



Hot Work Standard



MSW Process – Contractor Communication

**Thailand Profit Center
March, 2009**



Purpose – Scope & Objectives

Purpose

To ensure that hot work is performed in a safe and controlled manner.

Objective

Establishes the requirements for the safe performance of hot work.

Scope

This Standard covers work performed by Chevron employees and their delegates and contractors within Chevron Global Upstream Exploration and Production (GU) operational control.



Requirements

1. Consider all cold work alternatives before performing hot work.
2. Hazards associated with isolation of hazardous energy shall be identified and mitigated prior to beginning work.

NOTE: Hot tapping requires additional precautions.

3. Personnel involved in hot work activities shall be trained and competent in the roles for which they are responsible.
4. A Qualified Gas Tester must conduct gas testing prior to hot work where there is a potential for flammable gases to be present. The Qualified Gas Tester shall determine the frequency of gas testing based on the potential risk.
5. Fire Watch must be present where open flame hot work is carried out, except in designated safe welding areas.
6. The hot work must begin within 30 minutes after the Qualified Gas Tester has tested the area and cleared it for hot work to start.

Requirements

7. When the work has been completed according to the job scope, the Work Team Leader must close out and return the Hot Work Permit and permit-related documents to the permit approver after:
 - The jobsite has been left in a safe, clean and orderly condition.
 - Adequate time (30 minutes) has elapsed for the Fire Watch to verify the condition of the jobsite.
 - The work that was performed meets the required scope and specifications.
8. If work is interrupted by Stop Work Authority, weather conditions, alarms or unforeseen dangerous conditions, the Hot Work Permit must be revalidated before work can be restarted.
9. Hot tapping is not covered under this Standard. It is considered a high risk activity which requires Subject Matter Expert input, written procedures and a high level of management approval.

Roles and Responsibilities

There must be clearly defined roles, and personnel must meet the training and competency requirements of this standard prior to starting work. The SBU is responsible for establishing the methodology to achieve competence.

The following roles and responsibilities are specific to hot work and are further defined in [GU - Training Requirements Tool](#).

- Qualified Gas Tester
- Fire Watch
- Person Performing Hot Work

Roles and Responsibilities – Qualified Gas Tester



Responsibilities

- Conduct necessary tests as required in accordance with the SWP Gas Detection Standard (tests may be required as part of permit process, JSA requirements or from other business needs)
- Be familiar with the instrument they are using and the instrument handbook
- Inspect and zero the instrument before each use
- Conduct instrument field calibration checks
- Anticipates where gases and vapors may occur and/or accumulate
- Enter Gas Test results on the relevant documentation, including the date and time, and then sign the permit in the gas testing section
- If required to enter a confined space to conduct gas tests, must also meet all the requirements of an Authorized Entrant
- Stops the work if unsafe conditions develop

Note: Only qualified gas testers are permitted to conduct gas tests

Roles and Responsibilities – Qualified Gas Tester



Minimum Knowledge Requirements

- The requirements of the relevant SWP Standards
- Gases and vapors
- Toxins that may be encountered
- Physical properties and hazards associated with flammable and combustible materials they are working with and around, and how best to control them
- Gas detection principles
- Use of and limitations of portable gas testing equipment
- Calibration and response testing of portable gas testing equipment
- The relevant regulatory requirements
- The relevant industry practices/standards
- The hazards inherent in hot work and confined space entry
- Can state their authority to stop work

Roles and Responsibilities – Qualified Gas Tester



Minimum Performance-Based Skill Requirement

- Can properly put on and remove PPE (including respiratory protection)
- Can put on, fit, use, and maintain both air purifying and air supplying respirators
- Can response check gas testing equipment
- Can calibrate gas testing equipment, when required
- Can demonstrate skills in a controlled environment (for example, at a training location)
- After initial training, perform initial field testing under the supervision of a competent person
- Can analyze test results to identify safe and unsafe conditions



Roles and Responsibilities – Fire Watch

Responsibilities

- Knows the work planned and the hazards involved
- Inspects the job site prior to Hot Work activities and ensures that combustibles are removed or covered
- Ensures that any nearby openings are sealed or covered with fire safe materials
- Observes conditions in the immediate and adjacent areas of hot work to ensure that the work is performed safely and that any requisite conditions on the permits to work are complied with
- Raises an alarm should a problem occur
- Extinguishes any incipient fire, if it is safe to do so
- Maintains watch at the area for at least 30 minutes after completion of hot work and inspects adjacent areas where sparks or flame may have traveled for signs of combustion
- Stops the work if unsafe conditions develop



