

BP OIL -- TOLEDO REFINERY

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SCOPE	This procedure describes the methods used for the preparation and testing of areas for safe Hot Work and Hot Work Spark Potential, and Vehicle Entry.
HEALTH	N/A
SAFETY Special PPE & Special Hazards	Standard PPE Fire and/or Explosion Respiratory Protection or specialized PPE based on risk assessment
REFERENCE DOCUMENTS	<ul style="list-style-type: none"> ▪ SAF 037 - Lock Out/Tag Out Procedure ▪ SAF 023 – Using Direct Reading Gas Testing Equipment ▪ SAF 080 Smoke Pen Authorization and Permit Procedure ▪ SAF 082 – Vehicle and Traffic Safety Policy ▪ SAF 097 - Temporary Electrical Power ▪ Toledo Isolations Policy ▪ BP Golden Rules ▪ UL 913 - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division I, Hazardous (Classified) Locations ▪ Toledo Control of Work Policy ▪ ISA-RP12.12.03-2002 – Recommended Practice for Portable Electronic Products Suitable for Use in Class I and II, Division 2, Class I Zone 2 and Class III, Division 1 and 2 Hazardous (Classified) Locations ▪ NFPA 70 – National Electric Code ▪ OSHA 29 CFR 1910.252 ▪ OSHA 29 CFR 1910.119(k)
SPECIAL MATERIALS & EQUIPMENT	Hot Work or Hot Work Spark Potential Task Risk Assessment-Permit Vehicle Entry Permit Portable ABC Fire Extinguisher and/or charged fire hose Calibrated Gas testing device
QUALITY	Gas Testing Device must have been calibrated in compliance with the existing policy for these devices.
ENVIRONMENTAL	N/A

OVERVIEW

The purpose of this Procedure is to provide details for the preparation, testing, and permitting of areas where Hot Work or Hot Work Spark Potential, or Vehicle Entry are to be performed. Preparing for safe Hot Work requires knowledge of the sources and properties of flammable and combustible materials and operating conditions which could adversely affect conditions at the work site. This Procedure applies to all BP-Husky Toledo Refinery property.

DEFINITIONS

Affected Issuing Authority - where planned activities in one area may impact on activities in another area, the Issuing Authority of the affected area is referred to as the Affected Issuing Authority.

Area Authority - This is the operations person who manages the day-to-day CoW in each operating area.

Authorized Gas Tester Level 1 - An individual authorized and competent to conduct gas testing and interpret the results for confined space entry. An AGT Level 1 is also qualified as an AGT Level 2 and 3.

Authorized Gas Tester Level 2 - An individual authorized and competent to conduct gas testing and interpret the results for all levels of gas testing EXCEPT confined space entry. An AGT Level 2 is also qualified as an AGT Level 3.

Authorized Gas Tester Level 3 - An individual who has received practical instruction on the use and interpretation of the results from both portable and personal gas monitors. Authorized only for ongoing continuous gas testing.

Body-Worn – normally worn directly on or supported by a person's body.

Competent Person - a person having sufficient knowledge, skill, and training to undertake the work safely and to the standard required, and with sufficient awareness and experience to work within the refinery environment in a safe manner.

Designated Safe Hot Work Area - Area within a 50' radius from the location the Hot Work task is being performed that is tested and has controls in place for safe Hot Work tasks. Hot Work tasks within a confined space may be exempt from the 50' radius requirement with proper risk assessment.

Designated Safe Hot Work Spark Potential Area - Immediate area surrounding Hot Work Spark Potential tasks that has controls in place for safe Hot Work Spark Potential tasks. The size of the immediate area is determined during the risk assessment and TRA-Permit development process.

Fire Watch - a competent person stationed at the location where Hot Work is taking place to monitor conditions and precautionary measures. A Fire Watch shall watch for fires and other unsafe conditions and raise the alarm if such conditions occur. Fire Watchers require clear instructions in their duties and arrangements appropriate to their location and situation shall be made for their relief. Fire Watchers can be given fire fighting duties provided it is within their capability to do so. However, their primary function is to monitor the safe work area and raise the alarm.

Hand Held – intended to be supported by one hand during normal use.

