
11. Be alert to the restrictions imposed by clothing. Remove hoods or head gear that may impair vision.
12. Keep the vehicle in good condition. Report all deficiencies to equipment maintenance.
13. Drivers are prohibited from initiating or acknowledging cell phone and private channel two-way radio telephone calls while the vehicle is in motion. The vehicle must be brought to a full stop in a safe location off the roadway.
    - The prohibition on two-way radio telephones applies only when used as a telephone, not as an open channel communication device.
14. Using headsets, headphones, earbuds, or similar devices while driving is prohibited.
15. October 1 to May 1, carry arctic gear (full body clothing, arctic boots, and mittens) suitable for survival in current weather conditions. It is recommended to carry non-perishable food and water in case of emergency.

16. It is recommended that all Company mass transportation carry survival and emergency equipment for all passengers.
17. Perform a radio check prior to departure. It is required to have some form of two-way communication when driving in the field.
18. All traffic meeting or being overtaken by an emergency vehicle must yield the right-of-way, pull over, and stop until the emergency vehicle has passed.
19. Vehicles meeting or passing working heavy equipment must slow to 15 mph. For public roads, adhere to posted speed limit.
20. Vehicles must slow to 5 mph when personnel, vehicles and/or equipment are staged on the road.
21. When approaching snow blower operations you must stop until discharge from the chute has stopped and the chute is laid over out of the line of traffic and visibility is such that you can see clearly to pass.
22. Rig moves occurring throughout the field will be announced via the local radio system.
    - In preparation for a rig move, matting boards and plywood are installed on the road. Pay attention to warning signs. Matting boards or plywood may remain on the road after a rig has passed by.
    - Slow down to 5 mph when approaching rig move activity.
    - Do not pass unless directed to do so by escort personnel. Be cautious as workers may be on the road.
    - No passing is allowed in a “no passing zones”, including passing working equipment or slow-moving vehicles.
    - These wide impassable loads often require road closures or one lane traffic. Detours may be necessary.
    - Follow directions of Security or escort personnel.
    - Additional caution should be taken as bridge rails and roads signs may be temporarily removed
23. Do not drive while fatigued or impaired.

Disabled Vehicle

1. When a vehicle or equipment is disabled, pull as far to the right shoulder of the roadway as possible.
2. Activate 4-way emergency flashers and deploy reflective highway warning triangles if available. Triangles should be set 100 feet in front of the vehicle, 10 feet behind the vehicle, and 100 feet behind the vehicle. When setting the triangles, hold the triangle between yourself and the on-coming traffic, so that other drivers on the road are able to see you.
3. Contact Security and inform them of the vehicle number and your location. If the two-way radio will not operate, flag down any passing vehicle and use their two-way radio to contact Security.
4. Driver must stay with the vehicle until the emergency flashers and the highway warning triangles have been deployed, and Security has been notified of the vehicle location and unit number.
5. The driver of a vehicle passing or overtaking a disabled vehicle shall stop and assist the occupants of the disabled vehicle. Ensure that security has been notified and that assistance is on the way.

Four-Wheeler or Snow Machine Travel

A helmet must be worn when traveling by four-wheeler or snow machine.

Foul Weather Contingency Plan

1. Implementation

Foul weather procedures shall be implemented as conditions dictate according to local policy.

Phase I: Caution – Reduced Visibility. Travel on the field is permitted using extreme caution. Reduce speed and be certain all equipment (radios, lights, etc.) is operating properly. Arctic gear is required.

Phase II: Restricted – Convoy Only travel in the field.

Travel is permitted in convoys of two or more vehicles only. Radio communication between vehicles in the convoy is required.

Phase III: Closed – Critical or Emergency Travel Only. Travel will be by heavy equipment convoy only.

2. When a foul weather contingency is declared:

All Supervisors shall:

- Limit all unnecessary vehicle traffic.
- Notify all employees who report to them that foul weather conditions exist.
- Instruct all employees with outside responsibilities on the proper cold weather gear to be carried while traveling.
- Instruct all employees not to leave the vehicle in the event of breakdown or loss of traction, but to call for assistance on the radio.
- If Phase II conditions exist, the Supervisor shall suspend all regulated confined space work and consider suspending all non-regulated confined space work.

Facility Supervisors shall:

- Inform all people in their facility that foul weather conditions exist.

All Employees shall:

- Contact their Supervisors to report their location if in facilities not under the Supervisor's control, then report to the facility Supervisor where they are located for instructions.

3. Emergency Situations

Emergency situations during foul weather conditions shall be dealt with according to job site contingency plans.

Helicopter Travel

1. The helicopter pilot is in complete charge of the aircraft and passengers at all times during flight operations. Pilot is to provide passengers with an emergency briefing prior to flight.
2. Keep clear of the helipad until the helicopter has landed. The helipad is not to be used as a staging area for passengers or equipment.
3. When boarding or leaving the helicopter, passengers are not to enter the rotor blade arc until the pilot has signaled that it is safe to do so.
4. Under no circumstances shall any passenger walk under the tail rotor or tail boom. When it is necessary to walk around the helicopter, the trip is to be made within sight of the pilot and around the front of the aircraft only.
5. Do not distract the pilot with unnecessary conversations or actions.
6. Never throw anything out of the helicopter because of possible damage to the rotors.
7. Passengers shall not be aboard the aircraft during refueling operations.
8. Wear appropriate warm clothing and footwear for the weather, or transportation may be denied. Secure loose items such as hats.
9. Safety glasses are required for boarding and exiting helicopter where there isn't a dedicated paved or hard surface heliport.

Helicopter Travel Offshore

1. Employees shall wear a U.S. Coast Guard approved exposure suit that is fully zipped and buttoned up for cold-water exposure when flying offshore. Each suit shall have an approved strobe light.
2. All cranes shall be secured or pointed away from the helicopter deck while the helicopter is operating in the area of an offshore platform. A green light on the crane cab is used to signal the helicopter that it is safe

to land on the platform. For vessel heliports, follow Company cleared for landing policies and as directed by the vessel helicopter landing officer (HLO).

3. A windsock is to be provided on an offshore platform, and shall be illuminated at night.
4. Helicopters shall not land when unignited and undiffused gas is venting from an offshore platform.
5. Employees shall follow the instructions of the helicopter landing deck officer (HLO) or assistant (HLA).
6. Listen to the preflight briefing and be familiar with the emergency procedures.
7. Verify Company policy regarding carriage of butane lighters or other hazardous materials items onboard aircraft in baggage or on person.
8. Wear appropriate hearing protection.
9. Do not carry baggage or equipment on or around the helicopter without approval of pilot in command.

Fixed Wing Aircraft Travel

1. Wait to approach the aircraft until notified by crew to do so.
2. Wear appropriate warm clothing and footwear for the weather, or transportation may be denied.
   - Appropriate clothing required for travel October 1 through May 1 includes:
     - Heavy coat or jacket
     - Warm gloves or mittens
     - Winter cap or hat or hood which covers the ears
     - Warm substantial footwear (including warm socks) with sturdy outer-sole
   - Inappropriate clothing for travel October 1 through May 1 includes:
     - Raincoats, windbreakers, jacket shells or vests without an accompanying heavy coat
     - Shorts or dresses without leg protection
     - Open toe, open heel, or shoes with slick soles
     - Office shoes such as loafers, wing-tips, flats, clogs, high heels, or sandals

3. Listen to the preflight briefing and be familiar with the emergency procedures.
4. Wear appropriate hearing protection.
5. Tobacco use is prohibited on all flights and Company buses.
6. All travelers on flights are subject to security procedures used by all commercial air carriers.
7. Checked baggage is not to exceed 50 pounds per item.

Crew Boat Operations

1. The captain is in charge of the crew boat and its passengers at all times. Follow the instructions of the captain at all times during your transport aboard the vessel.
2. Passengers shall remain in the passenger compartment until the captain has signaled that it is safe to exit.
3. All personnel riding the crew boat shall wear personal flotation devices unless otherwise approved by the captain.
4. Personnel shall not attempt to make a transfer to or from the crew boat when carrying anything that will restrict their movements.

Material/Personnel Transfer between Offshore Platforms and Boats

1. The crane operator and all persons involved in loading or unloading operations shall discuss and plan procedures prior to movements of personnel or materials.
2. All persons connected in any way with material/personnel transfers who may be exposed to falling overboard shall wear an approved flotation device at all times.
3. Only personnel engaged in the transfer operations shall be on deck during personnel or material transfer operations. All personnel not involved in the transfer operations

shall keep clear of the decks in the vicinity of the transfer operations while such operations are in progress.

4. Personnel shall be alert, keeping their eyes on the crane block, load, and slings, while avoiding positions where they could become trapped between the load and parts of the platform or other materials.
5. Loads shall be maneuvered over the water rather than over the boat.
6. Where the crane operator cannot see the deck of the supply boat, a signalman shall be used to give visual signals to both the crane operator and the boat crews.
7. Any employee required to work on the boat during material/personnel transfer operations shall wear a hardhat and U.S. Coast Guard-approved personal flotation device.
8. At least two people shall be available on the deck of the supply boat to load supplies safely and properly.
9. Boats shall be equipped with a radio on the same frequency as the platform. Boat personnel shall monitor this frequency at all times while the loading and unloading operation is in progress.
10. Transfer of personnel to or from the boat will be by the personnel basket only. No personnel are allowed inside the webbing in the personnel basket while being transferred. Only baggage is allowed inside the webbing. Personnel shall stand on outside of webbing.
11. Wind and sea conditions shall be evaluated prior to the transfer of personnel.
12. Man-baskets or other personnel lifting devices shall be used only after completing a preloaded trial lift. Only competent personnel may operate personnel lifting devices. Competent person is responsible for giving an orientation to all personnel being transferred.

GENERAL SAFETY STANDARDS

Snow Removal Standard

Purpose / Scope

This standard defines requirements that shall be followed to safely remove snow from areas including, but not limited to, common traffic areas such as roadways, parking lots and around facilities, areas near operational equipment and any other areas where snow covered cables, pipelines, equipment or other hazardous obstructions may be present.

Snow removal where hazardous obstructions exist will require a Unit Work Permit. It is important to ensure that all information identifying hazards is accurate and current.

Snow removal in common traffic areas such as roadways, parking lots, and around facilities will not require a Unit Work Permit. However, notification of the Unit Operator is required prior to accessing and departing pads.

Vehicles and equipment involved in snow removal activities within 10 feet of a classified area shall require Operator notification but not a Hot Work Permit.

Ice / Snow Ramps for Loading or Offloading Equipment

1. Any ramp that is used for loading/offloading equipment that is constructed either in part or supported by ice/snow shall be designed and approved per company policy.
2. Design shall describe the load limit for the ramps intended use inspection criteria, and equipment that can be safely offloaded or loaded.
3. Ice/snow ramps shall have signage limiting the use to competent equipment operator and a contact phone number for the group that constructed the ramp.

Ramps may only be utilized with permission of the group that constructed them.

4. Ramp must be inspected per the design criteria by the equipment operator prior to use.

Objective

1. Ensure the area where the snow removal work is to be done is inspected.
2. Provide communication with all departments concerned.
3. Document all hazardous conditions and special requirements of the work area.

An annual review will be conducted to ensure proper markings of pipelines, cables, equipment or other obstructions where there is a possibility that accumulated snow will need to be removed. This review includes updating and distribution of the Equipment Operations Guides (EOG).

Permit Initiation

A Unit Work Permit for snow removal may be initiated by anyone and will be done at the appropriate control room, drillsite/wellpad, or other designated location.

Responsibilities

Unit Operator/Issuing Authority:

1. Discusses precautions and special considerations, and conducts a site review with the person(s) responsible for doing the snow removal prior to issuing a Unit Work Permit.
2. Completes and signs the Unit Work Permit authorizing snow removal as required.
3. Promptly reports and investigates/evaluates the extent of any damage that occurs during snow removal.
4. Participates in the annual review to verify the accuracy of current drawings and identification of known hazards.

5. Ensures pipelines, cables, equipment or other obstructions as identified in the EOG are properly marked with substantial snow poles or equivalent.
6. Notifies the Roads & Pads Group when any pipeline, cable, or other obstruction is in need of a new or replaced marker and follows up to ensure markers are installed prior to snow accumulation. Work to be completed via the Work Order system.

Roads and Pads Representative:

1. Participates in the annual review to verify the accuracy of current drawings used in the EOG.
2. Confirms field-wide distribution of the updated EOG on an annual basis.
3. Contacts the Unit Operator or other designated responsible person prior to conducting snow removal.
4. Initiates Unit Work Permit as required and participates in site review and discussions with Operations personnel prior to starting snow removal activity.
5. Looks for obstructions not previously identified or marked and notifies Operations personnel of the location and need for snow poles or markers.
6. Immediately notifies Operations personnel if powered equipment contacts/damages facility lines, cables or equipment during snow removal.
7. Maintains updated EOGs and reviews as part of the Unit Work Permit as required.

Surveying Contractor:

1. Maintains a current detailed drawing of the each operating area that includes pipeline and cable locations.
2. Participates in the annual review to verify the accuracy of current drawings.

Electrical Representative:

Participates in the annual review to verify the accuracy of current drawings.

Engineering Representative:

Participates in the annual review to verify the accuracy of current drawings.

Special Considerations

1. Snow poles and/or location markers shall be placed 3-4 feet from the accessible side of pipelines and power cables.
2. Temporary power cables must be placed far enough from the edges of roadways and pads, be elevated, or barricaded to prevent being struck by snow removal equipment
3. A qualified electrician must provide on-site approval when using power equipment to remove snow within 15 feet of unguarded, energized overhead electrical lines.
4. No power equipment snow removal operations shall be permitted within 3 feet of any utility (including-critical communication, fiber optic, etc.), or energized electrical cable unless:
   - it is clearly visible to the Equipment Operator, or
   - it has been marked with snow poles and/or location markers, or
   - it has been de-energized and physically located by hand excavation methods.
5. No power equipment snow removal operations shall be permitted within 3 feet of any energized electrical cable 600 volts or greater unless:
   - it is clearly visible to the Equipment Operator, or has been marked with snow poles and/or location markers; and
   - a ground spotter is employed to assist with the operation.
6. No power equipment snow removal operations shall be permitted within 3 feet of any pipeline, pit, curtain liner, or other non-energized utility unless:
   - it is clearly visible to the Equipment Operator, or
   - it has been marked with snow poles and/or location markers.

7. Adequate precautions must be taken to account for the release of stored energy when removing over-burden from snow-loaded pipelines. Do not use powered mechanical equipment to remove snow from the top of a buried pipeline without prior approval from Production/Area Supervisor.
8. When infrastructure (e.g. pipelines, energized equip-ment, etc.) normally left snow covered must be exposed using methods that potentially could cause damage, perform the following tasks in addition to the other requirements of this standard:
   - Consult applicable drawings to aid in understanding what obstructions are in the affected area.
   - For planned work, mark all infrastructure within the work zone and 10 feet outside it in advance of the work whenever such locate can be accomplished before snow covers it.
   - When the work requires exposing snow covered infrastructure, the entire work zone and 10 feet outside it must be probed using a 1 foot grid pattern in order to develop a complete profile of the area.
   - Use snow poles and/or location markers to delineate the infrastructure.
   - In the area where snow is to be removed, use offset markers to easily relocate obstructions as each layer of snow is removed. Do not assume the position of any obstruction until it is once again clearly delineated.
9. Snow blower operators shall not direct snow plume toward electrical substations, transformers, overhead lines and structures, cable trays and other electrical apparatus. If the plume cannot be directed away from the equipment due to wind conditions, snow removal should be stopped or performed by other types of heavy equipment.
10. Snow blower operators shall blow snow in designated area(s) in accordance with the EOGs.

Oversize Vehicle Standard

Purpose/Scope

This standard establishes requirements to minimize risk to personnel, motor equipment, electrical transmission lines, and bridge structures from oversized motor vehicles on Company controlled roads.

Objectives

Establish communications with appropriate security, electrical maintenance, engineering, logistics, and emergency response personnel.

Responsibilities

Vehicle Operator:

1. Ensures the traction vehicle of any load 14 feet or wider shall have a lighted, amber rotating beacon prominently displayed. Wide load signs or markers must be attached to the unit and be clearly visible to traffic approaching from the front and from the rear. Sections of the load protruding beyond the vehicle width must be lit by markers or spotlights when traveling in darkness.
2. Arranges an escort for a vehicle that has any of the following characteristics:
   - Width between 16-20 feet requires one escort unit
   - Width of 20 feet or wider is considered impassable and requires two escort units
   - 25 feet or higher
   - Vehicle weight that may exceed posted weight limits
3. Contacts security if an escort is required.
4. Strictly observes posted bridge load limits and speed limits.

Escort:

1. Compares the vehicle height with the electrical overhead line clearances.
2. Lays out a route that will encounter the least number of overhead crossings.
3. Contacts the appropriate Electrical Representative if any electrical lines come within 15 feet in any direction of the anticipated move.
4. Contacts an Engineering Representative if the vehicle-weight exceeds posted bridge load limits.

Electrical Representative:

1. Makes a complete study of the location in relation to the overhead lines, and develops a safe plan to move the load under the line.
2. Has the authority and responsibility to safely move the equipment under the crossing when the equipment arrives at a low overhead crossing.
3. Ensures the load speed while traveling under the power line is no more than a walking pace (3 mph).
4. Notifies appropriate supervision if an outage is required or the lines need to be dropped.

Engineering:

1. Performs a structural analysis for any bridge crossing in excess of the posted load limit.
2. Verifies vehicle weight to ensure proper load data for the structural analysis.

Special Considerations

Movements and Road Blocking:

Movement of modules to work locations must be coordinated with the Electrical Supervisor, Fire Chief, Medical Lead, Equipment Operations Supervisor, Project Logistics Coordination, Security, and the Dock Master, with a minimum of 24 hours notification to allow the affected Operations Supervisor to be notified.

Roadside Work
Traffic Control Standard

Purpose/Scope

This standard establishes the minimum requirements while working on or adjacent to roads.

This standard does not apply to heavy equipment engaged in routine road maintenance (grading, snow removal, dust abatement, etc.).

Objectives

1. Protect personnel working on or adjacent to roadways by establishing consistent safety practices for roadside work activities.
2. Provide warning to vehicle and equipment operators of the presence of personnel and equipment working on or adjacent to roadways.

General Requirements

1. Notify Security of work location and expected duration so information can be shared fieldwide as appropriate.
2. Vehicles and equipment used during roadside work must be equipped with a flashing amber/red beacon.
3. Vehicles parked on a road must turn off headlights and activate both emergency flashers and flashing beacon(s).
4. Roadside work crews must comply with high visibility clothing requirements in the Employee Safety section in this handbook.
5. The speed limit is reduced to 5 mph in areas where personnel, vehicles, or equipment are staged on roads.
6. During Phase I foul weather conditions, roadside work must be approved by the responsible area supervisor.
7. Roadside work is prohibited during Phase II or Phase III weather conditions.

Roadside Work Zone Signage Requirements

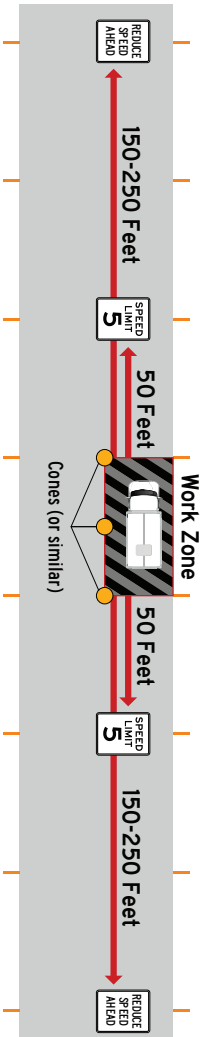
1. Work zones for roadside work must be delineated with use of signs and cones or barricades.
2. “Men Working - Reduce Speed Ahead” or similar worded signs must be placed at least 150 feet (three delineators) and not more than 250 feet (five delineators) in both directions from the work zone.
3. 5 mph speed limit signs must be placed approximately 50 feet (one delineator) in both directions from the work zone. The reverse side of these signs must indicate “Resume Speed.”
4. Cones or other warning devices must be placed between the 5 mph speed limits signs to delineate the work zone.
5. 5 mph speed limit signs may be attached to vehicles or equipment that are mobile within the designated work zone.
6. Sign placement must be adjusted to ensure drivers have visibility of the work zone before approaching from over a hill, around a corner, intersection, or other obstruction.
7. Traffic control/information signage must be removed or turned away from traffic immediately following job completion.

See diagram on page 72 for an example of work zone signage.

Special Considerations

1. Consider suspending roadside work when visibility is reduced.
2. Use additional traffic control measures (i.e., flaggers, security personnel, electronic message boards, lighting) when necessary to ensure the safety of personnel working in the area.
3. Mobile roadside work (delineator replacement, corrosion probe readings, etc.) does not require warning signs but vehicles must have both emergency flashers and flashing beacon(s) turned on and 5 mph speed limit signs attached to vehicles or equipment.

Roadside Work Zone Signage Example



Hydrogen Sulfide (H_2S) Standard

Purpose

The purpose of this standard is to establish and maintain a safe environment for personnel working in areas with the potential for encountering hydrogen sulfide (H_2S) gas through establishment of uniform operating standards and controls.

Refer to the specific Company standards and/or procedures for definitions, process sampling procedures, identification of H_2S designated areas, signage, detection and alarm systems, and safe work practices applicable for facilities operated by each Company.

Responsibilities

Unit Operator:

1. Performs H_2S gas checks necessary to characterize conditions where workers may be exposed to H_2S.
2. Notes on any permits where H_2S could be present.
3. Checks that personnel are using personal monitors in H_2S designated areas.
4. Checks that personnel working in areas with air concentrations exceeding 10 parts per million (ppm) H_2S in breathing zones wear appropriate respiratory protection and take proper precautions as required below:
   - 10 - 50 ppm: Full face air purifying respirator with appropriate cartridges.
   - 50 ppm: Supplied air (SCBA in a positive pressure mode or airline unit with a 5-minute escape bottle) and confirms back-up personnel with proper equipment are standing by

First-Line Supervisor:

Ensures all H_2S related activities within their scope of responsibility are in accordance with Company standards.

Company or Contractor Work Group Leader:

1. Ensures personnel performing work in "H_2S Designated Area" have received H_2S training. Individuals shall provide evidence of current H_2S training upon request.
2. Provides a pre-job review with personnel that may be exposed to H_2S, highlighting special safety precautions required for the job. This includes facility alarms, evacuation routes, assembly points, etc.
3. Provides required protective equipment and personal H_2S monitors while working in "H_2S Designated Area."
4. Chooses an evacuation path in consideration of current wind direction.
5. Conducts a personnel head count after an evacuation in response to an H_2S or gas alarm and report status to the Control Room Operator or Drillsite/Wellpad Operator, or appropriate authority.
6. Assigns a trained back-up person, with ready access to supplied breathing air, when working in atmospheres greater than 50 ppm of H_2S.

Person Doing the Work:

1. Knows and understands the H_2S and other facility alarms.
2. Provides evidence of required H_2S training upon request.
3. Obtains and has the ability to properly use supplied breathing air apparatus and personal H_2S monitors, if required to assist in rescue or facility isolation.
4. Reports to the designated briefing area and is accounted for upon hearing an H_2S or gas alarm.
5. If a situation with H_2S levels of 10 ppm or greater in the atmosphere is encountered, leave the area at once and notifies the appropriate operations personnel. Does not attempt to stop a leak, correct a situation, or perform rescue unless properly trained.

6. Wears appropriate respiratory protection and takes proper precautions if working areas with air concentrations exceeding 10 ppm H_2S in breathing zones as required below:
   - 10 - 50 ppm: Full face air purifying respirator with appropriate cartridges.
   - 50 ppm: Supplied air (SCBA in a positive pressure mode or airline unit with a 5-minute escape bottle) and confirms back-up personnel with proper equipment are standing by.

"H_2S Designated Area" Operating Requirements

Designated Area

Modules and facilities will be designated as H_2S areas when they contain a process stream with H_2S concentrations in the vapor phase greater than 100 ppm. The designated areas will be identified by a sign. Well pads and drill sites with one or more wells having greater than 100 ppm H_2S will be posted with a notice on the entrance warning that some facilities on the pad are "H_2S Designated Areas." For locations in U.S. federal waters, H_2S areas are defined differently (see 30 CFR 250.490).

Notification

For entrance into "H_2S Designated Areas," prior approval is required from the responsible designated authority.

Visitors

1. Escorted visitors will rely on the escort for compliance with the H_2S Standard.
2. Unescorted visitors will be required, at a minimum, to have basic awareness level training or orientation. Advanced training may be required as determined by the First-Line Supervisor based on length of exposure and operating conditions.

Respiratory Protection

1. Personnel working in areas with air concentrations exceeding 10 ppm H_2S in breathing zones must wear appropriate respiratory protection as required below:
   - Greater than 10 ppm but no more than 50 ppm: Full face air purifying respirator with appropriate cartridges.
   - Greater than 50 ppm: Supplied air (SCBA in a positive pressure mode or airline unit with a 5-minute escape bottle).
2. Emergency escape breathing apparatus (5 minute minimum) shall be available to individuals working in areas of restricted egress where an upset condition could require passing through a toxic atmosphere during evacuation.

Monitoring

1. Personal H_2S monitors shall be worn at all times in an "H_2S Designated Area." Where more than one individual will be working in the same area, at least one individual with a personal monitor shall be assigned to the group as determined by the Work Group Leader or the Supervisor.
2. Personal H_2S monitors and testing equipment shall be approved by the appropriate Safety or Industrial Hygiene department and shall be set to alarm at 10 ppm H_2S. H_2S monitors and testing equipment shall be function tested and calibrated according to the manufacturer's recommended schedule.
3. H_2S designated well house shelters with a process stream at or greater than 300 ppm will be identified with a Danger sign and shall be tested prior to each entry.

Ventilation

Any well house or module with atmospheric concentrations of H_2S exceeding 10 ppm shall be vented (i.e., natural, mechanical) prior to entry to ensure concentrations are reduced below 10 ppm.

Iron Sulfide

Iron sulfide may be present in process equipment that is in H_2S service. When dry, iron sulfide may ignite spontaneously in the presence of air. In addition to the fire hazard, toxic sulfur dioxide gas is released as a byproduct of iron sulfide combustion.

1. Prior to opening any process equipment that has the potential to contain iron sulfides, make every effort to clean the equipment by water washing or steam cleaning.
2. Keep equipment and internal vessel components wetted until laboratory analysis determines the sludge or scale is non-pyrophoric.
3. All iron sulfides removed from equipment should be immediately discarded into metal containers with tight fitting lids and wetted thoroughly. It should then be labeled and disposed of according to Company policy.
4. If iron sulfides do ignite, apply water to extinguish the fire. SCBA must be worn while extinguishing iron sulfide fires.

Structural Penetration Standard

Purpose/Scope

This standard shall be followed to minimize potential safety hazards when it is necessary to make penetrations in building floors, walls, partitions, soffits, ceilings, and roofs.

This standard applies throughout all Company operations.

Objective

Institute safeguards, appropriate controls, and actions to protect personnel and equipment.

Responsibilities

The Unit Operator or other person responsible for the area shall review and approve the exact location of all structural penetrations. The permit shall be specific in stating that a penetration is to be done.

The supervisor responsible for the area shall ensure that appropriate as-builts are made.

Special Considerations

1. Inspection methods should be used to ensure that there are not any obstructions such as conduits, lines, wires, or structural members, in the area to be penetrated. Additional consideration should be given to potential asbestos-containing material or lead-based paint. Contact the safety/industrial hygiene department.
2. All insulated metal clad walls, panels and ceilings shall be cut or penetrated by sawing, or drilling. The use of a torch or similar hot burning/cutting equipment is prohibited.
3. Steel floors or deck plates shall not be penetrated with a torch or other means of hot burning/cutting, without providing clear access to subfloor or soffit areas. Cold cutting procedures shall be employed when access to the subfloor or soffit is not possible.

