

BP OIL -- TOLEDO REFINERY

Document Type: Procedure	Toledo Refinery	Reference No.: SAF 032
Effective Date: February 15, 2016	Confined Space Entry	Revision No.: 14
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SCOPE	This procedure describes how confined space entry will be managed at BP Toledo Refinery. It applies to BP employees and contractors, who may enter a confined space simultaneously.
HEALTH Special PPE & Special Hazards	<p>Possibility of personnel being subjected to oxygen deficiency, flammable gases and vapors, toxic materials, or radiation hazards inside the confined space.</p> <p>Mechanical or electrical hazards within the confined space.</p> <p>Having an emergency occur outside the confined space which would affect the safety of those inside.</p>
SAFETY	Protection of personnel working or entering Confined Space.
REFERENCE DOCUMENTS	<ul style="list-style-type: none"> • 29 CFR 1910.146 • 29 CFR 1926.651 • PSME 18 Safe Use of Nitrogen • Toledo Control of Work Policy • OPNS-074 Toledo Isolations Policy • SAF-044 Hot Work, Hot Work Spark Potential, and Vehicle Entry. • MAINT-E-022 Use of Pressure Rated Line Blanks • SAF-037, SAF-102, SAF-067, SAF-120, SAF-033
SPECIAL MATERIALS & EQUIPMENT	Communication Equipment Rescue Equipment
QUALITY	N/A
ENVIRONMENTAL	N/A

Definitions

Active confined space

- A confined space that currently has entrants.

After-hours

- Work performed outside of the regular business hours of Monday – Friday, 7:30 AM – 4:00 PM. Holidays are also considered after-hours work.

Attendant

- A person who remains outside the confined space to monitor the authorized entrants and conditions throughout the confined space entry period and has specific duties defined in this procedure. (Must be knowledgeable in Confined Space Hazards.) See Appendix A 2.0 for the summary of Attendant duties.

Authorized Entrant

- A person who is authorized by the Entry Performing Authority to enter the confined space. (Must be knowledgeable in Confined Space Hazards.) See Appendix A 1.0 for the summary of Authorized Entrant duties.

Authorized Gas Tester (AGT) 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 (AGT) 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 (AGT) Level 3

- An individual who 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.

Confined Space

- Any space large enough and so configured that an employee can enter and perform assigned work, has limited or restricted means for entry or exit, and is not designed for continuous employee occupancy. Examples include:
 - process vessels and related equipment (vessels, flare stacks, and boilers), storage tanks.
 - vaults and other underground spaces with limited ventilation, sewers, pits, pipe trenches
 - entry onto an external floating roof tank.
 - any temporary cut, trench, excavation or depression that exceeds 4 feet in depth.
 - Fin-fans (above and over the shroud), vessel skirts and compressor decks.

NOTE: Temporary shelters are designed for human occupancy, however, unventilated temporary shelters may have the potential to trap hazardous vapors/gases or can become oxygen deficient as a result of work within them using nitrogen or inert welding gas. Atmospheric hazards need to be considered when using temporary shelters.

Confined Space Entry

- Occurs when any part of a person's body breaks the plane of an opening into the confined space.

Confined Space Entry Permit

- A documentary control device to ensure that confined space entry is authorized and executed subject to specified safety precautions. The actual work to be carried out in the confined space, be it hot work or cold work, shall be carried out under an accompanying Permit to Work as required by Control of Work.

Confined Space program

- The overall program for controlling confined space entry, for protecting employees from confined space hazards, and for regulating employee entry into confined spaces.

Engulfment

- The surrounding and effective capture of a person by a liquid or a finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction or crushing.

Entry Log

- The form (SAF032-FM02) is a recognized attachment of the Entry Permit and is used to document the confined space Entrants' names and the times at which they enter and leave the confined space. The entry log allows attendants to quickly and accurately determine who is inside the space. Prior to entry, the current Entry Performing Authority for the space must print name and sign this form. The entry log shall be returned to the Issuing Authority at the end of each shift.

Entry Performing Authority (Entry PA)

- The Entry Performing Authority serves the role of Entry Supervisor in OSHA 29 CFR 1926.1210.

Hazardous Atmosphere

- A atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:
 - a) Flammable gas, vapor, or mist that exceeds 10% LFL (Lower Flammable Limit)
 - b) Airborne combustible dust that meets or exceeds its LFL
 - c) Atmospheric oxygen concentration below 19.5% or above 23.5%
 - d) Atmospheric concentration of any substance for which a dose or PEL is published in OSHA 1910 (Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances) and which could result in employee exposure in excess of its dose or PEL.
 - e) Any other atmospheric condition that is immediately dangerous to life and health.

Immediately Dangerous to Life or Health (IDLH)

- Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interface with an individual's ability to escape unaided from a permit space.

Inerting

- The displacement of the atmosphere in a permit space by a noncombustible gas (nitrogen) to such an extent that the resulting atmosphere is noncombustible. This produces an IDLH atmosphere.

Inert Entry

- Entry into a confined space that contains a potentially lethal atmosphere, such as IDLH or inert atmosphere. Refer to SAF 033 Inert Entry.

