Lewis Energy Group®

STANDARD OPERATING PRACTICE

Fire Protection & Prevention

Lewis Energy Group
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Acronyms and Abbreviations

ANSI	American National Standards Institute
API	American Petroleum Institute
ASTM	American Standard of Testing Materials
BU	Business Unit
CFR	Code of Federal Regulations
EAP	Emergency Action Plan
EHS	Environmental Health and Safety
FPP	Fire Prevention Plan
LEG	Lewis Energy Group
NEC	National Electric Code
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RRC	Railroad Commission
SOP	Standard Operating Practice
SWR	Statewide Rule

1.0 Purpose and Policy Statement

The purpose of this Fire Prevention and Protection Plan (FPP) is to provide guidance and procedures to LEG (Lewis Energy Group) Team Members about the causes of fire, prevent loss of life and property by fire, and to comply with the Occupational Safety and Health Administration (OSHA) standard on fire

prevention, 29 CFR Subpart L. It provides LEG Team Members with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards specific to the work that they perform.

LEG Policy Statement

"Lewis Energy Group (LEG) fire prevention and protection begins in the workplace. Team Members/ contractors can make a significant contribution to fire prevention and protection by keeping their workplace clear of trash, scrap, and waste materials. Understanding the types of fire extinguishing equipment is an important part of fire extinguishment and personal protection. All Team Members/contractors shall be familiar with the operations, application, and maintenance of the types of fire extinguishers used at LEG facilities. Fire protection is provided at all LEG locations and properties as deemed necessary by applicable codes and regulations. Appropriate LEG Team Members receive training on fire prevention and protection".

LEG is committed to minimizing the threat of fire that could affect Team Members, contractors, visitors, and property. LEG complies with applicable laws, regulations, codes and good practices pertaining to fire prevention. LEGs separate Emergency Action Plan (EAP) spells out the procedures for responding to major fires. The EAP is stored electronically on the LEG Team Member Portal under Safety SOPs and Forms.

2.0 Regulations that Apply to Fire Safety

Federal Regulations:

- **OSHA Standards**: The Occupational Safety and Health Administration (OSHA) continues to be a primary source of fire safety regulations for oil and gas operations. The most relevant standards include:
    - **29 CFR Part 1910 Subpart H**: This subpart addresses general workplace fire protection plans (FPPs), including requirements for hazard identification, prevention, mitigation, training, and emergency procedures.
    - **29 CFR Part 1910 Subpart L**: While not the sole focus of this SOP, Subpart L addresses specific hazards in the oil and gas industry, including flammable liquids and gases.

State Regulations (Texas):

- **Texas Railroad Commission (RRC) Rules:**
    - **State Wide Rule (SWR) 20:** This rule requires immediate notification to the RRC district office in case of a fire affecting oil and gas wells, facilities or storage receptacles. A follow-up letter detailing the incident and volume of lost resources is also mandated.

Industry Standards:

- **National Fire Protection Association (NFPA) Code**: NFPA standards provide specific guidance for fire safety in various settings. NFPA recommends relevant chapters of the American Petroleum Institute (API) Recommended Practices (RP) for the oil and gas industry.

Additional Resources:

- **LEG Emergency Action Plan (EAP):** The LEG EAP details fire and explosion response procedures specific to our South Texas operations. This crucial plan outlines clear steps, assigned roles, and references relevant OSHA interpretations to keep everyone safe during an emergency.

3.0 Fire Prevention or Fire Protection

It is important to make the distinction between fire prevention and fire protection.

Fire Prevention is the elimination of the possibility of a fire starting. In order to start, every fire requires an initial heat source, an initial fuel source, and something to bring them together. Prevention can occur through successful action on the heat source, the fuel source, or the behavior that brings them together. Examples of programs initiated in the workplace to prevent fires include housekeeping programs and fire inspection programs. Vigilance involves regular inspection of the workplace to identify fire hazards. Action is necessary to correct hazardous situations by cleaning up debris, installing effective storage and ventilation systems for hazardous materials that could ignite or fuel a fire, establishing and enforcing work rules and maintenance policies that prevent hazardous situations from arising, shielding or ventilating heat sources, and repairing or replacing faulty equipment or electrical systems. Cooperation between LEG Business Managers (BU) and LEG Team Members is necessary to ensure understanding of their common interests in fire prevention and to ensure maximum effort by all concerned to see and correct fire hazards.

Fire Protection is the necessary planning and design to mitigate damages when fire occurs. Fire protection strategies are those activities designed to minimize the extent of the fire. Fire protection includes reducing fire hazards by inspection, layout of facilities and processes, and design of fire detection-and-suppression systems. It is important to include in the workplace fire-safety planning considerations for fire suppression or extinguishment and for evacuation of persons in the event of a fire emergency. Fire-extinguishment systems include sprinkler systems, rated fire doors and walls, portable fire extinguishers, and standpipe hose systems. Evacuation of persons includes means of egress, detection-and-notification systems, and emergency planning and preparedness. Fire protection requires the development of an integrated system of balanced protection.

3.0 FPP Access

OSHA requires that LEG have a written FPP available for Team Members to review and have access to at all times. This FPP serves as the written plan that will be located electronically on the Team Member Portal and in hardcopy at each job location. Team Members will review the FPP prior to beginning work at a LEG location and be familiar with the plan elements discussed in this FPP.

4.0 General Requirements

Under no circumstance shall a LEG Team Member be required to perform firefighting.

A Team Member response to fires shall be in accordance with the LEG EAP and this SOP. At a minimum, Team Members shall immediately report all fire emergencies as instructed in these two documents.

Means of Egress

Each exit shall be clearly visible and marked by a sign reading "Exit", and exit routes shall be free and unobstructed. Do not place material or equipment within the exit route, and no lock or fastening shall be permitted that prevents free escape from the inside of any building or piece of equipment while occupied. Each doorway or passage along an exit access that could be mistaken for an exit shall be marked "Not an Exit" or similar designation, or be identified by a sign indicating its actual use (e.g. closet). Each exit route door shall be free of decorations or signs that obscure the visibility of the exit route door. Each exit route shall have adequate lighting so that a Team Member with normal vision can see along the exit route.