4. Penetrations of fire rated walls, floors, and ceilings will be sealed in accordance with Engineering Standards so as to maintain the rated fire integrity of the barrier. For additional information, consult the Facility Engineer.
5. If a structural member is to be cut or penetrated, the Facility Engineer or Structural Engineer shall evaluate the work to confirm that structural integrity is maintained.
6. All new roof penetrations shall be approved by the Facility Engineer and a repair plan established prior to executing the work.

Impedance Pipe Thaw Standard

Purpose/Scope

The purpose of this standard is to establish requirements to prevent accident or injury by ensuring all personnel are aware of impedance pipe thaw operations.

Permit Initiation

A Hot Work Permit is required for thawing in all classified areas.

Responsibilities

Unit Operator:

1. Gas checks all pipe flanges, well houses, and production buildings in the affected area to ensure there are no leaks, both prior to the start of pipe thawing operations and regularly throughout the procedure.
2. Communicates to all personnel in the area that a pipe thaw operation is beginning and that all other pad activities shall cease unless approved by the responsible Drillsite/Wellpad Operator to continue.
3. Checks placement of fire extinguishers and other safety equipment.
4. Checks all tubing and small diameter piping for isolation and disconnection from the piping being thawed. No opening and blinding or other piping work should be done during thawing.
5. Lists any special precautions as required on the Hot Work Permit.
6. Monitors the work as it progresses, and informs maintenance, production, or construction employees of any changes affecting the safety of the work in progress. Stops the work if any change occurs that creates an unsafe condition. Work shall not resume until a safe condition is restored.
7. Monitors pressure differential across ice plugs and eventual direction of plug flow.

8. Limits access by unauthorized personnel to work areas.
9. Confirms that signs have been posted at all access points.

First-Line Supervisor:

1. Ensures that all pipe thawing is done according to the appropriate Company pipe thaw standard.
2. Gives approval to do pipe thawing only when absolutely satisfied that appropriate precautions have been taken.

Person Doing the Work:

1. Verifies that only qualified electricians perform impedance-type pipe thaw operations.
2. Reads and understands the conditions of the Hot Work Permit issued before starting work.
3. Advises other workers of any special conditions pertaining to the job.
4. Places “Do Not Enter” signage at all entrances to the job site indicating that pipe thaw operations are under way.
5. Follows the Company standard for impedance pipe thawing.
6. Monitors the internal pipe pressure, pressure differentials, and temperature where possible and maintains within safe limits.

Special Considerations

1. Be aware that flange isolation kits may be in place in the pipeline being thawed.
2. All electrical cables attached to the pipeline should be de-energized and disconnected before the thawing operation begins.
3. Personnel shall not stand or pass between the pipe and adjacent pipelines when it is being thawed.

Variances

Any deviation requires written approval as defined by the Variance to Safety Standard.

Hot Tapping and On-Line Plugging of Equipment In Service Standard

Purpose/Scope

This standard establishes requirements that will be followed to authorize hot tapping or plugging of operating equipment or lines that are currently in service, after it has been determined that the continuity of service is essential and shutdown is impractical.

Penetration of a line with a hot tap machine, whether in service or safely purged, is subject to this standard.

Note: In addition to the listed requirements below, all hot tapping and on-line plugging of equipment in service will be done in accordance with the Unit Work or Hot Work standards.

Objectives

Ensure adequate communication between the operating department and maintenance or construction personnel prior to performing the hot tap.

Hot Tap Package Review and Permit Initiation

To perform a hot tap or plugging of on-line equipment, a written package will be required from Engineering. This package shall include location, piping or equipment specifications, nondestructive examination, stress relieving information, and any other procedure deemed necessary to ensure the job can be performed safely. It will also include completed copies of the bit travel calculation sheets, wall thickness information, and connection and block valve hydrotest charts. The package will be approved by the First-Line Supervisor, the next higher level Supervisor, Company Safety Department, and an Engineering representative. A Unit Work Permit or Hot Work Permit will be initiated, and a copy of the Hot Tap Package will be attached to the Permit.

Responsibilities

Unit Operator:

1. Issues the appropriate permit in accordance with the appropriate standard.
2. Verifies that the location of the hot tap is correct.

First-Line Supervisor:

Ensures all participants in the hot tapping process have fulfilled their duties and responsibilities.

Control Room Operator or Drillsite/Wellpad Operator:

1. Ensures facility operations, construction, and/or maintenance will not be adversely affected by the proposed work.
2. Signs the permit.

Person Doing the Work:

1. Ensures the equipment to be worked on is ready and that the work can proceed safely.
2. Confirms completion of hot tap bit travel calculations.
3. Ensures there is adequate clearance for the hot tap machine.
4. Ensures that the pressure and temperature of the line to be tapped does not exceed the rated pressure and temperature of the hot tap machine.

Company Safety Representative:

1. Verifies that reviews and approvals were obtained for the hot tap procedure and that the connection valve was hydro tested.
2. Checks the work area for potential hazards and adds any special precautions to the permit.

Variances

Any deviation requires written approval as defined by the Variance to Safety Standard.

Flammable Fluid Transfer Standard

Purpose/Scope

This standard establishes minimum requirements to protect the safety and health of personnel when using vacuum and tanker trucks to transfer flammable fluids to or from non-permanent facilities.

Objectives

1. Vacuum trucks shall never be hooked up directly to lines or pressure vessels under pressure. Tanks are not considered pressure vessels. Fluids discharged from pressurized sources are to be flowed into tanks rather than directly to the vacuum unit.
2. Ensure equipment used to transfer flammable fluids meets applicable safety requirements.
3. Ensure equipment layout adequately separates potential ignition sources from potential sources of flammable vapors or liquids, and provides for personnel egress.
4. Ensure all personnel involved in the transfer use appropriate precautions for handling flammable fluids.
5. Ensure fluid transfer operations are never left unattended.

Definitions

1. **Flammable liquid** (or fluid) means a liquid having a flash point at or below 199.4° F (93° C).
2. **Transfers** are defined as movement of flammable fluids from:
   - Truck to truck
   - Tank to truck
   - Truck to tank
3. **Non-permanent facilities** include vacuum trucks, solid waste handling trucks (super sucker or Guzzlers), tanker trucks, and mobile/temporary holding tanks.

Exceptions

The following operations are not covered by this standard, but shall be accomplished by following established safe practices:

- Equipment fueling
- Loading or unloading fluid at permanent facilities (e.g., bulk fuel loading dock, oily waste, recycle facilities and fixed chemical tanks)
- Pumping fluid into a well, flowline, or other permanent facility
- Routine use of drillsite or wellpad bleed tanks by Company Representative

Responsibilities

Vehicle Contractor/Operator:

1. Ensures contractor personnel are properly trained and understand proper procedures for handling flammable fluids.
2. Ensures remote controls to shut down the fluid transfer are available for trucks with onboard pumping and vacuum equipment. These controls must be away from any vents or potential leak sources.
3. Ensures relief valve discharge piping and other atmospheric vents or drains (including the vacuum pump exhaust, compressor discharge, and vapor space vent valves) exhaust flammable vapors away from any potential sparking devices, other ignition sources, and the truck cab.
4. Ensures truck vents and fluid piping meet applicable Federal and State Regulations, and are designed to meet applicable NFPA and API guidelines.
5. Ensures bonding straps and grounded hoses are checked on a regular basis and maintained in good conductive condition.

Company Representative (or designee):

1. Conducts a pre-job, on-site safety discussion, spill prevention review, and job scope review, including the potential hazards of the work and emergency procedures, with all participants.
2. Conducts a visual inspeciton of secondary containment in loading area to insure it is not compromised.
3. Establishes a minimum of 2 emergency exit paths leading away from the transfer area for personnel egress. These exit paths must be a minimum unobstructed width of 5 feet, and in a non-downwind direction.
4. Ensures a minimum unobstructed pathway of 25 feet is maintained for fire and emergency vehicle access to the transfer area.
5. Reviews the wind direction relative to the trucks and equipment layout. Ensures the prevailing wind conditions are monitored so any potential sources of hydrocarbons are kept at least 25 feet downwind of any potential ignition source.
6. Ensures the inlet and/or outlet piping (truck connections) and truck mounted fluid pumping equipment are located at least 25 feet or more downwind from any potential ignition source on-site or on the back of the truck.
7. Ensures the trucks and/or tank(s) involved in the transfer are separated by at least 25 feet.
8. Reviews positions of fire extinguishing equipment and ensures the operator is trained in its proper use.
9. Ensures electrical bonding straps or grounded hoses are connected between all equipment involved in the transfer.
10. Ensures, when venting at low temperatures, the operator monitors vents and check valves for freeze off conditions and takes appropriate actions to mitigate the hazard.
11. Checks functionality of communication devices before transfer begins.

12. Ensures flammable fluids sucked into a solid-waste handling truck (super sucker or Guzzler) are at least 40° F below their flash point.
13. Ensures vapor pressure of well bore fluids are within Company operating parameters prior to any vacuum system transfers.
14. Completes a Unit Work Permit for any transfer that will not be continuously supervised by a Company Representative (or designee).

Special Considerations

1. Personnel safety must always be the first consideration in transferring flammable fluids. Environmental impacts due to fluid spills are of secondary importance to personnel protection.
2. When venting at low temperatures, the operator monitors vents and check valves for freeze off conditions and takes appropriate actions to mitigate the hazard.
3. Transfers of hydrocarbon containing fluids to tanks or vessels greater than 10,000 gallons that are not equipped with an overfill protection device require an off-loader and receiver. Both must remain present and maintain communication during the entire fluid transfer. The receiver is responsible for continuously monitoring the fluid level of the receiving tank. Alternative methods may be approved by Company Environmental Representative..
4. Review Company flammable fluid transfer guidelines and spill prevention plans for use of drip pans, surface liners, and additional requirements for fluid transfer operations.

Hydrostatic Testing Standard

Purpose/Scope

This standard establishes minimum requirements for the protection of personnel and property during hydrostatic testing of process and pipeline systems and pressure vessels.

Hydrostatic testing is performed to test temporary and permanent process piping systems, component parts of systems, and pressure vessels for leaks and to determine whether the system will withstand the service loading without failure.

Objectives

1. To define the appropriate sources of specifications and codes for the performance of hydrostatic tests.
2. To provide communication and coordination between all affected personnel.

Hydrostatic Testing Specifications

Hydrostatic testing shall be conducted in a manner consistent with the hydrotest procedure package and shall meet the hydrostatic testing specifications in the ANSI or ASME codes and engineering standards. Consult the Company engineering department for the applicable codes and standards.

Responsibilities

First-Line Supervisor:

1. Ensures the work complies with the appropriate hydrostatic testing specifications.
2. Ensures a site-specific hydrotest procedure was submitted to the responsible engineer for review and approval prior to commencing any operations.
3. Assures line/vessel is properly treated with corrosion inhibitor if it remains packed with hydrotest fluid.

Unit Operator:

1. Verifies that all routes of access to the hydrotest area are restricted and are clearly marked with signs stating “Danger-Hydrotesting in Progress.”
2. Verifies that the Special Precautions section of the Unit Work Permit is filled out as described above.

Person in Charge of Hydrotest Crew:

The person in charge of the hydrotest crew will check and verify to the First-Line Supervisor or engineer that:

1. All equipment used for hydrotesting is rated for the appropriate pressure rating for the test procedure.
2. All test instrumentation is capable of handling the pressures that are required for the test and is correctly attached to the test system.
3. Pressure gauges have been calibrated within the last 30 days.
4. Chart recorders have been calibrated within the last 90 days.
5. Dead weight testers have been calibrated within the last 12 months.
6. Digital gauges and recorders that have been calibrated within the last 180 days.
7. All hoses are fully secured with tie-down devices capable of withstanding the forces used in the test.
8. The pressure relief valves on the pump have been tested and certified within the last 12 months and are capable of handling the pressures needed for the test.
9. The test medium will not freeze at the lowest temperature to be encountered during the test period and that lines to the deadweight machine and the chart recorder are filled with hydraulic oil.
10. If testing is done below -20° F, all fittings, hoses, etc. are rated for low temperature service (-50° F).
11. The structure and support of the vessel or piping can support the dead weight of the hydrotest fluid.
12. Proper spill prevention procedures are followed and containment is provided.

Procedures

Hydrotest work shall be conducted under the following rules:

1. High-pressure hose connections or hard piping shall be used for connecting any attachments to the hydrotest system.
2. Hydrotest headers shall be equipped with independent bleed-off points.
3. All flanges shall be properly bolted and torqued prior to starting the test.
4. No bolts may be tightened when there is more than 50% of hydrotest pressure or 1,000 psig; whichever is less pressure on the system being tested.
5. No pipe-threaded connections on the test system may be tightened when there is any pressure on the test system.
6. Temporary welds, such as hydrotest headers to pipelines, shall be inspected and welded per the design specification and approved welding procedures.

Removal of Hydrotest Fluid & Pigging Operations

1. Disposal of hydrotest medium shall be per The Alaska Waste Disposal and Reuse Guide.
2. Motive gas for all pigging operations shall require approval and shall be so noted in the site-specific hydrotest procedure prior to commencing work.

Hardline

Temporary piping systems used for temporary hookups for flowlines, gas lift, fill cleanouts, etc., made up from threaded pipe and fittings are referred to as hardline. Hardline shall be inspected and recertified for use on a periodic basis as specified by Company standards.

The responsible First-Line Supervisor shall ensure that all hardline in use at a particular job site has current certification and is appropriate for the job site.

Fired Heater Standard

Purpose/Scope

This standard is for mobile equipment used to heat air and liquids including flammable fluids outdoors. This includes hot oil trucks and indirect-fired heaters.

The standard establishes minimum requirements to protect the safety and health of personnel when using fired heaters at both permanent and non-permanent facilities.

Direct-fired heaters shall not be used for or near process facilities. The use of direct-fired heaters for other areas such as shops and camps is not allowed without permission from the responsible supervisor.

Objectives

1. Ensure all fired heaters are located only as close to the work as necessary.
2. Ensure all fired heaters meet applicable safety requirements.
3. Ensure equipment layout adequately separates potential ignition sources from flammable material, solids and vapors or liquids, and provides for personnel egress.
4. Ensure all personnel involved in the use of fired heaters understand the hazards and follow appropriate safety precautions.
5. Ensure any mobile fired heater operation complies with applicable safety standards.

Responsibilities/General Considerations

The user is responsible for ensuring the heater is set up and used properly. The person responsible for the fired heater and/or area shall check the heater and surrounding area to make sure the area is free of any fire hazards such as gas, oil or fuel leaks. Heaters should be checked at least once per 12 hour shift. Some job conditions may require more frequent inspections and could include constant monitoring.

Responsible Company/Contract Supervisor

1. Ensures that a pre-job, on-site safety discussion and job scope review, including the potential hazards of the work and emergency procedures is conducted with participants for trucks with onboard fired heaters if applicable.
2. Ensures personnel safety is always the first consideration when using mobile fired heaters, especially while heating enclosures and flammable fluids.
3. Ensures environmental impacts are included in pre-job assessments.
4. Ensures use of drip pans and/or surface liners during mobile fired heater operations per Company spill prevention plan.
5. Reviews the wind direction relative to the fired heater equipment layout. Ensures the prevailing wind conditions are monitored so any potential sources of hydrocarbons are downwind of the ignition source.
6. Completes the appropriate permit for heating operation if applicable.
7. Ensures personnel are properly trained and understand the proper operating procedures of fired heaters used for space heating and for heating flammable fluids.
8. Ensures shut down controls are clearly identified and visible on mobile fired heaters and trucks with onboard fired heaters.
9. Reviews positions of fire extinguishing equipment and ensures the operator is trained in its proper use.

Fired Heaters Used for Heating Air

1. Mobile indirect-fired heaters within a classified area are subject to the Hot Work Permit Standard. A classified area extends 10 feet beyond the exterior wall or roof of a building, fan exhaust, vent, low point drain, high point vent or flanges.

2. Indirect-fired heaters used for well service activities that are placed outside a classified area (for example, more than 10 feet from a well house) are not subject to the Hot Work Standard (API RP 500).
3. All ducting linking the fired heater to a work site shall be flame resistant. Commonly used flame resistant flexible duct will begin to degrade at 250° F. Flame resistant ducting material contaminated with oil or other flammable material shall not be used.
4. Be aware of the associated fire danger when mobile fired heaters are used for space heating. The commonly used Tioga heater, for example, will have an outlet temperature of 200° F when the ambient temperature is 0° F. Higher ambient temperatures will result in much higher heater outlet temperatures. Heating operations need to be monitored very closely above 0° F to prevent heater outlet from reaching elevated temperatures.
5. Fired heater ducting outflow must never be directed at cylinders, process equipment or piping as overpressurization may occur.
6. Fired heaters are required to have emergency shutdown devices prominently visible on the exterior of the heater.
7. It is recommended that heaters be shut down for fueling.
9. Consideration of access and egress should be addressed in placement of ducting. During winter months ducting should be supported above the ground surface to prevent melting ice from creating ruts and uneven walking and working surfaces.
9. Neoprene module interconnects (weather boots) are combustible. Use caution if applying heat in these areas.
10. Fired heaters either shall be equipped with a 20 pound, dry chemical fire extinguisher or have one available within 50 feet while in use.
11. Use straight duct runs if possible. Kinks or s-turns in flexible duct will result in hot spots and should be avoided.

12. Enclosures being heated should be well ventilated to prevent excess heat build-up in the duct due to back-pressure on the heater outlet and temperature buildup in the enclosure that could change conditions and impact safety of the operation.
13. Use only the appropriate size heater for the size of the area to be heated.
14. Heater user is responsible for communicating to incoming shift personnel specific heater location and heater operation monitoring requirements.
15. Heaters that are used solely for the comfort of personnel should be shut down when left unattended.

Fired Heaters Used for Heating Fluids

1. Establish 2 emergency exit paths if possible leading away from the area for personnel egress.
2. Ensure a minimum unobstructed pathway of 25 feet is maintained for fire and emergency vehicle access.
3. Ensure relief valve discharge piping and other atmospheric vents or drains exhaust flammable vapors away from any ignition sources, and the truck cab.
4. Ensure truck vents and fluid piping meet applicable Federal and State Regulations, and are designed to meet applicable NFPA and API guidelines.
5. Ensure electrical bonding straps or grounded hoses are connected between all equipment involved in the heating operation. Ensure bonding straps and grounded hoses are checked on a regular basis and maintained in good conductive condition.
6. While heating fluids in a closed tank at low ambient temperatures, there is potential for the vented gas to condense and possibly freeze off the vent. Take appropriate action to mitigate this hazard.

Defeated Safety Devices Standard

Purpose/Scope

The purpose of this standard is to establish a procedure to authorize, record and monitor all defeated safety devices.

Objectives

Ensure adequate communication during times when safety devices are inoperative.

Defeated Safety Device Log

A Defeated Safety Device Log (DSD Log) shall be maintained in the designated facility location that specifies date, tag number, device defeated, how defeated, reason and authorization. Items that are under the continuous direct control of the authorized person and returned to service prior to the end of the shift are not required to be entered on the DSD Log.

Responsibilities

Unit Operator:

1. At the beginning of each shift, initials the DSD Log to acknowledge awareness of the devices being defeated and length of time out of service.
2. Obtains appropriate authorization from Supervisor or designee before defeating any safety device, then records on the DSD Log.
3. Attaches a “Danger – Do Not Operate” tag to the device or control panel. Tag shall identify the defeated device, reasons why defeated, operator’s name, and date. When instrumentation readouts or indicators are affected, a “Danger – Do Not Operate” tag shall also be posted at those locations.
4. Informs the persons doing the work on the status of the defeated device.
5. Ensures all safety devices are returned to normal operating condition prior to completing the job.

6. Records the date when the safety device was returned to service on the DSD Log.

Control Room Operator or Drillsite/Wellpad Operator:

Remains aware of the status of any defeated safety devices and how it may affect the overall operation.

Operations First-Line Supervisor:

1. Initials the DSD Log daily to indicate awareness of the devices being defeated and length of time out of service.
2. Ensures that impact to process safety as well as personnel safety and health is acceptable when operating with a safety device that has been defeated.
3. Considers the cumulative risk associated with multiple items on the DSD Log and evaluates additional mitigations that may be warranted.

Duration

The Operations Manager's signature shall be required on the DSD Log if a device is defeated for 90 days, and will be required every 90 days thereafter.

The Field/Senior Level Manager's signature shall be required on the DSD Log after 120 days, and every 120 days thereafter.

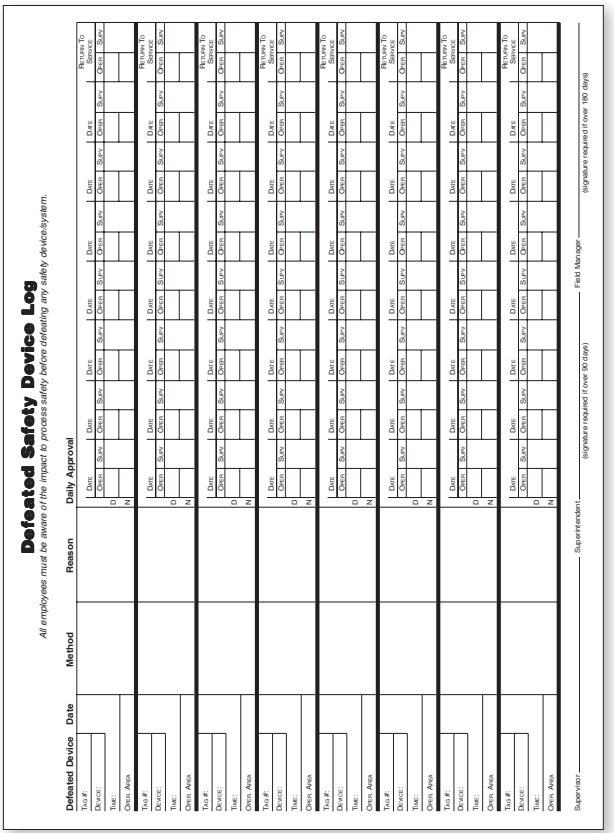
Special Considerations

Short-term operation of a facility without halon protection requires the approval of the Operations First-Line Supervisor except during routine fire and gas system maintenance or PMs.

Continuous operation of a facility with a defeated fire suppression/detection system/alarm system such as halon, gas detection, etc., requires the approval of the appropriate manager.

Note: Continuous operation is defined as any 12-hour period from the time the system became inoperable.

Jumpers that impact safety devices shall be recorded on the DSD Log.



Defeated Safety Devices Standard Form

Ground Disturbance Standard

Area Civil Work Request (ACWR)

Purpose/Scope

This standard defines administrative requirements that shall be followed to authorize any excavation, trenching, burying, pile driving, conductor and VSM drilling, and any other ground disturbance operations that could damage covered or buried cables and pipelines. Any ground disturbance greater than 12 inches in depth will require an Area Civil Work Request (ACWR). If there are any questions regarding potential to contact buried utilities less than 12 inches at the specific location, contact the area supervisor to determine whether an ACWR needs to be completed.

Consult your company's specific ground disturbance policy to ensure compliance with any additional requirements.

Exception:

Using a vac truck or super sucker to extract aggregate from inside of an established cellar does not require an ACWR. If obstructions are encountered during extraction, stop and contact the area supervisor. If contaminated material is identified before, during, or after extraction, stop and contact the Company Environmental Representative.

Objectives

1. Ensure adequate communication between all personnel prior to excavation, digging, trenching, drilling, or clearing.
2. Ensure all underground hazards such as pipelines, electric cables, etc. have been identified.
3. Ensure a hazard assessment of the work and any special precautions has been completed.
4. Institute a formal, consistent, and documented procedure.
5. Ensure surveyed as-built and formal documentation of all changes are completed.

6. Ensure any changes in work scope not included in the original project description will not necessitate starting the process over.

Requirements

1. Each ACWR shall include an expiration date (not to exceed 90 days) if ground disturbance activities are not initiated within the specified time. The expiration date shall be based on the time the Surveying contractor signs the Field Inspection section of the ACWR.
2. All Pre-Job Requirements signatures shall be obtained prior to the Field Inspection signatures. Only those departments requiring a field locate or special precautions need to sign off in the Field Inspection section. This will be done once they have verified the locate or special precautions they have requested are complete. The Field Inspection signatures do not have to be obtained in the order in which they are listed with the exception of the Surveying Contractor signature, which shall be obtained first, and the Safety signature, which shall be obtained last. Final approval signatures must be obtained in the order they are listed.
3. A single ACWR shall represent a specifically defined area identified by common underground hazards. If multiple proposed locations on a project do not share the same pre-identified hazards then multiple ACWRs are required.
4. The ACWR shall contain the most current drawings of the construction site which overlays and clearly identifies the underground utilities (power/telecommunication and pipelines) and the proposed VSM drill holes, trench or other ground disturbance.
5. Positively identify all cables/lines within 30 feet of a VSM drill hole, trench or proposed excavation prior to beginning excavation activities:
   A. A qualified technician shall conduct a field locate of the proposed dig/excavation site using electromagnetic detection equipment (including the use of a transmitter clamped to the existing identified lines) or other approved detection

technology to positively verify known and unknown underground utility locations.

B. A qualified surveyor shall survey and mark underground utilities using the most current version of the underground as-built drawings and the results of the field locate. A qualified surveyor is not required to mark underground utilities if scope of work is limited to non-mechanical excavation activities (e.g. hand digging, super sucker, water wash, etc.).

Responsibilities

ACWR Initiator:

The Company or Contractor Representative responsible for overseeing and/or performing the work will initiate the ACWR. A minimum of 72 hours is normally required to complete the entire ACWR process.

The Initiator:

1. Submits the ACWR with a detailed location and specific work description (i.e., name of line, dimensions, depth, etc.) to determine if a field locate is required.
2. Submits the ACWR with the most current drawing showing underground utilities as-builts including revision number, a dimensional construction drawing and any other supporting documents to help identify the exact location of the proposed ground disturbance.
3. Includes in the submittal any required environmental permits.
4. Indicates on ACWR if work is within the DOT Work Notify Area (WNA) or Pipeline Right-of-Way (ROW) and includes applicable work authorization documents with ACWR submission.
5. Once all pre-job clearance approvals are obtained, the ACWR initiator will know if field locates are required based on the surveying contractor, electrical, communications, and facility/drill-site engineering's determination.

6. If underground utilities exist, ensures they are properly delineated as prescribed below before assuming responsibility of the upkeep of the delineation markers.
7. Maintains delineation markers until the excavation is initiated once responsibility has been accepted from Surveying Contractor.
8. Retains the completed original ACWR for one year.

Surveying Contractor:

1. Assists the Initiator in obtaining the most current drawings for the ACWR.
2. Verifies the need and completes the field locate when required. Field locate is not required for underground cables that are:
   - Encased, and
   - Visible on both ends of the casings
3. Delineates all underground lines/utilities within 30 feet of the proposed dig site.
4. Notifies the Initiator once the area has been delineated.
5. Coordinates as-built scheduling with the contractor.
6. Ensures the underground utility drawings are updated and kept current.
7. Verifies on the "Field Inspection" form prior to work commencing, that there have been no changes to the proposed location or drawing updates.
8. Shall not sign on the pre-job section until satisfied that all special precautions have been identified and that work can be accomplished safely.

Electrical Representative:

1. Completes a walk-down of the area surrounding the proposed work prior to completing the ACWR pre-job section to verify all underground electrical cables are accurately shown on the drawings or accurately marked by the Surveying Contractor. The walk-down is also for the purpose of determining if any buried electrical cables will be affected and to determine if any cables are within 30 feet of the work area.

