HOT WORK

CHEVRON PIPE LINE COMPANY (CPL)

PROCEDURE NUMBER: CPL HES-205
# CONTENTS

## HOT WORK   HES-205

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Purpose</td>
<td>205 - 3</td>
</tr>
<tr>
<td>2.0</td>
<td>Scope</td>
<td>205 - 3</td>
</tr>
<tr>
<td>3.0</td>
<td>Prerequisites</td>
<td>205 - 5</td>
</tr>
<tr>
<td>4.0</td>
<td>Process Overview</td>
<td>205 - 7</td>
</tr>
<tr>
<td>5.0</td>
<td>Instructions</td>
<td>205 - 8</td>
</tr>
<tr>
<td></td>
<td>5.1 Permit Origination</td>
<td>205 - 8</td>
</tr>
<tr>
<td></td>
<td>5.2 Hazard Evaluation</td>
<td>205 - 9</td>
</tr>
<tr>
<td></td>
<td>5.3 Site Preparation for Hot Work Permit Requirements</td>
<td>205 - 10</td>
</tr>
<tr>
<td></td>
<td>5.4 Flammable Gas Testing</td>
<td>205 - 10</td>
</tr>
<tr>
<td></td>
<td>5.5 Authorize Hot Work to Begin</td>
<td>205 - 10</td>
</tr>
<tr>
<td></td>
<td>5.6 Hot Work</td>
<td>205 - 11</td>
</tr>
<tr>
<td></td>
<td>5.7 Permit Extension</td>
<td>205 - 11</td>
</tr>
<tr>
<td></td>
<td>5.8 Work Completion</td>
<td>205 - 12</td>
</tr>
<tr>
<td>6.0</td>
<td>Roles and Responsibility</td>
<td>205 - 12</td>
</tr>
<tr>
<td>7.0</td>
<td>Reporting Requirements</td>
<td>205 - 13</td>
</tr>
<tr>
<td>8.0</td>
<td>Documentation and Records Retention</td>
<td>205 - 13</td>
</tr>
</tbody>
</table>

### Appendices

- **A** Glossary
- **B** Hot Work Permit Form (CPL-682)
- **C** Fire Watch Training Requirements
1.0 Purpose

The purpose of this procedure is to:

- describe the written hot work permit process;
- describe jobs and activities that are considered to be hot work or use a source of ignition;
- control work that is capable of creating a source of ignition in areas where flammable vapors or combustible materials are present;
- establish requirements to be followed when performing hot work or using a source of ignition;
- describe the methods for controlling hot work activities at Chevron Pipe Line Company facilities; and
- comply with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.252 Welding, Cutting and Brazing, as well as various state regulations regarding welding, cutting and brazing, and flammable and combustible materials.

2.0 Scope

2.1 Personnel Covered by this Procedure

This procedure applies to all personnel, company or Contractor, working in or on Chevron Pipe Line Company owned, operated or maintained pipelines or facilities using a source of ignition in an area where flammable vapors or combustible materials could be present.

- Facilities that are regulated by the USCG may have additional requirements. Please contact your local Safety Specialist for clarification.

2.2 Activities Covered by this Procedure

2.2.1 A Hot Work Permit must be issued when any source of ignition is used and the potential for flammable or combustible materials is present.

A Hot Work Permit is required when work involving any source of ignition is conducted in the following locations:

- Any area that has been classified as Class 1, Division I; Class 1, Division II, per the National Electric Code requirements;
- Any area that is within 35 feet of any combustible/flammable materials;
- Any area within 35 feet of potential flammable and combustible material release points (flanged and/or threaded piping connections, instrumentation
bleeds, separators, tanks, dehydrators, pig traps, regulators, meters, compressor stations, transfer pumps, and other equipment);

- Any area where combustible/flammable material are more than 35 feet away, but are easily ignitable and/or where situated near adjacent wall or floor openings; or
- Any area where combustible/flammable materials are adjacent to the opposite side of metal partitions, walls, ceiling, or roofs and are likely to be ignited by heat conduction or radiation.