Hazardous Classified Locations – A location where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dusts or ignitable fibers or flyings (API 500, section 3.2.10.4), this includes Class I, Division II.

Hot Work is any task that has a continuous/uncontrolled heat source capable of igniting flammable or combustible materials. Examples of Hot Work categories are and may include the following activities:

- Burning
- Welding
- Cutting (open flame cutting or arc gouging)
- Grinding (anything that throws sparks, such as partner saw or metabo) or other similar activities
- Air arcing
- Soldering
- Open flame
- Stress relieving
- Preheating
- Similar activity that creates an uncontrolled ignition source

Hot Work TRA (Task Risk Assessment) - a properly authorized written risk assessment covering Hot Work tasks.

Hot Work Spark Potential TRA (Task Risk Assessment) - a properly authorized written risk assessment covering Hot Work Spark Potential tasks.

Intrinsically Safe – a UL definition referring to electrical devices or instruments that have been specifically designed, tested (UL 913), and approved for use in Class I, II, and III, Division I and II, Hazardous (Classified) Locations.

Issuing Authority - the person who ultimately accepts the risk assessment and controls that have been put in place and grants approval to do work by issuing a “Permit to Work” in his/her area. An Issuing Authority shall always be a BP employee or a contractor directly reporting to BP management.

LEL – an abbreviation for "Lower Explosive Limit" which is the lowest concentration of a flammable gas in air capable of being ignited by a spark or flame.

Level 2 Risk Assessment - a structured process involving a team of competent people who understand the task and jobsite hazards. It includes contractors and/or vendors as appropriate.

Hot Work Spark Potential (HWSP) refers to any task, tools, or activities capable of producing a spark. Examples of task and equipment categories are:

- Non-intrinsically safe devices
- Motor driven equipment (using an internal combustion engine)
- Needle gunning
- Buffing
- Dry grit in shot blasting
- Hand held instruments
- Battery operated, non-intrinsically safe devices such as: cordless drills, inspection tools, survey tools, electrical test equipment, scissor lifts, electric soldering irons, digital cameras, cell phones, computers, and other electronic devices.
- Air operated equipment that potentially can generate a spark
- Air driven impact gun
- Opening an explosionproof, purged, or pressurized enclosure with energized electrical equipment inside
- Performing any work inside an enclosure with energized electrical equipment.
- Radiography (x-ray survey meters)

Normal Use – operation of a device or equipment including stand-by (ready to use) according to the manufacturer’s instructions for use or for the obvious intended purpose.

PEP 1 – a body worn portable electronic product, in direct contact with the skin, that is deemed incapable of causing an ignition under normal conditions.

Performing Authority (PA) - a maintenance supervisor or pusher/foreman. The PA participates in the CoW process from work generation, all the way through to field work. In addition to participating in the risk assessments before work is started, the PA is responsible for accepting the permit from operations and for walking his/her crew down at the job site.

Permit - written permit issued by Issuing Authority giving the crew permission to perform work.

Portable – intended to be carried by hand or supported by a person’s body.

Portable Electronic Devices (PED) – a battery powered or photovoltaic cell powered apparatus that can be hand-held or that is intended for use while worn on a person’s body.

Positive Isolation - is defined as:

- Spool removal - removal of a pipework section or spool piece and blinding the live end, or
- Blank isolation - insertion between flanges of a blank (spade), the swinging of a spectacle blank (figure-8) or replacement of a spacer (slip-ring) with a line blank.).

Vehicle Entry Permit - a properly authorized permit allowing entry of vehicles into hazardous classified locations or permitted roadways as defined in SAF-082.