5.0 This Fire Prevention and Protection Plan (FPP)

The minimum elements of this FPP include:

A. Common and Special fire hazards and processes
B. Mechanical and Chemical fire hazards (Frac Explosives)
C. Alarm and Detection Systems
D. Fire Extinguishment
E. Workplace Practices
F. Fire Program Management and Responsibilities (Reserved)

Portions of these required elements within other plans such as the Emergency Action Plan (EAP) may be available.

5.1 Common and Special Fire Hazards and Processes

Some common fire hazards found in LEG workplaces and locations include but are not limited:

- Well Site Ignition Sources
- Hot Work
- Tank-Vehicle and Tank-Car loading and unloading
- Flammable and Combustible Liquids and Storage
- Electricity as an Ignition Source
- Outside Aboveground Storage Tanks
- Storage Cylinders
- Spray Operations
- Smoking / Vaping Devices

Wellsite Ignition Sources (Common and Special Hazard)

There are a number of potential sources of ignition for flammable gases and liquids on the wellsite. It is necessary to provide for a general ignition safety program that could help pre-empt potential hazards of fire and explosion at these locations.

Potential Hazards at the well site include but are not limited to:

a. Ignition and explosions of flammable gases or vapors from:
    - Internal-combustion engine sparks
    - Open flames from any source
    - Smoking / Vaping Devices
    - Welding operations
    - Electric power tools
    - Two-way radios
    - Vehicles with catalytic converters
    - Portable generators
    - Use of non-intrinsically safe electronic devices

Some possible prevention solutions may include:

a. Provide spark arrestors for internal-combustion engines.
b. Post **"NO SMOKING"** signs wherever a flammable gas or vapor hazard exists.
c. Locate "spark producing" equipment or facilities well away from potential hazard areas.
d. Prohibit vehicles with catalytic converters from areas where flammable vapors may be present.
e. Prohibit open flames from the area where flammable vapors may be present.

Chemicals such as those used in fracking, cleaning, production operations or other operations conducted by LEG Team Members can be highly flammable. When exposed to oxygen rich air, the vapors from the chemicals or hydrocarbons are highly combustible and could lead to flash fires and explosions. During hydraulic fracturing perforation, the final stage of well completion, a perforating gun detonates a series of targeted explosions, punches holes through the casing and creates the fissures for gas extraction, providing a potential ignition source. During completion, hydrocarbons contained in high-pressure shale formations can kick, or flow into the wellbore through the rig platform, leading to loss of well control, or blowout. Team Members are required to review and be familiar with the LEG EAP prior to working in and around these environments.

Oily clothing, rags and combustible waste material will be disposed of properly in metal containers with a lid to contain fires that cause spontaneous combustion.

Fire-resistant and retardant clothing can reduce injuries and fatalities related to explosions and fires. The National Fire Protection Association required that garments cover the upper and lower body as completely as possible. Please refer to the LEG SOP on Personal Protective Equipment (PPE) located on the Team Member Portal for information on proper clothing to be worn in and around operations where the potential of fire may exist.

Hot Work (Common or Special Hazard)

Team Members exposure to the risk of fire from ignition of flammable or combustible materials in the workspace when performing hot work such as welding, cutting, brazing, soldering, and grinding, and from leaks of flammable gas into the workspace, from hot work equipment is one of the main potential hazards of hot work.

The basic precautions for fire prevention during hot work include:

a. Obtain a HOT WORK PERMIT prior to beginning hot work.
b. Perform hot work in a safe location, or with fire hazards removed or covered. [29 CFR 1910.252(a)(1)(i)].
c. Use guards to confine the heat, sparks, and slag, and to protect the immovable fire hazards. [29 CFR 1910.252(a)(1)(ii)].
d. Do not perform hot work where flammable vapors or combustible materials exist. .Relocate work and equipment outside of the hazardous areas, when possible. [29 CFR 1910.252(a)(1)(ii)].
e. Portable fire extinguishers will be immediately available in a state or readiness.
f. While performing hot work, assign additional personnel (fire watch) to guard against fire. Fire watch is required whenever performing welding or cutting in locations where anything greater than a minor fire might develop. [29 CFR 1910.252(a)(2)(iii)(A)] ◦ Fire watch trained to use fire-extinguishing equipment will have fire-extinguishing equipment readily available.
g. Be familiar with facilities for sounding an alarm in the event of a fire.
h. Watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm.
i. Maintain the fire watch at least a half-hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires. [29 CFR 1910.252(a)(2)(iii)(B)]
j. Use caution when working around the wellhead area. Flash fire or explosion that results from an accumulation of flammable gases, such as Methane or Hydrogen Sulfide, around the wellhead area can cause burns.
k. Monitor the atmosphere with a gas detector. **STOP WORK** if flammable or combustible gas exceeds 10 percent of the lower explosive level (LEL).
l. Identify the source of the gas and repair the leakage.

LEG has developed an SOP specific to Hot Work that includes welding, cutting and brazing that Team Members shall be familiar with prior to performing hot work. This SOP is available electronically on the ***LEG Team Portal***.

Tank/Truck/Rail Car Loading and Unloading (Common or Special Hazard)

Transferring flammable and combustible liquids from tank vehicles, cars or trucks poses the same type of hazards when transferring these liquids from one portable container to another. These hazards include the potential for the presence of flammable and combustible vapors and the potential to create a static-electrical ignition source. Equipment used by LEG in the transfer of liquids from tank cars, rail cars, or trucks, should be approved for use and for the class of liquid being transferred. Prevent the release of flammable and combustible vapors and the buildup of static electricity when transferring flammable or

combustible liquids into vessels, containers, or portable tanks within a building only through closed piping systems. Prevent these releases by transferring from safety cans by means of a device drawing through the top or from a container, or portable tank by gravity through an approved self-closing valve. Transferring by means of air pressure on the container or portable tank is prohibited.