Isolation

- Procedures that address isolation requirements include: SAF-037, SAF-102, OPNS-074, SAF-067, and MAINT-E-022.
- The process by which a confined space is removed from service and completely protected against the release of energy and material into the space by such means as:
 - a) Positive isolation (blanking or blinding)
 - b) Lock out of all sources of energy
 - c) Removing sections of lines, pipes, or ducts
 - d) Blocking or disconnecting all mechanical linkage
 - e) Disconnection of all temporary piping and connections

Issuing Authority

- A person who accepts the risk assessment and controls that have been put in place and grants permission for work to commence 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.

Lowest Point of Entry

- The planned entry point of a confined space that is closest to grade where an Authorized Attendant is currently located/on duty.

Oxygen-deficient atmosphere

- Any area where oxygen concentrations are below 19.5%

Performing Authority

- A Control of Work role that may be fulfilled by the existing Maintenance Supervisors, Contractor Foremen, Contractor Pushers and BP 1st Class Craftsmen assigned by supervision to the role. For Permit-required Confined Space entry, the Performing Authority may be the Entry Performing Authority if they have been trained as an OSHA Confined Space Entry Supervisor.

Permit-required Confined Space. A confined space that has one or more of the following characteristics:

- a) Contains or has a potential to contain a hazardous atmosphere.
- b) Contains a material that has the potential for engulfing an entrant.
- c) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
- d) Contains any other recognized serious safety or health hazard.
- e) Excavations greater than 4 feet in depth.

Positive Isolation

- Disconnection and plugging or blanking (blinding) of open ends or disconnection and removal of piping sections or spool pieces and plugging or blanking of open ends
- The insertion of a blind between flanges, the swinging of a spectacle blank (figure-8) or replacement of a spacer (slip-ring) with a line blank.

Reclassified Confined Space

- A confined space where the only hazard posed in the permit space is an actual or potential hazardous atmosphere and where continuous forced air ventilation alone is sufficient to maintain the permit space safe for entry.

Temporary Shelter

- A temporary shelter is not considered a confined space as long as it was designed and constructed for employee occupancy, does not have limited means for entry and exit, and has sufficient ventilation to keep atmospheric gas levels within acceptable ranges .
- Temporary shelters may include asbestos remediation enclosures, enclosures for welding, or shelters erected for wind breaks, provided they have a door cut into them and the walls do not go all the way to the ground to provide ventilation.
- There are separate rules regarding the placement of temporary shelters. Refer to PSM-022 Control Procedure for Siting Occupied Portable Buildings.

NOTE: If temporary shelters are not considered confined spaces, they need to be constructed in a manner that it will remain contaminate free due to natural ventilation and evaluated to ensure they do not have the possibility to become a hazardous environment.

1.0 Preparing the space

- 1.1. Every confined space entry shall have a Level 2 Task Risk Assessment to establish whether the proposed confined space entry can be performed safely. Refer to the Task Risk Category Table for participants and approvers.
- 1.2. These items should be considered during the Level 2 Task Risk Assessment:
 - types of atmospheric testing to be performed
 - recommended limits of atmospheric testing (if different than what is listed on confined space permit)
 - frequency of gas testing (would it be required more frequently than every 12 hours)
 - method attendant will use to communicate with entrants
 - determine what radio channel the attendant will monitor
 - harness or non-entry rescue requirements
 - potential hazards and controls within the space
 - initial assessment of ventilation
- 1.3. The space should be physically walked down as part of the Level 2 Task Risk Assessment. Drawings of the interior of the space shall be considered for the Level 2 Task Risk Assessment, unless the space can be opened and the entire interior configuration can be seen without entering the space.
- 1.4. Any Vessel installed prior to 1992 may have potential asbestos containing material and must be tested by an Asbestos Hazard Evaluation Specialist if the suspect material may be disturbed as part of the work scope.
- 1.5. Every confined space must be evaluated for ventilation requirements. Refer to site Industrial Hygenist and SAF-120 for information.
- 1.6. The Area Operations Shift Supervisor, or designee, shall contact the confined space rescue team so they can evaluate the space and write a rescue plan prior to work crew arriving at the confined space.

2.0 Isolation

Requirements

- 2.1. All confined spaces shall have isolation of all hazardous energy sources before entry occurs. Exceptions include:
 - a. In the case of inert entries, if the only line that is not positively isolated is the Nitrogen line.
 - b. Allowing for removal of material used for washing or cleaning the space. However, any bottom drains or bleeds that lead or are connected to the sewer must be protected against vapors traveling through the drain and into the space by covering or isolating the sewer.
- 2.2. Any mechanical or electrical equipment, such as internal moving devices, exposed electrical conductors, electrical grids in desalters, electrodes in precipitators, or radiation sources associated with the confined space shall be de-energized and isolated according to procedure.
- 2.3. Positive isolation is required for all lines leading into and out of a confined space.

NOTE: 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.