2.2.2 An Open Flame Hot Work Permit is used for work meeting the definition of hot work. Activities that require the use of an Open Flame Hot Work Permit include:

- Welding, cutting, brazing or burning with a torch, electric arc or soldering iron;
- Using a propane torch;
- Using open flames;
- Grinding; and
- Smoking.

A Non-Open Flame Hot Work Permit is used for work not meeting the definition of open-flame, but still capable of producing sparks or heat that could be possible sources of ignition. Activities that require a Non-Open Flame Hot Work Permit include:

- Sandblasting (abrasive blasting; either wet or dry);
- Spray painting;
- Chipping, ripping, or other cutting by impact;
- Breaking concrete;
- Use of internal combustion equipment (vehicles, portable generators, and air compressors, etc.)
- Opening of electrical equipment;
- Using explosive-charge powered tools;
- Hot Tapping;
- Using non-explosion-proof electric equipment, such as heaters, motors, coils, extension cords, tools, and lights;
- Use of portable electronic devices (includes cellular phones, pagers, radios, portable computers, and handheld computers, etc.); and
- Operation of vehicles in “operating” areas. Operating areas are defined as inside of tank berms, within 25 feet of pumps, and 10 feet of aboveground
piping, flanges, valves, and scraper traps unless the vehicle is operated on an established roadway.

2.3 **Exemptions from this Procedure**

It is generally not necessary to obtain a Hot Work Permit in open areas. Open areas include, but are not limited to:

- Administration or office buildings;
- Operation of motor vehicles on an established roadway;
- Parking lots;
- Welding in a welding shop when combustible materials are at least 35 feet away and the area is free of combustible/flammable gas release points; and
- Right-of-way above buried pipeline when combustible materials are at least 35 feet away and the area is free of combustible/flammable gas release points.

3.0 **Prerequisites**

Hot Work Permit will be issued only after Safe Work Permit is completed.

3.1 **Qualified Gas Tester**

A Qualified Gas Tester is required to conduct the gas testing at the job site. A Qualified Gas Tester is an individual (company and contractor) who has been trained to know how and where to operate portable gas testing instruments. A Qualified Gas Tester must be competent in the selection, performance verification (“bump test”), and use of portable gas testing instrument. In addition, a qualified gas tester must be familiar with the facility and the facility’s operation. Training must include the recognition of hazards inherent in hot work and confined space entry. Refer to Gas Testing and Analysis procedure, HES-209.

A contract Qualified Gas Tester must provide proof of training upon request.

3.2 **Fire Watch**

A Fire Watch is required for all activities that require an Open-Flame Hot Work Permit.

The primary function of the Fire Watch is to observe conditions in the immediate and adjacent areas to assure that hot work is performed safely. The Fire Watch is expected to be able to immediately extinguish a small fire should one occur.

The Fire Watch must be trained in the use of fire extinguishing equipment, the hazards involved with incipient stage fire fighting and the methods for sounding an alarm in case of fire. They must have actual experience in handling the equipment on small incipient style practice fires simulating actual situations as closely as possible.
A Fire Watch must have completed a fire watch course within the last year. The training requirements, duties, and responsibilities for a fire watch are listed in Appendix C – Fire Watch Training Requirements.

A contract Fire Watch must provide proof of training to Chevron Pipe Line Company upon request.
### 4.0 Process Overview

- **Is a Safe Work Permit (SWP) complete?**
  - No → **Stop Complete the SWP**
  - Yes → PIC completes the appropriate section of the SWP

- **Is permit an open flame hot work?**
  - No → This becomes a Non Open Flame Permit
  - Yes → PIC reviews permit conditions and requirements with person/s conducting work (PCW)

- PCW prepares job site

- **Are permit conditions and requirements met?**
  - No → Use SWA to ensure job site meets permit requirements
  - Yes → PIC and PCW sign and date permit and post at job site with safe work permit

- Proceed with job

- When job is complete return permit to the PIC

- PIC files in the appropriate office
5.0 Instructions

5.1 Permit Origination

5.1.1 During hot work, both ignition and oxygen are present. All it takes to start a fire is to expose a source of fuel. Hot work involves inherent risks, there are several considerations to be made by those planning the work prior to issuing a permit.