2. If no electrical cables will be affected and none are within 30 feet of the work area, then no locate is required. Check 'Field Locate Required?' Box 'No' on the front of the ACWR.
3. If any electrical cables will be affected and are within 30 feet of the project area, then a physical locate is required. Check 'Field Locate Required?' Box 'Yes' on the front of the ACWR.
4. Shall mark the located ground path and depth of all buried electrical cables that are within 30 feet of the work area with red paint.
5. The field locate will be done by using an electromagnetic detection tool (including the use of a transmitter clamped to the power line to be identified or other approved line detection technology) to positively verify known and attempt to find any unknown buried electrical cable locations prior to beginning excavation activities.
6. Shall be on site for any work activity within 15 feet of any buried energized power or control cable, unless a risk assessment is completed and approved by responsible work group lead, Company Electrical Representative and Company First Line Supervisor (or designee). The risk assessment must identify risks and verify mitigations for each work group involved and include the following components at a minimum:
   - emergency isolation,
   - break in contact,
   - rescue and emergency response,
   - site control while emergency response is en route, etc.

   Risk assessment can be documented on work permits using the Critical Hazard Task Categories section.

   If the cables are de-energized, the electrician is not required to stay on site.
7. Shall de-energize all buried electrical cables within 3 feet of the project area, unless non-mechanical excavation methods (e.g., hand digging, super sucker, water wash, etc.) are used to locate energized cable(s). Once the cables are de-energized, the electrician is not required to stay on site.
8. Shall not sign on the pre-job section until satisfied that all special precautions have been identified and the work can be accomplished safely.

Communications Representative:

1. Shall verify that no communications cables will be affected by the proposed activity (no locate required). Check 'Field Locate Required?' Box 'No' on the front of the ACWR.
2. Shall verify that all communications cables within 15 feet of the project area (locate required) are clearly marked for location and depth. Check 'Field Locate Required?' Box 'Yes' on the front of the ACWR.
3. Shall not sign on the pre-job section until satisfied that all special precautions have been identified and the work can be accomplished safely.

Facility Engineering Representative:

1. Shall verify that no pipelines, liners, or other utilities will be affected by the proposed activity (no locate required).Check 'Field Locate Required?' Box 'No' on the front of the ACWR.
2. Shall review that all buried pipelines, liners, or other utilities within 15 feet of the project area (locate required) are clearly marked for location and depth. Check 'Field Locate Required?' Box 'Yes' on the front of the ACWR.
3. Shall not sign in the signature block until it is safe to proceed.
4. Shall not sign on the pre-job section until satisfied that all special precautions have been identified and the work can be accomplished safely.

Company Environmental Representative:

1. Shall review and add any environmental precautions.
2. Shall review all precautions taken to ensure there are no conflicts in the project area.

3. Shall sign the ACWR, acknowledging their familiarity with the work and steps taken to avoid environmental incidents.
4. Shall not sign on the pre-job section until satisfied that all special precautions have been identified and the work can be accomplished safely.

DOT Pipelines Representative:

1. Shall review and add any precautions if work occurs within the DOT Work Notify Area (WNA) or Pipeline Right-of-Way (ROW).
2. Shall not sign on the pre-job section until satisfied that all special precautions have been identified, applicable authorizations are in place, and the work can be accomplished safely.

Note: The DOT Pipelines Representative is only required to review ACWRs when work occurs within the DOT Work Notify Area (WNA) or Pipeline Right-of-Way (ROW).

Company Safety Representative:

1. Shall review and add any safety precautions.
2. Shall sign the ACWR, acknowledging their familiarity with the work and steps taken to avoid unplanned contact with existing utilities.
3. Shall review all remarks and expectations with the initiator to ensure all precautions are addressed.
4. Shall not sign on the pre-job section until satisfied that all special precautions have been identified and the work can be accomplished safely.

Person Doing the Work:

1. Shall review all precautions taken to ensure there are no conflicts in the project area.
2. Shall ensure all remarks and expectations have been addressed.
3. Shall sign the ACWR, acknowledging their familiarity with the work, the steps taken to avoid unplanned contact with existing utilities and that it is safe to proceed.

4. Shall attach a copy of the completed ACWR to the appropriate work permit.

First Line Supervisor of the Person Doing the Work:

1. Shall review all precautions taken to ensure there are no conflicts in the project area.
2. Shall ensure all remarks and expectations have been addressed.
3. Shall sign the ACWR, acknowledging their familiarity with the work, the steps taken to avoid unplanned contact with existing utilities and that it is safe to proceed.

Company Area First-Line Supervisor:

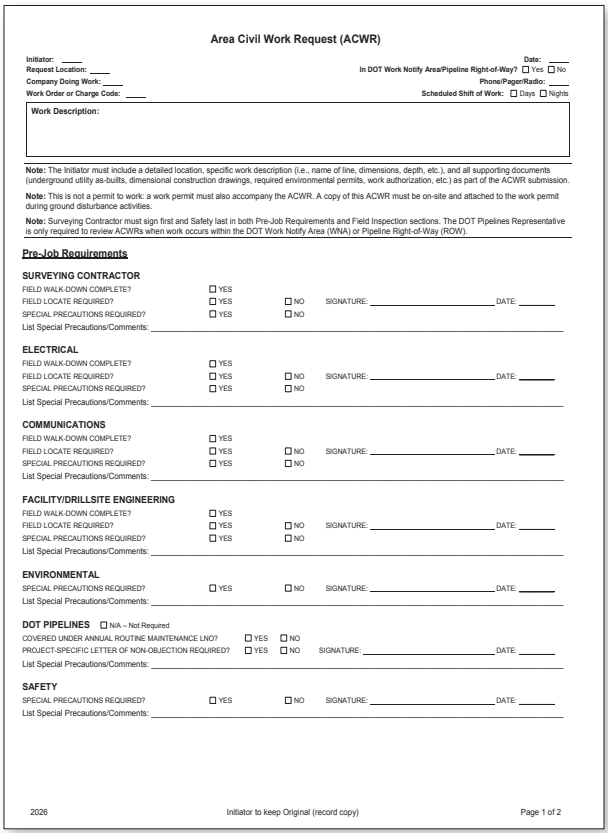
1. Shall review all precautions taken to ensure there are no conflicts in the project area.
2. Shall ensure all remarks and expectations have been addressed.
3. Shall sign the ACWR, acknowledging their familiarity with the work, the steps taken to avoid unplanned contact with existing utilities and that it is safe to proceed.

Excavation Considerations

1. For excavations 6 feet or more in depth, provide perimeter barricades, guardrail systems, or covers to protect personnel. Cover open drill holes (VSM's, module pilings, conductors, etc.,) with plywood covers at least 1-1/8 inches thick with handles, cones, and appropriate warning markings.
2. Walkways shall be provided where employees or equipment are required to cross over excavations. Guardrails shall be provided where walkways are 6 feet or more above lower levels.
3. No power equipment excavation operation shall be permitted within 3 feet of any buried cable or other utility, unless it has been de-energized and physically located by hand excavation methods.

- Underground cables that are encased and visible on both ends of the casings do not require a field locate.

4. No power equipment excavation operation shall be permitted within 3 feet of any buried pipeline, pit, curtain liner or other non-energized utility unless it has been physically located by hand excavation methods.
5. The Excavation Competent Person shall evaluate all excavations daily if employees are going to work or enter the excavation. The evaluation will be documented.
6. Excavations deeper than 4 feet shall be evaluated by the Company Safety Representative for additional precautions and mitigations.
7. The walls and faces of all excavations in which personnel are exposed to danger from moving ground shall be guarded by shoring, sloping or an equivalent means in accordance with applicable regulations.
8. The Fire Department shall be notified by Operations of any excavation which may impede access to facilities, drillsites/wellpads, etc. Alternate traffic routing shall be provided where possible.
9. Prior to backfilling a trench or excavation where new utilities are installed, the surveying contractor shall complete a field as-built of the new utilities before backfilling is allowed. Consider use of identification markings above buried items.
10. All buried items, utilities, etc., must be appropriately documented on as-built drawings. The drawings must show location, depth and description of buried items.



Area Civil Work Request (ACWR)

Initiator: ____ **Date:** ____
Request Location: ____ **In DOT Work Notify Area/Pipeline Right-of-Way?** ☐ Yes ☐ No
Company Doing Work: ____ **Phone/Pager/Radio:** ____
Work Order or Charge Code: ____ **Scheduled Shift of Work:** ☐ Days ☐ Nights

Work Description:

Note: The Initiator must include a detailed location, specific work description (i.e., name of line, dimensions, depth, etc.), and all supporting documents (underground utility as-builts, dimensional construction drawings, required environmental permits, work authorization, etc.) as part of the ACWR submission.

Note: This is not a permit to work: a work permit must also accompany the ACWR. A copy of this ACWR must be on-site and attached to the work permit during ground disturbance activities.

Note: Surveying Contractor must sign first and Safety last in both Pre-Job Requirements and Field Inspection sections. The DOT Pipelines Representative is only required to review ACWRs when work occurs within the DOT Work Notify Area (WNA) or Pipeline Right-of-Way (ROW).

Pre-Job Requirements

SURVEYING CONTRACTOR
FIELD WALK-DOWN COMPLETE? ☐ YES
FIELD LOCATE REQUIRED? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____
SPECIAL PRECAUTIONS REQUIRED? ☐ YES ☐ NO
List Special Precautions/Comments: _____

ELECTRICAL
FIELD WALK-DOWN COMPLETE? ☐ YES
FIELD LOCATE REQUIRED? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____
SPECIAL PRECAUTIONS REQUIRED? ☐ YES ☐ NO
List Special Precautions/Comments: _____

COMMUNICATIONS
FIELD WALK-DOWN COMPLETE? ☐ YES
FIELD LOCATE REQUIRED? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____
SPECIAL PRECAUTIONS REQUIRED? ☐ YES ☐ NO
List Special Precautions/Comments: _____

FACILITY/DRILLSITE ENGINEERING
FIELD WALK-DOWN COMPLETE? ☐ YES
FIELD LOCATE REQUIRED? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____
SPECIAL PRECAUTIONS REQUIRED? ☐ YES ☐ NO
List Special Precautions/Comments: _____

ENVIRONMENTAL
SPECIAL PRECAUTIONS REQUIRED? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____
List Special Precautions/Comments: _____

DOT PIPELINES ☐ N/A – Not Required
COVERED UNDER ANNUAL ROUTINE MAINTENANCE LNO? ☐ YES ☐ NO
PROJECT-SPECIFIC LETTER OF NON-OBJECTION REQUIRED? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____
List Special Precautions/Comments: _____

SAFETY
SPECIAL PRECAUTIONS REQUIRED? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____
List Special Precautions/Comments: _____

2026 Initiator to keep Original (record copy) Page 1 of 2

Area Civil Work Request Form - Front

Area Civil Work Request (ACWR)

Initiator: ____ **Date:** ____
Request Location: ____ **In DOT Work Notify Area/ Pipeline Right-of-Way?** ☐ Yes ☐ No
Company Doing Work: ____ **Phone/Pager/Radio:** ____
Work Order or Charge Code: ____ **Scheduled Shift of Work:** ☐ Days ☐ Nights

Note: By signing the Field Inspection section below, positions validate the completed locate and all special precautions have been addressed.

- Except for the Surveying Contractor and Safety, only departments that required a "Field Locate Required" or listed any special precautions in the Pre-Job Requirements section need to sign the Field Inspection section.
- For positions not required to sign the Field Inspection section, check the 'N/A – Not Required' box 'No'

Note: Each ACWR shall include an expiration date (not to exceed 90 days) if ground disturbance activities are not initiated within the specified time. The expiration date shall be based on the time the Surveying Contractor signs the Field Inspection section below.

Field Inspection

SURVEYING CONTRACTOR CLEARANCE
HAS THE EXCAVATION BEEN MARKED? ☐ YES
ARE THE UNDERGROUND UTILITY DRAWINGS THE MOST CURRENT? ☐ YES Drawing # _____ Rev. # _____ ☐ N/A Reason: _____
HAVE ALL SPECIAL PRECAUTIONS BEEN MET? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____

ELECTRICAL CLEARANCE ☐ N/A – Not Required
IS LOCATE COMPLETE? ☐ YES ☐ N/A
HAVE ALL SPECIAL PRECAUTIONS BEEN MET? ☐ YES ☐ NO
IS AN ELECTRICIAN REQUIRED TO BE ONSITE? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____

COMMUNICATIONS CLEARANCE ☐ N/A – Not Required
IS LOCATE COMPLETE? ☐ YES ☐ N/A
HAVE ALL SPECIAL PRECAUTIONS BEEN MET? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____

FACILITY/DRILLSITE ENGINEERING CLEARANCE ☐ N/A – Not Required
IS LOCATE COMPLETE? ☐ YES ☐ N/A
HAVE ALL SPECIAL PRECAUTIONS BEEN MET? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____

ENVIRONMENTAL CLEARANCE ☐ N/A – Not Required
HAVE ALL SPECIAL PRECAUTIONS BEEN MET? ☐ YES ☐ NO SIGNATURE: _____ DATE: _____

DOT PIPELINES CLEARANCE ☐ N/A – Not Required
IS LETTER OF NON-OBJECTION IN PLACE? ☐ YES ☐ N/A
HAVE ALL SPECIAL PRECAUTIONS BEEN MET? ☐ YES ☐ N/A SIGNATURE: _____ DATE: _____

SAFETY CLEARANCE
HAVE ALL SPECIAL PRECAUTIONS BEEN MET? ☐ YES ☐ N/A SIGNATURE: _____ DATE: _____

Note: Once all Field Inspection signatures above have been obtained, the Person Doing the Work, the First Line Supervisor of the Person Doing the Work, and Company Area First-Line Supervisor shall sign the ACWR acknowledging their familiarity with the work and the precautions taken.

Note: A copy of the completed ACWR shall be attached to the appropriate work permit during the ground disturbance. The Original (record copy) shall be kept on file with the Initiator for one year.

Final Approvals (sign the ACWR in order below)

PERSON DOING THE WORK SIGNATURE: _____ DATE: _____

FIRST LINE SUPERVISOR OF THE PERSON DOING THE WORK SIGNATURE: _____ DATE: _____

COMPANY AREA FIRST-LINE SUPERVISOR SIGNATURE: _____ DATE: _____

2026 Initiator to keep Original (record copy) Page 2 of 2

Area Civil Work Request Form - Back

Energy Isolation Standard

Purpose/Scope

This standard establishes the minimum requirements for protecting personnel from injury due to the unexpected release of energy during equipment maintenance and startup.

Every worker shall have the right to exclusive control over the energy isolation associated with their work.

This right allows every worker to do the following each shift:

1. Physically verify each energy isolation device
2. Physically verify "zero energy state"
3. Physically apply their Personal Locks/tags

Applicability

This standard applies to all energy isolation conducted on Company leases and right-of-ways. Contractors shall adhere to this standard.

1. This standard applies to the following:
   A. Equipment that must be serviced or maintained during normal production operations, AND
   B. When a worker is required to do one of the following:
      1) Remove or bypass a guard or other safety device, OR
      2) Place their body in an area around the equipment where an accidental release of energy could result in personal injury ("point of operation")

Note: this standard does not apply to equipment controlling the pressure in the hole, but does apply to all other equipment on the drilling or well servicing unit.

The local operations management, in conjunction with the safety department, shall decide and document when the following exemptions apply.

2. This Standard DOES NOT apply to the following:
   A. Minor tool changes/adjustments and other minor services activities that meet all 3 of the following criteria.
      1) It is essential that the equipment continue to operate, AND
      2) The work is routine, repetitive, and part of the normal operation, AND
      3) Alternate protection methods, other than energy isolation, are used. Examples include, but are not limited to: machine guards; electrical "hot sticks;" a local control switch under the Exclusive Control of the worker.
   B. Work on corded or plugged equipment, PROVIDED:
      1) Unplugging the equipment results in complete isolation of the equipment from all energy sources, AND
      2) The plug is under the Exclusive Control of the worker
   C. Hot Tap Operations PROVIDED:
      1) It is essential that the equipment continue to operate, AND
      2) Shutdown of the equipment is impractical, AND
      3) Documented procedures are used which include specifically designed equipment to provide proven, effective personnel protection (Example: An Engineering package using the hot tap machine.)
   D. Electrical work performed by technicians on power generation and transmission and distribution systems. This is an exception to the Facility Electrical Lockout and Tagout for plant equipment as stated in this section and shall fall under power generation, transmission and distribution as regulated by 29 CFR 1910.269. This electrical energy isolation shall use utility switching orders.

Locks and Tags

All individually assigned Personal Locks and tags shall be removed ONLY by the person who installed them. All lock out devices used for energy isolation are not to be used for any other purpose.

This Standard recognizes the following locks and tags:

1. *Personal Lock* - A lock, or set of locks, with a single, unique key. These locks shall meet the following requirements:
   A. Be used exclusively for energy isolation and not for any other purpose.
   B. Be standardized, colored red and clearly labeled or tagged with the employee's name and contact number.
   C. Personal Locks shall be issued to an individual employee and the key shall be under the control of that individual.
2. *Device Lock* - A set(s) of uniquely keyed-alike locks where the key is under the exclusive control of the lock box. This lock is applied directly to the energy isolation device when a lockbox Lockout technique is being used. Device Locks that are assigned for use with a lockbox shall have a "Energy Isolation" tag attached. Multiple sets of locks may be used to isolate equipment and the key for each set shall be placed inside the lockbox. Device locks must meet the following requirements:
   A. Be used exclusively for energy isolation and not for any other purpose.
   B. Be of any color except colors already assigned to Personal Locks (red) and Control Locks (orange, yellow, brown, green and white).
3. *Control Lock* - These are keyed-alike locks that are used to protect the process or equipment, and are not to be used for personal protection. Control Locks are generally the first lock on a lockbox and the last lock off.

Control Locks shall be color-coded based on the user group:

A. Operations – Orange.
   1) These locks are used by Operations personnel and commonly referred to as "Operations Locks" or "Operators' Locks."
   2) If an operator will be a worker, the Operator must apply a Personal Lock to the lockbox and fill out all associated forms.
B. Electrical – Yellow.
C. Mechanical – Brown.
D. Instrumentation – Green.
E. Projects/Contractors/Vendors – White with Company name.

4. Energy Isolation (EI) Tag – A tag used to identify hazards that could present a threat of death or serious injury to personnel. These tags shall be attached to all energy isolation devices. Tag format will be determined by each Company and shall meet the following requirements:
   A. All energy isolation tags shall be considered the same as a lock. Unauthorized removal of an EIP tag or EIP tagged device is prohibited.
   B. Be standardized with the same style, label, print, and format.
   C. Be able to withstand the environmental conditions where it is applied and still be legible.
   D. Be attached with a non-reusable, self-locking device, such as a nylon cable tie, that is able to withstand a minimum 50 pounds of force without breaking.
   E. Be labeled with a unique number. If tag has a tag stub, the stub must also be labeled with that unique number.
   F. Be clearly and completely filled out with employee's name/position and contact number.

   See Tagging and Flagging Standard for an example EI tag.

5. Lockout is always required over tagout; therefore:
   A. If an Energy Isolation Device is designed or modified such that it is lockable, it SHALL be locked and tagged.
   B. If an energy isolation device CANNOT be locked, then an "EI" tag shall be attached at the same location as a lock would have been installed. Alternative safety measures to provide full employee protection shall be undertaken, such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.
6. If an energy isolation device is being used for more than one energy isolation, then the device shall have separate locks and tags for each energy isolation.
7. If the worker who installed a Personal Lock and tag is not available to remove it, or when a worker who signed in on the job and then fails to sign out is not available, then the following procedure shall be followed by the worker's First-Line Supervisor:
   A. Verify that the worker is not in the work area.
   B. Ensure the safety and integrity of the equipment to be re-energized before removing the lock or tag.
   C. Authorize the physical removal of the Personal Lock (or the signing out on the Worker Log) by signing the Worker Log next to the worker's name.
   D. Make all reasonable efforts to contact the worker to inform them that their Personal Lock has been removed or that they failed to sign out.
   E. Ensure that the worker is informed that his/her Personal Lock has been removed BEFORE the worker returns to the work area.

Lockout Techniques

Note: For the purpose of this standard, the term "Operator" shall be used to describe the authorized employee in charge of the energy isolation. In facilities other than process facilities, this could mean a maintenance employee or contract employee.

Lockbox Technique

1. The Operator locks all lockable energy isolation devices with a Device Lock. This Device Lock is the first one on an energy isolation device, the last one off and the last item signed off the energy isolation list.
2. The Operator tags all energy devices, including both lockable and non-lockable devices, and all open bleeds, with a "EI" Tag.
3. The Operator places inside the lockbox:
   A. The unique key(s) for the Device Lock(s) that are attached to the energy isolation devices.
   B. If tags are used in lieu of locks because the device will not accept a lock, then the tag stubs, if applicable, are placed in the lockbox or Master Card envelope.
4. The Operator "locks" the lockbox at the hasp with a Control Lock.
   A. When using multiple lockboxes for the isolation of sub-sections of an equipment section or system, and a lockbox is listed as an isolation step with other end devices in the energy isolation procedure, a Device Lock and tag must be placed on that lockbox, consistent with other "EI" devices.
   B. When using multiple lockboxes for the isolation of sub-sections of a single unit shutdown, such as a turbine or compressor, an Information Only tag must be attached to each lockbox to identify the corresponding sub-section or system being protected, including the specific energy isolation procedure number for that lockbox.
5. All workers or the Designated Worker attach their Personal Locks on the lockbox at the beginning of the shift, remove them at the end of the shift, and sign in and out of the Worker Log. If a worker is not working under a Designated Worker's lock, then the worker shall attach their Personal Lock to the lockbox. Refer to Company policy for site-specific Designated Worker requirements.
6. When the work is completed, all workers or the Designated Worker remove(s) their Personal Locks from the lockbox, and then the Operator "unlocks" the lockbox and uses the unique key(s) and tag stubs, if applicable, to remove all the Device Locks from the energy isolation devices.

Lockout Tagout Technique

The Lockout Tagout Technique can be used without a written procedure for situations where the following conditions are met:

1. The work is completed within the worker's shift.
2. The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees.
3. The machine or equipment has a single energy source which can be readily identified and isolated.
4. The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
5. The machine or equipment is isolated from that energy source and locked out during servicing or maintenance.
6. A single lockout device will achieve a lockout condition.
7. The lockout device is under the Exclusive Control of the Authorized Employee performing the servicing or maintenance.
8. The servicing or maintenance does not create hazards for other employees.
9. The employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.

10. Operations can apply a Control Lock to protect equipment/process if they choose to do so.

Note: In the above cases, the worker shall attach their individually assigned Personal Lock and tag directly on the energy isolation device. Example: Motor PMs.

Energy Isolation Procedures

1. Written Energy Isolation/Safeout Procedures are required for all energy isolations involving more than one energy isolation device. P&ID's or the appropriate engineering documentation shall be utilized when developing energy isolation/safe out procedures for all but the simplest isolations.
2 Energy isolation procedures or changes to energy isolation procedures shall be approved by First-Line Supervision or Designee.
3. These energy isolation procedures shall be specific to each piece of equipment being serviced or maintained.
4. Specific procedures shall include procedural steps unique to the equipment being isolated, such as:
   A. Shutting down the equipment
   B. Isolating the equipment
   C. Locking out the equipment
   D. Releasing any stored energy in the equipment
   E. Verifying "Zero Energy State"
   F. Returning the equipment back to service
5. Except for Temporary Re-energize Procedures listed in this Standard, for any energy isolation device that must be installed/removed more than once (for example, re-opening valves used for blinding operations, then re-isolating the valves in order to remove the blinds);
   - Separate sign on/sign off entries must be made on the energy isolation list (EIL), OR
   - Separate energy isolation procedures (EIP)/EIL's must be used.

6. Temporary Re-energize Procedures (if applicable).
   A. These procedures are required if a part of the energy-isolated equipment must be re-energized to ensure proper servicing or maintenance.
   B. These procedures shall include the following:
      1) Notification of all affected employees that part of the equipment is being temporarily removed from energy isolation.
      2) Removal of all tools and materials.
      3) All workers signing off the "Worker Log"
      4) Removal of any Personal Locks and "EI" tags.
      5) Energizing of the equipment.
      6) De-energizing the equipment once proper servicing or maintenance is completed.
      7) Reapplication of the Energy Isolation/Safe Out Procedure.
      8) Notification of all affected employees that the equipment is being returned to energy isolation.
7. Documents Used
   A. Energy Isolation List (EIL; either on Master Card or separate sheet)
   B. Worker Log (either on Master Card or separate sheet)
   C. Energy Isolation/Safe Out Procedures as required.

All documents must be completely filled out.

Energy Isolation Methods

The following Isolation Methods for Electrical and Pressure shall be considered, in the order given.

Electrical Energy Sources

1. On electrical equipment or circuits with the potential of 50 volts or higher, the electrical supply will be turned off and locked out in accordance with the following:
   A. Before isolating the equipment and attempting to start/stop to verify zero energy, a qualified/authorized person should activate the start/stop switch to verify it is the correct switch for the

equipment and prove it works. Then isolate/lock out power and then verify zero energy using the same switch previously activated.

B. A qualified/authorized employee (normally the unit operator) will turn off the power to the equipment that is being worked on by opening the circuit breaker. Electrical equipment rated above 480 volts shall be isolated by a qualified and authorized person or a qualified electrician during safe outs. The equipment shall be tested to verify that it is de-energized by trying the start/stop switch and the test reconfirmed after a change in conditions or when workers return to the worksite after an extended break in time (e.g. 2 hours).

C. If the equipment cannot be tested by the use of a start/stop switch or if the work involves electrical components of the equipment (such as motor leads), then a qualified electrician will be required to test the load side of the circuit breaker to ensure that the equipment is de-energized. The test shall be reconfirmed if there is a change in conditions. If operator can't verify equipment works with the on/off switch prior to isolating the equipment, a qualified electrician will be required to verify that the power source to the equipment is isolated.

2. When the tagout option is used for electrical isolation such as a circuit breaker that cannot be locked out, the qualified electrician shall isolate the energy source by:
   A. Removal of an isolating circuit element, or
   B. Racking out a breaker.
3. The following Wiring Disconnect Procedure may be used when it is not possible to physically lock out an electrical isolating device:
   A. The electrician disconnecting the power source will test the circuit to assure that it is de-energized. The wires will be disconnected, properly isolated and tagged so that they do not constitute a hazard.
   B. The electrician shall tag the disconnect switch with a "EI" tag and log it into the Energy Isolation List.

C. The Operator and worker(s) shall attach a tag on the outside of the MCC cubicle or disconnect switch just as they would install a lock if the switch were locked out.

D. Under no circumstances will the wiring be reconnected if there is another person's tag in place. Each person must remove their own tag just as they would remove their own lock, as specified under control of locks/ tags and keys.

Note: Treat all disconnected neutral conductors, ground conductors, and bonding jumpers as energized.

Pushbuttons, selector switches, and other control circuit type devices that do not directly control the electricity shall not be used as energy isolation devices.

Pressure - Hydraulic, Pneumatic

1. **Blinding**
   - Install full-rated blind (see the Opening/Blinding Standard), then attach "EI" tags and log it into the Energy Isolation List.
2. **Disconnection/Misalign**
   - This involves physically removing part of the equipment, or misaligning piping. "EI" tags shall then be attached and listed on the Energy Isolation List.
3. **Double Block and Bleed**
   - This involves three valves: two block valves and a bleed valve in between. For Energy Isolation purposes, all three valves shall be tagged with an "EI" tag and listed on the Energy Isolation list. In addition, the two block valves shall be locked (see the Opening/Blinding Standard for a drawing).
   - Bleed Valves
     - Bleed valves shall be tagged and listed on the EI device list
     - Generally, bleed valves shall not be locked for EI unless authorized by the First Line Supervisor

4. **Other Devices**
   - Devices such as stopples or freeze plugs shall not be used as primary forms of isolation, except where the application has been properly engineered, risk assessed and approved by the appropriate Technical Authority.
5. **Single Block**
   - This involves closing one block valve, then applying locks and tags. Note, this option requires the prior approval of the Company First-Line Supervisor and, where applicable, Contractor First-Line Supervisor (see the Opening/Blinding Standard).

