

Confined Space Entry

1. Purpose

The purpose of this policy is to establish requirements for the safe entry into and work in confined spaces.

2. Scope

This policy applies to all persons who identify, prepare, enter, monitor, work in or provide emergency rescue for confined spaces.

The following policies, procedures and programs are applicable to or referenced in this policy.

- Air Monitoring
- Authorization to Work
- Benzene
- Cold Work
- Contractor Management
- Facility Release
- Hot Work
- Hydrogen Sulfide
- Lessons Learned
- Level 2 Hazard Identification and Task Risk Assessment (HITRA)
- Lockout Program
- Personal Protective Equipment
- Respiratory Protection
- Stop Work

3. Minimum Requirements

	Minimum Requirements	Supporting Documentation
1.	USPL locations shall have a current survey of confined spaces.	Section 6
2.	A Confined Space Entry Permit shall be issued prior to entry into a confined space.	Section 7
3.	All Confined Space Entry permits shall be issued by an Asset Operator (or Designee) and received by a Performing Authority. <i>Self-permitting is prohibited.</i>	Section 5
4.	Confined Space Entry Permits shall be retained for a minimum of 12 months or until reviewed by the Safety Coordinator, which ever is longer.	Section 7
5.	Authorized entrants with the exception of rescue entrants shall not enter into a confined space with an IDLH atmosphere or with a Level 2 HITRA residual risk of "Very High".	Section 7
6.	Employees and contractors who engage in confined space permitting, entry, and rescue operations shall be trained and competent for their roles as identified in the USPL Control of Work Training and Competency Matrix.	Section 10
7.	All personnel performing work on behalf of USPL have the responsibility and authority to stop any work they consider to be unsafe.	Section 7

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4. Definitions

Air monitoring—The process by which atmospheric substances or conditions that are in or around confined spaces are identified and evaluated with respect to their hazard.

Air monitoring is based on frequency (e.g. continuous or periodic): the substances monitored (e.g. H₂S, CO benzene): and conditions (e.g. LEL, O₂).

1. **Initial air monitoring**—Air monitoring conducted daily before worker entry into a confined space.
2. **Continuous air monitoring**—Use of an instrument that can continuously sample the atmosphere for substances or conditions with an alarm to alert personnel when a specific allowable concentration is out of the specified range.
3. **Periodic air monitoring**—Air monitoring at a specific frequency for specific contaminants to determine changes in atmosphere that could require a change in the level of respiratory protection.

Asset Operator (AO)—A BP employee who is responsible for the operation of the asset where work is being performed. The Asset Operator shall be accountable for the asset equipment being in a safe condition for the scope of work to be performed. The Asset Operator or an Asset Operator Designee (if used) is responsible for the completion of the ATW form.

Asset Operator Designee (AOD)—A BP employee or contractor individual who is authorized to issue ATWs and / or permits on behalf of the Asset Operator.

Attendant—An individual stationed outside a confined space who monitors the Authorized Entrants and who performs Attendant roles as outlined in this policy.

Authorized Entrant—An employee or contractor who USPL authorizes to enter a confined space that requires an Attendant.

Authorized Gas Tester (AGT)—An authorized entrant who has been trained and demonstrates competency in the elements specified for authorized gas testers in the USPL Training and Competency Matrix.

Bump Test (also called a Function Check)—The process of exposing the instrument to a concentration of a challenge gas sufficient to activate all alarms and qualitatively verify the performance of the instrument before each day's use. A bump test is very simple and takes only a few seconds to complete.

Calibration—The process of exposing an instrument to a known concentration of gas to determine the accuracy of its response, readings, and alarm set points. The instrument's response can be adjusted if needed. A two-point calibration (zero gas and a known concentration) is used to perform a full calibration.

Confined Space—A space that has all the following characteristics:

- Is large enough and so configured that an individual can bodily enter and perform assigned work; and
- Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits are examples of spaces that could potentially have limited means of entry or exit); and
- Is not designed for continuous human occupancy.

Note: "Bodily enter" means an individual can fit their entire body into the space. Large pig launchers may be considered confined spaces when empty but not a confined space with a pig in it if they cannot be bodily entered at that time.

"Assigned work" includes inspections, even if no other work is performed.

The determination of whether a space has "limited or restricted means for entry or exit" within the meaning of the policy's definition of "confined space" should include consideration of whether, in light of the hazards posed by the particular space at issue, the configuration of other characteristics of the space would interfere with an entrant's ability to escape or be rescued in an emergency situation. Therefore, ladders would

generally be considered a limited means of egress. Confined space access points which are too small to allow an individual to walk upright and unimpeded through it are similarly considered to restrict an individual's ability to escape.