- 2.4. If level gauges/site glasses are not blinded, then they shall be treated as part of the vessel and as such will be washed/cleaned and gas freed.
- 2.5. If positive isolation can not be achieved, then the isolation shall be approved by the Operations Manager and documented with the Refinery Isolations Planning Tool. See the Task Risk Category Table on the Control of Work website for other required approvers.
- 2.6. Positive isolation shall be made at the closest point to the vessel.
- 2.7. Where positive isolation can not be made at the closest point to the vessel due to access or operational reasons, then the isolation point shall be approved as defined in the Toledo Isolation Policy.
- 2.8. **Floating roof tank** – Required Isolation for entry onto a floating roof tank roof includes:
 - a) Positive isolation of any source of energy that would discharge into the area above the roof and into the confined space. Positive isolation may be blanking, re-alignment or removing sections of lines, pipes or ducts, and disconnection of all temporary piping and connections.
 - b) PSVs that relieve into the tank below the roof level do not have to be positively isolated and may remain aligned into the tank's interior.
- 2.9. **Sewers** - If isolation is not possible because the space is part of a continuous system (such as a sewer), work around, on, or in the adjacent items must be controlled or halted so that no harmful effect

could occur in the item being entered.

- 2.10. **Elevators** - Elevator repairs require confined space entry into the spaces below and above the cars for troubleshooting problems. The specialty contractors used for elevator repairs shall be trained in lockout/tagout procedures and may be made responsible for the isolation of the energy sources of the elevators before and during entry. All other requirements of this procedure still apply.

3.0 **Purging**

- 3.1 After isolating enclosed equipment for interior work, purge it free of unsafe concentrations of flammable, explosive, or toxic materials. Use purge medium suitable for the confined space and its content. After purging, test the atmosphere thoroughly to determine effectiveness of purging; re-purge and retest as necessary. Refer to SAF-103 Guidance on Preparation for Breaking Containment for suggestions on cleaning and purging.

4.0 **Initial Atmospheric Testing**

- 4.1 Gas testing of a confined space shall be carried out before it is approved to be safe for entry. The atmosphere shall be tested by an Authorized Gas Tester (AGT) Level 1 at necessary locations.
- 4.2 The AGT Level 1 cannot be the Entry Performing Authority for the space to be entered.
- 4.3 The AGT Level 1 shall use an active gas tester with detection for oxygen, LEL, carbon monoxide, and hydrogen sulfide and is equipped with a PID (photo ionization detector). The space must be evaluated to determine the need for any other toxic gas monitoring such as ammonia, SO₂, or benzene. The AGT shall test for any other toxics that may be present.
- 4.4 The testing order is: oxygen, then LEL (combustible gases and vapors), then toxic gases and vapors. If the gas testing equipment performs tests at the same time, the AGT Level 1 must look at the oxygen reading first to make sure it is in acceptable range.

NOTE: Oxygen must be tested first because some gas testing equipment does not work in low oxygen environments.

- 4.5 The confined space must be adequately ventilated and tested to ensure the removal of toxic, asphyxiating and flammable material and:
- Oxygen content is between 19.5% and 23.5%.
 - Flammability shall not exceed 0% of the LEL as measured by a combustible gas meter.
 - Toxic contaminants shall not exceed the published PEL, TLV or other recommended limit as defined on the CSE permit.
- 4.6 Entry cannot be made into any confined spaces if there is more than 10% of the LEL.

- 4.7 If the Authorized Gas Tester is required to enter an unknown atmosphere to take tests for the Entry Permit, that person will:
- Review rescue plan
 - Review isolation of space and applicable hazards with operations
 - Have a attendant
 - Wear a supplied air respirator (SCBA or airline with egress cylinder).
- 4.8 Testing shall be performed at all locations within the space where the atmosphere may be different. For example, if a physical barrier prevents ventilation from passing between areas then each area needs to be tested. If there are low areas where gases heavier than air may pool, those shall be tested also.
- 4.9 Testing locations shall be identified on the Confined Space Entry Permit. Initial test results shall be written on the permit. Follow-up testing shall be written on the Additional Gas Testing Results form (SAF-032-FM04) kept with the Confined Space Entry Permit posted at the space.

NOTE: The Confined Space Entry Permit serial number (red 5-digit number in upper right corner) must be written on the Additional Gas Testing Results form in the designated space provided.

- 4.10 Each entrant or authorized representative must be provided the opportunity to observe any testing of the space that is conducted prior to initial entry or subsequent to such entry.
- 4.11 Re-testing will be done at least every 12 hours during entry. If a greater frequency is defined in the risk assessment, re-testing may need to be conducted more frequently than every 12 hours (for example every 6 hours). Testing for other toxic contaminants will continue until all contaminants have been removed from the space. The AGT Level 1 shall also repeat gas test results upon request.
- 4.12 For initial testing before a Confined Space Entry Permit is issued, air moving equipment shall be shut off for a minimum of 30 minutes before making atmospheric tests. Controls will be based on these atmospheric testing results. Controls shall be written on the Confined Space Entry Permit.
- 4.13 Repeat testing shall be taken with all air moving equipment shut off for a minimum of 15 minutes.

5.0 Confined Space Entry Permit

- 5.1 All confined spaces must have an approved Confined Space Entry Permit before entry into the space is authorized.
- 5.2 The Issuing Authority will prepare the Confined Space Entry Permit. If no issuing authority is responsible for the job/task then the Entry Performing Authority or his/her delegate will prepare the Confined Space Entry Permit.