Note: Control valves shall not be used for energy isolation. Remote operated valves, designed for positive pressure containment, can be used provided they are disconnected from all Energy Sources and manually closed.

Other Energy/Hazard Sources

1. **Energy of motion** is present in all moving objects. Examples: Moving vehicles, running machinery, loads swinging or moving, cutting actions, etc., are all examples of energy of motion hazards.
2. **Chemical energy** is released during contact with chemicals. Examples: Chemicals in piping, paints and thinners, and chemical transfers. The hazard communication program addresses these chemicals and SDS sheets are provided for review.
3. **Radiation energy** emanates from radioactive sources. Examples: exposure to ionizing radiation (radioactive materials) used for X-Ray operations and some down hole tools (NORM, tracers, well logging operations), and non-ionizing radiation (light, radio waves, etc.) that can be found in welding light, lasers, and microwaves.
4. **Electrical energy** is a flow of an electrical charge through a conductor. Examples: power lines, heat trace, lighting systems, static electricity, cords and cables.

5. **Gravity** is a force on elevated bodies such as rig traveling equipment, materials suspended from a crane, or people in elevated positions.
6. **Heat/Cold** refers to thermal hazards that may be present indoors as well as out. Examples: facility process piping, steam systems, hot air heaters, heat trace, welding, open flame, and heat recovery systems; and compressed gas lines, liquid natural gas, cryogenic liquids, and many surfaces exposed to sub-zero weather.
7. **Pressure** is the result of energy stored in circulating, pneumatic, or hydraulic systems. Examples: Pumping operations, compressed air, gas pressure, pressure testing, hydraulics. Pressure can be active, as found in the circulating system with oil or drilling mud moving through the piping, or it can be stored in accumulators and hydraulic systems and hoses. We may also find pressure in threaded connections when we take them apart or formation pressure stored in downhole tools. Knowing the system and the potential for pressure release is critical for safe operations. Noise is measured as sound pressure so we include noise under pressure to keep things simple.

Manage the above energy/hazard source(s) by:

- **Eliminate** the energy source(s). Examples: Safe outs; lockout / tag out, drain systems, purge/ventilate, neutralize, substitute, blinds, and cold cutting etc.
- **Control** the energy source(s). Examples: shoring, tag lines, blocks, cribbing, wheel chocks, double block and bleed, whip checks, and mechanical stops and disconnection etc.
- **Protect** against contact with the energy source(s). Examples: Barricades, fall protection, exclusion zones, belt guards, insulation, warning signs, monitor exposure, and PPE etc.

Employee Responsibilities

It is the responsibility of every employee to ensure his or her own safety.

Operations First-Line Supervisor:

Responsible for the proper preparation of process equipment for maintenance and ensuring the coordinated Energy Isolation/Safe Out Procedure is in place and properly implemented. The Supervisor shall conduct periodic inspections to ensure the Energy Isolation Standard is being followed.

Before Work Begins

1. **Operator:**
   - A. Prepares or verifies written energy isolation procedures.
   - B. Notifies all affected employees that the equipment will be shutdown and energy isolated.
   - C. Shuts down the equipment.
   - D. Isolates the equipment from all energy sources.
   - E. Applies Device Lock(s), "EI" tag(s) as described in the Lockout Technique section.
   - F. Verifies "Zero Energy State" for each energy source by attempting to re-energize the equipment from every location.
   - G. Records all information on the Energy Isolation List or Master Card.
   - H. Completes the requirements for using a lockbox if one is used, per the Lockout Technique section.
   - I. Operator applies Operations Control Lock to lockbox.
   - J. If Operator will be a worker, the Operator's Personal Lock must also be applied to the lockbox.
   - K. Verifies that all workers and/or Designated workers have completed the Worker Log and have:
     1) Been notified of their responsibility to verify the energy isolation.
     2) Signed in (Initials required) on the Worker Log or Master Card.

     3) Installed a Personal Lock on the lockbox.
2. **Individual Worker:**
   - A. Physically verifies the energy isolation per the Energy Isolation List or Master Card with the Operator and zero energy state. Reconfirms when moving from one location to another or return to the worksite after an extended break in time (e.g., 2 hours).
   - B. Attaches Personal Lock(s) or tags
   - C. Completes Worker Log or Master Card.
3. **Designated Worker:**
   - A. Physically verifies the energy isolation per the Energy Isolation List or Master Card with the Operator and zero energy state. Reconfirms when workers move from one location to another or return to the worksite after an extended break in time (e.g., 2 hours).
   - B. Attaches Personal Lock(s) or tags.
   - C. Completes Worker Log or Master Card.
   - D. Ensures that each worker in the group is notified of their responsibility to verify the energy isolation.
   - E. Ensures that each worker in the group has personally signed in on the Worker Log or Master Card.

     Note: The Designated Worker CANNOT complete the Worker Log or Master Card for the worker. Only the worker can sign it.
   - F. Adds their initials on the Worker Log or Master Card next to the worker's name in their group. Worker cannot assume they can work under the Designated Worker's Personal Lock. There must be a mutual agreement between the worker and the Designated Worker and the Designated Worker must initial next to the worker's name on the Worker Log or Master Card.
4. **Worker (under Designated Worker):**
   - A. Physically verifies the energy isolation per the Energy Isolation List or Master Card with the Operator, if they so choose.

B. Attaches Personal Lock(s) or tags in addition to those of the Designated Worker, if they so choose.

C. Completes Worker Log or Master Card.

Shift or Crew Changes Lockbox

In all cases where the Individual Worker/Designated Worker (Authorized Employee) is leaving, they shall remove their Personal Lock. If the equipment is not safe to start, they shall apply a Control Lock to protect the equipment and/or process. For work that will be completed over several shifts, they shall install their Control Lock on the lockbox or energy isolation device prior to starting work and not remove their Control Lock until the work is completed and the equipment returned to a safe condition. The Control Lock does not provide personal protection.

1. **Outgoing Operator:**
   A. Communicates to the Incoming Operator the types and locations of energy isolation devices (Energy Isolation List or Master Card);
   B. Communicates the hazards involved if these devices are removed;
   C. Reviews the Worker Log or Master Card;
   D. Removes Personal Lock from the lockbox, if the lock has been attached to the lockbox, and signs out on the Worker Log or Master Card; and,
   E. Leaves the Control Lock in place on the lockbox.
2. **Incoming Operator:**
   A. Reviews the Energy Isolation List/Master Card
   B. Reviews the Worker Log/Master Card
   C. Verifies Zero Energy State.
   D. If the Operator is going to perform servicing or maintenance under the Energy Isolation Standard, applies Operator's Personal Lock, and signs in on the Worker Log or Master Card.
   E. Leaves the Control Lock in place on the lockbox.

3. **Outgoing Individual Worker:**
   A. Communicates to the Incoming Worker the types and locations of energy isolation devices; and,
   B. The hazards involved if these devices are removed.
   C. Signs out on the Worker Log or Master Card.
   D. Removes Personal Locks and/or tags if they have been attached.
   E. If the equipment is not safe to put back into service and there is not an incoming worker, the worker shall apply a control lock to the lockbox.
4. **Incoming Individual Worker:**
   A. Physically verifies the energy isolation per the Energy Isolation List or Master Card with the Operator and zero energy state.
   B. Attaches Personal Lock(s) or tags
   C. Completes Worker Log or Master Card.
5. **Outgoing Designated Worker:**

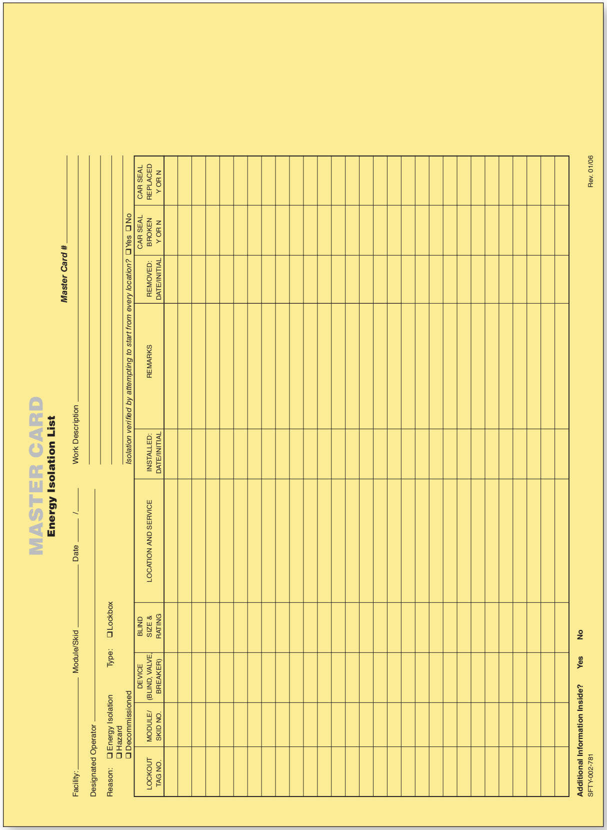
The Designated Worker assumes full responsibility for the safety of the workers in their group. For this reason, the Designated Worker shall have control over who is in their group.

   A. Ensures that each outgoing worker in their group completes the appropriate blocks on the Worker Log or Master Card, signing initials next to each worker's name.
   B. Removes Personal Lock and signs out on the Worker Log or Master Card.
   C. Reviews the Energy Isolation List/Master Card with the incoming Designated Worker.
   D. If the equipment is not safe to put back in service and there is not an incoming Designated Worker, the Designated Worker shall apply a Control Lock to the lockbox.

6. **Incoming Designated Worker:**
   A. Reviews the Energy Isolation List or Master Card;
   B. Verifies zero energy state and reconfirms when workers move from one location to another, return to the worksite after an extended break in time (e.g., 2 hours);
   C. Attaches Personal Locks or tags;
   D. Completes the appropriate blocks on the Worker Log or Master Card;
   E. Ensures that each worker in their group is notified of the worker's right to verify energy isolation and apply Personal Locks or tags if the worker wishes to do so; and
   F. Ensures that each worker in their group completes the appropriate block on the Worker Log or Master Card, signing initials by each worker's name.
7. **Outgoing Worker (under Designated Worker):**
   A. Communicates to the Incoming Worker the types and locations of energy isolation devices; and,
   B. The hazards involved if these devices are removed.
   C. Signs out on the Worker Log or Master Card.
   D. Removes Personal Locks and/or tags if they have been attached.
   E. If the equipment is not safe to put back into service and there is not an incoming worker, the worker may apply a control lock to the lockbox.
8. **Incoming Worker (under Designated Worker):**
   A. Verifies isolations with the Operator if they so choose.
   B. Installs Personal Locks and/or tags, if not working under a Designated Worker.
   C. Signs in on the Worker Log or Master Card. Obtains approval from the Designated Worker to work under the Designated Worker's Personal Lock.

When Work is Complete:

1. **Worker or Designated Worker:**
   A. Notifies Unit Operator that work is completed.
   B. Verifies that all personnel in their group have signed out by signing initials next to each worker's name on the Worker Log or Master Card.
   C. Signs out on the Worker Log or Master Card.
   D. Removes Personal Locks and/or tags.
2. **Operator:**
   A. Verifies that all worker locking devices and/or tags have been removed and all personnel have signed out of the Worker Log or Master Card.
   B. Removes Device Locks and/or tags.
   C. Dates and initials Energy Isolation List or Master Card.
   D. Ensures personnel and equipment are clear and it is safe to place the equipment in service.
   E. Removes Control Locks, matches tag stubs/EIL to tags prior to re-energizing.
   F. Returns equipment to service.
   G. Ensures the Master Card, Energy Isolation List and the Worker Log are filed per the facility's administrative requirements.
   H. If equipment is to remain out of service, NEITHER the Personal / Device Locks nor the Energy Isolation tags may be left in place. Instead, the Tagging and Flagging Standard for non-energy isolation situations shall be followed and the appropriate Control Lock used if necessary.



MASTER CARD
Energy Isolation List

Master Card # ______

Facility: ______ Module/Skid ______ Date ___ / ___ / ___ Work Description ______

Designated Operator ______

Reason: ❑ Energy Isolation ❑ Hazard ❑ Decommissioned Type: ❑ Lockbox

Isolation verified by attempting to start from every location? ❑ Yes ❑ No

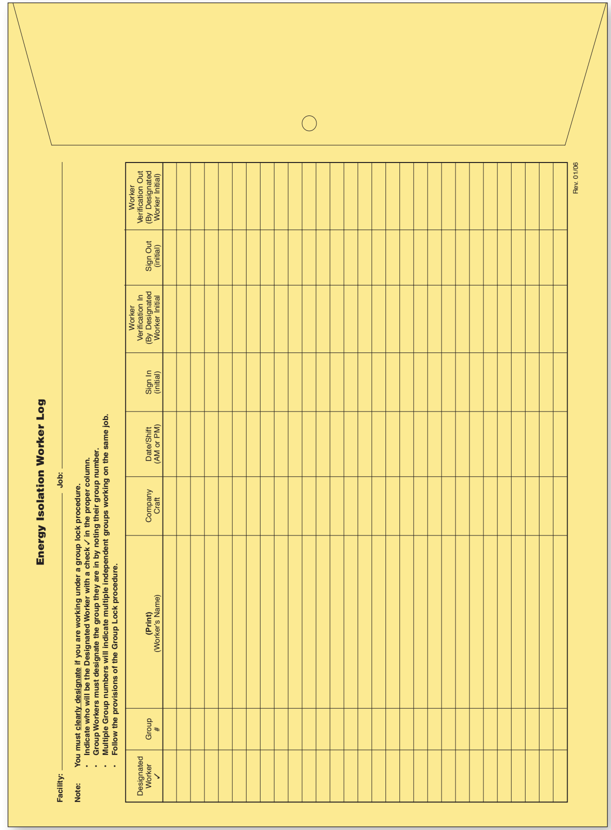
LOCKOUT TAG NO.	MODULE/ SKID NO.	DEVICE (BLIND, VALVE, BREAKER)	BLIND SIZE & RATING	LOCATION AND SERVICE	INSTALLED: DATE/INITIAL	REMARKS	REMOVED: DATE/INITIAL	CAR SEAL BROKEN Y OR N	CAR SEAL REPLACED Y OR N

Additional Information Inside? Yes No

SFTY-002-781

Rev. 01/06

Energy Isolation Standard List Master Card (Front)



Energy Isolation Worker Log

Facility: ______ Job: ______

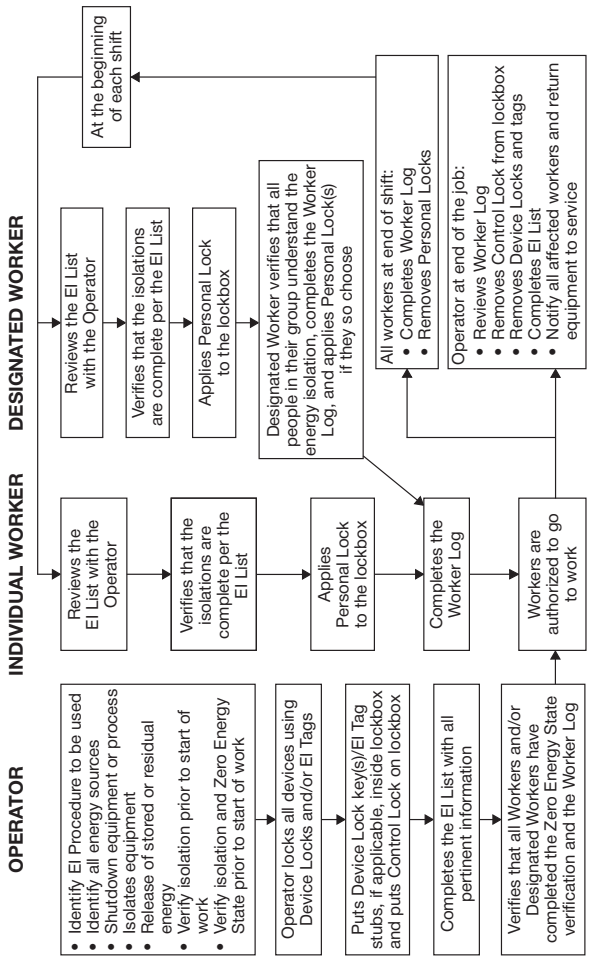
Note: **You must clearly designate if you are working under a group lock procedure.**
- **Indicate who will be the Designated Worker with a check ✓ in the proper column.**
- **Group Workers must designate the group they are in by noting their group number.**
- **Multiple Group numbers will indicate multiple independent groups working on the same job.**
- **Follow the provisions of the Group Lock procedure.**

Designated Worker ✓	Group #	**(Print)** (Worker's Name)	Company Craft	Date/Shift (AM or PM)	Sign In (initial)	Worker Verification In (By Designated Worker Initial	Sign Out (initial)	Worker Verification Out (By Designated Worker Initial)

Rev. 01/06

Energy Isolation Standard Workers Log (Back)

EI lockbox - Lockout Flow Chart



Tagging & Flagging Standard

Purpose/Scope

The purpose of this standard is to establish tagging and flagging requirements and to make employees aware of temporary hazards, special conditions or the abnormal position of equipment.

Responsibilities

Operators are responsible for knowing about all tags and flags located in their area. This does not preclude anyone from adding a tag or flag in an area as long as the Unit Operator or personnel responsible for the area are informed as soon as possible.

Accident Prevention Tags

Accident Prevention Tags are used to identify temporary hazardous conditions and provide a message to employees with respect to those conditions. Accident Prevention Tags are hereafter referred to as “tags.”

Energy Isolation tags will be used when designating devices that should not be operated during energy isolation of equipment as per the Energy Isolation Standard.

Danger tags will be used when there is a possibility that a hazard could present a threat of death or injury to an employee or when defeating safety devices.

Caution tags will be used where a minor incident could occur due to a hazard and to convey safety related information.

Information Only tags will be used to convey operational information that is non-safety related. Information Only tags may be constructed of any material and be of any color except red, white, or yellow and of a design such that it cannot be confused with the other tags mentioned in the Energy Isolation or Tagging & Flagging Standards.

Abandoned Equipment tags will be used where equipment has been abandoned in place.

Flags

Five colors of flagging are used to draw attention to specific items or conditions.

Orange flagging is used to identify:

- Energy Isolation (EI) tags, Danger or Caution tags not readily visible, and
- the non-normal position of operating equipment.

For NON-ENERGY ISOLATION situations, orange flags without tags shall be used when equipment is temporarily placed in a non-normal operating position and Operations personnel placing the equipment in a non-normal position remain at the facility.

Blue flagging is used to identify specific pieces of equipment or locations of future work (x-rays, UT inspection points, tie-ins, hot taps, etc.).

Yellow flagging is used to mark leaks (Gas/liquid).

Pink and black checkered flagging is used to mark equipment (piping, valves, etc.) that has been identified for demolition. Flagging must be placed at each demolition location.

White flagging is used to mark equipment (piping, tubing, filters, valves, etc.) disturbed during major outages or maintenance activities and not identified by another process, such as an Energy Isolation List (EIL) or formal handover process (i.e., FCO, commissioning, etc.). White flagging is installed by maintenance work crews and removed by Operations during final equipment checks prior to start-up.

Specific Considerations

1. Tagging and flagging are visual elements to make people aware of temporary hazards or to convey useful information. They are not substitutes for careful checking of each device prior to decommissioning of equipment or operational change.
2. Tags must be able to withstand the environmental conditions in which they are placed.

3. Tags must be secured to devices in such a way that they cannot be accidentally detached. Energy Isolation tagging attachment devices (other than locks), shall be nonreusable, attachable by hand, self locking, and capable of withstanding 50 pounds of force.
4. Tags must convey the following information:
   - The date the tag was attached.
   - Explanation of the conditions associated with the placement of the tag.
   - Who (person/position) attached the tag. Tags must be identifiable to a unique responsible individual on-site by indicating a name, pair of names, or by a unique job position.
   - The contact number of the (person/position) attaching the tag.
5. Equipment cannot be operated as long as a “Danger” tag is attached.
6. Tags may only be removed by the person/position attaching the tag or an authorized representative of that person/position. See Energy Isolation Standard if applicable.

Sign Classification and Requirements

OSHA and ANSI classify safety signs according to use. Their definitions are very similar. OSHA has three classifications of signs:

1. Danger Signs – Indicate immediate danger and that special precaution are necessary. OSHA also specifies that the red, black and white colors used for Danger signs be in accordance with ANSI Z53.1-1967 or ANSI Z535.1-2006(R2011).
2. Caution Signs – Warn against potential hazards or caution against unsafe practices. OSHA specifies that the standard color for Caution signs shall have a yellow background, black panel and yellow letters. All letters used against the yellow background shall be black. The colors must be accordance with ANSI Z53.1-1967 or ANSI Z535.1-2006(R2011).

3. Safety Instruction Signs – Used where there is a need for general instructions and suggestions relative to safety measures. OSHA specifies that the standard color for Safety Instruction signs shall be a white background, green panel and white letters. Any letters used on the white background shall be black. The colors must be in accordance with ANSI Z53.1-1967 or ANSI Z535.1-2006(R2011).

Energy Isolation (EI) Tag Example - Front

DANGER

SEE OTHER SIDE

Highest level of Hazard Awareness.

This tag must be used for Energy Isolation.

Energy Isolation (EI) Tag Example - Back

Control # 0001 Date

DANGER

❑ Safety Defeated
❑ Other (Describe Below)

DO NOT OPERATE while this tag is attached:

Full description of why tag is attached *(See Other Side)*

Attached By: _____

Contact Number: _____

Only to be removed by person attaching or authorized representative

Comments _____

ACCUFORM SIGNS REORDER #RT83HAZ

DANGER

Highest level of Hazard Awareness.
This tag must be used when defeating safety devices or where serious injury or death could occur.

REMARKS: _____

SEE OTHER SIDE

Date

CAUTION

❑ Device not in normal position

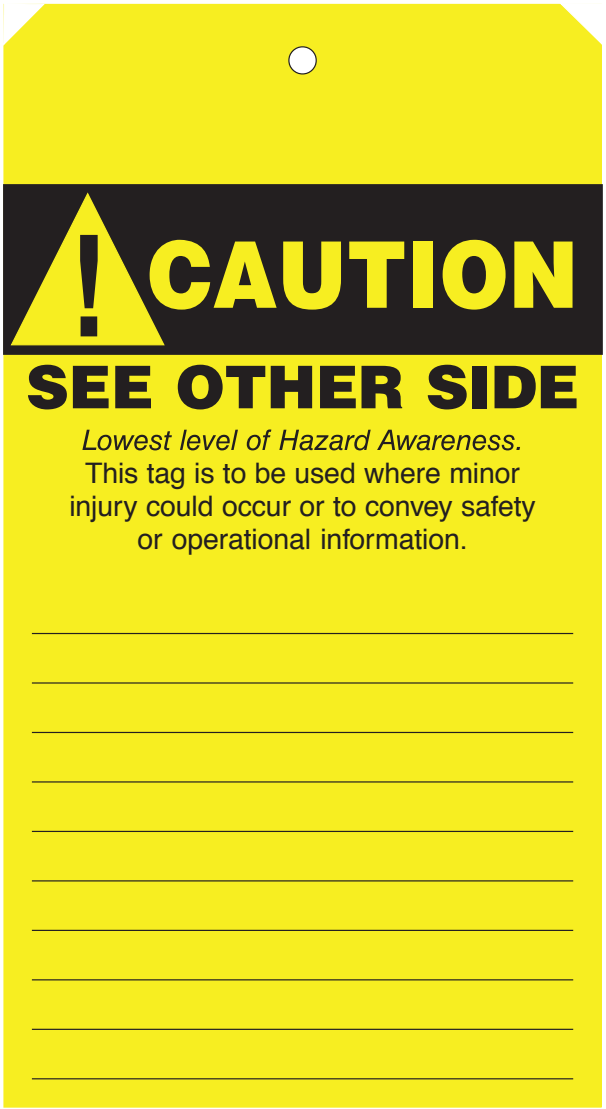
Full description of why tag is attached *(See Below and Other Side)*

Attached By: _____

Contact Number: _____

Only to be removed by person attaching or authorized representative

98P110


CAUTION
SEE OTHER SIDE
Lowest level of Hazard Awareness.
This tag is to be used where minor injury could occur or to convey safety or operational information.


Control #
0001
ABANDONED
This tag has been attached because this equipment is abandoned in place
Only to be removed by person attaching or authorized representative
Master Card Number:
Attached By:
Date:
Contact Number:
98P114

PERMITS

Safe Work Expectations

The safety standards in the ASH are intended to establish defined, consistent ways of performing work in Company operating areas. Verify Company work permit processes as they may differ by location. Each employee must be familiar with these safety standards, as they have a daily impact on work done. Although there is a provision to receive a variance from a standard, jobs should be structured to comply with the applicable standard.

**Note: The term standard is used to describe safety rules in this text. The member Companies have different usage for each term individually, thus the combined term standard.*

- Any variation from a safety standard requires written approval according to the Variance to Safety Standard process in this handbook.
- No work may be initiated without notification and permission of the person in charge of the area.
- Any individual may invalidate a work permit at any time they consider the conditions or work methods to be unsafe.

Titles

Position titles may vary within operating areas. At times there may be more than one individual within a position category. When this occurs, responsibilities defined in the safety standards should be assigned to specific individuals and communicated to all affected parties, prior to initiating work. The following are example titles of positions for the defined responsibilities.

Permit Initiator:

The person who initiates or requests the permit. This may or may not be the person doing the work.

Unit or Area Operator/Issuing Authority:

This title refers to the Supervisor or Unit/Area Operator who is:

- Responsible for the area in which the work is permitted
- Accountable for ensuring the area and equipment are safe prior to starting work

**Note: This may be the Equipment Operator, Drilling Company Representative, Facility Operator, Unit Operator, Area Operator, Drillsite/Wellpad Operator, Lead Operator, Camp Maintenance Technician, or designee.*

Authorized Gas Tester:

This title refers to a person who is authorized to use gas detection equipment for the purposes of atmospheric testing.

Work Group Leader:

This title refers to the individual (generally the crew lead) who is directly overseeing the person(s) doing the work.

First-Line Supervisor/Responsible Supervisor/ Designee:

This title refers to the supervisor responsible for the area in which the work is permitted, such as the operations supervisor, foreman, tool pusher, or designee. The supervisor can delegate signature authority to a designee for permitting duties. The individual delegating the authority remains ultimately responsible.

Designee:

The person designated by First Line Supervisor/Responsible Supervisor to perform their permitting duties.

**Note: When work is accomplished under the provision of delegated authority (a designee), the individual delegating authority remains ultimately responsible. The designee shall sign for the delegating authority as in the following example: John Doe for Jane Smith.*

Company Safety Representative:

It is recognized that not all field work sites have full-time safety department coverage or that safety department availability might be minimal. When this is the case, safety department responsibilities, as required by the standards of the ASH, may be redistributed to line management or other qualified personnel with prior approval of the company safety department.

Area/Board Operator:

This title refers to the central point of contact for the facility in which the permitted area for the work is located.

Person Doing Work:

The person to whom the permit is issued. This person is responsible for ensuring that all precautions stipulated on the work permit are followed.

Company Representative:

An individual, either Company or contract, who has been designated by Company management as a Company representative for the purpose of initiating permits.