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| 1.0 | Responsibilities | 1.1 | The Issuing Authority is responsible for making sure all required precautions specified on the permit have been taken to provide and maintain a safe environment for Hot Work or Hot Work Spark Potential or Vehicle Entry. The relief Issuing Authority will assume this responsibility where preparations extend through a shift change. |
| | | 1.2 | The Issuing Authority shall inform the Affected Issuing Authority when the Designated Safe Hot Work Area 50 foot radius encroaches into their area. The Affected Issuing Authority shall sign the appropriate section of the permit. |
| | | 1.3 | Before starting Hot Work or HWSP (Hot Work Spark Potential) tasks, the Performing Authority shall contact the Issuing Authority to review work site conditions and to obtain their permit. |
| | | 1.4 | The Performing Authority is responsible for assuring safe worksite conditions and for recognizing changing conditions. |
| | | 1.5 | The Issuing Authority is to regularly monitor conditions at the Hot Work or HWSP site and be prepared to order immediate stoppage if conditions warrant such action. Frequency of job site visits shall be documented on the permit. |
| | | 1.6 | Before leaving the job site, the mechanics or Fire Watch will see that hot slag and embers are quenched. See section 10.0 for details and responsibilities of a Fire Watch. |

2.0 Avoidance of Hot Work in Operating Units

- 2.1 Hot Work can be hazardous, especially in classified areas, and therefore the following questions should be considered:
- Can alternative cold work methods be used e.g. bolting instead of welding?
 - Can the Hot Work be executed in a non-classified area and then installed with cold work methods?
 - Can the Hot Work be delayed until a shutdown or turnaround when the plant can be de-pressured, drained and made hydrocarbon free?
- 2.2 BP's operating policies for its processing plants include the concept of planned shutdowns (or turnarounds) for major maintenance and modifications. During these events, all systems containing flammable fluids will normally be depressured. Where invasive Hot Work on these systems is required, they shall be flushed and tested zero LEL for safe working. Isolation of systems for maintenance shall follow the guidelines in Procedure SAF 037 Control of Hazardous Energy (Lock Out/Tag Out) Procedure.
- However, it is recognized that the refinery cannot routinely be completely shutdown and isolated: some sections can be isolated individually; others cannot be isolated at all without total loss of oil and gas production. Therefore, it is recognized Hot Work may need to be conducted within an operating unit, though this must be justified and kept to a minimum.
- 2.3 Storage tanks should be decommissioned and zero LEL before any Hot Work is conducted on the tank. Hot Work on the floating roofs should also be avoided when the tanks are in normal service. However, it is recognized some Hot Work may need to be conducted on storage tanks containing flammable or combustible materials in normal service. Approvals required for this work can be found in the Task Risk Category Table, such as for Hot Work on un-cleared piping or equipment or Confined Space Entry with no positive isolation.

3.0 Permit Provisions

- 3.1 All Hot Work tasks in hazardous classified locations require a L2TRA (Level 2 Task Risk Assessment). Other adjacent activities shall be considered in the risk assessment and in the permit development and issue. The need for an additional fire watch(s) and fire extinguisher(s) will be assessed during the Level 2 Risk Assessment.
- 3.2 All Hot Work and Hot Work Spark Potential (HWSP) tasks require a written permit unless they meet the Exemptions in section 4.0.
- 3.3 The permit for Hot Work or HWSP tasks shall be completed as part of the work planning package and approved by the appropriate people.
- 3.4 The people required to approve the Hot Work or Hot Work Spark Potential tasks can be found in the Task Risk Category Table.

- 3.5 Gas testing results must be documented on the Permit.
- 3.6 The person performing the work must have a proper permit before they can start Hot Work or Hot Work Spark Potential tasks. A copy of the permit shall be located at the job site.
- 3.7 For water draws in OM&S only, a permit may be issued allowing work to begin pending satisfactory gas testing immediately prior to entering the area and continuous monitoring at set down of vehicle.
- 3.8 When conditions make it unsafe to proceed, stop Hot Work/HWSP tasks immediately. A member of the work crew must report the condition change to the Issuing Authority. Hot Work or HWSP tasks can only resume when conditions are safe and the Permit has been reauthorized.
- 3.9 When work is complete, the Issuing Authority shall be informed and the appropriate section of the Permit completed

4.0 Exemptions

- 4.1 Certain areas or tasks are exempt from the requirements of a Hot Work or HWSP permit. Only the specific areas listed in this section are exempt. To exempt another area or task, an MOC must be completed and this procedure updated.
- 4.2 The following areas are exempt from the requirements for Hot Work Spark Potential permit for non-permitted work tasks or for HWSP equipment not being used for a work task.
 - All non-hazardous classified locations
 - All areas within the Green PPE Zone
 - Lallendorf complex
 - Parking lots outside the refinery fenceline
 - Water intake
 - Navarre L&D

NOTICE

- Using an open flame lighter and smoking inside of a smoke pen does not require a Hot Work permit. Other Hot Work tasks on a smoke pen do require a Hot Work permit. See SAF-080 for smoke pen requirements.