- 5.3 One choice must be selected on the Confined Space Entry Permit – Permit Required Confined Space or Reclassified Confined Space. If the space changes from one type to another, a new permit must be written.
- 5.4 The permit must contain the date and authorized duration of the entry permit. A confined space permit may be issued for up to 30 days. For confined space work that takes longer than 30 days, a new permit must be issued at least every 30 days. Confined Space Entry Permits are valid until their expiration date as long as conditions in the space do not change.
- 5.5 The Confined Space Entry Permits must describe the communication procedures used by entrants and attendants to maintain contact with each other during entry.
- 5.6 The Confined Space Entry Permits must list the radio channel the attendant will monitor and is determined by the Issuing Authority. This channel should be the area operations channel.
- 5.7 The Confined Space Entry Permits must identify the requirement for harness and non-entry rescue. All entrants are required to wear a harness when entering a confined space unless deemed to pose more of a hazard to the entrant or it would not aid in rescue. If a harness is not necessary, it shall be noted on the confined space permit and approved by a BP Safety Advisor.

NOTE: The harness is to make rescue more safe and efficient. The harness can be worn underneath nomex, Tyvek, etc. Rescue crews are trained to cut through clothing to access the harness in case of emergency.

- 5.8 The Isolation / Preparation section of the permit shall be completed. Each item should be initialed when completed. The Shift Supervisor shall sign the permit after verifying isolation, preparation, and controls are in place. This signature is necessary to authorize the gas testing of the confined space.
- 5.9 Initial gas testing results shall be documented on the permit by the AGT Level 1. Results must include: the date, time, results of the test, and name of the Authorized Gas Tester (AGT) Level 1. Additionally, the AGT Level 1 must also document on the permit the test instrument name and serial number as well as a description of the testing locations within the space.
- 5.10 The Issuing Authority shall physically walk down the space to check that controls are in place before signing the permit. The Entry Performing Authority also shall physically walk down the space to check that controls are in place before signing the permit.

- 5.11 After the permit is filled out, controls are in place, and gas testing results are found to be within acceptable levels and documented, the Entry Performing Authority shall sign the permit as the Initial Entry Performing Authority.
- 5.12 The Initial Entry Performing Authority shall also print name and sign the Entry Log (SAF 032-FM02). To authorize entry, both the Entry Permit and the Entry Log must be signed.
- 5.13 When the Initial Entry Performing Authority is no longer in that role, the new (current) Entry Performing Authority must print name and sign the Entry Log in order to authorize entry.
- 5.14 The Entry Permit shall be kept at the lowest point of entry to the confined space.
- 5.15 The Issuing Authority shall post the approved Confined Space Entry Permit at the lowest point of entry of the space. If the Entry Permit posted at the confined space becomes illegible, a new permit must be posted.
- 5.16 Any problems encountered with the confined space during entry operations shall be noted in the Lessons Learned section on confined space entry permit. The problems shall also be documented and reported appropriately (such as near miss reporting).
- 5.17 Permits are considered cancelled when the Purpose of Entry, as written on the permit, is completed. If the space is closed up and needs to be re-opened, a new permit must be written.

6.0 Work Requirements for Permit Required Confined Space.

- 6.1 A "Danger - Confined Space Entry" sign shall be positioned by every entryway as soon as it is opened.
- 6.2 An attendant is required for entry into permit required confined spaces. The attendant must have a BP radio to summon emergency services if required.
- 6.3 For each craft/company entering a confined space, the Attendant shall notify the confined space rescue team (CSR) on radio channel 16A when first entry of the space occurs and when their work is completed in the space for the shift. The Attendant shall also provide CSR the name of their Entry Performing Authority.

NOTE: Even if the confined space rescue team performed initial gas testing, that is not notification of entry. The rescue team must be contacted when entry actually occurs.

- 6.4 An entry log shall be used to keep track of authorized entrants into the permit space. The entry log shall list the name of the current Entry Performing Authority (and signature), the name of the attendant, and the names of authorized entrants and their time in/out of the space.

Form SAF 032-FM02 must be used regardless which company is performing the entry. The entry log shall be returned to the Issuing Authority at the end of each shift.

NOTE: The Confined Space Entry Permit serial number (red 5-digit number in upper right corner) must be written on the entry log in the designated space provided.

- 6.5 Continuous atmospheric monitoring of O₂, LEL, H₂S, and CO by an Authorized Gas Tester Level 3 is required for all confined space entry. When possible, a member of the work crew inside the space should have a continuous 4-gas monitor. However, some work tasks (such as high pressure water blasting, sand blasting, or arc gouging) may decrease the function of a gas monitor or damage it. In these cases, continuous gas testing may be carried out at the entrance by the attendant or at exhaust points.
- 6.6 If a hazardous atmosphere is detected during entry, each entrant shall leave the space immediately, the space shall be evaluated to determine how the hazardous atmosphere developed, and measures shall be taken to protect employees from the hazardous atmosphere prior to re-entry.
- 6.7 Documentation to be posted/kept at the confined space during entry includes:
- Confined Space Entry Permit
 - Gas testing results
 - Rescue Plan with Emergency Notification Plan
 - Entry Log
 - Ventilation Plan or documentation stating a mechanical ventilation is not required