Examples of areas that can potentially be considered confined spaces include, but are not limited to, process vessels and related equipment (vessel tower skirts and flare stacks); boilers; storage tanks; frac tanks; tank cars; truck trailers for liquids; underground utility vaults more than 4 feet in depth; DOT-Regulated vaults/pits more than 4 feet in depth; sewers and sewer systems (storm and product); ventilation and exhaust ducts; manholes; drop-off trash boxes; elevator pits; pipelines; dikes (e.g. steel, concrete) around individual tanks/vessels that are vertical and more than 4 feet high; external floating-roof tanks with a roof that is more than 4 feet below the top of the shell; internal floating-roof tanks (above and below the floating roof); entry into snow roofs or geodesic domes; floating-roof pontoons; and enclosures built around live process equipment (including utility and purged lines). The practice of cutting openings in tanks (door sheets) may be seen as sufficient to declassify the tank as a confined space if no other limitations to entry and exit are present.

Confined spaces may exist within a confined space. For example, if work is occurring under a floating roof, on top of a floating roof, and inside a pontoon on the same floating roof, this work can proceed under one Confined Space Entry Permit as long as each of the spaces that will be occupied are thoroughly assessed as part of the permitting process.

Confined Space Entry Permit—The signed “Confined Entry Permit” document that is provided by the USPL Asset Operator to document that the conditions for confined space entry have been met. A valid and signed confined Space Entry Permit allows controlled entry into a confined space.

Early-warning system—the method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include, but are not limited to: alarms activated by remote sensors; and lookouts with equipment for immediately communicating with the authorized entrants and attendants.

Engulfment—The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated and 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.

Entrant—An employee or contractor who USPL authorizes to enter a confined space that requires a Stand-by.

Entry—The action by which any part of person's body breaks the plane of an opening into a confined space.

Entry Supervisor—An individual who determines whether acceptable confined space entry conditions are present, allows entry after the Asset Operator has issued the permit, observes entry operations, terminates entry and closes out the permit.

Immediately Dangerous to Life or Health (IDLH) Atmosphere—An atmosphere that could expose individuals to the risk of death, incapacitation, or impairment of the ability to self-rescue (that is, to escape unaided from a confined space), injury, or acute illness from one or more of the following:

- Flammable gas, vapor, or mist in excess of 10% of its Lower Explosive Limit (LEL).
- Atmospheric oxygen concentrations below 19.5% or above 23.5%.
- Atmospheric contaminants that exceed the published NIOSH IDLH values.

Note: There are other materials typically not used by USPL that below the IDLH, could impair rescue (e.g. ammonia, acetic acid).

Note: USPL does not allow work in an actual IDLH atmosphere or where a Level 2 HITRA residual risk level is “Very High”.

Immediately Dangerous to Life or Health (IDLH) Condition—A condition that could expose individuals to the risk of death, incapacitation, or impairment of the ability to self-rescue (that is, to escape unaided from a confined space), injury, or acute illness from one or more of the following:

- Has the potential to contain an IDLH atmosphere or an atmosphere that would impede the ability to exit the space;
 - The space is considered to have the potential to contain an IDLH atmosphere if the source of the contaminant can not be identified, or if the Entry Supervisor and the Asset Operator / Designee are not confident that the contaminant will likely be kept to below actual IDLH levels with implemented controls.
- Contains a material that has the potential for engulfing an Authorized Entrant;
- Has an internal configuration (e.g., inwardly converging walls, a floor that slopes downward and tapers to a smaller cross-section) that could cause an Authorized Entrant to be trapped or asphyxiated; or
- Contains Level 2 HITRA residual risk level of “High” for tasks to be executed in the confined space during that shift.

Note: USPL uses the ATW and Level 2 HITRA processes to determine if the space “contains any other recognized serious safety or health hazard”, one of four independent criteria specified by OSHA to determine if the space is a Permit Required Confined Space.

Initial Monitoring—Air monitoring performed by an Authorized Gas Tester each shift, prior to issuing a Confined Space Entry Permit to perform work.

Job site—Within visual proximity of the work being performed.

Level 2 Hazard Identification and Task Risk Assessment (HITRA)—A structured process to identify hazards and specify actions to mitigate these hazards for a permitted work activity or task.