- 4.3 The following areas are exempt from the permitting requirements for all Hot Work and Hot Work Spark Potential tasks:
 - Designated work floor areas inside the Maintenance Shops
 - Designated work floor areas inside the Pure Oil Warehouse Building
 - Fabrication locations outside of the Process Block.
 - Designated work areas inside or outside of the Ivy Steel Building

- 4.4 Body worn Portable Electronic Products, in direct contact with the skin, as defined in PEP 1 (ISA-RP12.12.03-2002), do not require a Hot Work Spark Potential permit. The following are recognized as Exempt from the requirements of a Hot Work Spark Potential permit:
- Electronic wristwatches
 - Hearing aids inserted in the ears
 - Products powered by a maximum of two button cells with no electrical connections accessible outside the product.
- 4.6 If cameras are used in a hazardous classified location, a portable LEL monitor may be used rather than a written PTW. See the Site COW Policy or Camera Form for the requirements of cameras. The camera must be shut off if LEL exceeds zero. All other non-intrinsically safe devices require a written PTW when used in hazardous classified areas, except those listed on the Task Risk Category Table.
- 4.7 Turnarounds, Special Projects, Greenfield or Brownfield work may be exempt from this procedure or specific elements of it. This work must have a written plan that addresses Hot Work, Hot Work Spark Potential and Vehicle Entry and meets all regulatory requirements, such as OSHA. The exemption from this procedure must be approved by either the Health and Safety Team Leader or the HSSE Manager.
- 5.0 Determination of Work Site Conditions
- 5.1 The Issuing Authority, Area Authority, and Performing Authority inspects the work area for possible sources of flammable and combustible materials. For Hot Work the area shall include the 50 foot radius, for HWSP the area shall include the immediate area only. Check for such conditions as leaks, spills, draining, bleeding, venting, open sewers, open vents, safeties lifting to atmosphere, vacuum breakers, product sample points, hidden sewers in tower skirts, pump drains, etc. Inside buildings, check for floor openings, cracks or holes in walls or the floor, open doorways, or open windows that may expose combustible materials. If these conditions exist, controls should be documented on the permit.
- 5.2 The minimum size for a Designated Safe Hot Work Area (for Hot Work tasks only) shall be a radius of 50'.
- 5.3 A safe work area for Hot Work Spark Potential tasks includes the immediate area surrounding the task. The size of the immediate area where controls must be implemented is determined during the risk assessment and HWSP permit development.
- 5.4 Check unit operating status to detect upsets that could create unsafe conditions at the work site.
- 5.5 **Atmospheric Testing** - Atmospheric testing shall be carried out by an Authorized Gas Tester Level 1 or 2 within the work area using an

active gas tester (one with a pump). Testing shall be repeated at least every 12 hours when Hot Work or HWSP tasks are being performed. For Hot Work, testing shall be carried out in the Designated Safe Hot Work Area (50' from Hot Work). For Hot Work Spark Potential, testing shall be carried out in the immediate area around the HWSP work. Where the vessel, equipment or system is large, multiple gas tests shall be made. The following gas tests shall be made, in the order set out below:

1. Oxygen content, which shall be 19.5%-23.5%, i.e. similar to air (otherwise the flammable gas meter will not be accurate)
2. Flammable Gas concentration, which shall be 0% LEL. When 0% LEL can not be achieved or confirmed, it must be documented on the permit and controls implemented.

5.6 **Continuous atmospheric testing** - A member of the work crew performing any Hot Work task shall conduct continuous monitoring for LEL. A member of the work crew performing any Hot Work Spark Potential task in a hazardous classified location shall conduct continuous monitoring for LEL. A passive monitor may be used for continuous monitoring. Continuous monitoring shall be carried out by an Authorized Gas Tester Level 1, 2 or 3. The person performing the continuous monitoring can have other duties and does not need to be dedicated to gas testing. The location of the continuous monitor should be discussed during the risk assessment.

