Hot Work Standard

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2	2025/08/27	Use	Sastry Bhamidipati HSE Consultant	Ian Braconnier, Chris Jones, Frank Roberts, Tamara Hawkins HS Director(s)	Iraitz, de Anzola Guerra Manager, Process Safety and Assurance
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REVISIONS				**APPROVALS**	

REVISION CONTROL SHEET		
Revision	**Date Issued** (YYYY/MM/DD)	**Comments**
1	2020/02/20	Usability mapped–Issued for use.
2	2025/08/27	Included the following changes in Section 1 Hot work Types and permits Type B Lower Energy (Spark Potential) permit as per Enablon – Within an entire tank berm where tanks contain a hydrocarbon source. Added "may extend from 3 meters to 7.5 meters" and "Refer to the hazardous area classification drawing" in the Note. Added the following in What are Hydrocarbon Sources section • Process module buildings • Well heads • Truck loading /unloading • Chemical tanks • Pumps areas The following changes are made in section 2.2 based on regulatory updates: • Minimum distance from Hot work to any combustible material 15 meters instead of 10 meters due to the updated fire code. • Fire watch must remain for 30 minutes once Type A hot work is complete to ensure no fire or hot spots remain. • Fire watch must remain for 60 minutes when there are combustible materials within 15 meters of the hot work area due to the updated fire code. • If fire eyes are activated and a hot work area can be monitored, then a fire watch may not be required.

Contents

About this Standard

Purpose

The purpose of this standard is to ensure hot work is managed in the safest, most practical manner at sites operated by ConocoPhillips Canada (CPC).

1. Hot Work Types and Permits

Types of Hot Work Requiring Permits

Hot work types requiring a written permit are as follows:

Hot Work Type	Criteria	Area
Type A – High Energy	• Fire/ spark producing activities such as welding, cutting, grinding, stress relieving of piping, and / or open flame.	• Within 25 meters of a hydrocarbon source and/or Within 15 meters of combustible material.
Type B – Low Energy	• Work on electrical circuits, use of electrical tools or equipment e.g., drills, portable generators, etc. • motorized equipment (internal combustion engine)	• Within 3 meters of a hydrocarbon source • Within an entire tank berm where tanks contain a hydrocarbon source.
Non-intrinsically safe electronic devices	• Mobile phones, tablets, cameras, radios, and calibration and testing equipment.	• Refer to Type B Controls above

NOTE: In the case of a building containing hydrocarbon sources, the hot work area may extend from 3 meters to 7.5 meters beyond the exterior wall or roof of a building, exhaust vent, low point drain, high point vent of flange. Refer to the hazardous area classification drawing.

What are Hydrocarbon Sources

Hydrocarbon sources are any flammable liquids or gases produced from or used in the exploration or production of hydrocarbons such as light oil, condensate, natural gas, bitumen, natural gas liquids (NGL) and includes equipment such as:

- process module buildings
- wellheads
- truck loading/unloading
- chemical tanks
- pumps area

CAUTION: Leak Points are locations where hydrocarbons may be released such as flanges, drains, vents, vessels, tanks, relief valves, etc.

Activities Not Considered Hot Work

Work activities that are not in the scope of this standard include:

- work activities where intrinsically safe tools are used, and
- internal combustion vehicle operations on dedicated roads designed for vehicle movement.

Diesel Vehicle Engines

Diesel vehicle engines operating within 25 meters of a hydrocarbon source must be equipped with the appropriate positive air shut off devices.

- This does not include vehicles operated on dedicated roads designed for vehicle movement.

Defenses Required

During work planning, ensure defenses are implemented to address the following:

- Explosions
- Fires
- Natural gas / hydrocarbons including entrained or liquids or gases
- Pyrophoric material (i.e. iron sulphide)
- Sparking
- Arc flash
- Combustible Dust

NOTE: Consider the fire triangle when assessing hazards.

1.1 Preparing Work Area

Precautions to Prevent Fire	All reasonable precautions to prevent fire must be taken prior to starting Type-A High Energy hot work. Consider the following: • Remove or protect all combustible materials (i.e. wood, cardboard, rags, etc.) within 15m (unless effective spark containment is achieved). • Remove or protect hydrocarbons exposed to sparks within 25 m of the hot work. Where removal is not possible, shield materials with noncombustible or fire-resistant covers, or thoroughly wet down surfaces as appropriate. • Cover openings on containers, vessels, tanks, sewers, sumps or piping in the area. Protect equipment, instruments, etc. from being exposed to sparks or hot slag. • Store electrode stubs in a designated container. • Remove or protect all combustible materials (i.e. cardboard, rags, wood–including scaffold decks, etc.) within 15m (unless effective spark containment is achieved).
Fire Extinguishers	At least one fire extinguisher must be located within 7.5 meters of the work area for Type A Hot Work activities. The extinguisher must be a minimum 20 lb. ABC rating.