General Permitting Rules

1. One of the main purposes of the work permit is communication. It is the responsibility of all personnel involved to ensure adequate communication takes place so the work can be performed safely. If work to be done impacts more than one area, all affected areas shall be informed.
2. The risks introduced by simultaneous operations must be thoroughly assessed, documented and managed. The number of operations that can be performed simultaneously, at the same location, depends on a number of factors, including the type of activity, location in relation to other activities, duration of the work, etc. In order to create and maintain a safe operation, it may be necessary to assign one person to be the SimOps coordinator who will be accountable for the overall coordination of the total operation.

3. Any individual may invalidate a work permit at any time if they consider the conditions or work methods to be unsafe. Anyone stopping work in this manner will inform the person doing work, remove the site copy of the permit and return it to the Issuing Authority, giving their reasons for this action. In such instances, thelssuing Authority will inspect the work site and decide whether the permit should be revalidated.
4. When any emergency alarm or emergency announcement is made, stop all work, close all gas cylinders and secure ignition sources. Do not resume any work until notified by the Unit Operator. If the condition is in the permitted area and evacuation is required, the affected permit becomes invalid and must be reissued or revalidated by the Issuing Authority when the area is cleared for work again.
5. It is the responsibility of the Unit Operator or Issuing Authority to safe out and prepare the work area. The Person Doing Work is responsible for verifying the safe out and ensuring the work is performed in a safe manner.
6. The permit is a triplicate form. Mark items “not applicable” (N/A) as appropriate. No line shall be left blank on a permit. The bottom copy or hard copy shall be displayed at the work site or be in the worker’s possession. The middle copy shall be kept in the main control room or a site designated by the First Line Supervisor. The top copy or original shall be kept by the Unit Operator/Issuing Authority.
7. Work is restricted to the scope and time duration stated on the permit. Permits are valid until job completion but must not extend beyond the end of the shift in which they were issued unless allowed by company policy.

   A permit must be renewed by the Unit Operator/ Issuing Authority for any changes to conditions or job scope.
8. All permits must be revalidated if work is not started within a maximum of 2 hours of issue or if there is a break in the work of 2 hours or more. Revalidation

consists of the Unit Operator verifying that the conditions of the permit are still applicable and it is safe to work. The Unit Operator will then initial the permits, record the time, and allow work to commence.

9. If permits are in effect at the time of operator crew change (week to week) or when operators assume different areas of responsibilities during a 12-hour shift, there are two options:
   A. The outgoing and the incoming Operators jointly review the job and the incoming Operator signs the permit signifying he/she is aware of the work and has assumed responsibility for the area.
   B. Permits are closed out until the incoming crew has changed out and has checked out the affected areas. The incoming Unit Operator then revalidates the permit or issues a new permit to the workers.
10. On the back of the permit are questions and a task hazard assessment. Use the questions, checklist items, and any other assessments that are applicable to the job to ensure all safety aspects are considered. The THA should be reviewed between the Issuing Authority and the Person Doing the Work.
11. When work is completed, the Person Doing Work will contact the Unit Operator. The Unit Operator should inspect the area for completion, safety, and cleanliness. The Person Doing Work returns the hard copy to the main control room or other designated location and closes out the permit by signing the hard copy.
12. The following shall be retained for a period of time as specified by Company policy: Master Cards, Energy-Isolation Lists, Worker Logs, and the hard copy of all permits.
13. Nothing in these standards precludes a contract company or individual from performing their own atmospheric tests, installing their own lockout devices, or otherwise verifying the safety of the equipment to be worked on.

Site-Specific Permitting Guidelines

The information below describes the procedures for obtaining permits in various operating areas that were in place at the time this handbook was developed. It is subject to change as improvements are made in how business is done. The main control room operators of the facility will be the reference on permitting guidelines if assistance is needed.

Facility Work

Work permits for any work in or around a facility are to be obtained through the main control room of that facility.

For areas without main control rooms, personnel must coordinate through the local responsible Supervisor.

Well Work

It is the responsibility of operations personnel to keep drilling personnel informed of any activities (gas venting, hot work, etc.) on the drillsite or wellpad that may affect the safety of the drilling rig.

Likewise, it is the responsibility of drilling personnel to keep operations informed of any activities on the drilling rig that may affect the safety of the operations.

When perforating, all radios and mobile phones on the pad shall be turned off prior to arming the guns unless the perforating system has been certified and approved as being immune to RF interference. Proper notification will be made and warning signs will be placed at entrances to the pad prior to arming the guns.

Work permits for working on a drillsite/wellpad or in a manifold building are obtained from the Drillsite/Wellpad Operator except in the case of a drilling rig. The Rig Supervisor is responsible for issuing permits for work on the rig and the associated shops or equipment. All permitting outside of the rig confines shall be done by the Drillsite/Wellpad Operator.

The Drillsite/Wellpad Operator must be verbally notified prior to any well work being performed.

Follow Company Policy for all permits involving X-ray activities associated with well work.

A handover procedure is used to document the condition of a well and immediate area when transferring it from operations to drilling and again when drilling returns the well to operations.

Unit Work Standard

Purpose/Scope

The Unit Work Standard ensures that the person in charge of any area or equipment is aware of all work done in their unit.

There are specific sign-in procedures for access to facilities as outlined in the General Safety Rules section of this handbook. Verbal permission from Operations, at a minimum, is required for access to all operating areas, with the exception of the Control Room. Routine access to facility pads will not require a Unit Work Permit.

All personnel shall also notify the Unit Operator or Control Room Operator when they are leaving the area and/or sign out.

The following is a list of examples of work requiring a Unit Work Permit:

- Construction and non-routine work
- Hot tapping (the portion of work exclusive of hot work)
- Flammable fluid transfer when not attended full time by a Company Representative
- Use of intrinsically safe equipment in a classified area

The following is a list of examples of routine work that does not require a Unit Work Permit. This list is subject to periodic revision as activities are approved or deleted as required. People performing this routine work will still have to sign in for personnel accountability purposes in facilities or obtain verbal clearance via radio.

- Snow removal on normal roads and pads
- Potable water delivery
- Sewage pick-up
- Fueling vehicles
- Waste dumpster pick-ups
- Delivery or pick-up of equipment (e.g. heaters) or materials
- Checking running equipment (e.g., light plants)
- Security rovers

- Visual inspections inside and/or outside various modules or skids
- Monthly inspections (SCBAs, vibration readings, etc.)
- Routine sampling by laboratory personnel
- Other activities as identified and approved

Well Work

Permission for access to a drillsite/wellpad must be obtained. Access to drillsite/wellpad is granted by contact with the Drillsite/Wellpad Operator.

Well isolation work that involves connecting or disconnecting a well from the flow lines requires a Process Opening/Blinding Permit (see Process Opening/Blinding Standard).

The following well work may not require a Unit Work Permit, however communication with the Drillsite/Wellpad Operator is mandatory. Refer to company policy for site-specific requirements.

- Well work operations including slick line, electric line, coiled tubing, work over, and drilling.
- Wellhead pumping activities including well and flow line freeze protection, flow line treatments, tubing displacements, mechanical integrity tests (MIT), acidizing, fracturing, hot oiling, setting and pulling of backpressure valves, etc.
- Well maintenance activities including valve greasing, wellhead problem diagnosis, gas lift troubleshooting, fluid level determinations, wellhead inspection, etc.
- Movement of equipment or vehicles on the wellpad during the above operations.

Objectives

1. Ensure the area where the work to be done is inspected.
2. Provide communication with all departments concerned.
3. Document all hazardous conditions and special requirements of the work area.

Permit Initiation

Permits may be initiated by anyone and will be done at the appropriate control room or other designated location.

At the discretion of on-site management, Field Work Requests (FWR) or Preventive Maintenance (PM) documentation may be used in lieu of completing a separate Unit Work Permit, when all other provisions of the Unit Work Permit Standard are followed.

Responsibilities

Unit Operator/Issuing Authority:

1. Ensures the equipment and area have been properly prepared and are ready for the safe execution of work.
2. Ensures that lines to be demolished or removed are properly identified and marked.
3. Checks placement and condition of safety equipment.
4. Makes necessary tests for flammable and/or other hazardous conditions.
5. If hydrotesting, see specific duties in the Hydrostatic Testing Standard in this handbook.
6. Lists special precautions as necessary.
7. Shows the Persons Doing Work the locations of the nearest communications equipment and applicable safety devices.
8. Reviews the questions and Task Hazard Assessment on the back of the Unit Work Permit.
9. Signs the Unit Work Permit after the above conditions have been met.
10. Ensures that the hard copy of the Unit Work Permit has been posted at the work location or it is readily available if it cannot be posted.
11. Prevents an operation from being performed, which has the potential to cause the area or equipment to become unsafe while the permit is in effect. Consideration should be given to simultaneous operations.

12. Monitors the work as it progresses and performs gas checks as appropriate to ensure the conditions of the permit are not changing.
13. Advises relief operators of any permit in effect.
14. Contacts Company Safety Representative prior to initiating hot tap activities.
15. Inspects the work site after any interruption has occurred prior to resuming work.
16. After the work is completed, inspects the work area and adjacent areas to determine that they are in a safe condition and signs the permit close out section.

Control Room Operator or Drillsite/Wellpad Operator:

1. See specific duties under the Hot Tapping Standard in this handbook.
2. Communicates to all personnel in the area if radiography (x-ray) is in progress.
3. Checks with the Unit Operator prior to permit close out.

First-Line Supervisor:

See specific duties under the Hot Tapping and Hydrostatic Testing Standards of this handbook.

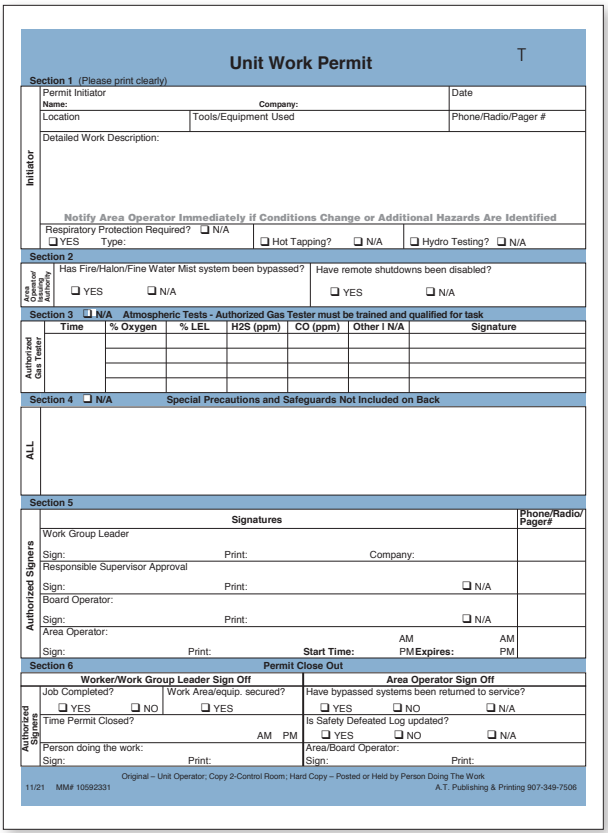
Person Doing the Work:

1. Reads, understands and follows the conditions listed on the Unit Work Permit.
2. Posts the hard copy of the Unit Work Permit at the work location or ensures it is readily available if it cannot be posted.
3. Advises other workers of any special precautions or conditions pertaining to the job.
4. Surveys the area to confirm safe working conditions. Knows where the nearest telephone, fire alarm, emergency communications system, fire extinguisher, safety shower, first aid kit, etc., are before starting work, and knows how to use them, if appropriate.

5. If hydro testing, see specific duties in the Hydrostatic Testing Standard.
6. Is constantly aware of conditions in the immediate work area, and be ready to stop work if conditions change. Do not resume work without approval of the Unit Operator.
7. Cleans up and secures the work area after completion of work each shift. At the end of the shift or upon completion of the work, whichever comes first, notifies the operator, returns the permit to the Control Room or designated location, and signs the closeout portion on the hard copy. If the job is incomplete or the person or crew temporarily leaves the unit, the Person Doing Work must notify the Unit Operator.

Duration of Permits/Permit Close Out

Permits are valid until job completion but must not extend beyond the end of the shift in which they were issued unless allowed by company policy.



Unit Work Permit

Section 1 (Please print clearly)

Initiator

Permit Initiator — Name: — Company: — Date

Location | Tools/Equipment Used | Phone/Radio/Pager #

Detailed Work Description:

Notify Area Operator Immediately if Conditions Change or Additional Hazards Are Identified

Respiratory Protection Required? ❑ N/A ❑ YES Type: | ❑ Hot Tapping? ❑ N/A | ❑ Hydro Testing? ❑ N/A

Section 2

Area Operator/ Issuing Authority

Has Fire/Halon/Fine Water Mist system been bypassed? ❑ YES ❑ N/A

Have remote shutdowns been disabled? ❑ YES ❑ N/A

Section 3 ❑ N/A **Atmospheric Tests - Authorized Gas Tester must be trained and qualified for task**

Authorized Gas Tester

Time	% Oxygen	% LEL	H2S (ppm)	CO (ppm)	Other I N/A	Signature

Section 4 ❑ N/A **Special Precautions and Safeguards Not Included on Back**

ALL

Section 5

Authorized Signers

Signatures	Phone/Radio/ Pager#
Work Group Leader — Sign: Print: Company:	
Responsible Supervisor Approval — Sign: Print: ❑ N/A	
Board Operator: — Sign: Print: ❑ N/A	
Area Operator: — Sign: Print: **Start Time:** AM PM **Expires:** AM PM	

Section 6 **Permit Close Out**

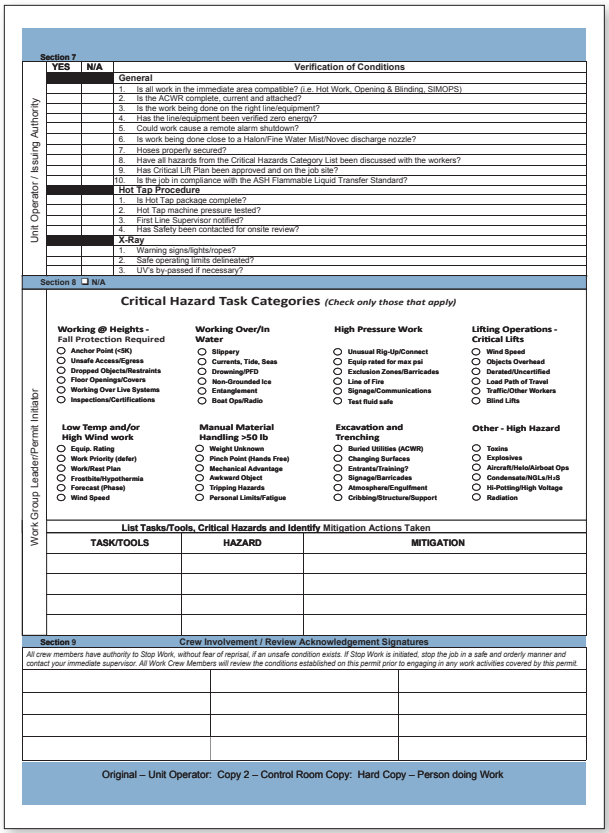
Authorized Signers

Worker/Work Group Leader Sign Off		Area Operator Sign Off	
Job Completed? ❑ YES ❑ NO	Work Area/equip. secured? ❑ YES	Have bypassed systems been returned to service? ❑ YES ❑ NO	❑ N/A
Time Permit Closed? AM PM		Is Safety Defeated Log updated? ❑ YES ❑ NO	❑ N/A
Person doing the work: Sign: Print:		Area/Board Operator: Sign: Print:	

Original – Unit Operator; Copy 2-Control Room; Hard Copy – Posted or Held by Person Doing The Work

11/21 MM# 10592331 A.T. Publishing & Printing 907-349-7506

Unit Work Permit



Section 7

Unit Operator / Issuing Authority

YES	N/A	Verification of Conditions
		General
		1. Is all work in the immediate area compatible? (i.e. Hot Work, Opening & Blinding, SIMOPS)
		2. Is the ACWR complete, current and attached?
		3. Is the work being done on the right line/equipment?
		4. Has the line/equipment been verified zero energy?
		5. Could work cause a remote alarm shutdown?
		6. Is work being done close to a Halon/Fine Water Mist/Novec discharge nozzle?
		7. Hoses properly secured?
		8. Have all hazards from the Critical Hazards Category List been discussed with the workers?
		9. Has Critical Lift Plan been approved and on the job site?
		10. Is the job in compliance with the ASH Flammable Liquid Transfer Standard?
		Hot Tap Procedure
		1. Is Hot Tap package complete?
		2. Hot Tap machine pressure tested?
		3. First Line Supervisor notified?
		4. Has Safety been contacted for onsite review?
		X-Ray
		1. Warning signs/lights/ropes?
		2. Safe operating limits delineated?
		3. UV's by-passed if necessary?

Section 8 ❑ N/A

Work Group Leader/Permit Initiator

Critical Hazard Task Categories *(Check only those that apply)*

Working @ Heights - Fall Protection Required
- ○ Anchor Point (<5K)
- ○ Unsafe Access/Egress
- ○ Dropped Objects/Restraints
- ○ Floor Openings/Covers
- ○ Working Over Live Systems
- ○ Inspections/Certifications

Working Over/In Water
- ○ Slippery
- ○ Currents, Tide, Seas
- ○ Drowning/PFD
- ○ Non-Grounded Ice
- ○ Entanglement
- ○ Boat Ops/Radio

High Pressure Work
- ○ Unusual Rig-Up/Connect
- ○ Equip rated for max psi
- ○ Exclusion Zones/Barricades
- ○ Line of Fire
- ○ Signage/Communications
- ○ Test fluid safe

Lifting Operations - Critical Lifts
- ○ Wind Speed
- ○ Objects Overhead
- ○ Derated/Uncertified
- ○ Load Path of Travel
- ○ Traffic/Other Workers
- ○ Blind Lifts

Low Temp and/or High Wind work
- ○ Equip. Rating
- ○ Work Priority (defer)
- ○ Work/Rest Plan
- ○ Frostbite/Hypothermia
- ○ Forecast (Phase)
- ○ Wind Speed

Manual Material Handling >50 lb
- ○ Weight Unknown
- ○ Pinch Point (Hands Free)
- ○ Mechanical Advantage
- ○ Awkward Object
- ○ Tripping Hazards
- ○ Personal Limits/Fatigue

Excavation and Trenching
- ○ Buried Utilities (ACWR)
- ○ Changing Surfaces
- ○ Entrants/Training?
- ○ Signage/Barricades
- ○ Atmosphere/Engulfment
- ○ Cribbing/Structure/Support

Other - High Hazard
- ○ Toxins
- ○ Explosives
- ○ Aircraft/Helo/Airboat Ops
- ○ Condensate/NGLs/H2S
- ○ Hi-Potting/High Voltage
- ○ Radiation

List Tasks/Tools, Critical Hazards and Identify Mitigation Actions Taken

TASK/TOOLS	HAZARD	MITIGATION

Section 9 **Crew Involvement / Review Acknowledgement Signatures**

All crew members have authority to Stop Work, without fear of reprisal, if an unsafe condition exists. If Stop Work is initiated, stop the job in a safe and orderly manner and contact your immediate supervisor. All Work Crew Members will review the conditions established on this permit prior to engaging in any work activities covered by this permit.

Original – Unit Operator: Copy 2 – Control Room Copy: Hard Copy – Person doing Work

Unit Work Permit

Hot Work Standard

Purpose/Scope

The Hot Work Standard minimizes the potential of fire or explosion in classified areas and all modules within a production operational area (e.g. water flood, utilites, etc.) by requiring a Hot Work Permit. This applies but is not limited to:

1. Open flame, welding, burning/cutting, or grinding within 75 feet of a classified area.
2. The use of non-intrinsically safe electrical tools and instruments in a classified area unless allowed by Company policy.
3. Work on electrical circuits including the opening of explosion proof boxes or junction boxes in a classified area.
4. Hot work on portable and mobile containers which contain or have contained flammable or combustible materials.
5. Impedance thawing.
6. Stress relieving of piping welds with heat treatment.
7. The use of spark producing devices in a classified area.

NOTE: Process line opening/blinding operations will require atmospheric testing while using pneumatic/hammer wrenches. A Hot Work Permit will not be required. Follow the requirements of the Process Opening/Blinding Standard.

A Hot Work Permit is required for mobile heaters, stationary trucks, cranes, and other mobile equipment operating within a classified area. A classified area extends 10 feet beyond the exterior wall or roof of a building, fan exhaust, vent, low point drain, high point vent, or flanges.

Vehicles in the following activities operating within 10 feet of a classified area shall require operator notification but not a permit:

- In transit
- In snow removal
- In routine well servicing by the drillsite operator

- Delivery of parts and materials
- Manned well servicing operations such as coiled tubing units, slickline units, boom truck cranes, etc.

Hot work conducted in areas not addressed by this standard (e.g. non-classified areas) may be performed under a Unit Work Permit. Applicable provisions of the Hot Work Standard shall apply as appropriate.

On drill rigs, all hot work inside the confines of the drill rig and associated buildings is the responsibility of the Rig Supervisor. All hot work accomplished outside of the rig and within 75 feet of a classified area requires a Hot Work Permit from the Drillsite/Wellpad Operator.

Any hot work permits issued for operations or construction involving burning/cutting, welding, grinding, or the use of an open flame that are within 75 feet of a classified area of the rig, or down-wind from the rig on the same pad, shall require the verbal approval of the Rig Supervisor.

Objectives

1. Ensure the work area is inspected and combustibles and flammables are isolated for the hot work.
2. Establish fire watches when applicable.
3. Provide communication with all departments concerned.
4. Control how open flame or spark-producing equipment is used.
5. Formally document and communicate all hazardous conditions and special requirements of the work area.
6. Ensure local exhaust and/or general ventilation is adequate to keep the amount of toxic fumes, gases, or dust below maximum allowable concentrations or that appropriate respiratory protection is utilized.

Permit Initiation

Permits may be initiated by anyone and will be done at the appropriate control room or other designated location.

Responsibilities

Unit Operator/Issuing Authority:

1. Does not issue a Hot Work Permit when a Process Opening/Blinding Work Permit is in effect in the same fire zone.
2. Does not issue a Hot Work Permit if the LEL is greater than 10%.
3. Inspects the work area and adjacent areas for a distance at least 35 feet around the hot work site, including the other side of any wall or barrier and on lower floor levels, to which sparks or heat might spread; this includes adjacent combustible walls, roofs, partitions and floors. Welding/cutting in proximity to ducts or systems that might carry sparks shall be shielded or shut down if feasible.
4. Ensures the equipment and areas have been properly prepared and are ready for the safe performance of work.
5. Ensures that lines to be demolished or removed are properly identified and marked.
6. Ensures that all hollow spaces, cavities, or containers are tested and vented to permit the escape of air or gases prior to preheating, burning/cutting, or welding.
7. Makes necessary tests for flammable and/or other hazardous conditions immediately prior to the start of hot work or when work is suspended for more than 2 hours. If the Operator is unable to safely get to the same location where the work is to take place (i.e. Rope Access Technology crew working at heights), the Operator may allow a trained work crew to perform gas tests under their direction.
8. Considers the need for continuous atmospheric monitoring.
9. Shows the Person Doing Work the locations of the nearest communications equipment and applicable safety devices.
10. Checks placement and condition of proper fire extinguishers and other safety equipment.
11. Informs fire watch of potential fire hazards.

12. Reviews questions and Task Hazard Assessment on back of Hot Work Permit.
13. Lists special precautions as necessary.
14. Signs the permit after the above conditions have been met.
15. Ensures that the hard copy of the Hot Work Permit has been posted at the work location or with the Person Doing the Work if it cannot be posted at the job site.
16. Prevents an operation from being performed which has the potential to cause the area or equipment to become unsafe while the Hot Work Permit is in effect. For example, does not allow lab samples to be taken while hot work is taking place.
17. Monitors the work as it progresses to ensure that the conditions of the Hot Work Permit are not changing.
18. Stops the work if a change occurs which creates an unsafe condition. Work shall not resume until a safe condition is restored.
19. If conditions change, re-inspects and gas-checks the work area and notes readings on front of permit.
20. Advises relief operators of any permit in effect.
21. If any process upset or emergency alarm causes the shutdown of work, re-inspects the work area prior to allowing work to be resumed.
22. After work has been completed, inspects the work areas and adjacent areas to determine that they are in a safe condition and signs the permit close-out section.

Control Room Operator or Drillsite/Wellpad Operator:

1. Ensures that facility operation, construction, or maintenance will not be adversely affected by the proposed work activities.
2. Notifies the First-Line Supervisor (or designee) and receives their approval prior to starting hot work.
3. Signs the Hot Work Permit, certifying that the job is ready to proceed.
4. Checks with the Unit Operator prior to permit closeout.

First-Line Supervisor:

1. Ensures all participants in the Hot Work Permit process have fulfilled their duties and responsibilities.
2. Confirms the proper precautions for hot work have been taken.

Person Doing the Work:

1. Reads, understands, signs and follows the conditions listed on the Hot Work Permit. Posts the hard copy of the Hot Work Permit at the work location or ensures it is readily available if it cannot be posted.
2. Advises other workers of any special precautions or conditions pertaining to the job.
3. Surveys the work area to confirm safe work conditions. Knows the location of the nearest telephone, fire alarm, emergency communication system, fire extinguisher, safety shower, first aid kit, etc., before starting work, and knows how to use them.
4. Confines all sparks and slag as close to the work area as possible.
5. Maintains constant awareness of conditions in the immediate work area and is ready to stop work and notify the Unit Operator if conditions change. Does not resume work without approval of the Unit Operator.
6. At the end of the shift or upon completion of the work, whichever comes first, notifies the Unit Operator, and returns the hard copy of permit to the Control Room or designated location, and closes out the permit by signing the hard copy.
7. When an alarm or emergency announcement is made, stops all work, disconnects all electrical equipment, and turns off all gas cylinders. Does not resume any work until notified by the Unit Operator.
8. Persons working in close proximity to any welding or burning/cutting operation may not carry cigarette lighters, matches, or any other flame-producing device.

Fire Watch:

A dedicated fire watch is required for torch cutting, gas welding, arc welding and grinding, or as other conditions warrant.

1. Observes an area of at least 35 feet around the hot work site, including the other side of any wall or barrier and lower floor levels, and maintains the area free of combustibles and tripping hazards.
2. May perform other safety-related tasks if the primary fire watch responsibility is not compromised. These might include atmospheric monitoring or being a confined space stand-by person.
3. Understands and follows the conditions listed on the Hot Work Permit.
4. Is trained in the use of fire extinguishing equipment provided.
5. Understands the alarms and where and how to activate them.
6. Notifies the Person Doing the Work if any sparks are not contained at the work area.
7. Sounds the alarm for assistance and extinguishes any small fires started by sparks or slag.
8. Remains on the scene from the start until 30 minutes after the completion of all welding, burning/cutting, or grinding. Inspects the work area and adjacent areas to determine that they are in a safe condition prior to departure.

Company Safety Representative:

Shall provide an independent assessment of the work area and sign the permit for any work involving:

- Welding, burning/cutting or grinding (excluding buffing) on any process piping that has not been depressurized, blinded and purged.
- Any burning/cutting, welding, open flame or grinding inside a confined space.

- Welding, burning/cutting, open flame or grinding on lines or equipment within the blinded boundaries of a confined space.

Heating equipment with an open flame (e.g. heat loss tests) does not require a Safety Representative to be present or sign the permit.