- First ask, “Does the work need to be performed hot?” If the work can be completed cold, this should be the preferred alternative. Hot work should be the exception, not the rule. If hot work is needed, can it be moved to another safe area away from piping and other equipment?

- Identify all the hazards and take the necessary precautions. After reviewing the big picture, the scope and requirements must be clearly defined on the permit. Any change in scope means the permit must be re-evaluated and renewed. Consider how the work will be supervised.

- Open flame hot work must not be allowed during the start up or shut down of equipment as things can change fast, resulting in unexpected releases of flammable hydrocarbons.

- When open flame hot work is performed near (within 35 feet) a tank, vessel or any storage container with hydrocarbons, the tank MUST be isolated from taking receipts and mixers must be turned off (recommending one hour prior) before open flame hot work can occur. The tank can remain active for deliveries to a pipeline, loading rack (truck or rail), and or a wharf. All hazards should be considered and addressed in the Job Safety Analysis (JSA) and Job Site Safety Plan (JSSP) as applicable. Items such as the current weather conditions (along with all conditions present) must be taken into account and considered as part of the hazards.

- It is important to have a very good communication process to contact those conducting the hot work in the event of an upset or emergency.

- Gas testing may not tell the whole story. Do not assume a negative lower explosive limit (LEL) test assures the safety of the hot work. A gas test is a critical step, but it is only a snapshot of the air tested. It does not tell the worker about combustibles that do not liberate vapors (i.e., diesel fuel). Until the system is open at the lowest level, assume hydrocarbon is present. Also, most hydrocarbon vapors are heavier than air and will accumulate in low spots or become trapped in such areas.

5.1.2 The Person-in-Charge must specify the type of hot work permit, Open-Flame Hot Work Permit, or Non-Open-Flame Hot Work Permit. The Person-in-Charge also must designate what types of activities (welding, grinding, spray painting, etc.) are authorized.
5.1.3 The Person-in-Charge must initiate the Safe Work Permit process by completing the General section of the Hot Work Permit.

5.2 Hazard Evaluation

The Person-in-Charge specifies the required restriction(s) by checking all applicable boxes in the Permit Restrictions section of the permit.

5.2.1 The required restrictions for a Hot Work Permit include verifying that:

a) Flammable vapor levels are measured at or below 10% of the LEL.

b) Gas testing must be conducted as necessary to assure there is no accumulation of hazardous vapors. The atmosphere must be tested either continuously or at a maximum interval of every two hours as specified on the permit. Results must be recorded on the permit every two hours.

c) If any level of LEL is detected, stop work, locate the source and take action to assure that conditions will not exceed 10% of the LEL. Continuous monitoring must be required.

5.2.2 The requirements for an Open Flame Hot Work Permit include:

a) A Fire Watch

b) Drains and vents within 50 feet of the proposed hot work must be covered with a material suitable for preventing sparks from entering the drains and to prevent any potential flammable gases coming out of drain or vent.

c) As a minimum, a 20 lb ABC fire extinguisher must be immediately available.

• Contractors are required to provide their own fire extinguisher(s).

The Person-in-Charge may specify a fire watch for any hot work due to the nature of the work.