7.0 Ventilation and Respiratory Protection

- 7.1 The need for mechanical ventilation shall be assessed based on the scope of work and associated hazards of the space.
- 7.2 A written ventilation plan shall be developed and approved in accordance with SAF 120 (Ventilation Guideline). A copy of this written plan or documentation stating mechanical ventilation is not required must be kept at the space with the entry permit.
- 7.3 There may be a need for multiple ventilation plans for each confined space based on the tasks that are being performed.
- 7.4 All ventilation plans and/or documentation stating mechanical ventilation equipment is not required shall be provided to the BP Industrial Hygiene Department for review prior to the start of the confined space entry.
- 7.5 Every confined space must be evaluated for ventilation requirements.

Refer to the site Industrial Hygenist and SAF-120 for information.

- 7.6 **Entry without respiratory protection will be allowed only after:**
- a) Deposits, scales and sludges likely to give off vapors harmful to someone's health have been removed.
 - b) The work to be done inside the confined space will not involve the release or generation of flammable or toxic gases, vapors, fumes, mist or dust.
 - c) The atmospheric conditions within the confined space meet the requirements in section 4.5

- 7.7 **Entry with respiratory protection is required when:**
- a) PELs, TLVs, or the limits on the CSE permit are exceeded.

- 7.8 If confined space testing indicates that respiratory protection is required, it must be documented on the CSE Permit.

8.0 Requirement for entry into vessels with an oxygen-deficient atmosphere or Inert Entry

- 8.1 For requirements related to entry into vessels with an oxygen deficient atmosphere, refer to SAF-033.
- 8.2 When a permit-required confined space switches to an Inert Entry confined space, an Inert Entry Confined Space Permit must be written. The same is true after Inert Entry is completed and the space switches back to a permit-required confined space.
- 8.3 BP employees are not allowed to enter Inert confined spaces.

9.0 Reclassified Confined Spaces

- 9.1 A space classified as a permit-required confined space may be changed to a reclassified confined space if the only hazard posed in the permit space is an actual or potential hazardous atmosphere and that continuous forced air ventilation alone is sufficient to maintain the permit space safe for entry.
- 9.2 If initial entry is required to determine if the space meets these requirements, it must be treated as a permit-required confined space. When it is switched to a Reclassified Confined Space, a new permit must be written.
- 9.3 For reclassified spaces, the Reclassified Confined Space box shall be checked.
- 9.4 Entry into reclassified spaces is prohibited until the forced air ventilation has eliminated any hazardous atmosphere.
- 9.5 Reclassified spaces are usually limited to out-of-service tanks after a door-sheet has been cut.
- 9.6 In addition to the approvals listed for confined space permit, reclassified spaces also need approval from a member of the BP Safety Department and the Entry Performing Authority.

- 9.7 All of the rules of confined spaces apply (including isolation and atmospheric testing) except for the following:
- Attendant is not necessary
 - Entry Log listing names of attendants and entrants is not required
 - Entrants are not required to wear a harness or retrieval line for rescue purposes.
 - Confined space rescue team is not required to be on-site. If rescue is necessary, it can be performed by the emergency response team or local fire and rescue.

9.8 If a hazardous atmosphere is detected during entry within a confined space that has been reclassified, each person in the space shall exit the space immediately. Operations shall then re-evaluate the space and determine how the hazardous atmosphere developed and what controls must be put in place to protect entrants before re-entry. That evaluation may include whether the space must be classified as a permit required space, in accordance with the applicable provisions of this procedure.

10.0 Duties of Entry Performing Authority

- 10.1 The Entry Performing Authority has responsibility for the confined space entry, including making sure required controls are in place and acceptable entry conditions exist.
- 10.2 The Initial Entry Performing Authority signs the Confined Space Entry Permit. The current Entry Performing Authority does not need to sign the Entry Permit. The current Entry Performing Authority must print name and sign the Confined Space Entry Log.
- 10.3 This person is responsible for determining if acceptable entry conditions as defined in the risk assessment and Permit to Work are present at the space. Responsibilities of the Entry Performing Authority include:
- Ensuring that all precautionary measures stipulated on the confined space entry permit form and accompanying documentation are followed.
 - Verifying gas testing required by the Permit to Work has been completed. Verify results of gas testing are within acceptable ranges as listed on the confined space permit.
 - Verifies that rescue services are available and the method for contacting them is working.
 - Ensures a ventilation plan (when required) is complete and that all mechanical ventilation equipment is working and in place.
- 10.4 The Entry Performing Authority should verify that all tests specified have been conducted and that all procedures and equipment specified are in place before signing the Entry Permit or Entry Log to allow entry to begin.
- 10.5 Informs authorized personnel (Attendants/Entrants) of requirements of this procedure (see sect. 16.0).
- 10.6 Coordinates entry operations when employees of more than one

employer are working simultaneously as entrants in a permit space so that employees of one employer do not endanger the employees of any other employer.