The transfer of liquids to or from a tank car or tank truck can create an electrical-potential difference between the tank car or truck and the tank. Provide a means of bonding when transferring between two containers for any class of liquids. Bond by connecting a metallic bond wire to the fill stem or to some part of the rack structure to some metallic part in electrical contact with the tank vehicle. Make the bonding connection to the vehicle or tank before opening or closing.

To protect adjacent property, loading or unloading operations involving Class I liquids (above) should not be closer than 25 feet to the adjacent property or 15 feet to the loading or unloading facilities for Class II or Class III liquids as described in this FPP.

Flammable and Combustible Liquids and Storage (Common or Special Hazard)

Flammable and combustible liquids pose a unique hazard in the workplace primarily because of the amount of fuel they can provide for a fire and the relatively low heat source necessary to ignite the material. Flash point is the basis for a flammable or combustible liquid. When a flammable or combustible liquid is involved in a fire, it is the vapor over the surface of the liquid that burns. The lower the flash point, the more readily sufficient concentration of vapor is present at a lower temperature.

Flammable and combustible liquids can be stored in the workplace in a number of ways. Types of flammable and combustible liquid storage include portable-container storage, tank storage, storage cabinets, and storage rooms.

A common practice at LEG worksites is the transferring of flammable and combustible liquids from one storage container to another. For example, a Team Member may need to transfer a flammable liquid from a 55-gal drum to a safety can. Several hazards are present during this type of task, including spilling the liquid, release of vapors into the work area, and accidental ignition of the vapors. It is common to store flammable and combustible liquids in a container. OSHA defines a container as “any can, barrel, or drum”. A barrel is a container that has a capacity of 42 gallons, while a safety can is an approved container with a maximum capacity of 5 gallons with a spring-closing lid and spout cover. A safety can design is to relieve internal pressure when subjected to heat. Drums have a capacity of up to 60 gallons, and tanks have a capacity of more than 60 gallons. Confirm approval of any barrel, safety can, drum or tank for the type of material they store before use at a LEG location.

Flammable-and combustible-liquid containers may also be made of glass and plastic, provided no more than 1-gallon of flammable liquid be stored in these types of containers. Do not use metal containers for flammable or combustible storage. Refer to OSHA 29 CFR 1910.106(d) for the maximum allowable quantities of flammable and combustible liquids by container type.

Always keep flammable liquids in approved, covered containers when not in use.

Take adequate precautions to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static electricity, electrical, and mechanical sparks; spontaneous ignition, including heat-producing chemical reactions; and radiant heat.

Storage cabinets are commonly used to store quantities of flammable and combustible liquids in containers, drums, and barrels. The purpose of the storage cabinet is to protect the liquids inside the cabinet and, if subjected to heat, to limit the internal temperature to not more than 325 degrees F. The cabinets are constructed to withstand a ten-minute fire test. Additional features of the cabinet include steel construction, self-closing doors, venting to the outside where required by code, and raised at least two-inches above the bottom of the cabinet. Storage cabinets should be approved for use for flammable-liquid storage meeting NFPA standards for the design and construction of flammable-and –combustible-liquid storage cabinets. Label the cabinets to say **"FLAMMABLE – KEEP FIRE AWAY"**.

In-side storage rooms used to store flammable and combustible liquids must be properly designed and constructed for that use. The major design aspects of the storage room include fire protection, spill containment, ventilation, fire resistance, and proper electrical wiring and equipment. Provide rated, self-closing fire doors to the room, and if windows are provided in the room, they should be approved for such use. OSHA has established the maximum quantity of flammable and combustible liquids to be stored inside a storage room. Factors to take into account include the fire-rating construction of the room and the presence of a sprinkler system. Minimum isle space is 3 feet and containers shall not be stacked on top of one another.

Use fire extinguishers for fire protection for a storage room. OSHA requires that at least one portable fire extinguisher having a rating of not less than 12-B units be located outside of, but not more than 10 ft. from the door opening.

Electrical wiring must meet the Class and Division for the storage room.

Proper ventilation is required to keep flammable and combustibles below their LELs. Where gravity ventilation is provided, the fresh-air intake, as well as the exhaust outlet from the room, shall be on the exterior of the building in which the room is located.

Electricity as an Ignition Source (Common or Special Hazard)

Failure of short circuits, ground faults, or other electrical failures are the most common causes for electrical fires. LEG locations may have a number of electrical sources that can be involved in a fire. Examples include production equipment, electrical wiring, heating equipment, piping conduits, wellhead and wellsite equipment. LEG has developed a separate SOP for Electrical Procedures. It is located on the ***LEG Team Portal.***

Make and maintain electrical installations at LEG locations and buildings in accordance with the National Electrical Code (NEC) and other standards that apply in special situations (NFPA 1997, 3-11). The NEC provides for the practical safeguarding of persons and property from hazards arising from the use of electricity. This code is updated every three years.

Electrical fires can be the result of a variety of electrical problems in the workplace. Improper use of equipment, improper installation, and improper maintenance of equipment are some of the more common reasons for electrical fires. Examples of sources of electrical fires in the workplace include but are not limited to the following:

a. Misuse of Electrical Cords. This includes running cords under rugs, over nails, or through high traffic areas and the use of extension cords as permanent wiring.
b. Poor Maintenance. This entails a lack of a Preventative Maintenance Program design to identify and correct potential problems before they occur.
c. Ground Failure. Failure to maintain a continuous path to ground can expose entire electrical systems to damage and can expose the workers using unprotected equipment to electrical hazards.
d. Damaged Insulation. Insulation protecting current-carrying wires damaged over time, resulting in exposed wires. If the exposed hot and neutral wires touch, they can create a short circuit and an ignition source for fires.
e. Sparking. Friction sparking is a form of mechanic heat created when two hard surfaces, at least one of which is metal, impact.
f. Circuit Overload. A circuit overload occurs when there are two or more appliances on the circuit than it can safely handle. When a circuit is overloaded, the wiring overheats, and the fuse blows or the circuit breaker trips.
g. Short Circuit. A short circuit occurs when a bare hot wire touches a bare neutral wire or a bare grounded wire (or some other ground). The flow of the extra current blows a fuse or trips a circuit breaker.
h. Arcing. Interruption of an electric circuit that is carrying current either intentionally or unintentionally.