5.2.3 The Person-in-Charge must specify any other requirements or approval(s) deemed necessary to protect the workers and the facility:

a) Lockout/tagout requirements, including blinds installed and/or lines disconnected as necessary. Refer to Isolation of Equipment procedure, HES-203.

b) Protection of the area beneath elevated work locations from hot metal sparks, slag, and electrode stubs. Barricade the area or catch the slag in a wetted tarp or other suitable material, as necessary. The same precautions must be observed with regard to cracks or holes in walls, open doorways, and open or broken windows.
c) Relocation of all movable combustible fire hazards, in the vicinity of the hot work, to a safe location. All sources of combustible materials must be relocated at least 35 feet from the work site. Where relocation is impracticable, protect combustibles with flameproof covers or otherwise shield with guards or curtains.

d) Protection of ventilation ducts and conveyor systems that might carry sparks to distant combustibles.

e) Use of fire-resistant shields or guards when welding or cutting near walls, partitions, ceilings, or roofs of combustible materials.

f) Measures to be taken to prevent ignition of combustibles on either side of a metal wall, partition, ceiling, or roof, due to conduction or radiation. If combustibles are not relocated, a fire watch must be stationed within sight of the combustibles.

5.2.4 The Person-in-Charge verifies the time limit and the job location boundaries on the General section of the Safe Work Permit.

5.3 Site Preparation for Hot Work Permit Requirements

The Person Conducting the Work prepares the job site by meeting all of the requirements of the Hot Work Permit and other requirements as listed on the Safe Work Permit.

5.4 Flammable Gas Testing

The Qualified Gas Tester must do a physical check of the gas detection instrument and verify gas sensor performance (“bump test”) before using it to measure the atmosphere. This check must be performed each work shift or before each use, if not used every shift.

Once the requirements are met, the Qualified Gas Tester conducts the initial gas testing. The Qualified Gas Tester records the initial test results as well as the date and time of the test in the Pre Job section. The Qualified Gas Tester also signs in that section. The initial gas tests must be taken immediately prior to starting the hot work.

All additional test results along with the initials of the Qualified Gas Tester and the date and time of the test are recorded on the Gas Testing Plan and Results Sheet.

5.5 Authorize Hot Work to Begin

The Person-in-Charge assures all the required fire and safety equipment is in place and in working condition before work begins. The Person-in-Charge assures the Fire Watch has been trained and instructed to stop hot work if conditions change that could endanger workers (see Appendix C – Fire Watch Training Requirements). The Person-in-Charge assures the Fire Watch has a two-way communication device (i.e., intrinsically safe radio or walkie-talkie tuned to CPL’s frequency) to communicate to the Person-in-Charge.
The Person Conducting Hot Work reviews the permit and communicates all the conditions and restrictions to others within the job boundaries. The Person Conducting Hot Work then signs in the approval section of the permit.

The Person-in-Charge verifies the flammable gas tests have been completed and conducts a final inspection to assure all permit conditions are satisfied and that the Person Conducting Hot Work understands the restrictions and the permit has been completed.

The Person-in-Charge posts the permit at the job site.

The permit is valid for one shift, not to exceed 12 hours. The permit may be extended for four consecutive shifts, (not to exceed 12 hours per shift). See section 5.7 Permit Extension.

Any permit that does not contain the current date, flammable gas test results, and required signatures and initials is not valid and hot work cannot be performed.

5.6 Hot Work

A work site must be ready for hot work when the requirements of the permit have been addressed, all signatures obtained, and the Hot Work Permit has been posted at the work site.

Work must be stopped immediately and the permit pulled if an adverse condition, i.e., a leak, spill, accident, or other mishap occurs. Any time the permit is pulled, the area must be re-inspected, gas tested, and confirmed safe before the work may resume.

Work must be stopped immediately and the permit pulled if the Fire Watch leaves the job site.

The existing permit must be pulled and a new permit issued if the job location is moved in any direction outside the tested area.

5.7 Permit Extension

A permit may be extended to the next shift if:

- Conditions remain unchanged and it is safe to do the work; and
- The Person-in-Charge and the Person Conducting Hot Work confirm that conditions are safe and the permit restrictions continue to be met. Both must date and sign in the approval section of the permit; and
- The Qualified Gas Tester conducts flammable gas tests and records the date and time the tests were taken, the tests results, and initials in the Gas Testing Plan and Results section of the permit; and,
- The Fire Watches for the extended shift are properly trained and the training is documented (verbally or written, if needed).