- 10.7 The Entry Performing Authority must have knowledge of the space including:
- Know the hazards which may be present during entry
 - Recognize the signs and symptoms of exposure to a hazard (SDS)
 - Understand the consequences of exposure to a hazard and is aware of behavioral effects of hazard exposure in entrants. (SDS)
- 10.8 Removes unauthorized individuals who enter or attempt to enter the space.
- 10.9 The Entry Performing Authority with Operations terminates entry and cancels the entry permit when the entry operations covered by the permit have been completed or a condition that is not allowed under the entry permit arises in or near the permitted confined space.

11.0 Duties Entrant & Attendant

- 11.1 See Appendix A for a summary of duties for entrants and attendants.

12.0 Non-Entry Rescue Requirements

- 12.1 Non-entry rescue shall be considered for every confined space entry. Non-entry rescue allows entrants to be rescued from the space without exposing a rescue team to the hazards of entering a confined space.
- 12.2 To facilitate non-entry rescue, each entrant must wear a full body harness with a retrieval line attached to the D-Ring in the center of the wearer's back. Another attachment point may be used if it would be effective in removing the entrant from the space. Wristlets may be used in place of the full body harness if wristlets are safer and more effective than the full body harness. The retrieval must be attached to a mechanical device or fixed point outside of the confined space so that rescue can begin as soon as necessary. A mechanical device needs to be available to retrieve personnel from vertical type permit spaces more than 5 feet deep when non-entry rescue is used.
- 12.3 The non-entry rescue requirement may be exempted by the CSE rescue team if it is determined that the presence of the retrieval line poses a greater hazard than the benefits it offers or would not contribute to the rescue of entrants. The Entry Performing Authority notes the exemption on the Confined Space Entry Permit, and approves the exemption by signing the approved Permit. The following guidance is offered to help in making this determination:
- The use of a retrieval line is not required if the permit-confined space has obstructions or turns that would prevent the pull on the retrieval line from being transmitted to the entrant. (*i.e. towers, large baffles or obstructions, multiple entrants where the lifelines cannot*

reasonably be kept separated and would become entangled, etc.)

- The use of a retrieval line is not required if the entrant would be injured during a rescue attempt because of forceful contact with projections in the confined space - *(i.e. towers, scaffolds where the entrant is working at elevation and, if non-entry rescue is used, would be pulled off elevation, etc.)*
- The use of a retrieval line is not required if the permit confined space is being entered by an entrant using an airline respirator and the retrieval line cannot be controlled so as to prevent entanglement hazards with the airline.
- The use of a lifeline is not required in a Reclassified Confined Space.

13.0 Rescue

- 13.1 A qualified confined space rescue service must be available on-site whenever Permit Required Confined Space entry is taking place.
- 13.2 Each confined space shall be evaluated and have a rescue plan written before entry. The plan shall be written by someone trained in confined space rescue. The plan shall be signed by a BP Safety Advisor confirming they reviewed the plan. The completed plan shall be posted at the space during entry and kept with the entry permit.
- 13.3 The rescue plan must contain, at a minimum, the rescue procedure and equipment or PPE required for rescue. The Confined Space Rescue Plan template must be used and is available on the BP Toledo webpage. If an outside agency is performing the service, they must provide the equipment necessary for rescue as defined by the plan unless other arrangements have been made.
- 13.4 A copy the rescue plan shall be kept by the rescue team for all active confined spaces.
- 13.5 The Active Confined Space Tracking Form (SAF032-FM05) shall be maintained by the rescue team and will be kept in the rescue team office.
- 13.6 A confined space location should only be added to the active confined space tracking form when the space becomes active, i.e., currently has entrants.
- 13.7 During regular business hours, the confined space rescue team can be contacted at 697-4970 or radio channel 16A. If the confined space rescue team cannot be reached, contact the EOC on radio channel 14A.
- 13.8 The Emergency Response Notification Plan must be completed and posted at the confined space as information on how attendants activate the confined space rescue team. This notification plan is available on the BP Toledo website.
- 13.9 In case of emergency, the attendant first contacts the confined space rescue team. The attendant should then notify the operator in that area of the emergency.

- 13.10 The confined space rescue team responds to the emergency. The EOC follow their rescue and notification protocols.
- 13.11 If other confined space work must stop because the team was activated, the EOC should make an “all call” announcement.
- 13.12 If the rescue team is responding to an entrant who has been exposed to a substance for which a SDS is available, the SDS should be made available to the medical team treating the entrant. The EOC can help obtain the SDS.

14.0 Rescue Team

- 14.1 The rescue team must meet the standards defined in OSHA regulation 29 CFR 1910.146(k)(2).
- 14.2 If a contractor is used for a rescue team, they shall be evaluated per 1910.146(k)(1). Optional evaluation questions can be found in 1910.146 Appendix F. Confirmation of the evaluation and acceptance of the rescue team shall be documented and filed in HSE Records (such as the file room).
- 14.3 There is no pre-determined limit to the number of confined spaces one rescue team can oversee. The spaces need to be evaluated by the rescue team and the team makes the decision about how many spaces they can handle. If the team is three people or less, provisions must be in place to have everyone working in confined spaces evacuate them immediately if the rescue team is activated. If there is more than one rescue team, or more than three people trained in confined space rescue with rescue equipment available, then confined space work can continue even if a rescue is going on in one space. The confined space rescue team is responsible for notifying the EOC to ensure that workers/attendants at other confined spaces know the rescue team has been activated and that all other confined space work must cease.
- 14.4 Entry into IDLH atmospheres requires rescue services to be assembled at the entry point and prepared so rescue can begin immediately. See SAF-033 for details on IDLH rescue.