Placement of electrical equipment in the environment may present a fire hazard. Environments in which concentrations of flammable vapors, ignitable fibers or combustible dust are present in sufficient concentrations may be ignited by electrical equipment and installations in the work area. To prevent the possibility of electrical equipment and wiring from igniting flammable or combustible vapors, all electrical wiring and equipment used in hazardous locations must meet the proper design requirements. The NEC classifies locations according to the potential for the presence of hazardous materials in the atmosphere. Furthermore, design specifications for the equipment to reduce the risk for a fire and explosion hazard because electrical equipment may create an ignition source are developed.

The NEC classifies hazardous locations into Classes I, II, and III and further subdivides them into Divisions 1 and 2. The Classes differentiate between the type of material that may be present in the air, and the divisions differentiate between the circumstances that may create the presence of hazardous concentrations of the material. Groupings assigned within each class identify the hazardous material present in the environment. OSHA uses Classes, Divisions, and Groupings, for the purpose of classifying hazardous locations and selecting safe electrical equipment for these areas.

<u>Class I Locations</u>

Class I locations are those in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. Class I, Division 1 locations are locations in which any of the following conditions exist:

a. Ignitable concentrations of flammable gases or vapors exist under normal operating conditions.
b. Ignitable concentrations of such gases or vapors may exist frequently because of repair or maintenance operations or because of leakage.
c. Breakdown or faulty operation of equipment or processes might release ignitable concentrations of flammable gases or vapors and cause simultaneous failure of electric equipment.

Examples of Class I, Division 1 locations include locations where volatile flammable liquids or liquefied flammable gases transferred from one container to another, the interiors of spray booths, areas containing open tanks of volatile flammable liquids, and all other locations where ignitable concentrations of flammable vapors or gases are likely to occur in the course of normal operations. When examining the requirements for electrical equipment used in hazardous locations involving Class I, it must be explosion proof.

Class I, Division 2 locations are locations in which any of the following conditions exist:

a. Volatile flammable liquids or flammable gases are handled, processed, or used; however, 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 case of abnormal operation of equipment.
b. Ignitable concentrations of gases or vapors prevented by positive mechanical ventilation might become hazardous through failure or abnormal operation of the ventilating equipment.
c. The location is adjacent to a Class I, Division 1 location, and ignitable concentrations of gases or vapors occasionally communicated to the area by adequate positive pressure ventilation from a source of clean air and effective safeguards against ventilation failure are not provided. This classification usually includes locations where volatile flammable liquids or flammable gases or vapors are used but that would become hazardous only in case of an accident or some unusual operating condition.

Class I locations can also be further subdivided into groups. A group is based upon the specific type of hazardous material in the location. The Class I Hazardous Location Atmospheres Groups include the following (NFPA):

Group A: acetylene

Group B: hydrogen

Group C: ethylene

Group D: Flammable hydrocarbon gases or vapors (e.g., methane, propane, gasoline vapors).

Therefore, a Class I, Division I, Group C location is a location in an environment in which ethylene vapors or a closely similar material are present in sufficient concentration to ignite under normal conditions.

Class II Locations

Class II locations are those that are hazardous because of the presence of combustible dust. Class II locations entail potential hazards created by the presence of dusts in sufficient concentrations to ignite. Equipment designed for use in Class II locations must be dust-tight or dustproof.

A Class II, Division 1 location can include any of the following:

a. Combustible dust is present in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures.
b. Mechanical failure or abnormal operation of machinery or equipment might cause the production of such explosive or ignitable mixtures and could provide a source of ignition through simultaneous failure of electric equipment, operation of protection devices, or from other causes.
c. Combustible dusts of an electrically conductive nature may be present in hazardous quantities. Examples of combustible dusts are dusts containing magnesium aluminum. Use of extreme caution will be necessary to avoid ignition and explosion.

Class II, Division 2 locations are those where the following conditions exist:

a. Combustible dust is not normally in the air in quantities sufficient to produce explosive or ignitable mixtures and dust accumulations are normally insufficient to interfere with the normal operation of electrical equipment or other apparatuses, but combustible dust may be in suspension in the air because of infrequent malfunctioning of handling or processing equipment.
b. Combustible dust accumulations near the electrical equipment may be sufficient to interfere with the safe dissipation of heat from electrical equipment or may be ignitable by abnormal operation or failure of electrical equipment.

Class II Hazardous Location Atmospheres Groups include the following:

Group E: atmospheres containing combustible metal dusts, including aluminum, magnesium, and their commercial alloys, or other combustible dusts whose particle size, abrasiveness, and conductivity present similar hazards in the use of electrical equipment.

Group F: atmospheres containing combustible carbonaceous dusts that have more than 8 percent total entrapped volatiles or dusts that have been sensitized by other materials so that they present an explosion hazard, including carbon black, charcoal, coal, and coke dusts.

Group G: atmospheres containing combustible dusts not included in Group E or F, including flour, grain, wood, plastic, and chemicals.

Class III Locations

Class III locations are those that are hazardous because of the presence of easily ignitable fibers or flyings but in which such fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures (NFPA 70). Class III, Division 1 locations are locations in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used. Such locations

usually include some parts of rayon, cotton, and other textile mills, combustible-fiber manufacturing and processing plants, clothing manufacturing plants, and woodworking plants. Easily ignitable fibers and flyings include rayon, cotton (including cotton linters and cotton waste), jute, and hemp. Class III, Division 2 locations are locations in which easily ignitable fibers are stored or handled, other than in the process of manufacturing. Class III locations must be approved for such use.

When determining the type and design of equipment used in hazardous locations, OSHA stipulates that NFPA 70: NEC should be followed These same standards will be applied in drilling, production, servicing, pipeline and the Encinal Main Yard locations where flammable vapor-air mixtures may exist under normal operations (Class I, Division 1 locations). Division 1 areas shall extend 20 feet in all directions from all points of vapor liberation.