5.7 When taking gas tests, inert samples must be diluted with air before being drawn into the instrument.

CAUTION

Portable flammable gas monitors in general use in refineries relies on there being normal levels of oxygen in the atmosphere; otherwise inaccurate readings may be obtained. It is important, therefore, in confined spaces or other areas where there may be limited ventilation to conduct testing to confirm that normal atmospheric levels of oxygen are present or install inert sampling accessories before testing for flammable gases and vapors.

NOTE: Gas monitoring instruments shall be tested and calibrated in accordance with SAF 023 Using Direct Reading Gas Testing Equipment and be bump checked and inspected daily in accordance with the manufacturer's instructions and refinery procedures to ensure their integrity.

5.8 Simultaneous Operations (SIMOPS) – Potential hazards from nearby activities must be evaluated and assessed. During Hot Work tasks there must be no sampling, line opening or breaking, venting or draining within the Designated Safe Hot Work Area.

5.9 **Open Sewers** - For Hot Work tasks, open sewers within the Designated Safe Hot Work Area shall be covered with a fire blanket or similar flameproof material to prevent the entry of sparks into the underground systems. For Hot Work Spark Potential, open sewers

within the immediate area of the work should be covered as determined by the risk assessment. It may be impractical to fully cover drainage gullies; however if this is the case, it should be addressed in the risk assessment. Sewers should be uncovered when Hot Work or HWSP tasks are completed.

5.10 **Additional controls for Hot Work tasks:**

- Removal of Combustibles - Combustibles, such as wood, paper, plastic and flammable and combustible liquids, shall be removed within the Designated Safe Hot Work Area. If relocation is impractical, these materials shall be protected using flameproof covers, or shielded with metal or flameproof curtains. During the risk assessment, if removal or shielding is deemed more hazardous than material may be left in place during Hot Work. Surrounding areas can also be kept wet to extinguish any sparks which settle. Where floors have been wet down, personnel operating arc welding or cutting equipment must be protected from possible shock.
- Confining Sparks - Flameproof barriers shall be considered to contain any sparks generated during the work.
- Ducts - Ducts and conveyor systems that might carry sparks to distant combustibles shall be protected or shut down.
- Combustible walls - Where cutting or welding is done near walls, partitions, ceilings or roofs of combustible construction, fire-resistant shields or guards shall be used to prevent ignition.
- Noncombustible walls - If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation. The preferred solution is to relocate the combustibles. Where combustibles cannot be relocated, a Fire Watch on the opposite side from the work is required.
- Combustible cover - Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.
- Pipes - Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

6.0 Isolating and Gas-Freeing Equipment

- 6.1 Positive isolation is required for Hot Work tasks on piping and equipment, excluding:
- Steam, water, or air systems (below 290 psig and 257°F)
 - Hot tap, stoppling or clamping tasks
- 6.2 Positive isolation is required for Hot Work tasks (excluding those exceptions in 6.1 and not HWSP tasks, necessarily). Positive isolation can **not** be replaced with valved isolation even if the time to install the blank is greater than the time it takes to perform the work.
- 6.3 If positive isolation is required as defined in section 6.1 and cannot be

achieved, than a Level 2 risk assessment and an Isolations Approval Form shall be completed. Approvals required for Hot Work tasks without positive isolation are documented in the Task Risk Category Table.