Rescue team training:

- 14.5 Personnel assigned to a confined space rescue team must be provided with and trained to use the PPE and rescue equipment necessary for making rescues from confined spaces in the refinery.
- 14.6 The rescue team must be trained to perform the assigned rescue functions and must have received the same training as authorized entrants.
- 14.7 Training must comply with OSHA standard 29 CFR 1910.146 (k)(2).
- 14.8 At least one member of each rescue team must maintain current certification in first aid and CPR skills.

- 14.9 The rescue team must practice making permit required confined space rescues at least once every 12 months, either from the actual permit spaces or from representative permit spaces.
 - 14.10 Documentation of the rescue team's training and drills must be maintained. For a contractor rescue team, the documentation shall be made available to BP upon request.
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- 15.0 **Outside personnel (contractors) working in a confined space**
 - 15.1 BP shall inform the contractor that the workplace contains permit required confined spaces and that permit space entry is allowed only through compliance with this procedure. This can be done through contractor orientation.
 - 15.2 The Entry Performing Authority must inform the contractor employees about hazards identified and precautions or procedures in place to protect entrants in the confined space. This can be done during the review of the Permit to Work and the Level 2 Risk Assessment.
 - 15.3 BP and the contractor both have responsibility to coordinate entry operations, when both BP personnel and contractor personnel will be working in or near the permit-required confined space.
 - 15.4 BP personnel, such as the BP Area Maintenance PA and/or the Issuing Authority, must discuss with the contractor at the end of the job any hazards within the confined space that were created or observed. This is achieved by documenting this information in the Lessons Learned box on CSE permit and can be done during the check-out of the eCoW work permit.
 - 15.5 The contractor company is responsible for obtaining information regarding permit required confined space hazards and BP confined space entry procedures.
 - 15.5 When contractor employees are entering a confined space, the Entry Performing Authority of the contractor is responsible for ensuring a rescue plan and rescue team are in place.
 - 15.6 When contractor employees are entering a confined space, the contractor shall use the BP Confined Space Entry Log (SAF032-FM02) to document Entrant names and times in which they enter and leave the confined space. BP must keep the original entry log if a copy is made for contractor company records.
 - 15.7 The contractor company shall, at minimum, follow the requirements set forth in this procedure. The contractor company must inform the Issuing Authority of any additional requirements they will follow if their confined space program is different than BP's.
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- 16.0 **Training**
 - 16.1 Employees covered by this procedure shall receive initial training. Re-training will be given to appropriate personnel whenever there is a

change in assigned duties, if a space presents a hazard in which they were not previously trained, if deviations from this procedure are discovered in review of the confined space program. Procedure updates require notification of changes to appropriate personnel which may also require training.

16.2 Contractors will ensure that their employees are knowledgeable of this confined space standard and all BP contractor safety rules.

17.0 Review of program

17.1 The confined space entry program shall be reviewed when local management has reason to believe that the measures in place are not protecting employees. Examples that may prompt a review include: unauthorized entry into a space, occurrence of an injury or near-miss during entry, detection of a condition prohibited by the permit, detection of a hazard not covered by the permit, or an employee complaint about the effectiveness of the program.

17.2 The confined space permit program will be reviewed at least annually through a review of the canceled permits by a member of the BP Safety Team. This review is to ensure employees participating in entry operations are protected from confined space hazards.

18.0 Record Keeping

18.1 All Confined Space Entry Permits, Entry Logs and gas test sheets will be collected by the area Safety Advisor from operations for archiving when the job is complete. The permit shall be kept for a period of one (1) year from the expiration or closure date.

19.0 Deviations

19.1 Any deviations from this procedure shall be approved through a Management of Change.

19.2 Turnarounds, Special Projects, Greenfield or Brownfield work may be exempt from specific elements of this procedure provided they have a written plan that addresses Confined Space Entry and meets all OSHA requirements. The exemption from this procedure must be approved by either the Safety Team Leader or the HSSE Manager.

Revision History

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
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06/14/12	Parker/ Hasbrouck	Added - Note: Any Vessel installed prior to 1992 may have potential asbestos containing material and must be tested by an Asbestos Hazard Evaluation Specialist if the suspect material will be disturbed as part of the work scope.
8/7/14	Hasbrouck	Administrative change only. Changed terminology to reflect new e-COW system. No MOC required.