Division 2 locations exist where flammable vapor-air mixtures exist under abnormal conditions for a distance beyond Division 1 locations. Division 2 locations include areas within 20 feet horizontally and 3 feet vertically beyond a Division I area, and up to 3 feet above the floor or grade level within 25 feet if indoors, or 10 feet if outdoors, from any pump, bleeder, withdrawal fitter, meter, or similar device handling Class I liquids.

Outside Aboveground Tanks (Common or Special Hazard)

Methods for controlling and preventing fires involving outside, aboveground storage tanks include the separation of storage tanks, diking and drainage, and venting. Separating aboveground storage tanks reduces the spread of fire from one tank to another and provides access to the tanks in the event of a fire. Examine several factors when determining the minimum separation between two aboveground tanks containing flammable and combustible liquids. These factors include the diameter of the tanks, tank capacity, and the characteristics of liquids stored.

Use venting on storage tanks to maintain a constant pressure inside the tank. Pressure inside a tank can change due to temperature changes and the displacement of liquid inside by either adding or removing liquid. To control pressure changes inside of a tank, allow air movement into and out of the tank. This can create a fire hazard when flammable or combustible vapors escape through the vent piping and contact a heat source.

In addition to venting, emergency relieve venting is required on storage tanks to relieve excessive internal pressures caused by fires. This protection may take the form of a floating roof, lifter roof, a weak roof-to-shell seam of another approved pressure-relieving construction. Emergency relief venting should meet the design capacities to prevent tank rupture.

Cylinders

Compressed gas or acetylene is stored in cylinders at some LEG work locations.

Acetylene is most often associated with its use as a fuel in welding and cutting operations because it produces a much higher flame temperature than other fuels. The gaseous acetylene that comes from cylinders is evolved from liquid acetone stored in an inert filler material inside the cylinder. As the tank is

opened, the acetylene gas is released from the cylinder. Tipping the cylinder on its side can result in the release of liquid acetone from the cylinder.

Transfer, handling, storage, and use of acetylene in cylinders shall be in accordance with Compressed Gas Association Pamphlet G-1-1996, which incorporates by reference 29 CFR 1910.6. When using acetylene cylinders for welding and cutting, the acetylene serves as the fuel while oxygen serves as the oxidizer. Hazards with acetylene in welding and cutting include the potential for fires because the fuel and oxidizer are together. Separating the fuel and oxygen cylinders when in storage by 20 feet will reduce the potential for fires.

Compressed gas cylinders storage and use pose a serious potential hazard for all team members who may be near or who may handle gas cylinders. Where gas cylinders are used, it is the BU managers responsibility that safety rules are observed, and their team members have been properly trained on the safe methods for storage, handling, and use of compressed gas cylinders.

The following rules, based on current Federal and State codes and regulations, are practical and essential if compressed gases are to be used safely: Ref. *Occupational Health Safety Administration* 1910.101, 1252 253; 1926.350; *National Fire Protection Association* Codes 55.

<u>Handling and Use of Compressed Gas Cylinders</u>

a. All compressed gas cylinders (regardless of size) shall be secured to racks, walls, work benches, or hand trucks by a strong chain or strap, or secured by any other approved method capable of preventing the cylinder from falling or being knocked over.
b. Report all questionable gas cylinders or equipment immediately to the supplier for correction or replacement.
c. Label on gas cylinders shall identify the contents.
d. Only personnel trained in the proper transportation and safe use of gas cylinders should handle cylinders.
e. Use of compressed gases shall only occur in areas with adequate ventilation for the gas being used.
f. Do not intentionally drop, strike, or allow the cylinder to strike another cylinder.
g. Keep cylinders far enough away or shielded while in the work area in order to prevent contact with sparks, flame, or radiant heat.
h. Threaded valve protection caps are required on all cylinders unless the cylinder valve connected to a regulator or manifold is used.
i. Gas cylinders shall be equipped with a functioning gas regulator while in use.
j. No one shall attempt to connect a regulator and/or accessory equipment by the use of improvised hookups or adapters.
k. When personnel have finished using a compressed gas cylinder for the day, close the cylinder valve and the pressure in the regulator and associated equipment released.
l. Post clearly visible warning signs indicating the approximate pressure the system is under and the gas involved, if using a compressed gas cylinder to maintain a static pressure on a closed system.
m. Empty cylinders shall have their valves closed.
n. Handle empty cylinders with the same care as full cylinder.

o. Compressed gas or compressed air shall not be used for cleaning purposes (to blow dust and debris away) without appropriate reduction valves (30 **psi** maximum).
p. Under no conditions shall a person direct high-pressure gas at another person.
q. While in use, all cylinders of flammable gases shall be protected by a flashback protection device approved by LEG Health Safety and Environmental (HSE).
r. Do not open cylinders of flammable gas more than 1-1/2 turns of the cylinder valve to allow for quick closing. If a special wrench is required, leave the wrench in position on the stem of the valve while the cylinder is in use to allow the gas flow shut off quickly in case of an emergency.
s. Oxygen cylinders and manifolds shall be at least 20 feet away from or separated by a one-hour rated fine resistant partition from all flammable gases and materials (such as oil, grease, and all petroleum products in general) in the area of use.
t. Vent manifold enclosures for oxygen in excess of 2000 cubic feet of manifold capacity to the outside. Protect the cylinder or manifold with check valves or alarms.
u. Identify regulators and other equipment used for oxygen as being **"OXYGEN ONLY"**.
v. Due to the possibility of an explosion, all oxygen regulators, tubing, etc. shall be kept clean and free of all organic materials such as oil and lint.
w. In the event a particularly hazardous gas (e.g., hydrogen chloride, hydrogen cyanide) is used, establish a procedure for evacuating, sealing, and isolating the area of use. The EH&S Division shall be notified prior to procuring such hazardous gases.
x. Only personnel properly instructed in the chemical and biological hazards of a corrosive and/or toxic gas are to release or use the gas or operate any equipment using the particular gas.
y. All supervisory personnel are to have available the necessary emergency treatment and first aid supplies and be able to administer or have administered the necessary first aid that may be required as a result of any hazardous gas being used.