Roles and Responsibilities – Fire Watch

Minimum Knowledge Requirements

- Hazards that may be encountered during hot work
- Gases and vapors
- PPE selection and limitations
- Selection and use of hand-held fire fighting equipment (extinguishers, fire-hoses and foam carts)
- Fire behavior, classes of fire, stages of fire and appropriate extinguishing agents for extinguishing fire
- Primary and secondary evacuation routes employees must take in event of a fire
- Requirements of the emergency plan
- How to sound an alarm in the event of an emergency
- Can state their authority to stop work

Roles and Responsibilities – Personnel Performing Hot Work



Responsibilities

- Knows how to perform the work procedures and the hazards involved
- Only performs hot work when the requisite work permits are in place
- Stops the work if unsafe conditions develop



Examples of Hot Work

- Using non-explosion-proof electrical equipment or battery operated electronic devices (including mobile phones, inspection and testing equipment, such as ultra-sound and X-ray) in a hazardous area if the equipment is not certified intrinsically safe
- Operating motorized vehicles (battery operated or internal combustion) within a hazardous area or diked area where flammable vapors may be present
- Burning acetylene or gas
- Welding, brazing, cutting, grinding or chipping
- Soldering
- Using electric resistance heaters
- Performing abrasion blasting, using high-pressure hydro-jet, etc.
- Using electric or air-driven power tools capable of causing "hot" sparks or enough energy to ignite a flammable mixture (i.e., jack hammers, rattle guns, etc.)
- Using any equipment that generates an exposed flame or hot filament



Contractors

Contractors shall use the SBU's procedures unless they have been reviewed by the SBU (usually through the CHESM process) to use their own procedures).



Jobsite and Equipment Preparation

Competent personnel must complete the steps needed to properly and safely prepare the jobsite and equipment for the start of work.

Typical preparations that are specific to hot work may include, but are not limited to, the following:

- Removing combustible materials within 10 meters (35 feet) of the hot work area. If combustible materials can not be removed, they must be protected by fire-resistant coverings or shields, or kept wet.
- Sealing drains within 15 meters (50 feet) of the hot work by plugging and filling with water, or by another equivalent method, to form a seal. Vents in the vicinity of (including vents on the decks above and below) hot work shall be routed away from the vicinity of the hot work, or the input source to the vents shall be safely isolated.
- Barricade and mark the area.
- Arranging for continuous ventilation during hot work.

Jobsite and Equipment Preparation (Con'T)

- Positioning fire-fighting equipment.
- Notifying facility personnel.
- Ensuring there is a designated Fire Watch at the jobsite.
- Inspecting all hot work equipment and ensure that it is safe to use.
- Gas-testing the jobsite and the surrounding 15 meters (50 feet) by a Qualified Gas Tester.
- Communicating to all affected parties through a pre-job briefing.

Additional preparations specific to opening equipment may include, but are not limited to, the following:

- Ensuring positive isolation (refer to [GU – Isolation of Hazardous Energy Standard](#))
- Depressurizing
- Purging, flushing, draining or venting



Conditions for Work Stoppage

During any non-emergency work stoppage, work site must be left in a safe condition, for example, non-essential equipment must be turned off and secured. Work must be stopped and the Permit Approver and Work Team Leader must reevaluate the Hot Work Permit if the jobsite is left unattended and/or under any of the following conditions:

- Changes in jobsite condition(s) that present a risk after permit issuance
- LEL greater than zero percent is detected
- Portable or continuous gas test equipment failure (for example, battery depleted)
- Change in scope of work, such as additional work not originally anticipated
- A safety concern has been raised by a worker or company representative
- Occurrence of a minor incident or near loss during a job task
- The job is left unattended
- When the environmental conditions change
- The Fire Watch leaves the hot work area
- The original finish time listed on the Hot Work Permit has been reached
- The Permit to Work is no longer valid



Fire Watch

A person must be designated to act as a Fire Watch. They must be competent and equipped to perform Fire Watch duties.

Fire Watch duties must be maintained for at **least 30 minutes after hot work ceases**. During this time, the Fire Watch must inspect the adjacent areas where sparks or flames may have traveled and look for signs of combustion.

NOTE: When personnel are carrying only non-intrinsically safe devices (e.g., battery operated equipment or occupational hygiene monitoring equipment) these personnel must also carry a continuously monitoring gas detector. If the gas detector alarm sounds they must immediately stop work and vacate the area and inform facility personnel of the alarm. No Fire Watch is required in these situations.

What Leaders Can Do to Support Hot Work SWP?



- Understand the SWP requirement
- Limit number of hot work to as low as reasonably practical
- Train welders (hot work awareness)
- Conduct site audit
- Train fire watch
- Train Qualified Gas Testers
- Ensure all gas test equipment are calibrated