Special Considerations

Welding, burning/cutting, or grinding on equipment or pipelines that have not been depressurized, blinded, and purged will require an engineered package, known as an In-Service Weld Package. This includes the installation of non-pressurized repair sleeves, if such sleeves include welding to the carrier pipe

This package shall include location, piping or equipment specifications, nondestructive examination, stress relieving information, and any other procedure that is deemed necessary to ensure the job can be performed safely. This package will be approved by at least the First-Line Supervisor and Project or Responsible Engineer.

When welding on rotating equipment, be sure the ground strap is as close to the area being welded as possible.

Prior to welding, burning/cutting, or grinding on vertical support members (VSM) conduct an atmospheric test along the entire length of the VSM to ensure no flammable gases are present on the inside diameter of the pipe.

Blinding Requirements

Hot work on depressurized, shut-in, or temporarily out-of-service process handling equipment, piping, and vessels requires a full-rated blind as close to the work as possible, however, when blinding as close to the vessel/work as possible creates additional hazards or is impractical, blinds can be applied at another location with the approval of the Company First Line Supervisor and Company Safety Representative.

The approvals to apply the blind at another location will be documented on the Energy Isolation Procedure.

A double block and bleed does not meet the blinding requirements for hot work. To allow a double block and bleed, a variance is required.

By Government regulation, variances are not permitted for a double block and bleed in lieu of blinding for burning/cutting or welding on used drums, barrels, tanks, or other containers. Any pipelines or connections to the drum, tank, or vessel must be disconnected or blinded.

In cases of hot work on equipment which has been exclusively in seawater or potable water service, and there is no potential for hydrocarbon entry into the system, a single block, as a minimum, is acceptable for isolation in lieu of blinding.

All blinding shall be done in accordance with the Process Opening/Blinding Standard in this handbook.

Neoprene Module Interconnects

Neoprene module interconnects (weather boots) are combustible. Additional precautions, such as covering with fireproof material, must be taken when burning/cutting, welding or grinding is to be done in close proximity to these module interconnects.

Hot Work in Confined Spaces

When welding is to be suspended (unattended for a period of 30 minutes or more), all welding machines must be disconnected from the power source, electrodes (if used) shall be removed from the holders to prevent accidental contact, and any gases used for welding shut off at a point outside of the confined space.

Whenever the torch is not being used for a substantial period of time (unattended for 30 minutes or more), the torch valves must be completely closed, and the gas supply to the torch shut off at a point outside the confined space. When practical, the torch and hose must also be removed from the confined space.

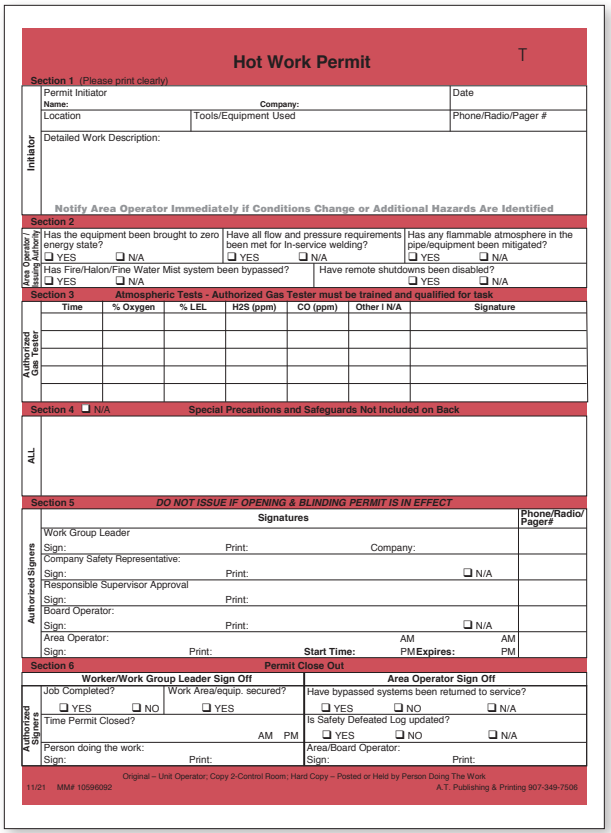
When welding or burning/cutting is being performed in a confined space, the gas cylinders and welding machines must be left outside of the confined space.

After welding operations are completed, the welder must mark the hot metal or provide some other means of warning other workers.

Local exhaust and/or general ventilation must be adequate to keep the amount of toxic fumes, gases, or dust below maximum allowable concentrations or appropriate respiratory protection must be utilized.

Duration of Permits/Permit Close Out

Permits are valid until job completion but must not extend beyond the end of the shift in which they were issued unless allowed by company policy.



Hot Work Permit

Section 1 (Please print clearly)

Initiator

Permit Initiator Name: | Company: | Date

Location | Tools/Equipment Used | Phone/Radio/Pager #

Detailed Work Description:

Notify Area Operator Immediately if Conditions Change or Additional Hazards Are Identified

Section 2

Area Operator/ Authorized Signer

Has the equipment been brought to zero energy state? ❑ YES ❑ N/A

Have all flow and pressure requirements been met for In-service welding? ❑ YES ❑ N/A

Has any flammable atmosphere in the pipe/equipment been mitigated? ❑ YES ❑ N/A

Has Fire/Halon/Fine Water Mist system been bypassed? ❑ YES ❑ N/A

Have remote shutdowns been disabled? ❑ YES ❑ N/A

Section 3 Atmospheric Tests - Authorized Gas Tester must be trained and qualified for task

Authorized Gas Tester

Time	% Oxygen	% LEL	H2S (ppm)	CO (ppm)	Other I N/A	Signature

Section 4 ❑ N/A Special Precautions and Safeguards Not Included on Back

ALL

Section 5 *DO NOT ISSUE IF OPENING & BLINDING PERMIT IS IN EFFECT*

Authorized Signers

Signatures	Phone/Radio/ Pager#
Work Group Leader Sign: Print: Company:	
Company Safety Representative: Sign: Print: ❑ N/A	
Responsible Supervisor Approval Sign: Print:	
Board Operator: Sign: Print: ❑ N/A	
Area Operator: AM AM Sign: Print: **Start Time:** PM **Expires:** PM	

Section 6 Permit Close Out

Authorized Signer

Worker/Work Group Leader Sign Off		Area Operator Sign Off
Job Completed? ❑ YES ❑ NO	Work Area/equip. secured? ❑ YES	Have bypassed systems been returned to service? ❑ YES ❑ NO ❑ N/A
Time Permit Closed? AM PM		Is Safety Defeated Log updated? ❑ YES ❑ NO ❑ N/A
Person doing the work: Sign: Print:		Area/Board Operator: Sign: Print:

Original – Unit Operator; Copy 2-Control Room; Hard Copy – Posted or Held by Person Doing The Work

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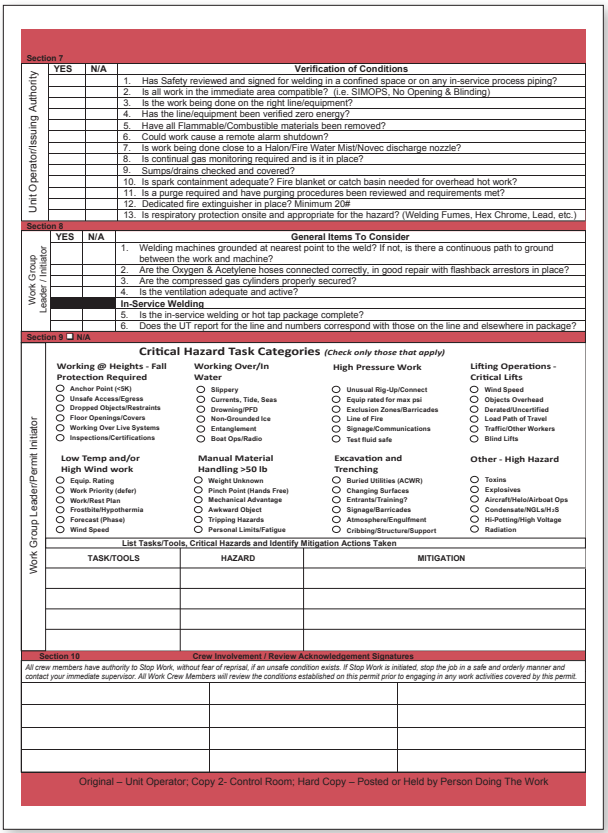
Hot Work Permit



Section 7

Unit Operator/Issuing Authority

YES	N/A	Verification of Conditions
		1. Has Safety reviewed and signed for welding in a confined space or on any in-service process piping?
		2. Is all work in the immediate area compatible? (i.e. SIMOPS, No Opening & Blinding)
		3. Is the work being done on the right line/equipment?
		4. Has the line/equipment been verified zero energy?
		5. Have all Flammable/Combustible materials been removed?
		6. Could work cause a remote alarm shutdown?
		7. Is work being done close to a Halon/Fire Water Mist/Novec discharge nozzle?
		8. Is continual gas monitoring required and is it in place?
		9. Sumps/drains checked and covered?
		10. Is spark containment adequate? Fire blanket or catch basin needed for overhead hot work?
		11. Is a purge required and have purging procedures been reviewed and requirements met?
		12. Dedicated fire extinguisher in place? Minimum 20#
		13. Is respiratory protection onsite and appropriate for the hazard? (Welding Fumes, Hex Chrome, Lead, etc.)

Section 8

Work Group Leader / Initiator

YES	N/A	General Items To Consider
		1. Welding machines grounded at nearest point to the weld? If not, is there a continuous path to ground between the work and machine?
		2. Are the Oxygen & Acetylene hoses connected correctly, in good repair with flashback arrestors in place?
		3. Are the compressed gas cylinders properly secured?
		4. Is the ventilation adequate and active?
		In-Service Welding
		5. Is the in-service welding or hot tap package complete?
		6. Does the UT report for the line and numbers correspond with those on the line and elsewhere in package?

Section 9 ☐ N/A

Work Group Leader/Permit Initiator

Critical Hazard Task Categories *(Check only those that apply)*

Working @ Heights - Fall Protection Required	Working Over/In Water	High Pressure Work	Lifting Operations - Critical Lifts
○ Anchor Point (<5K)	○ Slippery	○ Unusual Rig-Up/Connect	○ Wind Speed
○ Unsafe Access/Egress	○ Currents, Tide, Seas	○ Equip rated for max psi	○ Objects Overhead
○ Dropped Objects/Restraints	○ Drowning/PFD	○ Exclusion Zones/Barricades	○ Derated/Uncertified
○ Floor Openings/Covers	○ Non-Grounded Ice	○ Line of Fire	○ Load Path of Travel
○ Working Over Live Systems	○ Entanglement	○ Signage/Communications	○ Traffic/Other Workers
○ Inspections/Certifications	○ Boat Ops/Radio	○ Test fluid safe	○ Blind Lifts

Low Temp and/or High Wind work	Manual Material Handling >50 lb	Excavation and Trenching	Other - High Hazard
○ Equip. Rating	○ Weight Unknown	○ Buried Utilities (ACWR)	○ Toxins
○ Work Priority (defer)	○ Pinch Point (Hands Free)	○ Changing Surfaces	○ Explosives
○ Work/Rest Plan	○ Mechanical Advantage	○ Entrants/Training?	○ Aircraft/Helo/Airboat Ops
○ Frostbite/Hypothermia	○ Awkward Object	○ Signage/Barricades	○ Condensate/NOL/H2S
○ Forecast (Phase)	○ Tripping Hazards	○ Atmosphere/Engulfment	○ Hi-Potting/High Voltage
○ Wind Speed	○ Personal Limits/Fatigue	○ Cribbing/Structure/Support	○ Radiation

List Tasks/Tools, Critical Hazards and Identify Mitigation Actions Taken

TASK/TOOLS	HAZARD	MITIGATION

Section 10 — Crew Involvement / Review Acknowledgement Signatures

All crew members have authority to Stop Work, without fear of reprisal, if an unsafe condition exists. If Stop Work is initiated, stop the job in a safe and orderly manner and contact your immediate supervisor. All Work Crew Members will review the conditions established on this permit prior to engaging in any work activities covered by this permit.

Original – Unit Operator; Copy 2- Control Room; Hard Copy – Posted or Held by Person Doing The Work

Hot Work Permit

Confined Space Entry Standard

Purpose/Scope

The purpose of this standard is to establish and maintain a safe environment that meets the following criteria for personnel entering a confined space that:

1. Is large enough and configured so that an employee can bodily enter and perform the assigned work;

AND

2. Has limited or restricted means for entry and exit;

AND

3. Is not designed for continuous employee occupancy.

Note: Entry into spaces meeting the criteria listed in items 1 through 3, but that do not meet any of the criteria listed in item 4, may be considered Non-Regulated.

AND

4. If a confined space has one or more of the following characteristics, then it shall be considered a Regulated Confined Space.
   - Contains or has the potential to contain a hazardous atmosphere;
   - Contains material that has the potential for engulfing the entrant (i.e. sand, sludge, etc.);
   - Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section; or
   - Contains any other recognized serious safety or health hazard.

Examples of confined spaces that may meet the criteria identified above include, but are not limited to, process vessels, process towers, tanks, sumps, pits, sewers, compartments with manhole, valve pits, well cellars, and pipelines.

Note: Entry is defined as the breaking of the plane of the opening into the space by any part of the entrant's body.

Examples of spaces that could be classified as non-regulated confined spaces include vessel skirts, inlet air plenums, soffits, and process heaters after the fuel gas is blinded and all other potential energy sources are isolated.

For purposes of this standard, a hazardous atmosphere is one which may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (i.e. to escape unaided from the workspace), injury, or acute illness from one or more of the following:

- Flammable gas, vapor, or mist in excess of 10% of the lower explosive limit (LEL).
- Atmospheric oxygen concentration below 19.5% or above 23.5%.
- Atmospheric concentration of a toxic or hazardous substance that could result in an exposure in excess of the Permissible Exposure Limit (PEL) or company-specific Occupational Exposure Limit (OEL), whichever is more stringent, for the substance and that could subsequently cause death, incapacitation, impairment of self-rescue capability, injury, or acute illness.
- Any other atmospheric condition that is immediately dangerous to life or health, i.e. poses an immediate or delayed threat to life or that would cause irreversible adverse health effect or that would interfere with an individual's ability to escape unaided from the space.

Note: Check Company policy for more restrictive values than those described above.

Objectives

1. Properly identify hazards.
2. Institute appropriate controls, safeguards, and actions to protect personnel.
3. Coordinate all necessary permits and procedures including hot work and/or energy isolation.

Permit Initiation

Permits may be initiated by anyone and will be done at the appropriate Control Room or other designated location.

Contractor Requirements

Contractors who conduct entries into confined spaces shall be informed of the elements of this standard, the hazards identified with respect to the space, any precautions or procedures that have been implemented for the protection of employees in or near the confined space, and the procedures that will be utilized to coordinate the entry operations between various contractors and Company personnel.

The contractor shall be debriefed at the time of closeout of the permit regarding any new hazards confronted or created during the entry.

Confined space entries that are not conducted within Company structures such as flow stations, gathering centers, processing centers, drillsite/pad manifold buildings, gas plants, etc., may be executed using the contractor's confined space entry program, provided that:

- Company personnel will not be entering the confined space,
- A written concurrence between the contractor, the Company Supervisor responsible for getting the work done, and the Company Supervisor responsible for the area, is signed prior to the start of the job, and
- The contractor's confined space program meets or exceeds the requirements set forth by 29 CFR 1910.146 and 29 CFR 1926.1200. (This certification must be included in the written concurrence document.)

Pre Job Planning

1. A task specific hazard analysis (e.g. JSA, JHA, etc.) shall be conducted prior to any confined space activities. This hazard analysis shall evaluate all job steps for activities occurring within the confined space, and any activities external to the confined space which could affect the confined space.
2. This analysis shall include, as dictated by the hazards presented by the task, the following personnel:

   A. Entry Supervisor

   B. Employees involved in the task

C. Contractor Safety Specialist

D. Company Safety Specialist

E. Contractor Industrial Hygienist

F. Company Industrial Hygienist

G. Unit Operator/Issuing Authority

H. Emergency/Medical Services

I. Subject Matter Experts (welding, coating, etc.)

3. This hazard analysis shall include, at a minimum, the following:
   A. Training verification of all employees
   B. Required PPE and each employee's experience and capabilities with this equipment
   C. Individual crew member's confined space entry experience
   D. Industrial hygiene requirements such as atmospheric monitoring, temperature monitoring, work/rest cycles, etc.
   E. Ventilation requirements
   F. Need for on-site medical surveillance
   G. Need for non-entry rescue equipment
   H. Need for rescue personnel on site
4. This hazard analysis shall be reviewed prior to commencement of work for any confined space activity.

General Considerations

1. The Confined Space Entry Permit does not always authorize work to begin. It may need to be accompanied by an appropriate Unit or Hot Work Permit.
2. Prior to entry, the contents and hazards of the confined space shall be identified. Whenever possible, tanks, vessels and piping shall be cleaned by water washing, flushing or steaming. Cleaning by hand should be limited to final cleanup unless no other cleaning process is feasible.
3. Prior to entry, all potential sources of energy affecting the space shall be isolated in accordance with the Energy Isolation and Process Opening/Blinding Standard. When lines are not disconnected and misaligned, full rated blinds shall be installed. Double block and bleeds are not permitted for entry operations. Furthermore, vapor barriers are not an acceptable substitute for blinds.
4. All connecting lines to the vessel shall be blinded or physically disconnected and misaligned. Blinding should be as close to the vessel/work as possible, however, when blinding as close to the vessel/work as possible creates additional hazards or is impractical, blinds can be applied at another location with the approval of the Company First Line Supervisor and Company Safety Representative. This shall be done following the Process Opening/Blinding Standard. The approvals to apply the blind at another location will be documented on the Energy Isolation Procedure.
5. After a confined space has been depressurized, cleaned, isolated, and flushed as applicable it shall be tested prior to the complete removal of any hatch or man-way. In cases where a man-way or hatch is the only available location to perform atmospheric testing, the flange or cover can be opened partially, without completely removing bolts, to facilitate the atmospheric testing. A confined space is safe to open (not enter) if the concentration of flammable vapors is less than 50% of the lower explosive limit and provisions are made to vent the remaining vapor or gas to an appropriate location outside the skid or work location.
6. After a space has been opened, a "Do Not Enter" sign or tag shall be placed at all potential entry points indicating that the space is not safe for entry.
7. Adequate ventilation shall be maintained in the confined space throughout the entry operation. All ventilation equipment shall be bonded and grounded. If mechanical ventilation is used it must be located in such a manner that it will not introduce contaminants such as gas or toxic vapors. In addition, it should be placed in such a manner that it will not prevent egress

from the space. This will be verified by the Company Safety Representative and monitored by the Attendant.

8. An area immediately outside the confined space shall be made available for decontamination as necessary.
9. Retrieval Systems shall be used whenever an entrant enters a regulated confined space unless the retrieval system would increase the overall risk of the entry or would not contribute to the rescue of the entrant.

   Retrieval Systems should be considered for non-regulated confined spaces when emergency services rescue would be significantly delayed. Company Safety Representative will determine when retrieval systems are appropriate.
10. When retrieval systems are utilized, the following shall be performed:
    - A pre-plan shall be developed with emergency services.
    - Attendants will be trained on the retrieval system.
    - Retrieval systems will be inspected prior to entry.
    - Non-regulated confined spaces are not required to have rescue services coverage on stand-by or at the immediate location.
11. Any hot work in a location that may affect the confined space shall be approved by all parties who have authorized and signed the Confined Space Entry Permit. Any hot work performed within the boundaries of a confined space shall be approved and signed off by the Company Safety Representative and should be referenced to the Hot Work Standard under the "Hot Work in a Confined Space" section. A test of the atmosphere where the hot work is to take place shall be performed by the Company Safety Representative and documented on the Hot Work Permit.

Responsibilities

Employees may serve multiple roles listed below, for example the Entry Supervisor may also serve as an Attendant or Authorized Entrant, if they can successfully perform all duties outlined in this section.

Unit Operator/Issuing Authority:

1. Ensures that all blinds are installed in accordance with the Process Opening/Blinding Standard.
2. Ensures all pneumatic, hydraulic, thermal, electrical, and mechanical energy sources have been isolated in accordance with the Energy Isolation Standard.
3. Depressurizes, drains and purges the confined space and process lines. Opens all drain lines, gauge glasses, level control transmitters, bridles and similar equipment attached to the enclosure while purging, washing and cleaning the equipment. If the device cannot be cleaned, it shall be isolated from the confined space.
4. Ensures appropriate "Do Not Enter" signs or tags are posted at all possible entry points.
5. Endorses all permits affecting the Confined Space Entry Permit.
6. Prevents an operation from being performed that has the potential to cause the area or equipment to become unsafe while the permit is in effect.
7. Monitors the work as it progresses to ensure that the conditions of the permit are not changing.
8. Communicates hazards to the Entry Supervisor and ensure that all personnel working under the permit are aware of the hazards present.
9. Ensures a proper handover to the incoming Unit Operator occurs during shift change. Note: Renewal of the permit is required every shift.
10. Ensures test is completed for oxygen concentration, flammability, toxic materials and/or other hazards prior to entry for Non-Regulated Confined Spaces.
11. Ensures ventilation has been established.

12. After the safety inspection is completed and before entry is made by authorized entrants, lists any other precautions and signs the permit in the appropriate section for Non-Regulated or Regulated Confined Spaces.
13. Stops the work if a change occurs that creates an unsafe condition. Work shall not resume until a safe condition is restored and the Confined Space Entry Permit is revalidated per the General Permitting Rules.
14. Debriefs the contractor at the time the permit is closed out to ascertain whether any new hazards were confronted or created and documents on section 12 “Permit Close-out” on the Regulated/Non-Regulated Confined Space Entry Permit.

Control Room Operator or Drillsite/Wellpad Operator:

1. Ensures that the facility operations, construction, and maintenance activities will not be adversely affected by the proposed work activities.
2. Notifies the First-Line Supervisor (or designee) and receives their approval prior to entry.
3. Holds copies of the permits until the work is ready to start.
4. Debriefs the contractor at the time the permit is closed out to ascertain whether any new hazards were confronted or created and documents on section 12 “Permit Close-out” on the Regulated/Non-Regulated Confined Space Entry Permit in the case that the Unit Operator/Issuing Authority is unavailable.
5. Checks the box on the permit accordingly and, if new hazards were confronted or created, either notes them on the hard copy being filed or attaches a description of the hazards to the permit for filing.
6. Notifies the Unit Operator when the permit is closed out.

First-Line Supervisor:

1. Ensures the space is safe to enter, e.g., safeout procedures are complete and up to date and the Energy Isolation Standard has been followed.

2. Ensures that the Authorized Entrant, Attendant(s), and Entry Supervisor have received the required training and can perform their assigned duties.
3. Signs the permit after the safety inspection is completed and before entry is made by authorized entrants.
4. Verifies the confined space entry work is complete and ready to close. This includes ensuring that all personnel have exited the space and all equipment has been removed.
5. Determines if the requirement for the attendant and entry log may be waived for Non-Regulated Confined Spaces.

Entry Supervisor:

A determination shall be made during the pre-job planning phase of the Confined Space Entry as to who will serve as the designated Entry Supervisor. Logical choices, depending upon the complexity of the job, anticipated duration, number of entrants, etc., would include the Maintenance Supervisor, Project Engineer, Facility Supervisor, Lead or Unit Operator, Lead Maintenance Technician, or Contract Work Leader.

1. Informs the Authorized Entrants of the hazards identified inside and outside the space, any precautions or procedures that have been implemented for the employees in or near the confined space, and procedures that will be utilized to coordinate entry operations between companies.
2. Knows the hazards that may be faced during entry, including the mode, signs or symptoms of exposure. Remains informed of hazards that may be present due to other work being performed in the vicinity of the confined space.
3. Verifies that rescue services are available and that means for summoning them are operable for Regulated Confined Space entries.

4. Verifies by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted, and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
5. Removes unauthorized individuals who enter or who attempt to enter the confined space.
6. Whenever responsibility for confined space is transferred, and at intervals dictated by the hazards and operations conducted in the space, determines that entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.
7. Terminates entry and cancels the permit when the operations covered by the permit are completed or when a condition that is not allowed under the entry permit arises in or near the space.
8. Suspends all Regulated Confined Space operations and evacuates confined space any time the Rescue Team becomes unavailable. This includes when Phase II conditions are in effect or Phase II weather is forecasted. The work cannot resume until the Rescue Team returns to stand-by mode.
9. Ensures that employees working as part of the confined space entry crew have been trained in their individual job responsibilities as well as the hazards associated with the confined space entry work.
10. Remains readily available at the confined space entry location.
11. Monitors the work as it progresses to ensure that the conditions of the permit are not changing.
12. At the end of the shift or upon completion of the work, whichever comes first, returns the Hard Copy to the Control Room or designated location and closes out the permit by signing the Hard Copy.
13. Notifies emergency services or designee that confined space activities are completed for Regulated Confined Spaces.

Authorized Entrant:

1. Verifies energy isolation as applicable.
2. Reads and understands the Confined Space Entry Permit and checks with the Unit Operator before initial entry of the confined space.
3 Logs in and notifies the Attendant upon each entrance and exit of the confined space.
4. Knows the hazards that may be faced during entry including the mode, signs or symptoms of exposure.
5. Properly utilizes the equipment provided for testing or monitoring, ventilation, communications, lighting, barricading, access, and personal protective equipment.
6. Checks all safety equipment prior to entry, e.g. respirators, airlines, PPE etc.
7. Maintains communication with Attendant.
8. Alerts the Attendant upon recognizing any warning sign or symptom of exposure to a dangerous situation or detecting a prohibited condition.
9. Exits from the confined space as quickly as possible whenever an order to evacuate is given, a warning sign or symptom of exposure is recognized, a prohibited condition is detected, or an evacuation alarm is activated.
10. Cleans up and secures the work area after completion of work each shift. Notifies the Unit Operator if the job is incomplete and the unit is left unattended temporarily.
11. Stops all work when an alarm or Emergency Announcement is made and exits the confined space. Does not resume any work until notified by the Unit Operator.

Attendant:

1. Monitors only one permit space and performs no other duties that might interfere with their primary duty to monitor and protect the authorized entrants.
2. Reads and understands the Regulated / Non-Regulated Confined Space Entry Permit.

3. Remains outside the confined space main entryway at all times during the entry operations.
4. Does not enter a space unless first relieved by another qualified attendant.
5. Continuously maintains an accurate log of all persons in the confined space.
6. Warns unauthorized persons away from the space. Advises unauthorized persons that they must exit immediately if they have entered the space, and advises the Entry Supervisor and the authorized entrants if unauthorized persons have entered the authorized space.
7. Is knowledgeable of and able to recognize potential hazards that may be faced during the entry including the mode, signs or symptoms of exposure. Is aware of the potential behavioral effects of hazard exposure of entrants.
8. Posts hard copies of permits related to the confined space entry at the main entry of the confined space. All entrances deemed safe shall have an Attendant.
9. Ensures that all authorized attendants are in compliance with the requirements stated on the Regulated/ Non-Regulated Confined Space Entry Permit.
10. Monitors activities inside and outside the confined space to determine if it is safe for the persons making entry to remain in the space.
11. Maintains effective and continuous contact with persons inside the confined space, and has a means of communication with the Unit Operator.
12. Orders persons to immediately evacuate the confined space when a prohibited condition is detected, behavioral effects of hazardous exposure are detected, a situation outside the confined space is detected that could endanger entrants, or if rendered unable to safely and effectively perform all of the required duties.
13. Summons rescue and other emergency services as soon as persons inside need assistance to escape from the confined space.