- 6.4 Prepare an Isolation Plan (as described in SAF102) of positive isolation locations required to isolate the equipment. Provide positive isolation per the developed Isolation Plan.
- 6.5 Refer to MAINT-E-022 Use of Pressure Rated Line Blanks for the process for proper selection of pressure rated line blanks.
- 6.6 Any vessel, equipment or piping on or in which Hot Work tasks are to be carried out shall be thoroughly cleaned and ventilated. Purging with nitrogen, water, zyme flow, resid-x, or steam may be necessary to prepare equipment. Cleanliness throughout the equipment shall be confirmed by gas testing and where possible by visual inspection.
- 6.7 In some cases, long piping runs or complex systems cannot be adequately cleared of hazardous or flammable material. When purging and/or washing do not sufficiently clear piping, a hydraulic isolation tool or mechanically expanded plug may be installed at the point of work to supplement the positive isolation (blind or blank) for Hot Work tasks. Such devices shall only be used downstream of positive isolation as a vapor or liquid seal to contain and direct to vent any small amounts of fluid which would otherwise be released at the job site. A Level 2 risk assessment is required to use these devices. Approvals required are documented in the Task Risk Category Table.
 - Plumbers' plugs or inflatable bladders can only be used for sewer work.
 - Hydraulic isolation tools (e.g. Carbor Tool) must be installed by a trained technician from an approved specialty contractor using the contractor's installation procedures. The technician must be present at the immediate area at all times during Hot Work. Gas testing results at the point of work must be 0% LEL.
- 6.8 When working within envelope blanks, piping does not need to be blanked when a spool piece is removed, except for confined spaces where the rules of SAF032 apply.

- 7.0 Restrictions and Precautions
 - 7.1 Upon proper risk assessment, the Issuing Authority may, at their discretion, require additional control measures. These control measures may include, but are not limited to: use of barricade tape, keeping fire blankets wet, etc.
 - 7.2 While Hot Work is in progress, no sampling, line opening, venting, or draining may be conducted within a minimum of 50 feet.
 - 7.3 Cutting and/or welding are not allowed to be performed in sprinklered buildings while such protection is impaired.
 - 7.4 Cell phones and two-way pagers will not be used in process areas or hazardous classified locations. They may be carried into hazardous classified locations inside of a properly permitted vehicle. They may also be carried into a hazardous classified location by employees entering a POD/building provided the phone is turned off. The phone shall remain inside the building until the end of the workday or shift. This equipment may be used in control buildings or on roadways outside of process unit boundaries. Pagers approved for use in Class I, Division II, Hazardous (Classified) Locations and for Emergency Response Team use are allowed to be turned on in process areas.

- 8.0 Vehicle Entry
 - 8.1 Vehicle entry into live process units shall be kept to a minimum.

CAUTION

Vehicles have the potential to create a spark. Their use in hazardous classified locations must be risk assessed and gas testing performed before entry.

- 8.2 Vehicles with an internal combustion engine entering a hazardous classified location or a permitted road shall receive a Vehicle Entry Permit or a Hot Work Spark Potential permit (HWSP Permit).
- 8.3 Permitted roadways are all roads that are designated as hazardous classified locations, such as Class 1, Division 2. Other roads may be identified as permitted roadways to help with traffic control. See SAF-082 Vehicle and Traffic Safety Policy for more information.

8.4 Shift Truck Pass

- A HWSP permit should be issued for vehicles that are used as a tool for part of a task, such as cranes or forklifts in hazardous classified areas or permitted roadways.
- A Shift Truck Passes shall:
 - Be granted at the discretion of the Issuing Authority, even if a truck is listed as tool on the permit. This means the Issuing Authority may deny entry of the truck.
 - Be completely filled out by the Issuing Authority.
 - Be valid only for the date listed on the pass.
 - Be displayed at all times. Shift Truck Passes have been designed to be hung from the rearview mirror.
 - Be returned to the Issuing Authority by the end of the shift. Once