Non-Confined Space—An enclosed or partially enclosed space that does not meet the requirements or criteria for a confined space. Examples of potential Non-Confined Spaces include, but are not limited to, diked areas with sloped walls, open areas within firewalls, pump and densitometer shelters, or instrument and sample buildings.

On-site—Physically being on the property or within the property fence line where work is being performed.

Open Top Confined Space—Completely open top with the ability to view the floor area from the top of the space, where an air sample can be collected at floor level (e.g. open top valve pit, external floating roof tank without a geodesic dome).

Performing Authority—A BP employee or contractor individual who receives a permit issued by the Asset Operator or Asset Operator Designee.

Rescue Personnel—Personnel trained and designated to perform rescue from confined spaces,

Rescue Types:

Self-Rescue—Entrants are capable of exiting the confined space unaided.

Non-entry Rescue—Rescuers do not enter the confined space to extract the entrant.

Entry Rescue—Rescuers enter the confined space to extract the entrant.

Retrieval system—Equipment used for the rescue of persons from a permit space (e.g. a retrieval line, full-body harness, rescue basket and a lifting device).

Secured Confined Space—A confined space whose entry access points are obstructed and signage positioned to indicate entry is prohibited.

Should—Is used where a provisions is preferred

Shall—Is used where a provision is mandatory

Stand-by—An individual stationed outside a confined space who monitors the Entrants and who performs Stand-by roles as outlined in this policy.

Simultaneous Operations (SIMOPS)—Separate activities including product movement or work that takes place at the same time and site and have potential to impact each other (The asset operator serves as the single point of accountability for identifying the simultaneous operations at a work site).

Vertical Entry—Entry into a confined space greater than 5 feet in depth where a ladder is used for entry and egress.

Workforce—Any BP employee or contractor who is engaged in performing work on behalf of USPL.

5. Roles and Responsibilities

5.1. Asset Operator (or designee)

- A. Shall determine if the confined space previously contained hazardous material and for above ground storage tanks, if a Post-Cleaning Certification has been issued (Appendix IV).
- B. Shall document their acceptance of the Post-Cleaning Certification from the AGT once satisfied that the confined space is clean and all gas / product has been eliminated.
- C. Shall sign and issue the Confined Space Entry Permit (Appendix I) to the Performing Authority prior to entry into the space by entrants including the AGT.
- D. Shall verify individuals serving in the following roles are trained and competent; Entry Supervisor, Authorized Gas Tester, Attendant, Authorized Entrants.
- E. Shall issue permits to the Performing Authority or can delegate permit issuance to the AOD.
 1. Shall review and verify that permit conditions are deemed acceptable for the defined scope of work and affected equipment.
- F. Shall determine if changes can be made to a permit if permit conditions are exceeded or if the permit should be cancelled and a new permit issued
 1. If the Asset Operator determines that changes to the permit can be made, he / she shall document their approval of the changes by initialing the changes where they are documented on the permit
- G. Shall review the Level 2 HITRA to verify that the scope is appropriate, permits have been identified and that it has been properly approved.
- H. Shall inform third party contractors' authorized representatives of the existence and location of, and the danger posed by, each permit space in a timely manner and in a manner other than posting prior to commencing confined space entry on USPL controlled sites.

5.2. Attendants

- A. Shall sign the Confined Space Entry Permit for the space they will be attending.
- B. Shall maintain an accurate record of authorized entrants inside the Confined Space by logging authorized entrants including AGTs in and out each time he / she enters and exits the permit space using the "Confined Space Entry Log" (see Appendix III).
- C. Shall use one log to record the entry and exit of authorized entrants and the AGT(s).
- D. Shall be positioned outside of the Confined Space and shall do the following:
 1. Establish communication procedures with the authorized entrants.
 2. Have the means to contact the entry supervisor and rescue team (if applicable).
 3. Order evacuation of the Confined Space if:
 - a) Permit conditions are exceeded.

- b) Unsafe conditions occur inside the space.
- c) Unsafe condition occurs outside the space that could impact the safety of authorized entrants.
- 4. Implement the documented rescue plan as soon as an authorized entrant appears to need assistance.
- E. Shall remain outside the Confined Space while entrants are inside the space until relieved by another Attendant. Attendants are authorized to break the plane of the confined space, with appropriate PPE, to perform activities such as air monitoring, but shall not fully enter the confined space.
- F. Shall remain outside the Confined Space until all authorized entrants have exited the confined space and the entryway is secured to prevent unauthorized entry.
- G. Shall update the Confined Space Entry Log (Appendix III), with the new Attendant's name when relieved by another Attendant.
- H. Shall perform no task that can interfere with the Attendant's primary duty to monitor and protect the authorized entrants.
- I. Shall warn unauthorized persons from approaching or entering a Confined Space while entry is under way.
- J. Shall stop work and inform authorized entrants and the Entry Supervisor if unauthorized persons have entered the Confined Space.
- K. Shall prohibit materials from obstructing the entryway(s) to the confined space.
- L. One attendant may monitor a confined space within the same confined space as long as they can fulfill each of their responsibilities.
- M. Shall be trained in CPR for entry into a manhole or vault with energized equipment