Company Safety Representative:

1. Verifies that the space has been properly prepared, including energy isolation.
2. Tests for oxygen content, flammability, toxic materials and/or other hazards prior to entry for regulated confined spaces.
3. Makes the first entry into the enclosure, if necessary, to complete the safety inspection.
4. Coordinates any special precautions and signs all regulated confined space entry permits.
5. Endorses all hot work permits that might affect the regulated/non-regulated confined space entry permit.
6. Decides what restrictions will be imposed on the permit.
7. Ensures the appropriate Company procedures are followed and documented when re-classifying a confined space.
8. Determines whether a retrieval system or other emergency response equipment is required at the job site.
9. Verifies with Entry Supervisor that emergency services are available.

Security/Emergency Services:

1. Determine the availability of rescue services for regulated confined space entries. Conditions to be taken into consideration include:
   A. Phase conditions – Regulated confined space activities shall not be authorized during Phase II or Phase III weather conditions.
   B. Slow-moving or impassable loads – Rig moves or other activities can hamper rescue services' ability to respond. Alternative actions, including staging of rescue personnel and equipment at alternate locations during these activities, will be determined by emergency services.
   C. Other activities requiring Emergency Services personnel.

2. Suspend, via radio “all-call” or other agreed upon means, all affected Regulated Confined Space activities should the conditions dictate.

Atmospheric Monitoring

The space being entered must be tested for oxygen content, flammable gas, toxic gases and other potential contaminants.

During the tests all forms of forced air ventilation must be shut down. The following test sequence will be followed while performing atmospheric monitoring.

Periodic Monitoring shall take place every 12 hours at a minimum. More frequent testing may be required as indicated on the Confined Space Entry Permit.

Test Sequence

Oxygen Content

Entry into a space with less than 19.5% oxygen will require a SCBA or airline respirator with an escape bottle. Entry into a space with an atmosphere containing more than 23.5% oxygen is not allowed.

Flammable Gas

No entry will be made into any space where the atmosphere contains more than 10% of the lower explosive limit (LEL). Flammable gas samples should be taken from points within the space remote from openings. Where there are liquids or sludge present the samples should be taken within 6 inches of the surface as well as at the top of the space and intermediate points.

H_2S

Entrance into spaces where the concentration of H_2S is greater than 10 ppm shall be in accordance with the H_2S Standard in this handbook.

Other Toxic Contaminants

Other potential contaminants must be tested for as deemed appropriate by the nature of the confined space and the anticipated hazards. These can include, but are not limited to pH, NORM, toxic gases (such as benzene, CO), other toxic substances etc.

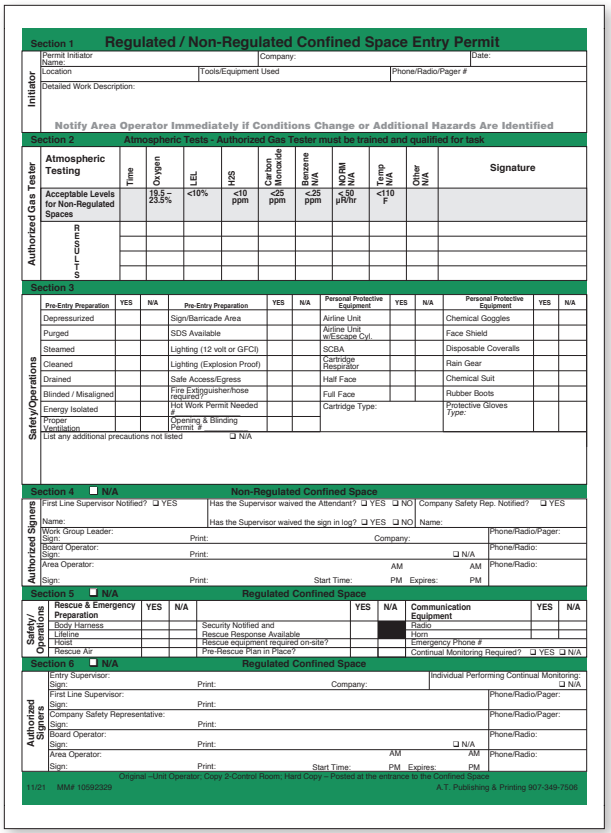
Duration of Permits/Permit Close Out

1. Permits are valid until job completion but must not extend beyond the end of the shift in which they were issued unless allowed by company policy
2. If a change in any of the conditions listed on the permit results in an unacceptable condition, work must cease and the permit becomes invalid. Prior to the re-initiation of work activities the Confined Space Entry Permit must be revalidated by the Entry Supervisor and the Unit Operator.
3. If at anytime during a regulated confined space entry, rescue or emergency services become unavailable, all work in the confined space shall be suspended and all occupants shall evacuate the confined space. After Emergency Services become available, work may continue as long as the confined space conditions have not changed, and the space is re-evaluated prior to resuming work by the Entry Supervisor and Unit Operator.
4. If a confined space is to be reclassified from a regulated confined space to a non-regulated confined space, the current permit will be closed out and a new Regulated/Non-Regulated Confined Space Entry Permit issued.

DANGER

Do Not Enter

98P76



Section 1 **Regulated / Non-Regulated Confined Space Entry Permit**

Initiator

Permit Initiator Name: | Company: | Date:

Location | Tools/Equipment Used | Phone/Radio/Pager #

Detailed Work Description:

Notify Area Operator Immediately if Conditions Change or Additional Hazards Are Identified

Section 2 **Atmospheric Tests - Authorized Gas Tester must be trained and qualified for task**

Authorized Gas Tester

Atmospheric Testing	Time	Oxygen	LEL	H2S	Carbon Monoxide	Benzene N/A	NO/IN N/A	Temp N/A	Other N/A	Signature
Acceptable Levels for Non-Regulated Spaces		19.5 – 23.5%	<10%	<10 ppm	<25 ppm	<.25 ppm	<.50 µR/hr	<110 F		
Sample Comments										

Section 3

Safety/Operations

Pre-Entry Preparation	YES	N/A	Pre-Entry Preparation	YES	N/A	Personal Protective Equipment	YES	N/A	Personal Protective Equipment	YES	N/A
Depressurized			Sign/Barricade Area			Airline Unit			Chemical Goggles		
Purged			SDS Available			Airline Unit w/Escape Cyl.			Face Shield		
Steamed			Lighting (12 volt or GFCI)			SCBA			Disposable Coveralls		
Cleaned			Lighting (Explosion Proof)			Cartridge Respirator			Rain Gear		
Drained			Safe Access/Egress			Half Face			Chemical Suit		
Blinded / Misaligned			Fire Extinguisher/hose required?			Full Face			Rubber Boots		
Energy Isolated			Hot Work Permit Needed #			Cartridge Type:			Protective Gloves Type:		
Proper Ventilation			Opening & Blinding Permit #								

List any additional precautions not listed ❑ N/A

Section 4 ❑ N/A **Non-Regulated Confined Space**

Authorized Signers

First Line Supervisor Notified? ❑ YES | Has the Supervisor waived the Attendant? ❑ YES ❑ NO | Company Safety Rep. Notified? ❑ YES

Name: | Has the Supervisor waived the sign in log? ❑ YES ❑ NO | Name:

Work Group Leader: Sign: Print: Company: Phone/Radio/Pager:

Board Operator: Sign: Print: ❑ N/A Phone/Radio:

Area Operator: AM AM Phone/Radio:

Sign: Print: Start Time: PM Expires: PM

Section 5 ❑ N/A **Regulated Confined Space**

Safety/Operations

Rescue & Emergency Preparation	YES	N/A		YES	N/A	Communication Equipment	YES	N/A
Body Harness						Radio		
Lifeline			Security Notified and			Horn		
Hoist			Rescue Response Available			Emergency Phone #		
Rescue Air			Rescue equipment required on-site?			Continual Monitoring Required? ❑ YES ❑ N/A		
			Pre-Rescue Plan in Place?					

Section 6 ❑ N/A **Regulated Confined Space**

Authorized Signers

Entry Supervisor: Individual Performing Continual Monitoring: ❑ N/A

Sign: Print: Company:

First Line Supervisor: Phone/Radio/Pager:

Sign: Print:

Company Safety Representative: Phone/Radio/Pager:

Sign: Print:

Board Operator: Phone/Radio:

Sign: Print: ❑ N/A

Area Operator: AM AM Phone/Radio:

Sign: Print: Start Time: PM Expires: PM

Original –Unit Operator; Copy 2-Control Room; Hard Copy – Posted at the entrance to the Confined Space

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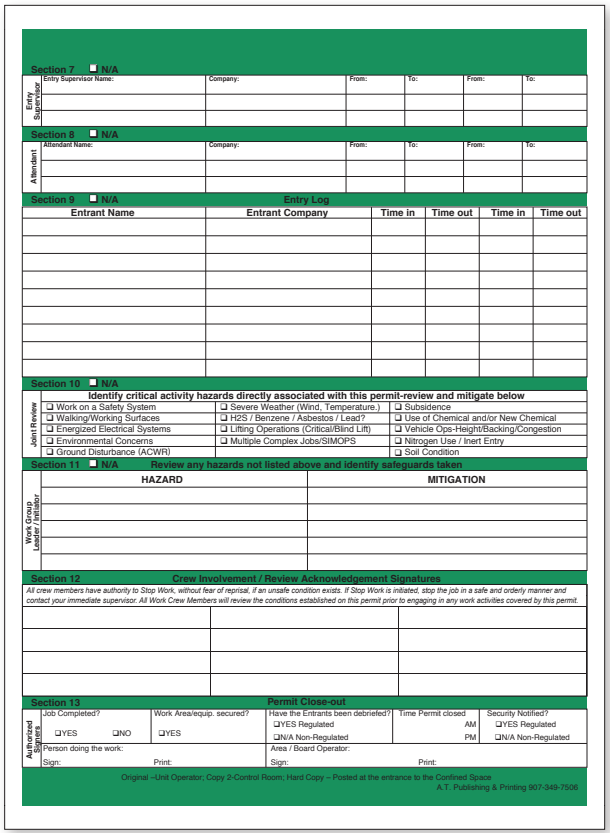
Regulated/Non-Regulated Confined Space Entry Permit



Section 7 ☐ N/A

Entry Supervisor

Entry Supervisor Name:	Company:	From:	To:	From:	To:

Section 8 ☐ N/A

Attendant

Attendant Name:	Company:	From:	To:	From:	To:

Section 9 ☐ N/A — Entry Log

Entrant Name	Entrant Company	Time in	Time out	Time in	Time out

Section 10 ☐ N/A

Joint Review

Identify critical activity hazards directly associated with this permit-review and mitigate below

❑ Work on a Safety System	❑ Severe Weather (Wind, Temperature.)	❑ Subsidence
❑ Walking/Working Surfaces	❑ H2S / Benzene / Asbestos / Lead?	❑ Use of Chemical and/or New Chemical
❑ Energized Electrical Systems	❑ Lifting Operations (Critical/Blind Lift)	❑ Vehicle Ops-Height/Backing/Congestion
❑ Environmental Concerns	❑ Multiple Complex Jobs/SIMOPS	❑ Nitrogen Use / Inert Entry
❑ Ground Disturbance (ACWR)		❑ Soil Condition

Section 11 ☐ N/A Review any hazards not listed above and identify safeguards taken

Work Group Leader / Initiator

HAZARD	MITIGATION

Section 12 Crew Involvement / Review Acknowledgement Signatures

All crew members have authority to Stop Work, without fear of reprisal, if an unsafe condition exists. If Stop Work is initiated, stop the job in a safe and orderly manner and contact your immediate supervisor. All Work Crew Members will review the conditions established on this permit prior to engaging in any work activities covered by this permit.

Section 13 Permit Close-out

Authorized Signers

Job Completed?	Work Area/equip. secured?	Have the Entrants been debriefed?	Time Permit closed	Security Notified?
❑YES ❑NO	❑YES	❑YES Regulated ❑N/A Non-Regulated	AM PM	❑YES Regulated ❑N/A Non-Regulated

Person doing the work:		Area / Board Operator:	
Sign:	Print:	Sign:	Print:

Original –Unit Operator; Copy 2-Control Room; Hard Copy – Posted at the entrance to the Confined Space

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Regulated/Non-Regulated Confined Space Entry Permit

Process Opening/Blinding Standard

Purpose/Scope

The purpose of this standard is to minimize any exposures to personnel and property while opening and blinding any line or vessel that has contained a flammable product.

Opening and blinding will be accomplished in accordance with the Energy Isolation Standard.

This standard applies to all work on permanent surface equipment connected to wellhead valving.

This standard does not cover:

1. Normal production operations on a regular basis. Examples of normal operations are replacing pressure gauges and pilots, changing orifice plates, venting through a valve, etc.
2. Drilling and well servicing, including well work over, coiled tubing and wire line activities.

Objectives

1. Ensure adequate communication between all departments concerned.
2. Institute a formal, consistent, and documented procedure.

Permit Initiation

Permits may be initiated by anyone and will be done at the appropriate Control Room or other designated location.

A Unit Work Permit is not required for opening and blinding operations if a Process Opening/Blinding Work Permit is in effect.

During Process Opening/Blinding a Hot Work Permit is not required for the use of pneumatic/hammer wrenches. Required atmospheric testing results will be recorded on the Process Opening/Blinding Permit. Use air movers to reduce LEL, H_2S and benzene at flange area as necessary.

Once the process is properly drained, purged (if applicable), opened and isolated and the permit closed out, additional work tasks may be completed under the hot or unit work permit systems.

Responsibilities

Unit Operator:

1. Follows all applicable energy isolation procedures before allowing work to commence.
2. Before opening a line or vessel that contains or has contained a flammable material, ensures there is no hot work being performed in the same fire zones.
3. Assures that the correct line or vessel is being opened and the equipment is drained and depressured as thoroughly as possible to reduce the potential of a release.
4. Ensures containers are in place to catch liquid that might be released.
5. Ensures proper personal protective equipment is used.
6. Reviews the questions and Task Hazard Assessment on the back of the permit.
7. Tags and records all blind installations and removals on the Master Card or Energy Isolation List.
8. Ensures atmospheric testing is performed before cold cutting or where pneumatic impact/hammer wrenches are used.
9. As the process is opened, conducts atmospheric monitoring to assess hazards and to choose the appropriate controls, e.g. ventilation, respiratory protection.
10. Contacts Company Safety Representative prior to initiating cold cutting operations.
11. Signs and issues the permit.
12. Ensures that the hard copy of the Process Opening/Blinding Permit has been posted at the work location or with the Person Doing the Work if it cannot be posted at the job site.

13. Prevents an operation from being performed which has the potential to cause the area or equipment to become unsafe while the Process Opening/Blinding Permit is in effect.
14. Monitors the work as it progresses to ensure that the conditions of the Process Opening/Blinding Permit are not changing.
15. Stops the work if a change occurs which creates an unsafe condition. Work shall not resume until a safe condition is restored.
16. If conditions change, re-inspects and gas-checks the work area and notes readings on front of permit.
17. Advises relief operators of any permit in effect.
18. If any process upset or emergency alarm causes the shutdown of work, re-inspects the work area prior to allowing work to be resumed.
19. After work is complete, inspects the work area and adjacent areas to determine they are in a safe condition and signs permit closeout section.

Control Room Operator or Drillsite/Wellpad Operator:

1. Ensures that facility operations, construction or maintenance will not be adversely affected by the proposed work activities, and sign the permit.
2. Ensures that First-Line Supervisor's or designee's approval is obtained and a documented procedure outlining the work and safeout is used prior to proceeding with an opening and blinding job where pressure cannot be bled to zero, or the absence of pressure cannot be verified.
3. Notifies the Unit Operator when the permit is closed out.

First-Line Supervisor:

1. Ensures all participants in the opening and blinding process have fulfilled their duties and responsibilities.
2. Ensures adequate precautions have been taken and gives approval when satisfied that work can proceed safely if:

- Pressure cannot be bled to zero
- The absence of pressure cannot be verified or when single valve isolation must be used.

Person Doing the Work:

1. Reads and understands the conditions of the Process Opening/Blinding Work Permit before starting work.
2. Advises other workers of any special precautions or conditions pertaining to the job.
3. When satisfied that the equipment to be worked on is ready and the work can proceed safely, signs the permit.
4. Post the hard copy of the Process Opening/Blinding Work Permit at the work location or ensure it is readily available if it cannot be posted.
5. At the end of the shift or upon completion of the work, whichever comes first, notifies the Unit Operator, and returns the hard copy of permit to the Control Room or designated location, and closes out the permit by signing the hard copy.

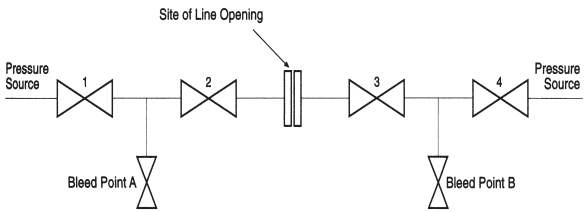
General Considerations

1. Take measures to avoid static buildup which could cause ignition of flammables. (Bonding across the flange, for example.)
2. Whenever there is a potential to release gas to atmosphere, eliminate all ignition sources, including fired heaters, vehicles, etc.
3. When opening a line or vessel containing H_2S and/or benzene, adhere to the Company H_2S and/or Benzene policy(s).
4. After process tanks or vessels have been depressurized, test the atmosphere prior to completing the removal of any hatch or manway. They are safe to open (not enter) if the concentration of flammable vapors is less than 50% of the LEL and/or provisions are made to inert the space. Contact Company Safety Representative for recommendations on PPE and monitoring.

Line or System Double Block and Bleed

Work that requires the opening of a process line or other process equipment shall be accomplished by using a double block and bleed where possible.

Note: A double block and bleed is not an approved isolation for a confined space entry or hot work (reference the Confined Space Entry Standard or Hot Work Standard in this handbook, as applicable).



Step 1 Close valves 1 and 4

Step 2 Bleed at bleed points A and B

Step 3 Close valves 2 and 3

Single Valve Isolation

When single valve isolation must be used, the responsible Supervisor's (or designee's) approval must be obtained and their name printed on the Process Opening/Blinding Work Permit. Approval can be obtained in person and/or verbally over the phone or radio.

The supervisor shall consider the following when determining whether to approve a single-block isolation:

- Risk associated with achieving a higher level of isolation
- Pressure/temperature of process
- Toxicity, flammability, etc.
- Ability to verify zero-energy state
- Robustness of mitigating measures/contingency plan
- Ability to monitor integrity of isolation during the job
  - Fixed gas detection
  - Liquid leak detection
  - Surveillance
- Type, age, and reliability of valve

When a single-block isolation is approved, the following precautions shall be taken:

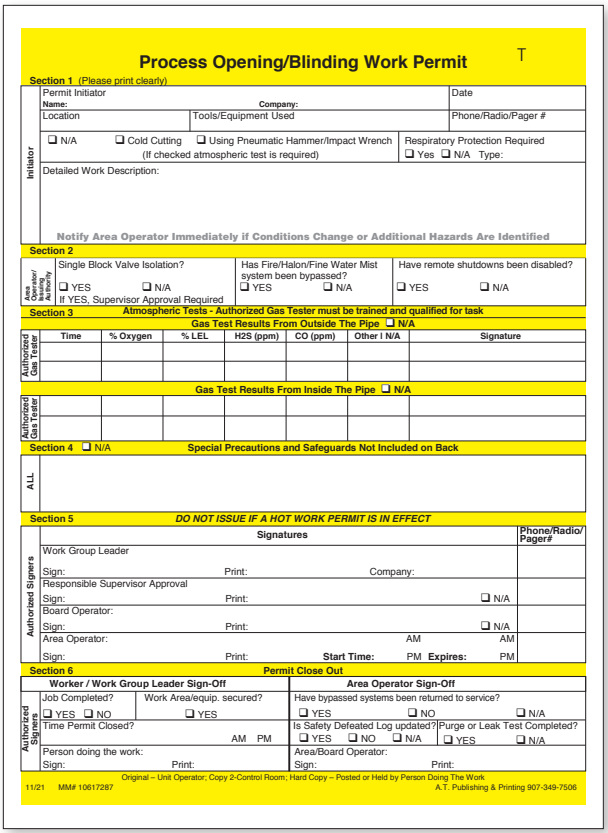
- The job must be worked until completion (i.e. continuously across day/evening shifts) or, an appropriate surveillance plan will be prescribed by the supervisor, taking into account the risk and mitigation factors noted above.
- The worker must notify the unit operator anytime the equipment will be left unattended (i.e. break time/lunch time or reassignment)
- Equipment maintenance must occur on location. Removal of equipment from the immediate work area will require installation of pressure-rated blind flanges or caps.

Blind Requirements

1. Blinds shall conform to Company-adopted design specifications or shall be temperature/pressure design rated.
2. A blind, other than a spectacle blind, must have a long enough "T" handle attached to extend at least two (2) inches beyond pipe flanges in order to eliminate any doubt whether the in-line device is a blind or a spacer.
3. Blinds, blind flanges, and spacers must have the appropriate class rating (e.g., 150, 300, etc.) stamped on the handle.
4. All permanent blinds and spacers shall be installed using new gaskets that conform to current Company design specifications.
5. All flange make-ups shall have the bolts properly torqued and torquing sequence shall be in accordance with current Company specifications.
6. No blind shall be installed or removed, unless it can be accomplished safely. Blinding should be as close to the vessel/work as possible, however, when blinding as close to the vessel/work as possible creates additional hazards or is impractical, blinds can be applied at another location with the approval of the Company First Line Supervisor and Company Safety Representative. The approvals to apply the blind at another location will be documented on the Energy Isolation Procedure.
7. Tapped blind flanges shall be used where possible. Design and construction standards should require consideration of a tapped blind flange behind a single block valve isolation when a blind flange is installed.

Duration of Permits/Permit Close Out

Permits are valid until job completion but must not extend beyond the end of the shift in which they were issued unless allowed by company policy.



Process Opening/Blinding Work Permit

Section 1 (Please print clearly)

Initiator

Permit Initiator — Date

Name: — Company:

Location — Tools/Equipment Used — Phone/Radio/Pager #

❑ N/A ❑ Cold Cutting ❑ Using Pneumatic Hammer/Impact Wrench (If checked atmospheric test is required) — Respiratory Protection Required ❑ Yes ❑ N/A Type:

Detailed Work Description:

Notify Area Operator Immediately if Conditions Change or Additional Hazards Are Identified

Section 2

Area Operator/ Issuing Authority

Single Block Valve Isolation? ❑ YES ❑ N/A If YES, Supervisor Approval Required

Has Fire/Halon/Fine Water Mist system been bypassed? ❑ YES ❑ N/A

Have remote shutdowns been disabled? ❑ YES ❑ N/A

Section 3 **Atmospheric Tests - Authorized Gas Tester must be trained and qualified for task**

Gas Test Results From Outside The Pipe ❑ N/A

Authorized Gas Tester

Time	% Oxygen	% LEL	H2S (ppm)	CO (ppm)	Other I N/A	Signature

Gas Test Results From Inside The Pipe ❑ N/A

Authorized Gas Tester

Section 4 ❑ N/A **Special Precautions and Safeguards Not Included on Back**

ALL

Section 5 ***DO NOT ISSUE IF A HOT WORK PERMIT IS IN EFFECT***

Authorized Signers

Signatures	Phone/Radio/ Pager#
Work Group Leader Sign: Print: Company:	
Responsible Supervisor Approval Sign: Print: ❑ N/A	
Board Operator: Sign: Print: ❑ N/A	
Area Operator: AM AM Sign: Print: **Start Time:** PM **Expires:** PM	

Section 6 **Permit Close Out**

Authorized Signers

Worker / Work Group Leader Sign-Off		Area Operator Sign-Off	
Job Completed? ❑ YES ❑ NO	Work Area/equip. secured? ❑ YES	Have bypassed systems been returned to service? ❑ YES ❑ NO	❑ N/A
Time Permit Closed? AM PM		Is Safety Defeated Log updated? ❑ YES ❑ NO ❑ N/A	Purge or Leak Test Completed? ❑ YES ❑ N/A
Person doing the work: Sign: Print:		Area/Board Operator: Sign: Print:	

Original – Unit Operator; Copy 2-Control Room; Hard Copy – Posted or Held by Person Doing The Work

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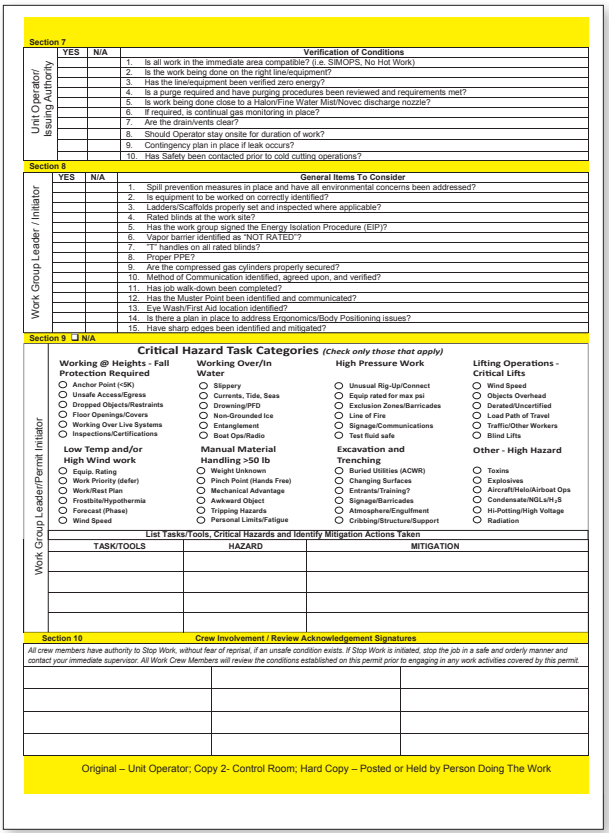
Process Opening/Blinding Work Permit



Section 7

Unit Operator/ Issuing Authority

YES	N/A	Verification of Conditions
		1. Is all work in the immediate area compatible? (i.e. SIMOPS; No Hot Work)
		2. Is the work being done on the right line/equipment?
		3. Has the line/equipment been verified zero energy?
		4. Is a purge required and have purging procedures been reviewed and requirements met?
		5. Is work being done close to a Halon/Fine Water Mist/Novec discharge nozzle?
		6. If required, is continual gas monitoring in place?
		7. Are the drain/vents clear?
		8. Should Operator stay onsite for duration of work?
		9. Contingency plan in place if leak occurs?
		10. Has Safety been contacted prior to cold cutting operations?

Section 8

Work Group Leader / Initiator

YES	N/A	General Items To Consider
		1. Spill prevention measures in place and have all environmental concerns been addressed?
		2. Is equipment to be worked on correctly identified?
		3. Ladders/Scaffolds properly set and inspected where applicable?
		4. Rated blinds at the work site?
		5. Has the work group signed the Energy Isolation Procedure (EIP)?
		6. Vapor barrier identified as "NOT RATED"?
		7. "T" handles on all rated blinds?
		8. Proper PPE?
		9. Are the compressed gas cylinders properly secured?
		10. Method of Communication identified, agreed upon, and verified?
		11. Has job walk-down been completed?
		12. Has the Muster Point been identified and communicated?
		13. Eye Wash/First Aid location identified?
		14. Is there a plan in place to address Ergonomics/Body Positioning issues?
		15. Have sharp edges been identified and mitigated?