<p>9-25-15</p>	<p>Schacht</p>	<p>Added in reference documents all necessary Isolation document requirements. Added fin fans, vessel skirts to confined space definition. External floating roof isolations exemptions in Isolation Requirement section. Requirement for IA and PA to walk down space any time it is permitted in Confined Space Entry Permit section. If space is switched from inert to permit required, a new permit is required (in entry into oxygen-deficient vessels section), and therefore a walkdown between IA and PA also required. Testing locations identified on the permit requirement under Initial Atmospheric Testing section. A new permit will be required each time space is switched from regular confined space to inert entry and back again. Entry PA posting permit at lowest point of entry in 'Confined Space Entry Permit' section. PA (Maint. Supervisor) signature removed from the permit. Area Authority removed from required signatures for reclassified spaces. Shift Supervisor is still a required signature for reclassified. Radio channel for attendant will be written on the permit. That way it will be consistent among all shifts and Operators, and it will not conflict with the method for attendant/entrant communication which is also on the permit (section on 'confined space entry permit'). Other changes:</p> <ul style="list-style-type: none"> • Removed inert entry requirements and put in attachment – separate procedure SAF 033. • Redesigned permit. • Added requirement that when switching between inert and non-inert, a new permit must be written. • Changed requirements for Maintenance Supervisor to better match OSHA requirements for Entry Performing Authority. • Added requirement that the permit be filled out, controls in place, and gas testing completed before Entry Performing Authority signs permit for approval. • Formalized BP Entry Log. This log must be used for all CSE regardless of performing company. • Updated Isolation definition to match Isolations Policy. • Deleted specific AGT competency/training requirements. • IA and Ops SS's may now gas test a confined space in their area. • Changed definition of reclassified space • Clarify storage of completed permits and how annual review completed. • MOC# M2016191-001
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Appendix A – Duties Summarized

1.0 Duties of Authorized Entrants

- 1.1 All entrants are required to wear a harness and PPE as defined on the Permit to Work or Confined Space Entry Permit when entering a confined space.
- 1.2 Communicate with attendant as necessary to enable the attendant to monitor entrant status.
- 1.3 Know the hazards which may be faced during entry.
- 1.4 Recognize the signs and symptoms of exposure to a hazard. (SDS).
- 1.5 Understand the consequences of exposure to a hazard and is aware of behavioral effects of hazard exposure in entrants. (SDS).
- 1.6 Notify the attendant when:
 - a) the entrants self-initiate evacuation of a confined space.
 - b) the entrant detects a prohibited condition.
 - c) the entrant recognizes any warning sign or symptom of exposure to a dangerous condition.
- 1.7 Be aware of and properly use personal protective equipment required, such as retrieval lines, respirators, or clothing needed for safe entry and exit.
- 1.8 Exit permit space when: attendant orders evacuation, an evacuation alarm is activated, or entrant perceives endangerment or prohibited condition.
- 1.9 Ensure isolation is complete and install personal lock if necessary (See SAF-037 Control of Hazardous Energy (Lockout –tagout)). Personal locks are not required for those confined space entries where lockout is not possible, for example a trench.
- 1.10 Make sure rescue plan has been developed and is posted at the confined space along with emergency notification plan.

2.0 Duties of Attendant

- 2.1 Know hazards which may be faced during entry.
- 2.2 Recognize the signs and symptoms of exposure to a hazard. (SDS).
- 2.3 Understand the consequences of exposure to a hazard and is aware of behavioral effects of hazard exposure in entrants. (SDS).
- 2.4 An attendant is stationed and remains outside the confined space at all times during entry operations.
- 2.5 Does not perform duties that might interfere with the attendants primary

duty to monitor and protect entrants.

- 2.6 Maintains an accurate count and list of all persons in the confined space.
- 2.7 Monitors activities inside and outside the entry space to determine if it is safe for entrants to remain in the confined space, and notifies process operator if conditions change.
- 2.8 Monitors the radio channel listed on the Confined Space Entry Permit.
- 2.9 Communicate with authorized entrants, as necessary to monitor their status using the communication method (i.e., visual, voice, radio, etc.) listed on the confined space permit.
- 2.10 Monitors one or more spaces as long as he/she is in close proximity and can monitor the entrants and their activities in the space(s) and all who enter and leave each space. If monitoring more than one space and an emergency occurs in one of the spaces, the attendant must notify entrants in the other spaces to evacuate the spaces until the attendant is no longer focused on the space with the emergency.
- 2.11 Summons help or emergency services as soon as the attendant determines that entrants need to escape from confined space entry hazard.
- 2.12 Orders entrants to evacuate space when:
 - a) Observing a condition which is not allowed on the Confined Space Entry Permit.
 - b) Detecting behavioral effects of hazard exposure.
 - c) Detecting a situation outside the space which could endanger entrants.
 - d) Detecting an uncontrolled hazard within space.
 - e) Monitoring confined space entry in more than one space and must focus attention on the rescue of entrants from one of those spaces.
 - f) Leaving work station, unless another qualified attendant is substituted.
 - g) The attendant cannot effectively and safely perform all the duties described in this section.
- 2.13 Warns unauthorized people away from confined space entry.
- 2.14 Requests unauthorized person to exit immediately if they have entered confined space.
- 2.15 Informs the authorized entrants if an unauthorized person has entered the confined space.
- 2.16 Notifies Entry Performing Authority if an unauthorized person enters the confined space.
- 2.17 When entrants as a group are leaving or re-entering a confined space, the attendant shall notify appropriate operating personnel (i.e., brakes, lunch, etc.)

- 2.18 May not enter the confined space to attempt the rescue of entrants.
They may perform non-entry rescue as specified in the rescue plan.

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