- returned, the Issuing Authority should discard the pass.
- A Shift Truck Pass is not needed if a 2-hour Vehicle Entry Permit is issued.
- 8.5 Before the Vehicle Entry Permit or HWSP permit is issued, an Authorized Gas Tester (AGT) Level 1 or Level 2 shall test the area with an active gas monitor. The LEL must be zero for a permit to be issued.
- 8.6 Before the Vehicle Entry Permit or HWSP permit is issued, a risk assessment shall be completed. The risk assessment shall include job site hazards and controls, such as:
- Duration of vehicle on site
 - The area where the vehicle is to be sited
 - Locations of vents, drains, sewers, sample points, etc.
 - All other relevant hazards in the area
 - Any simultaneous operations (SIMOPs) that may conflict, such as hydrocarbon breaking containment work.
- 8.7 The Vehicle Entry Permit shall be valid for a maximum of two hours.
- 8.8 The vehicle entry/exit path and location shall be specified on the Vehicle Entry Permit or HWSP permit.
- 8.9 For vehicles with a Vehicle Entry Permit, the permit shall be displayed in the vehicle at all times when on a permitted roadway or in a hazardous classified location.
- 8.10 Continuous gas monitoring shall be performed on permitted roadways or in hazardous classified locations once the vehicle reaches its set down point. It is encouraged to have an escort walk at a safe distance in front of internal combustion engine equipment and vehicles with a gas tester to ensure the atmosphere is safe to drive in. If the vehicle is parked and turned off, continuous monitoring must be conducted in the area before the vehicle is turned back on.
- 8.11 If the LEL exceeds zero, the AGT shall order the vehicle to be shut off.
- 8.12 For vehicles passing through one area to get to another area, the Issuing Authority for the Vehicle Entry Permit or HWSP permit shall be the Issuing Authority at the destination point. The Issuing Authority shall receive permission from all Affected Issuing Authorities that the vehicle can pass through the identified areas. The Affected Issuing Authorities shall test their areas and sign the Vehicle Entry Permit or HWSP permit. By signing the Vehicle Entry Permit or permit, the Affected Issuing Authorities are verifying that their portion of the route has been tested and results are 0% LEL and that SIMOPS have been identified and controls identified.
- 8.13 If Vehicle Entry Permits or HWSP permit for vehicles are to be revoked due to operational upsets or emergencies, any other affected areas that permission has been granted to issue permits must be notified. The Emergency Operations Center (EOC) can be called and requested to issue an "ALL CALL" on the radio and a Public Address Announcement that states that permits have been revoked for that

certain area.

- 9.0 Electrical Equipment
- 9.1 Electrical equipment used in hazardous classified locations of BP Toledo Refinery, shall be approved for use in Hazardous Classified Locations whenever practicable.
- 9.2 Electrical equipment not approved for use in Hazardous Classified Locations shall always require a Hot Work Spark Potential permit before use in Hazardous Areas of BP Toledo Refinery.
- 9.3 Equipment that has been approved for use in Class I, Division II, Hazardous Classified Locations, does not require a HWSP permit or continuous LEL monitoring.
- 9.4 Electrical Equipment that is not approved for use in Hazardous Classified Locations, and which will be in use for multiple shifts (e.g. welding machines, temporary power supplies, heaters for refractory drying, vessel ventilation, etc.), are subject to the following additional control measures:
- An explosion proof disconnect shall be provided to de-energize the equipment in the event of a vapor release.
 - Electricians shall provide a formal label on the disconnect stating the shutdown location for that specific equipment.
 - Equipment shall be de-energized at all times when not in use.
- 9.5 Only listed Hand Held Electrical Equipment and body worn Portable Electronic Products are exempt from HWSP permit requirements as described in Section 4.0.
- 10.0 Fire Watch
- 10.1 A Fire Watch shall be required for Hot Work tasks being performed under a Hot Work permit.
- 10.2 A Fire Watch may be required for HWSP tasks. If required, it will be documented as a control on the permit.
- 10.3 For Hot Work tasks, the Fire Watch is required for the duration of the Hot Work task and must remain for 30 minutes after the Hot Work task ceases to ensure a fire does not start from residual heat or sparks:
- 10.4 If a Fire Watch is required, the permit will specify if this will be their sole duty (dedicated Fire Watch) or in addition to their other duties (non-dedicated Fire Watch).
- 10.5 An individual may be able to perform the role of Fire Watch for more than one job provided the jobs are situated in close proximity and are on the same level.
- 10.6 A Fire Watch shall be posted at grade whenever Hot Work tasks are being performed at elevated levels, e.g. scaffold, elevated platforms, powered working platforms, pipe alleys, etc., and has the potential to shower sparks and/or hot molten slag over equipment and/or personnel. These areas shall be cordoned off with safety tape at an appropriate distance to avoid persons accidentally trespassing into the area. All efforts should be made to contain sparks whenever possible. The need for

an additional fire watch(s) and fire extinguisher(s) will be assessed during the Level 2 Risk Assessment.