Section 9 ❑ N/A

Work Group Leader/Permit Initiator

Critical Hazard Task Categories ***(Check only those that apply)***

Working @ Heights - Fall Protection Required
- ○ Anchor Point (>5K)
- ○ Unsafe Access/Egress
- ○ Dropped Objects/Restraints
- ○ Floor Openings/Covers
- ○ Working Over Live Systems
- ○ Inspections/Certifications

Working Over/In Water
- ○ Slippery
- ○ Currents, Tide, Seas
- ○ Drowning/PFD
- ○ Non-Grounded Ice
- ○ Entanglement
- ○ Boat Ops/Radio

High Pressure Work
- ○ Unusual Rig-Up/Connect
- ○ Equip rated for max psi
- ○ Exclusion Zones/Barricades
- ○ Line of Fire
- ○ Signage/Communications
- ○ Test fluid safe

Lifting Operations - Critical Lifts
- ○ Wind Speed
- ○ Objects Overhead
- ○ Derated/Uncertified
- ○ Load Path of Travel
- ○ Traffic/Other Workers
- ○ Blind Lifts

Low Temp and/or High Wind work
- ○ Equip. Rating
- ○ Work Priority (defer)
- ○ Work/Rest Plan
- ○ Frostbite/Hypothermia
- ○ Forecast (Phase)
- ○ Wind Speed

Manual Material Handling >50 lb
- ○ Weight Unknown
- ○ Pinch Point (Hands Free)
- ○ Mechanical Advantage
- ○ Awkward Object
- ○ Tripping Hazards
- ○ Personal Limits/Fatigue

Excavation and Trenching
- ○ Buried Utilities (ACWR)
- ○ Changing Surfaces
- ○ Entrants/Training?
- ○ Signage/Barricades
- ○ Atmosphere/Engulfment
- ○ Cribbing/Structure/Support

Other - High Hazard
- ○ Toxins
- ○ Explosives
- ○ Aircraft/Helo/Airboat Ops
- ○ Condensate/NGLs/H_2S
- ○ Hi-Potting/High Voltage
- ○ Radiation

List Tasks/Tools, Critical Hazards and Identify Mitigation Actions Taken

TASK/TOOLS	HAZARD	MITIGATION

Section 10 **Crew Involvement / Review Acknowledgement Signatures**

All crew members have authority to Stop Work, without fear of reprisal, if an unsafe condition exists. If Stop Work is initiated, stop the job in a safe and orderly manner and contact your immediate supervisor. All Work Crew Members will review the conditions established on this permit prior to engaging in any work activities covered by this permit.

Original – Unit Operator; Copy 2- Control Room; Hard Copy – Posted or Held by Person Doing The Work

Process Opening/Blinding Work Permit

VARIANCE TO SAFETY STANDARD

Although the mandatory provisions of the ASH are usually appropriate, not every situation can be anticipated. A variance will ensure that proper planning and review are conducted prior to performing work which cannot be done within the limits of the safety standards.

A variance is a deviation from practice or an acknowledgment that the system or equipment in question, by nature of its design or construction, is not covered or only partially covered by the ASH or standards.

The Variance to Safety Standard applies only to variances from Company standards. No variance from federal, state, or local requirements can be granted through this standard. Check Company policy for specific variance requirements that may differ from those described in this section.

It is the responsibility of the First-Line Supervisor or project engineer in charge of the work to be performed to initiate the variance request. The description of work to be done, intended dates of performance, options considered, safety precautions, and other pertinent information must be documented for circulation to approving parties.

Approving parties, designated by management, shall verify their concurrence and knowledge of the work by signature. Questions and suggestions shall be directed to the variance initiator. Approving parties shall perform their review in a timely manner and route the variance request to the next higher level or to the next organization.

A copy of the approved variance will be returned to the supervisor or project engineer in charge of the work. A copy of the approved variance shall be readily available within the appropriate work area or attached to a work permit if applicable. The original approved variance will be forwarded to the Company safety department.

Safety Standard Variance Form

Standard Number or Title	**Requestor**
Location	**Date(s) of Work**

1. Description of Work (in detail)

2. Why is the variance necessary? (List Safety Standard /requirement(s) being deviated from)

3. What special precautions will be taken to ensure safety?

4. List and attach supporting documents (e.g., detailed drawings, shutdown / purge procedures, etc.)

Routing for Approvals

Position	Name (print)	Signature	Date
1. First Line Supervisor / Ops Team Leader			
2. Ops / Field Manager			
3. Company Safety Representative			

Distribution of completed Variance:
1. Original: Send to Company Safety Representative for documentation.
2. Copies:
   a. Send to Ops / Field Manager and all signatories.
   b. Shall be readily available within the appropriate work area or attached to a work permit, if applicable.

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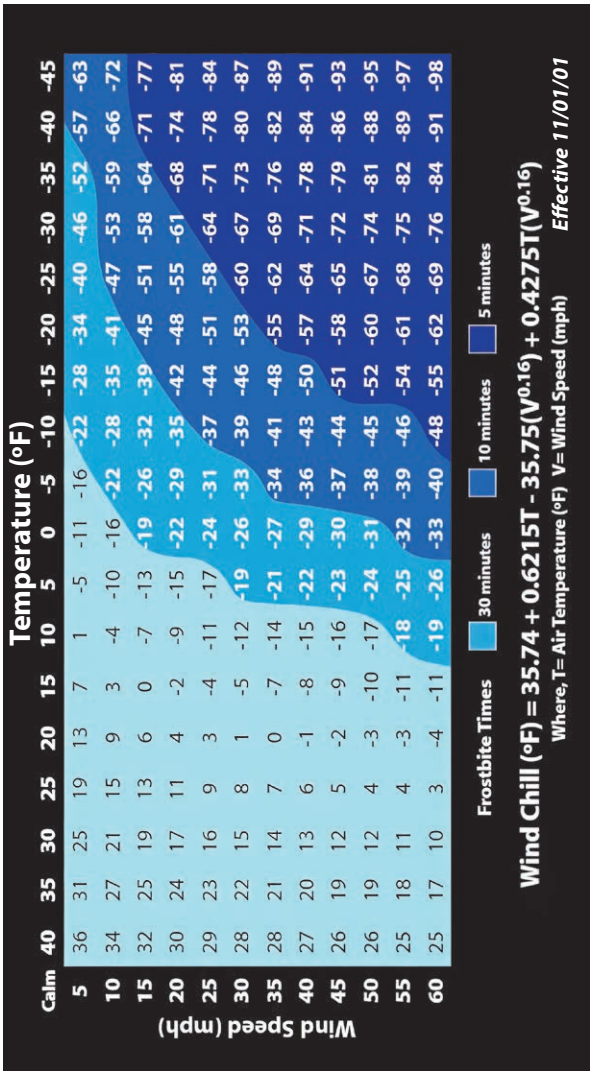
Safety Standard Variance Form

WIND CHILL CHART



CONVERSION FACTORS

Pressure

1 lb. per sq. inch	=	2.31 ft. water at 60° F
	=	2.04 in. Hg at 60° F
1 ft. water at 60° F	=	0.433 lb. per sq. in.
	=	0.884 in. Hg at 60° F
1 in. Hg at 60° F	=	0.49 lb. per sq. in.
	=	1.13 ft. water at 60°F
lb. per sq. in.	=	lb. per sq. in. absolute (psia) = lb. per sq. in. gauge

Temperature

° C	= (°F - 32) x 5/9
° F	= (9/5 x °C) + 32
° F + 459.72	= °F Absolute / Rankine
° C + 273.16	= °C Absolute / Kelvin
° Rankine (R) - 459.72	= °Fahrenheit (F)
° Kelvin (K) -273.16	= °Celsius (C)

Concentration

1,000,000 ppm	= 100.0%
100,000 ppm	= 10.0%
10,000 ppm	= 1.0%
1,000 ppm	= 0.1%
100 ppm	= 0.01%
10 ppm	= 0.001%
1 ppm	= 0.0001%

Weight of Liquid

1 gal. (U.S.)	=	8.34 lb. x sp. gr.
1 cu. ft.	=	62.4 lb. x sp. gr.
1 lb.	=	0.12 U.S. gal. ÷ sp. gr.
	=	0.016 cu. ft. ÷ sp. gr.

Flow

1 gpm	=	0.134 cu. ft. per min.
	=	500 lb. per hr. x sp. gr.
500 lb. per. hr.	=	1 gpm ÷ sp. gr.
1 cu. ft. per min. (cfm)	=	448.8 gal. per hr. (gph)

Work

1 Btu (mean)	=	778 ft. lb.
	=	0.293 watt hr.
	=	180 BTU's of heat required to change temp of 1 lb. water from 32° F to 212° F

1 hp. per hr.	=	2545 Btu (mean)
	=	0.746 kwhr
1 kw per hr.	=	3413 Btu (mean)
	=	1.34 hp. per hr.

Power

1 Btu per hr.	=	0.293 watt
	=	12.96 ft. lb. per min.
	=	0.00039 hp
1 ton refrig. (U.S.)	=	288,000 Btu per 24 hr.
	=	12,000 Btu per hr.
	=	200 Btu per min.
	=	83.33 lb. Ice melted per hr. at 32° F
	=	2,000 lb (1 ton) Ice melted per 24 hr. at 32° F
1 hp	=	550 ft. lb. per sec.
	=	746 watt
	=	2545 Btu per hr.
1 boiler hp	=	33,480 Btu per hr.
	=	34.5 lb. Water evap. per hr. at 212° F
	=	9.8 kw
1 kw	=	3413 Btu per hr.

Mass

1 lb. (avoir.)	=	16 oz. (avoir.)
	=	7000 grain
1 ton (short)	=	2000 lb.
1 ton (long)	=	2240 lb.

Volume

1 gal. (U.S.)	=	128 fl. oz. (U.S.)
	=	231 cu. in.
	=	0.833 gal. (Brit.)
1 cu. ft.	=	7.48 gal. (U.S.)

Weight of Water

1 cu. ft. at 50° F weighs 62.41 lbs.
1 gal. at 50° F weighs 8.34 lbs.
1 cu. ft. of ice weighs 57.2 lbs.
Water is at its greatest density at 39.2° F
1 cu. ft. at 39.2° F weighs 62.43 lbs.

Hydrogen Sulfide Concentrations

1 grain/100 Scf	= 15.9 part per million (ppm)
1%	= 10,000 ppm

FEET HEAD OF WATER TO PSI

Feet Head	Pounds per Square Inch	Feet Head	Pounds per Square Inch
1	.43	100	43.31
2	.87	110	47.64
3	1.30	120	51.97
4	1.73	130	56.30
5	2.17	140	60.63
6	2.60	150	64.96
7	3.03	160	69.29
8	3.46	170	73.63
9	3.90	180	77.96
10	4.33	200	86.62
15	6.50	250	108.27
20	8.66	300	129.93
25	10.83	350	151.58
30	12.99	400	173.24
40	17.32	500	216.55
50	21.65	600	259.85
60	25.99	700	303.16
70	30.32	800	346.47
80	34.65	900	389.78
90	38.98	1000	433.00

Note: One foot of water at 62°F equals 0.433 pound pressure per square inch. To find the pressure per square inch for any feet head given in the table above, multiply the feet head by 0.433.

FRESH WATER PRESSURE TABLES

Water Pressure to Feet Head

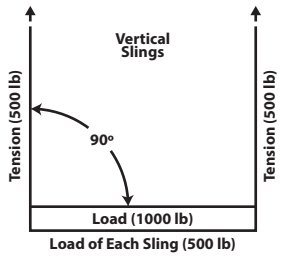
Pounds Per Square Inch	Feet Head	Pounds per Square Inch	Feet Head
1	2.31	100	230.90
2	4.62	110	253.98
3	6.93	120	277.07
4	9.24	130	300.16
5	11.54	140	323.25
6	13.85	150	346.34
7	16.16	160	369.43
8	18.47	170	392.52
9	20.78	180	415.61
10	23.09	200	461.78
15	34.63	250	577.24
20	46.18	300	692.69
25	57.72	350	808.13
30	69.27	400	923.58
40	92.36	500	1154.48
50	115.45	600	1385.39
60	138.54	700	1616.30
70	161.63	800	1847.20
80	184.72	900	2078.10
90	207.81	1000	2309.00

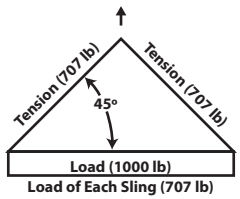
Note: One pound of pressure per square inch of water equals 2.309 feet of water at 62°F. Therefore, to find the feet head of water for any pressure not given in the table above, multiply the pressure pounds per square inch by 2.309.

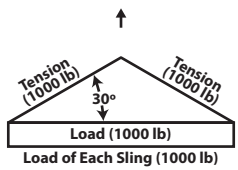
RIGGING TABLE

Sling Stresses at Various Sling Angles

(The sling angle shall never be less than 30°)







$$\text{Tension in Each Leg} = \frac{\text{Load}}{2} \times \text{Load Angle Factor}$$

Horizontal Sling Angle	Load Angle Factor	
90°	1.000	
85°	1.004	
80°	1.015	
75°	1.035	
70°	1.064	
65°	1.104	
60°	1.155	
55°	1.221	
50°	1.305	
45°	1.414	
40°	1.555	
35°	1.742	
30°	2.000	
25°	2.364	Not Recommended
20°	2.924	
15°	3.861	
10°	5.747	
5°	11.490	

Fall Protection and Rigging Annual Inspection Color Coding Requirements

All equipment requiring competent person evaluation must be color coded or visibly marked with date inspected annually. Color Code material, method of attachment, and location are determined by the user group.

Equipment	Example
Fall Protection	Full body harnesses Self-retracting lifelines Lanyards Portable anchorage points
Rigging	Synthetic / Wire rope slings Lifting chains Chain falls Come-a-longs / lever hoists

Annual inspection color codes

All color coding used to indicate annual inspection must follow the table below:

Annual Inspection Color Codes	
Year ending 2/7 (2022 / 2027)	Black
Year ending 3/8 (2023 / 2028)	Blue
Year Ending 4/9 (2024 / 2029)	Orange
Year ending 5/0 (2025 / 2030)	Red
Year ending 6/1 (2026 / 2031)	Green

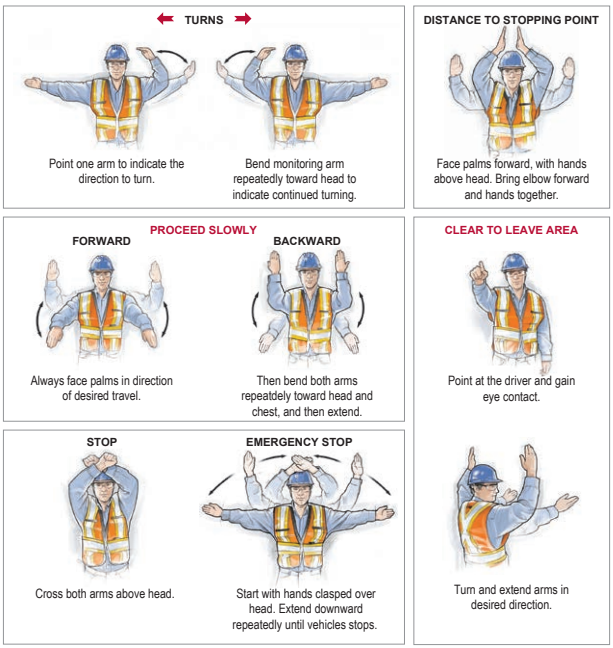
Completion of annual inspection

All color coding used to indicate annual inspection must be completed between October 1 and December 31. Equipment can be labeled with either color code during this transition period.

SPOTTER SIGNALS

The following signals will be used by the designated spotter when directionally guiding a piece of heavy equipment.

HAND SIGNALS FOR DIRECTING VEHICLES



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OPERATIONAL FORK TRUCK SIGNALS

These signals will be used for equipment with forks.

Raise the Tines
With forearm vertical, forefinger pointing up, move hand in small horizontal circles.

Lower the Tines
With arm extended, palm down, lower arm vertically.

Tilt Mast Back
With forearm vertical, thumb extended, jerk thumb over shoulder.

Tilt Mast Forward
With arm extended, thumb down, lower arms vertically.

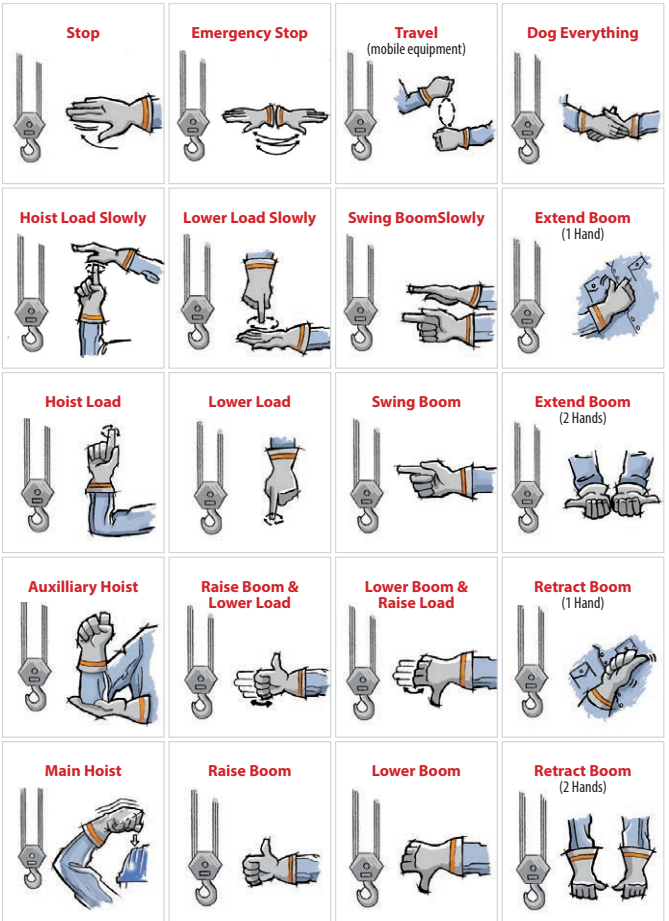
Move Tines in Direction Finger Points
With arm extended, palm down, point forefinger in direction of movement.

Dog Everything
Clasp hands in front of body.

Stop
Extend both arms, palms down

CRANE & LOADER OPERATIONAL SIGNALS

These signals will be used when a crane or loader is involved in a lifting activity.



GLOSSARY

ACGIH: American Conference of Governmental Industrial Hygienists.

ACWR: Area Civil Work Request, the two-part form completed prior to initiating any ground disturbance greater than 12 inches in depth regardless whether it is a permanent or temporary installation.

Affected Employee: An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

ANSI: American National Standards Institute

API: American Petroleum Institute

Appointed: Assigned specific responsibilities by the employer or the employer's representative.

Approved: Approved for a specific purpose, environment, or application described in a particular Standard requirement. Suitability of equipment for a specific purpose may be determined by a nationally recognized testing laboratory such as Underwriters or Factory Mutual.

Authorized: Appointed by a duly constituted administrative or regulatory authority. A person who is approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.

Authorized Employee: (for energy isolation purposes only): A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

- **Operator** – The "Authorized Employee" in charge of the Energy Isolation. This includes shutting down, isolating, and locking out a piece of equipment for servicing or maintenance. This person will also be in charge of removing the equipment from lockout after the work is completed, and starting up the equipment.
- **Worker** – Anyone who applies a Personal Lock or tag to an energy isolation device, including a Lockbox, if used.

Auto ignition temperature: The temperature at which a substance will spontaneously combine with oxygen and burn without an external ignition or heat source.

Barricade: A structure set up across a route of access to obstruct the passage. Equipment used as barricading devices are: manhole covers, railings with toeboard, etc.

Blind: A device such as a metal plate, inserted into flanged joints, a blind flange or a cap or plug installed on the end of pipe lines used to prevent potentially hazardous or pressurized liquids, gases, or vapors from passing through a pipeline or nozzle.

Buffing: Surface preparation method using powered rotary wheels designed to polish or clean the surface without removing or damaging the base material, with no or reduced spark production.

CFR: Code of Federal Regulations

Classified Area: Facilities where hydrocarbons are handled, processed, or stored are classified according to specifications set forth in the NFPA, National Electric Code, and API Recommended Practices.

A classified area extends 10 feet beyond the exterior wall or roof of a building, fan exhaust, vent, low point drain, high point vent, or flanges.

From the National Electrical Code, 2023:

- *Class I, Division 1.* A Class I, Division 1 is a location: (1) in which ignitable concentrations of flammable gases or vapors can exist under normal operating conditions; or (2) in which ignitable concentrations of such gases or vapors may exist frequently because of repair or maintenance operations or because of leakage; or (3) in which breakdown or faulty operation of equipment

or processes might release ignitable concentrations of flammable gases or vapors, and might also cause simultaneous failure of electric equipment.

- *Class I, Division 2.* A Class I, Division 2 is a location: (1) in which volatile flammable liquids or flammable gases are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in the case of abnormal operation of equipment; or (2) in which ignitable concentrations of gases or vapors are normally prevented by positive mechanical ventilation, and which might become hazardous through failure or abnormal operation of the ventilating equipment; or (3) that is adjacent to a Class I, Division 1 location, and to which ignitable concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.

Cold Cutting: The cutting of a line or equipment after it has been depressurized, blocked, and opened to the atmosphere using methods that do not generate a flame or sparks during the cut.

Competent Person: A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Construction Work: Work for construction, alteration, and/or repair, including painting and decorating.

Control Locks: These are keyed-alike locks that are used to protect the process or equipment, but not for personal protection.

Copy of Record: The copy of safe work permits that the Company requires to be filed for a specified period of time.

Designated Worker: A worker who has taken on the additional responsibility to protect the safety of other workers by allowing them to work under the protection of his/her Personal Lock.

Designee: A person who has been delegated by a higher authority to a person who has been delegated by a higher authority to complete a specific task. Note: When work is accomplished under the provision of a delegated authority (a designee), the individual delegating the authority remains ultimately responsible. Also, designees shall sign for the delegating authority as in the following example: John Doe for Jane Smith.

Device Lock: A uniquely keyed lock(s) where the key is under the exclusive control of the lockbox. This lock is applied directly to the energy isolation device only when a lockbox lockout technique is being used. Device Locks that are assigned for use with a lockbox shall have an EI Tag attached.

Direct-fired Heaters: Open flame contained within a portable device with a fuel source used for heating. This includes salamanders, blow torches, natural gas and LP gas heaters.

EIL: Energy Isolation List

Energized Electrical Work Permit: IIf live parts are not placed in an electrically safe work condition (i.e. for the reason of increased or additional hazards or infeasibility), work to be performed shall be considered energized electrical work and shall be performed by written permit only.

Energy Isolation: The method(s) for physically preventing the transmission of an Energy Source into an area where work is being performed. This is done using Energy Isolation Devices.

Energy Isolation Device: A mechanical device that physically prevents the transmission of an Energy Source.

Note: Push buttons, selector switches, and other control circuit type devices that do not directly control the electricity ARE NOT Energy Isolation Devices.

Energy Isolation List: A form used to identify and record all devices used to isolate potential sources of energy prior to servicing or performing maintenance on any equipment or machinery.

Energy Source: Any source of energy. Examples include electrical, pressure, mechanical, gravity, heat/cold, radiation, biological, and chemical (corrosives, etc.).

Equipment: Piping systems and mechanical equipment that require maintenance, or servicing, and have the potential to contain an Energy Source.

Exclusive Control: The Energy Isolation Device is within a worker's arm's reach and within their line of sight while they are working, OR is locked with the worker's Personal Lock.

Fall Restraint System: An approved device and any necessary components that function together to restrain an employee in such a manner as to prevent that employee from reaching the edge and falling.

FE13 (triflouromethane): A colorless, odorless and electrically non-conductive gas, is a replacement of Halon 1301.

Field Locate: The physical process of identifying and labeling all utility lines that are under ground.

Fire Zone: An enclosed area covered by one zone of a fire or gas detection system.

Flammable Liquid: Per OSHA, flammable liquid (or fluid) means having a flash point at or below 199.4 °F (93 °C)

Flash Point: The minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid within the vessel as specified by appropriate test procedure and apparatus.

Group: Two or more workers working under the protection of one of the worker's (Designated Worker) Personal Lock(s).

Halon 1301 (bromotrifluoromethane): A colorless, odorless and electrically non-conductive gas.

Hot Tapping: A method of adding a branch connection to a pressurized line without removing the line from service. The hot tapping procedure includes the attachment weld, hydrostatic test, and drilling of the pipe or other equipment.

Indirect-fired Heaters: A contained fired heated medium, normally fan assisted, used for area heating. This includes kerosene heaters, catalytic heaters, and boilers.

In-Service Package: An approved Engineered procedure required for any welding, burning/cutting, or grinding on equipment or pipelines which have not been depressurized, blinded and purged. This includes the installation of non-pressurized repair sleeves, if such sleeves include welding to the carrier pipe.

Intrinsically Safe: A condition in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air.

Isolation Procedures: Isolation procedures contain instructions for isolating all forms of energy associated with equipment for the protection of personnel during servicing and maintenance procedures.

LEL: Lower Explosive Limit

Lockbox: A box with the ability to be locked closed so that the contents inside the box cannot be removed without first removing a lock(s).

Lockout: The placement of a lock on an energy isolating device to ensure the energy source and equipment being controlled cannot be operated. Locks used must also positively identify their user.

Lockout Device: A mechanism which provides a positive means of control and accommodates multiple locks.

Master Card: An envelope used to log information, retain stubs from all two-part tags associated with locks and tags, and provide the most current status of process and other equipment that has been secured. It is an envelope with an Energy Isolation List printed on one side and Worker Log form printed on the other. It is always maintained in a location central to the process or equipment under control. A separate Master Card or EIL shall be completed for each job.

Means of Egress: A continuous and unobstructed way of exit travel from any point in a building or structure to a public way. Means of egress consist of three parts: the way of exit access, the exit, and the way of exit discharge.

NGL: Natural Gas Liquids

NEC: National Electrical Code (NFPA 70) covers installation requirements.

NFPA 70E: Standard for Electrical Safety in the Workplace addresses safe work practices and employee protection.

NFPA: National Fire Protection Association

Non-permanent Facilities: Temporary structures such as storage or break shacks and other mobile equipment including vacuum trucks, tanker trucks, and other mobile/temporary equipment or holding tanks.

Novec 1230: A fire suppressant liquid agent.

On-line Plugging: On-line plugging includes operations to stop flow in existing process equipment and/or piping. For example, placing an in-line stopple.

Personal Lock: A uniquely keyed lock(s) where the key is under the exclusive control of one worker. These locks are painted red and are clearly labeled with the employee's name and contact number. The purpose of a Personal Lock is to protect the worker from injury due to the accidental release of energy.

Pyrophoric: The ability to spontaneously ignite in the presence of air.

Qualified: A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project and is competent to judge the hazards involved.

Safety Device: Any operational device that safely controls the release of pressure, temperature, liquid levels, flow, etc., or protects the integrity of the equipment, preventing catastrophic failures.

Shift: For the purpose of the Alaska Safety Handbook, a "shift" refers to the Unit Operator/Issuing Authority's daily work period, which is typically 12 hours.

Simultaneous Operations (SIMOPS): The existence of multiple work processes in a single work area. These work processes may not be interrelated but are viewed as having the potential to introduce additional risk into an operation unless properly managed.

Tagout Device(s): A prominent means of warning and its attachment device, which must be substantial enough to prevent inadvertent or accidental removal. Tagout devices must be non-reusable, attached by hand, self-locking, and capable of withstanding no less than 50 pounds pull.

THA: Task Hazard Assessment

Trained: Knowledgeable in a specific subject material through lectures, testing, and hands-on activities. Results documented.

UL: Underwriters Laboratories

Welding, Burning/Cutting, Grinding: The process of melting or removing metal for the purpose of fabrication or repair (e.g., arc welding, gas welding, torch cutting by burning or disk grinding).

Worker Log: A form used to record all individuals working under energy isolation.

Zero Energy State: A condition in which all potential sources of energy are eliminated.

INDEX

ALASKA SAFETY HANDBOOK AMENDMENT PROCEDURE

A standing committee with representatives from each company reviews proposed changes during the ASH revision cycle.

To suggest an amendment, scan the QR code below and submit a brief proposal for consideration at the next revision.