<u>Transportation of Compressed Gas Cylinders</u>

a. When moving cylinders disconnect them from any regulators or manifolds, and where threaded to accept protective valve caps, secure valve caps in place before releasing the cylinder from their securing device.
b. Move cylinders on a hand truck or other cart designed for handling gas cylinders.
c. Handle no more than one cylinder at a time except on carts designed to transport more than one cylinder.
d. If transported, gas cylinders should be in a rack and in an upright position.

<u>Storage of Compressed Gas Cylinders</u>

a. Compressed gas cylinder storage areas must be in a fire resistant enclosure located away from emergency exits and must be kept well drained, well ventilated, cool, and protected from the weather. Regardless of size, provide all cylinders with supports (straps, chains, or other similar devices) capable of preventing the cylinders from falling.
b. Under no Condition shall the temperature of gas cylinders exceed 50°(125°F). When Type E gas cylinders are being used, do not exceed 34°C (93°F) since the relief valves of Type E cylinders are set to release above 35°C.
c. Prevent excess storage time by the use of the smallest practical size cylinder before a particular gas application.

d. Corrosive gases shall not be stored for more than six (6) months due to deterioration of the gas purity increasing the possibility of cylinder valve malfunction.
e. Oxygen shall not be stored in the same area with flammable gases unless separated by at least 20 feet or by a one-hour rated fire resistant partition. Cylinders stored in an area outside a building must be a minimum distance of 20 feet from flammable gases or combustible material.
f. Vent storage rooms that contain in excess of 2000 cubic feet of oxygen to the outside.

Spray Operations

LEG performs painting of rigs and equipment using spray operations or spray guns. Due to the fire hazards associated with the flammable and combustible vapors generated in spraying operations, no open flame or spark-producing equipment is allowed in any spray area or within 20 feet of the spray area unless it is separated by a partition. Sources of ignition may include electrical sources, mechanical sources, and hot equipment surfaces. Due to the presence of flammable vapors in a sufficient concentration to ignite, electrical wiring or any equipment in or near the spay area must meet acceptable electric codes for the location. Electrical wiring and equipment not subject to deposits of combustible residues but located in a spraying area shall be explosion proof type approved Class I Group D locations as described in previous sections. Electrical wiring, motors, and other equipment outside the 20 foot spray area and not separated by a partition shall not produce sparks under normal operating conditions.

Smoking

Smoking in all LEG buildings is prohibited. Certain outdoor areas designated as no smoking areas and are identified by **NO SMOKING** signs. Smoking is never allowed at wellsite, production, pipeline or any LEG locations. Smoking is not allowed within LEG vehicles used for work.

6.0 Fire Alarm Systems

OSHA requires an alarm system established by LEG to alert workers and local fire departments of fire emergencies. Review the *National Fire Protection Association* (NFPA) 72: *National Fire Alarm Code* for more detail regarding classifications for fire alarm systems.

To comply with OSHA and the NFPA Code, Job-site telephones and entrances must have alarm codes and reporting instructions at those entrances. Fire alarm systems shall provide warning for necessary action as called for in the LEG Emergency Response Plan, or for reaction time for safe escape of employees from the workplace or the immediate work area.

The alarm system shall be:

a. Capable of being heard above ambient noise or light levels by all employees in the affected portions of the workplace. Tactile devices may be used to alert those employees who would not otherwise be able to recognize the audible or visual alarm; and
b. Distinctive and recognizable as a signal to evacuate the work area or to perform actions designated under the emergency response plan.

Each BU Manager and Team Member will be educated on the preferred means of reporting emergencies, such as manual pull box alarms, public address systems, radio or telephones. Emergency phone numbers will be available to all affected personnel, and established procedures for sounding emergency alarms in the workplace will be followed. BUs will also comply with the following:

a. Devices, components, combinations of devices and systems constructed and installed to comply with this standard are approved (i.e. air horns, strobe lights or similar lighting devices, or tactile devices).
b. Restored alarm systems to normal operating condition as promptly as possible after each test or alarm. Spare alarm devices and components subject to wear or destruction shall be available in sufficient quantities and locations for prompt restoration of the system.
c. Maintain alarm systems in operating condition.
d. Perform testing, reliability and adequacy of non-supervised employee alarm systems every two months.
e. Test supervised alarm systems annually.
f. Maintain or replace power supplies as often as necessary to keep the system operational. Back-up means of alarm, will be provided by the LEG Safety Department when systems are out of service.
g. Servicing, maintenance and testing of Team Member alarms is performed by persons trained on the designed operation and functions necessary for reliable and safe operation of the system; and
h. Manually operated actuation devices for use in conjunction with Team Member alarms are unobstructed, and readily accessible.

7.0 Fire Extinguishment

LEG will provide Class ABC dry chemical and Class C, Carbon Dioxide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to Team Members without subjecting them to possible injury. Business Units will assure that portable fire extinguishers are maintained in a fully charged, operable condition and kept in their designated places at all times except during use. Portable fire extinguishers will be:

a. Located on the wall and properly marked so they are visible and non-obstructed, and immediately accessible in the event of a fire.
b. Located near doors, gates and other entrances or exits. Do not locate equipment in any location that makes access difficult.
c. Mounted at least four inches off the ground and no higher than 42 inches above ground level. Do not mount large fire extinguishers (greater than 30 pounds more than 3 ½ feet from ground level.
d. Selected and distributed based on the classes of anticipated workplace fires and on the size and degree of hazard which would affect their use.
e. distributed for use by employees on Class A fires so that the travel distance for employees to any extinguisher is 75 feet or less;
f. distributed for use by employees on Class B fires so that the travel distance from the Class B hazard area to any extinguisher is 50 feet or less; and
g. Distributed for Class C hazards on basis of the appropriate pattern for the existing Class A or class B hazards.

h. Based on each Business Unit's (BU) hazard assessment, some vehicles may be equipped with an ABC-rated fire extinguisher.
i. Before using an extinguisher, Team Members will know the location of the extinguisher in their work location and will be trained and familiar with the PASS method of firefighting.