- 10.7 A Fire Watch shall be required to have at least one 20 pound multipurpose "ABC" dry chemical extinguisher at the work site. The Issuing Authorities are responsible for determining any additional precautions and restrictions.
- 10.8 If the fire hazard calls for a larger extinguisher or more specialized equipment, such as portable monitors, fire hose larger than 1 1/2" hose, etc., then the Emergency Response Specialist should be consulted.
- 10.9 It is forbidden to use area operations extinguishers intended for "EMERGENCY USE ONLY" as stand-by equipment to meet the requirement of 10.6.
- 10.10 A Fire Watch must be trained in the use of hand-held portable fire extinguishers and in the responsibilities of a Fire Watch.
- 10.11 Responsibilities of the Fire Watch include:
- Check that flammable and combustible materials are cleared away from the work area
 - Ensure that identified drains on the work site are covered and sealed
 - Ensure that fire fighting equipment is available and ready for immediate use
 - Monitor work site area and any concurrent jobs within same location
 - Make sure that spark and welding spatter are contained
 - Stop the job if any safety issues develop
 - Watch for fires in all exposed areas
 - Try to extinguish fires only when obviously within the capacity of the equipment available, or otherwise sound the alarm
 - Raise the fire alarm in the event of a fire by contacting the operator or supervisor on the radio or by other means.
- 10.12 A Fire Watch is only required in designated shop areas inside buildings when the following conditions exist:
- Welding or open-flame cutting are performed, and
 - There is appreciable combustible material within 50 feet.
- 11.0 Confined Spaces
- 11.1 Tanks, vessels, and equipment must be properly isolated, cleaned and prepared to prevent explosive atmospheres from developing.
- 11.2 **Arc Welding** - When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur. The machine must be disconnected from the power source if possible. If the machine is hard wired, it must be turned off.
- 11.3 **Gas Welding or Cutting** - When the torch will not be used for a substantial period of time, such as during lunch hour or overnight, the torch valves shall be closed and the gas supply to the torch positively

shut off at some point outside the confined space. This will eliminate the possibility of gas escaping through leaks or improperly closed valves. Where practicable, the torch and hose shall be removed from the confined space.

11.4 **Tank Work** – Any tank work involving confined space entry under the floating roof must have positive isolation.

12.0 Emergencies

12.1 When the emergency siren sounds, all Hot Work tasks and Hot Work Spark Potential tasks must be suspended. Suspended Permits within the area directly impacted by the emergency must be revalidated by the Issuing Authority before starting or resuming any Hot Work or Hot Work Spark Potential tasks. Permits are revalidated by performing and documenting an LEL retest. The retest shall be documented on the permit or on an additional gas test form.

12.2 During Emergencies, emergency response vehicles do not need a permit to enter the area.

NOTICE

- During an gas/vapor release emergency when the siren sounds all vehicles should be placed off the road and shut off and occupant shall walk to muster areas.

13.0 Training Requirements

13.1 Authorized Gas Testers shall be trained in accordance with Control of Work, including using gas monitoring equipment and understanding the readouts of the equipment.

13.2 Individuals holding or performing a COW role shall be trained in accordance with Control of Work.

13.3 Firewatchers shall be trained on their responsibilities as listed in section 10.

14.0 Changes

14.1 Any deviations from this procedure must go through the Management of Change (MOC) process and include approval by the Control of Work Technical Authority.

NOTICE

Before starting an MOC, review the exceptions throughout this procedure (such as 4.0, 6.3, 10.12)

Revision history

The following information documents at least the last 3 changes to this document, with all the changes listed for the last 6 months.

Date	Revised By	Changes
8-11-14	Jon D. Parker	MOC# M20142473-001 -8.10 I.C.E. placards have been removed from the procedure.

9-11-14	Jon D. Parker	MOC# M2014707-001 – All changes were to revise terminology to meet electronic control of work process.
2-20-17	Mario Rizo	Added verbiage to sections 3.1 & 10.6 regarding assessment for additional fire watch and fire extinguisher placement. Also changed the word 'used' to 'required' in sections 10.1 & 10.2. Changed procedure owner. MOC# M2017372-001

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