1.2 Preparing Equipment

Inspect	All hot work equipment must be checked for defects and leaks before use each day and repaired as needed.
Isolate, Clean and Purge	Ensure equipment is positively isolated, cleaned and purged. Refer to Lockout / Tag Out, Process Isolation and Intrusive Maintenance, and Purging Procedures for more information. Mechanical / electrical sources and interlocking systems are disconnected, if required.
Hot Work on Tanks, Vessels, and Piping	Hot work must not be performed on tanks, vessels, sumps, piping, or other equipment that contains or has previously contained a flammable substance unless it has been: • thoroughly cleaned to remove flammable or combustible residue, • purged, filled with an inert gas, and/or isolated with physical barriers (mud plug) to stop the ingress of flammable vapours, and

- verified combustible gas <10 % LEL.

Welding and Cutting Equipment

Confirm welding and cutting equipment has:

- the required welding ground lead attached as close as practicable to the weld point with a properly prepared connection surface, and
- flashback arrests installed between torch and regulator on oxygen/fuel systems.

When not in use, compressed gas valves must be closed, lines bled, and electric welding equipment deenergized. Regulators shall be removed and proper end protectors installed on cylinders when they are not in use or when being transported, unless the cylinder is equipped from manufacturers with a protected caged regulator.

1.3 Safety Shutdown Devices

Out of View of Fire Eyes

Fire eye locations must be confirmed. All possible conflicts shall be discussed with Operations. Consider:

- any surface that may reflect a spark or arc flash and initiate an alarm or shutdown, and
- covering all windows to ensure fire eye alarms are not activated. Ensure scaffold hoardings do not obstruct safety devices, including but not limited to fire eyes and LEL detectors.

Bypassing Safety Shutdown Devices

Bypassing safety shutdown devices must only be done when unavoidable. Allow sufficient time to consult with Operations to obtain bypass approvals.

Refer to business unit-specific Bypassing Safety Shutdown Devices procedures.

1.4 Barricades

Type A Hot Work Barricades

Signage, barricades, or flagging to be installed to make others aware of welding hazards within Type A Hot Work areas.

Install non-flammable barriers or screens with non-reflective surfaces to protect nearby personnel from arc flash and spatter. Barriers must allow air circulation.

The following applies:

- Hazard assessment and permit must address Hot Work carried out at heights.

- Defenses must be installed to prevent dropped objects, sparks, or slag from contacting personnel below.
- Identify or isolate hot surfaces where contact could pose a hazard.
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2. Conducting Hot Work

2.1 Work Permits

Permit Requirements

Permits must include the type and frequency of atmospheric testing, safe work procedures, PPE required, and confirmation that the work area is free from combustibles or properly mitigated.

Where Field Level Hazard Assessments (FLHAs) are used by CPC and Full Time Equivalents (FTEs) in place of permits (e.g., for non-intrinsically safe devices), the risks, job tasks, and all controls must be documented.

Work Permits for Type A and Type B Hot Work

A work permit must be completed before performing Type A or Type B Hot Work. The permit must identify:

- potential or actual presence of hydrocarbons and ignition sources at or near the work area,
- potential for the release of flammable or noxious gas resulting from hot work (if applicable),
- atmospheric testing requirements,
- fire watch requirements, and
- defenses to prevent ignition of flammable liquids or gases.

Work Permits for Non-intrinsically Safe Electronic Devices

An FLHA (Field Level Hazard Assessment or Hazard Review Card) may be used as a work permit for non-intrinsically safe electronic devices provided:

- the type of equipment, job tasks, hazards, defenses and work location are outlined in the FLHA, and
- the use of personal gas monitors confirms that the atmosphere is safe.

> **NOTE:** This section only applies to ConocoPhillips Employees or Full Time Equivalent (FTE) personnel. Contractors using electronic devices must follow Type B Hot Work Requirements.

Work Permit Duration

Work permits may be issued for the following durations:

Hot Work Type	Duration
A – High Energy	• 12 hours: from the issue date and time. Extended shifts are permissible if the permit issuer approves it.
B – Low Energy	• Up to 30 days: reissued each shift, provided daily FLHAs or local hazard review tools are completed.
Non-intrinsically safe electronics	• Daily as it is documented on a FLHA

2.2 Fire Watch

When required

A Fire Watch is required when Type A – High Energy Hot Work is conducted. The work permit and/or hazard assessment will outline if a dedicated Fire Watch is required or if the role can be filled by a worker covering multiple Type A work scopes in the same area.

Fire Watch	Requirements
When Fire Watch is Required	• For all Type A-High Energy Hot Work. • When a work permit/hazard assessment specifies a dedicated fire watch is required or if a worker can serve as a Fire Watch
Fire Watch Duration	• Fire watch must remain for 30 minutes once Type A hot work is complete to ensure no fire or hot spots remain.