Ensuring the readiness of portable fire extinguishers requires clear division of responsibilities between Business Units (BUs) and the HSE Department. Here's a breakdown of these duties:

Business Unit Responsibilities:

1. Visual Inspections: BUs will be responsible for facilitating regular visual inspections of all portable fire extinguishers assigned to their area. These inspections, performed by trained personnel within the BU, should occur at a designated frequency (e.g., monthly) and confirm:

    - Proper placement and accessibility of extinguishers.
    - Tamper-seal integrity.
    - Gauge pressure readings within the green zone.
    - No visible signs of damage or leaks.

2. Maintenance Reporting: BUs will report any discrepancies or concerns identified during visual inspections to the HSE Department promptly. This includes issues like damaged equipment, missing tamper seals, or pressure gauge readings outside the acceptable range.

3. Extinguisher Availability: BUs will ensure that fire extinguishers remain readily available for use at all times. This includes notifying the HSE Department when an extinguisher is removed from service for maintenance or recharge and promptly returning it to its designated location upon completion.

HSE Department Responsibilities:

1. Comprehensive Inspections: The HSE Department will conduct comprehensive inspections of all portable fire extinguishers within each BU at least annually. These inspections may involve:

    - Verifying the findings of BU visual inspections.
    - Performing a more thorough physical examination of the extinguisher.
    - Reviewing maintenance records and ensuring compliance with service schedules.

2. Maintenance Scheduling and Oversight: The HSE Department will coordinate and oversee the scheduling of annual maintenance checks for all portable fire extinguishers.

3. Hydrostatic Testing: The HSE Department will ensure that pressure dry chemical extinguishers requiring a 12-year hydrostatic test undergo both emptying and maintenance every six years. This excludes dry chemical extinguishers with non-refillable disposable containers. The HSE Department will also track these cycles and initiate testing procedures.

4. Recordkeeping: The HSE Department will maintain a central repository for all fire extinguisher maintenance records, including BU inspection reports, service documentation, and hydrostatic testing results.

5. Training and Guidance: The HSE Department will provide training to BUs on proper fire extinguisher procedures, including visual inspection techniques and proper use.

6. Auditing and Investigation: The HSE Department will conduct periodic audits of BU fire extinguisher programs to ensure compliance with regulations and SOPs. They will also investigate any discrepancies or concerns identified during inspections, audits, or BU reports.

Fixed Extinguishing Systems Water and Foam: 1910.163

LEG has provided portable UEF (Tri-Max 30 and Tri-Max 200) and Foam spray systems to control fire in a protected area or on protected equipment. Where work is being performed, direct drainage of water spray systems away from those areas. Do not permit emergency egress through the drainage path.

OSHA requires training of company Team Members to use fire extinguishers. Training is required upon initial employment and at least annually thereafter. The training session will cover how to determine when a fire is too big to handle; what type of extinguisher to use; and the PASS system of early-stage firefighting. LEG may also train Team Members using hands-on live firefighting of staged fires in its incipient stage as needed.

8.0 Workplace Practices

Housekeeping

To limit the risk of fires, Team Members shall take the following precautions:

a. Minimize the storage of combustible materials.
b. Keep exit routes free from obstruction.
c. Dispose of combustible waste in proper covered, airtight, metal containers.
d. Use and store flammable materials in well-ventilated areas away from ignition sources.
e. Use only nonflammable cleaning products.
f. Keep incompatible (i.e., chemically reactive) substances away from each other.

g. Perform "hot work" (i.e., welding or working with an open flame or other ignition sources) in controlled and well-ventilated areas. Obtain a hot work permit from LEG EHS prior to starting hot work.
h. Keep all equipment in good working order.
i. Report leaks and spills immediately.
j. Repair and clean up flammable liquid leaks immediately.
k. Keep work areas free of trash and chemicals that are not compatible.
l. Turn off electrical equipment when not in use.

Maintenance

BU managers and Team Members will ensure maintenance of equipment according to the manufacturer specifications. LEG will comply with all applicable OSHA and NFPA codes for specific equipment. Only properly trained individuals will perform maintenance work.

The following equipment is subject to maintenance, inspection, and testing procedures:

a. Equipment installed to detect fuel leaks, control heating, or to control pressurized systems.
b. Portable fire extinguishers and fixed fire extinguishing systems.
c. Fire detection systems.
d. Fire alarm systems.
e. Emergency backup systems and the equipment they support.

9.0 Responsibilities

Fire safety is everyone's responsibility. Team Members should know how to prevent and respond to fires, and are responsible for adhering to company policies regarding fire emergencies including this and other related SOPs.

Upon initial assignment to a job or job location, the LEG Safety Department will inform Team Members of the fire hazards to which they may be exposed during their new employee orientation (OSHA 5810). LEG BU managers will provide adequate controls to provide a safe workplace, and LEG Safety will provide adequate resources and training to Team Members to encourage fire prevention and the safest possible response in the event of a fire emergency.

The LEG Safety Department shall manage this FPP and shall maintain all records pertaining to the plan. LEG Safety will also develop and administer the LEG Fire Prevention Training Program, ensure the fire control equipment and systems are properly maintained, control fuel source hazards, and conduct fire risk surveys.

LEG BU managers are responsible for ensuring that LEG Team Members receive appropriate safety training, and for notifying LEG Health and Safety Management when changes in operation increase the risk of fire. BU managers are also responsible for enforcing LEG's fire prevention and protection policies.

Team Members shall:

1. Complete all required training including review of this FPP.
2. Conduct operations safely to limit the risk of fire.
3. Report potential fire hazards to their supervisors.
4. Follow fire emergency procedures.