The permit must not be extended for more than four consecutive shifts.
5.8 Work Completion

A Fire Watch must remain in the area for 30 minutes after hot work has been completed to assure that all metal surfaces are cool and there are no smoldering materials. The Fire Watch removes the permit and gives the permit to the Person-in-Charge.

6.0 Roles and Responsibilities

6.1 Person-in-Charge

The Person-in-Charge is responsible for:

- initiating the hot work permit process;
- verifying necessary steps have been taken to eliminate the possibility of accidental fire;
- verifying a trained fire watch is present and that the fire watch understands assigned duties;
- assuring all required fire and safety equipment is in place and in working order;
- specifying all required restrictions;
- giving final approval of the permit;
- filing the permit; and
- the overall safety of personnel and equipment from operating hazards until the job is complete.

6.2 Person Conducting Hot Work

The Person Conducting Hot Work is responsible for:

- complying with all conditions and requirements of the hot work permit; and
- communicating restrictions and conditions to others in the job boundaries

6.3 Fire Watch

The Fire Watch is responsible for:

- completing required training per Appendix C – Fire Watch Training Requirements of this procedure;
- continuously monitoring assigned job(s);
- understanding use of fire protection equipment;
- extinguishing incipient stage fires;
• sounding an alarm and summoning help by two-way radio, air horn or some other means;
• remaining at site for 30 minutes after work; and
• removing the permit and giving to the Person-in-Charge.

6.4 Qualified Gas Tester
The Qualified Gas Tester is responsible for:

• assuring proper test equipment is available and has been verified or “bump tested”;
• conducting initial and follow up gas testing as specified in the Hot Work Permit; and
• documenting the date and time of the gas test and the gas test results.

7.0 Reporting Requirements
None.

8.0 Documentation and Records Retention
8.1 Required Documentation
CPL - 682 Hot Work Permit and the Gas Testing and Results Plan are used to document this procedure.

8.2 Document Storage and Retention Time
Hot Work permits must be kept for two years at the appropriate office.
Appendix A – Glossary

Bump Test or Verification Test
A test performed on a portable gas-testing instrument before use, to verify the instrument is functioning properly.

Fire Watch
An individual trained in the use of fire extinguishing equipment and familiar with methods for sounding an alarm in case of fire. A Fire Watch is required for all activities that require the completion of an Open-Flame Hot Work Permit. A Fire Watch must have completed a fire watch course within the last two years. A contract Fire Watch must provide proof of training to Chevron Pipe Line Company upon request. The primary function of the Fire Watch is to observe conditions in the immediate and adjacent areas to assure that hot work is performed safely. The Fire Watch is expected to be able to immediately extinguish a small fire should one occur. The training duties and responsibilities for a Fire Watch are listed in Appendix C – Fire Watch Training Requirements.

Gas Testing
The use of portable gas testing instruments to determine levels of flammable and toxic vapors or gases present in the atmosphere. Initial gas testing must be taken before work can begin and follow-up tests are required every two hours.

Hot Work
Hot work is any work that is capable of creating a spark or flame of sufficient temperature to ignite flammable vapors and/or combustible material. Examples are: welding (electric, arc or gas); cutting; brazing; the use of an open flame or any extreme heat, flame, or spark-producing procedure.

Hot Work Permit
A hot work permit is a permit outlining conditions and safety requirements that must be met prior to beginning any hot work. A Hot Work Permit is required for any work that might ignite flammable vapors or combustible materials. The permit is valid for one shift (or day if only working the day shift). However, the permit can be extended after the approval of all involved parties.

Incipient Stage Fire
A fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers or a 1½” fire hose.
Lower Explosive Limit (LEL)

LEL is the lowest concentration of gas or vapor (% volume in air) that burns or explodes if an ignition source is present at ambient temperatures.