	• Fire watch must remain for 60 minutes when there are combustible materials within 15 meters of the hot work area. • If fire eyes are activated and a hot work area can be monitored, then a fire watch is not required. • A final inspection must be conducted to ensure no fires, smoldering, or ignition sources remain. • In BC, during wildfire season, please refer to BC Wildfire Requirements.
One Fire Watch for Multiple Jobs	Permitted only if: • A clear line of sight is maintained. • No congestion that would delay response. • One fire extinguisher to be located in a suitable location close to the work area with at least 1 per spark watch.
Mobile Equipment	• For mobile equipment with fired heaters (e.g., combo truck), a post-work fire watch may not be required if deemed safe by the hazard assessment.

2.3 Gas Testing

Ventilation Requirements During Hot Work

The following table outlines the ventilation requirements during hot work:

	Requirement
Ventilation Required	Ensure natural or Mechanical ventilation to prevent accumulation of flammable vapors in open, semi-enclosed, and enclosed areas.
Atmospheric Conditions	0xygen: 19.5% to 23.0% Combustible gases: < 10% LEL Contaminants: Occupational Exposure Limits (OELs)
If Ventilation is Inadequate for respiration but LEL's are < 10 %	Use approved Respiratory Protection per the Respiratory Protection Standard.

Initial Gas Test and Atmospheric Conditions

An initial gas test must be conducted to verify atmospheric conditions by the local operator or delegate.

Hot Work will not be initiated and / or will be stopped if the following conditions are identified:

Parameter	Stop if
O_2	>23.0% or <19.5%
LEL	>10%

Continuous Monitoring

Testing and monitoring must be continuous for the duration of work and documented at a frequency defined on the work permit.

NOTE: An aspirated gas monitor is required for Type A Hot Work and a passive gas monitor (personal) is acceptable for Type B Hot Work or non-intrinsically safe device usage. IR gas monitors to be used with hydrocarbons in oxygen deficient atmosphere.

WARNING: In the event of a muster or monitor alarm due to a gas release:

1) Hot work must be stopped and left in a safe state
2) Personnel shall evacuate the area and inform operations.

Where to Conduct Gas Testing

Gas testing should take place as follows:

- In more than one location to gauge the presence of hazardous atmospheric conditions.
- Structural piles and under building floors and skids if a buildup of hazardous gas may exist.
- Testing flanges, valves, bleeders, drains and other potential hydrocarbon leak sources.

Documenting Results

Results must be documented on or attached to the work permit or applicable FLHA.

3. Roles and Responsibilities

Fire Watch & Worker Responsibilities

Fire Watch and worker responsibilities, training, and competency:

Role	Responsibility
Fire Watch	• Maintain contact and line of sight with those performing hot work. • Ensure work area is kept wet if required. • Monitor for fires, extinguish fires if safe to do so. • Ensure sparks and slag are contained. • Shutdown work activities if conditions change or become hazardous. • Sound alarm and/or otherwise notify others as necessary (e.g., emergency response team (ERT)). • Remain on duty for 60 mins after hot work has stopped or another competent person takes over fire watch.
Workers	• Understand the potential for and explosion hazards, including mitigations. • Maintain communication with the fire watch. • Understand emergency procedures, roles and responsibilities. • Stop hot work if conditions change from those identified on the hazard assessment. • Ensure welding machines are shutdown at the end of the day.

Training

Role	Training	
O & M Workers	• O & M workers may be assigned a field assessment of the hot work procedure in compliance with the Hot Work Field Competency Assessment Questions Document, ALL-A0A-00-AOI-OAS-00001, or a review and self-acknowledgement of the Hot Work procedure as per the O & M Training & Competency Matrix.	• Undergo competency assessment by Supervisor
CMT, Drilling, Completions and HSE, Workers	• Those involved in supervising hot work permits must review the Hot Work Standard and ensure compliance with the procedure.	• As per HSE Matrix/Kahuna

References

Document Name	Document ID
National Fire Code - 2024 BC Edition	
Safety in Welding, Cutting, and Allied Processes	CSA W117.2-12 (R2017
National Fire Code – 2023 Alberta Edition	
NFPA 51B Fire Prevention During Welding, Cutting and Other Hot Work	
Safe Work Permit	ALL-A0A-00-000-HST-0008
Personal Protective Equipment	ALL-A0A-00-000-HPR-0009
Process Isolation Standard (Corporate)	GESG-FAC-ES-002
Purging	ALL-A0A-00-000-NPR-0003
Respiratory Protection Standard	ALL-A0A-00-000-HST-0011
Process Isolation and Intrusive Maintenance	ALL-A0A-00-000-NST-0002
Surmont Lock Out Tag Out Procedure	SUR-A0A-00-OPM-OPR-0006
Montney Lock out Tag Out Procedure	MNY-A0A-00-000-NPR-0003
Hot Work Field Competency Assessment Questions	ALL-A0A-00-AOI-OAS-00001
Surmont Control of Work Procedure	Sur-A0A-00-OPM -OPR-0021