10.0 Fire Response

If a fire occurs on LEG's property, employ the following response procedures:

a. Sound an alarm if one is available and call for assistance.
b. Ask yourself the following questions when a fire is present:
    - ✓ Are escape routes available?
    - ✓ Is someone's life in danger?
    - ✓ Is LEG or public property in danger?
    - ✓ What type fire is it?
    - ✓ Is extinguishing the fire possible with the equipment available?
    - ✓ Do I have the right equipment?
    - ✓ Do I know how to use the equipment?
    - ✓ What direction is the wind blowing?
    - ✓ Are toxic or hazardous chemicals present?
    - ✓ Is outside firefighting assistance required?
c. Evacuate the area if the fire is beyond incipient stage.
d. Shut off and isolate all fuel sources or process flow immediately
e. Do not fight a fire past the incipient stage unless you have the necessary training.
f. When operating a fire extinguisher, remember the key word PASS
    - ✓ Pull (safety pin)
    - ✓ Aim (at the base of the fire)
    - ✓ Squeeze (lever)
    - ✓ Sweep (from side to side)
g. Approach the fire from the upwind side using approved firefighting equipment
h. After extinguishing fire, regardless of its size, monitor the area to ensure that the fire does not flare up.

11.0 Definitions

Carbon Dioxide – means a colorless, odorless, electrically non-conductive inert gas. The gas is a medium for extinguishing fires by reducing the concentration of oxygen or fuel vapor in the air to the point where combustion is impossible.

Class "A" fire – means a fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials. Water is often used to quench and soak the burning materials.

Class "B" fire – means a fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials. These fires must be smothered to seal in vapors and exclude oxygen or the fuel source removed.

Class "C" fire – means a fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.

Class "D" fire – Fires involving combustible metals such as magnesium, titanium, zirconium and potassium.

Dry chemical – means an extinguishing agent composed of very small particles of chemicals such as, but not limited to, sodium bicarbonate, potassium bicarbonate, urea-based potassium bicarbonate, Potassium chloride, or mono-ammonium phosphate supplemented by special treatment to provide resistance to packing and moisture absorption as well as to provide proper flow capabilities. Dry chemical does not include dry powders.

Education – means the process of imparting knowledge or skill through systematic instruction. It does not require formal classroom instruction.

Fire Brigade – means a private fire department where the organized group are knowledgeable, trained, and skilled in at least basic fire-fighting operations.

Flyings – are produced by machinery cutting, brazing and welding which settles around equipment and is vulnerable to ignition from heat and sparks.

Inspection – means a visual check of fire protection systems and equipment to ensure that they are in place, charged and ready for use in the event of a fire.

Incipient stage fire – means a fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

Local application system – means a fixed fire suppression system that has a supply of extinguishing agent, with nozzles arranged to automatically discharge extinguishing agent directly on the burning material to extinguish or control the fire.

Maintenance – means the performance of services on fire protection equipment and systems to assure that they will perform as expected in the event of a fire. Maintenance differs from inspection in that maintenance requires the checking of internal fittings, devices and agent supplies.

Tactile device -is a system of textured ground surface indicator found on footpaths, stairs and platforms to assist pedestrians who are visually impaired.

Universal Extinguishing Foam (UEF) - is a type of fire suppression agent designed to extinguish a variety of fire types. Unlike traditional foams which may target specific fire classes (e.g., Class A - ordinary combustibles, Class B - flammable liquids), UEF aims to be effective against a wider range of fires.

12.0 Document Control

Version	Change Date	Change Description	Changed by	Approved by	Approval Date
1.1	8/26/2019	Capitalize Team Member	Colin Clark	Ken Phillips	8/26/19
1.2	10/17/2019	Update Cover Page Remove Line #s Update TOC Correct some spacing issues	Colin Clark	Ken Phillips	10/17/19
1.3	5/29/2024	Update Section 2 & 7	Colin Clark	Ken Phillips	5/29/24

NOTE: Changes to this document shall be reviewed by the Sub-Committee and approved by the Executive Safety Committee (ESC). Any document revisions are to be noted on the Document Review Change Log. This form shall be kept current to maintain audit compliance.

Appendix A:

Fire Extinguisher Selection

Extinguisher Test Interval

Monthly Extinguisher Inspection

Annual Extinguisher Inspection

Fire Extinguishers Selection:

Extinguishing Agent	Fire Classification
Water type (including anti-freeze, soda-acid, wetting agent and loaded steam).	Class “A” Fires
Carbon Dioxide	Class “B” and “C” Fires
Halon	Class “B” and “C” Fires
Dry Chemical	Class “A”, Class “B”, Class “C” Fires
Multipurpose Dry Chemical	Class “A”, Class “B”, Class “C” Fires
Foam	Class “A” and Class “B” Fires
Dry powder (special type)	Class “D” Fires

Test Interval:

Type of extinguishers	Test interval (years)
Soda acid (soldered brass shells) (until 1/1/82)	(1)
Soda acid (stainless steel shell)	5
Cartridge operated water and/or antifreeze	5
Stored pressure water and/or antifreeze	5
Wetting agent	5
Foam (soldered brass shells) (until 1/1/82)	(1)
Foam (stainless steel shell)	5
Aqueous Film Forming foam (AFFF)	5
Loaded stream	5
Dry chemical with stainless steel	5
Carbon Dioxide	5
Dry chemical, stored pressure, with mild steel, brazed brass or aluminum shells	12
Dry chemical, cartridge or cylinder operated, with mild steel shells	12
Halon 1211	12
Halon 1301	12
Dry powder, cartridge or cylinder operated with mild steel shells	12

Visual Monthly Extinguisher Inspection:

Pass	Fail	Description
		1. Extinguisher located in designated place.
		2. No obstruction to access or visibility
		3. Operating instructions on nameplate legible and facing outward.
		4. Seals and tamper indicators not broken or missing.
		5. Determine fullness by pressure gauge, weighing, or lifting.
		6. Examine for obvious physical damage, corrosion, leakage, or clogged nozzle.
		7. Pressure gauge reading or indicator in the operable range position.
Corrective Actions:		

Inspected By: _____ Date: _____

Business Unit: _____ Location: _____

Extinguisher Annual Maintenance Inspection:

Pass	Fail	Mechanical Parts	Extinguishing Agent	Expelling means
Corrective Actions:				

Serviced/Tested By: _____ Date: _____

Business Unit: _____ Location: _____