Person Conducting Hot Work

The person conducting the hot work is the individual who will be using the ignition source(s). He/she is responsible to comply with all permit restrictions and conditions.

Person-in-Charge

The Team Leader responsible for the assets, or their designated CPL employee representative, or a qualified third party contractor, that has overall responsibility for determining acceptable condition for hot work, and the safety of personnel and equipment from operating hazards until the job is completed. This person is responsible for verifying that conditions in the area are safe for hot work to be performed.

The Person-in-Charge cannot be a contractor; however, the Person-in-Charge can be a Qualified Third Party (Q3P) inspector who is acting as the Company representative.

Qualified Gas Tester

A Qualified Gas Tester is an individual (company and contractor) who has been trained to:

- Know how, where, and when to test for atmospheric contaminants; and
- Operate portable gas testing instruments that can be used for the taking of samples and simultaneously analyzing them for the presence of atmospheric contaminants. Operation of portable gas testing instruments includes zero adjustment, verification (“bump check”), what instrument alarms indicate, knowing when malfunctions occur, and how to interpret the results indicated by the instrument.

In addition, a qualified gas tester must be familiar with the facility and the facility’s operation. Training must include the recognition of hazards inherent in hot work and confined space entry. Only qualified gas testers may conduct gas tests.

Safe Atmosphere for Hot Work

The atmosphere, within 50 feet of where hot work is going to be performed, where any flammable vapors detected are 10% of the LEL or less.

Qualified Third Party Contractors

A Contractor separate and distinct from the contractor performing the work, (or a third party who does not work for the contractor, but works directly on behalf of CPL) who has been trained in CPL applicable procedures, and understands the hazards, risks, exposures, and associated impact to operations from the activities in the facility.
**Contractor**

A person, who agrees to furnish materials or perform services at a specified price for construction. The person performing the work.

**Requestor/Work Owner**

The person, who selects, hires or oversees the work of a contractor.
Appendix B – Hot Work Permit Form (CPL-682)

CPL – HOT WORK PERMIT

| Location: | | | | |
| --- | --- | --- | --- | |
| Open-Flame Hot Work Permit | Non-Open-Flame Hot Work Permit | | |
| Welding | Grinding | Spray Painting | Breaking Concrete |
| Cutting | Brazing | Opening of Electrical Equipment | Sandblasting |
| Burning | Propane torch use | Chipping or cutting by impact | Hot Tapping |
| Other (please specify): | | Use of a Vehicle or other equipment with an Internal Combustion Engine in the operating area (inside/beneath, within 20 feet of pumps and 10 ft above/ground piping, flange, valves and scraper traps unless the vehicle is operated on an established roadway) | |
| Requirements for Open-Flame Hot Work (must be met before hot work may begin) | | Use of Non-explosion proof electrical equipment (heaters, motors, coils, tools, lights, etc.) | Electronic Equipment (cell phone, digital camera, flash photography, etc.) |
| Fire Watch must be present! | | Other (please specify): | |
| Communication established (radio, hand signals, etc.) | | | |
| Combustible material within 35 feet has been removed, covered or mitigated | | Area checked for venting, bleeding or sampling | |
Appendix C – Fire Watch Training Requirements

As a minimum, the fire watch must attend a training session each year which includes the following:

A. Know how to report Emergencies

1. Alert personnel in the area of emergency:
   a. Call for help! Fire! etc.
   b. Air horn
   c. Radio – Pac Set
   d. Telephone

2. Know how to report your name and location of the emergency.

   EXAMPLES: 
   Name of facility
   Name of street
   Name or number of building

3. Know how to report type of emergency:
   a. Fire – type of fire if known (i.e., liquid, gas, insulation, staging)
   b. Medical – how many people, condition of people (i.e., conscious, unconscious)
   c. Spill or leak – liquid or gas, product if known, source if known

4. Do not hang up phone until instructed or evacuation is required.

B. Understand the Emergency Response/Action Plan where work is taking place and know how to perform the following emergency response activities:

1. Notify CPL operations and/or project manager of emergency and follow their instructions.

2. Fire: Attempt to extinguish small (incipient stage) fires only.

3. Leaks and Spills: Stop all work in area. Notify CPL operations and/or project manager and follow their instructions.

4. Medical: Stop work in immediate area. Notify CPL operations and/or project manager. Give first aid if trained to do so. Do not leave injured person alone.

5. Do not move injured person unless further injury is imminent.
6. Use caution when responding to a person down for unknown reason. If a release is suspected, don’t rush in. Call for help, keep person in sight. Deny entry.

C. Knowledge of the following characteristics and types of fires:

1. Fire – there must be heat, fuel, air together with chemical chain reaction. If one or more of the elements are removed, you have extinguishment.

2. There are four classes of fires:

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<thead>
<tr>
<th>Class</th>
<th>Material</th>
<th>Type of Extinguishing Agent</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>Wood, paper, dry grass, tarp</td>
<td>Water, ABC dry chemical</td>
</tr>
<tr>
<td>B</td>
<td>Flammable liquids, (gasoline, oil, grease, LPG)</td>
<td>Dry chemical, CO2, water fog, foam</td>
</tr>
<tr>
<td>C</td>
<td>Electrical equipment, motors</td>
<td>CO2, dry chemical, de-energize</td>
</tr>
<tr>
<td>D</td>
<td>Metals – titanium, magnesium</td>
<td>Metal-X, dry chemical</td>
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3. Primary fire hazards in Chevron Pipe Line are Class B type fires, i.e., flammable liquids and flammable gasses.

4. Characteristics of flammable liquid fires are:
   - Orange flame
   - Black smoke
   - Rapid spread – could be under pressure

5. Characteristics of flammable gas fires are:
   - Blue flame or nearly invisible
   - No smoke or very little smoke unless flame is burning something else
   - Loud noise from pressure release
   - Stationary at the source

D. Duties and Responsibilities of a Fire Watch

1. Be observant:
   a. Is there a Hot Work Permit posted on job site?
   b. Look for changing conditions, odors, liquids leaking, etc.

2. Drains and Sewers:
   a. Have they been located, properly covered and sealed?
   b. All within 50 feet of Hot Work.
   c. Use Nsert-A-Seal with gasket in place when possible.

3. Cleanliness of Job Site:
   a. Remove unwanted combustibles – rags, cardboard, dry grass, wood.
b. Establish one area for job supplies.

c. Keep job site clean and free of hazards.

4. Fire Prevention/Equipment:
   a. Contain sparks and slag.
   b. Wet down dry grass areas before and after hot work.
   c. Use hose bridges where necessary.
   d. Keep fire extinguisher and hose unobstructed and readily available.
   e. Stop job when unsafe conditions exist.

5. Secure Job Site (end of day or job):
   a. De-pressure, disconnect standby hose.
   b. Reconnect hose in hose box if applicable.
   c. Uncover drains.
   d. Identify unsafe conditions – barriers, tape, signs.
   e. Fire watch must be maintained for at least a ½ hour after completion of welding or cutting operations to detect and extinguish smoldering fire.
   f. Remove permit from job site and give to the Person-in-Charge.

E. Hands-On Fire Training

1. The fire watch training must include hands-on defensive fire fighting on small (incipient stage) practice hydrocarbon fires simulating actual situations as closely as possible using the following equipment:

   Portable fire extinguishers: 20 lb., 30 lb. and/or 150 lb. dry chemical extinguishers, 15 lb. CO₂ and 2½ gallon water extinguishers.

   **The instructor will demonstrate the use of the equipment. Then, the students will operate the equipment.**

2. Training must be completed on extinguishers, which will be used for the work being performed.

3. Use of electronic devices to simulate hydrocarbon fires are acceptable.