5.3. Authorized Entrants

- A. Shall review the Confined Space Entry Permit and sign the Confined Space entry Permit.
- B. Shall immediately evacuate the confined space when they recognize a warning sign or symptom of exposure, a dangerous condition, when permit conditions are exceeded, or when notified by the Attendant
- C. Shall inform the Attendant who is maintaining the Confined Space Entry/Exit log upon their entry and exit so the log can be updated.
- D. Shall wear a full body harness and retrieval line if the rescue method is non-entry rescue or if specified in the rescue plan.

5.4. Authorized Gas Tester

- A. Shall be accountable for the development of the Confined Space Air Monitoring Plan.
- B. Shall review and sign the Confined Space Permit as either an Authorized Entrant or Entrant based on the characterization of the confined space prior to entry.
- C. Shall conduct and oversee monitoring per the Confined Space Air Monitoring Plan.
- D. Shall perform initial monitoring of the atmosphere inside the confined space and record results on the Air Monitoring Plan and provide the form to the Entry Supervisor.
 - 1. The AGT shall exit the confined space if an IDLH atmosphere is present.
 - 2. The AGT shall exit the space when a specific contaminant level exceeds the capability of the respiratory protection worn.

- E. May perform minor operational activities while performing their initial air monitoring (e.g. tank gauging, exercise valve, inspections) if the activity will not affect the classification of the space.
- F. Shall notify the Attendant (if applicable) and Entry Supervisor if an IDLH atmosphere is present or if atmospheric concentrations exceed the capability of the respiratory protection use by entrants.
- G. Shall conduct air monitoring and document the results.
- H. Shall verify the atmosphere if the break is greater than 2 hours.

5.5. BP Site Supervisor

- A. Shall maintain a current survey of confined spaces for their site and review the results of this survey with site operating personnel if there are any changes (see Appendix VI Confined Space Workplace Survey).
- B. Shall annually verify that confined spaces on site, that are not being entered, have signage posted at entry access points stating “Danger—Permit-Required Confined Space, Do Not Enter” or other similar language.
 - 1. As per OSHA requirements, confined spaces that require special tools to access the confined space are not required to be labeled.

5.6. Entrant

- A. Shall review and sign the confined space permit.
- B. Shall immediately evacuate the confined space when they recognize a warning sign or symptom of exposure, a dangerous condition, or when permit conditions are exceeded.

5.7. Entry Supervisor

- A. Shall complete the Confined Space Entry Supervisors Checklist for all confined space permits, and amend the permit if necessary based on information provided by the Authorized Gas Tester.
- B. Shall designate one entry point as the entry point.
- C. Shall complete the Confined Space Entry Permit for presentation to the Asset Operator for permit issuance.
- D. Shall review air monitoring data to assess if a Cold Work Permit for Toxic Substance Exposure is required to enter the confined space.
- E. Shall authorize entry by the Authorized Gas Tester to perform initial air monitoring after the Asset Operator has issued the Confined Space Entry Permit.
- F. Shall authorize entry for the workforce after the confined space has been classified for workforce entry.
- G. Shall verify that each Confined Space has either an Attendant or Stand-by.
- H. Shall remain on-site and shall be available to the Attendant
- I. Can also serve as an Attendant, rescue team member, or Authorized Entrant, if trained and competent for the role. Can also serve as Stand-by or Entrant.
- J. Shall stop the job if work is being performed outside of the description of work to be completed on the confined space entry permit.
- K. Shall stop work and cancel the permit if an IDLH atmosphere is present.
- L. Shall stop work and require a re-assessment of the Cold Work Permit for Toxic Substance Exposure if atmospheric concentrations exceed the capability of the respiratory protection being used.

- M. Shall verify the following when cancelling the permit:
 - 1. All entrants exited the space.
 - 2. The permit entryway is secured.
 - 3. The reasons for cancelling the permit are recorded on the permit form.
- N. Shall cancel the permit (jointly with the Performing Authority) as soon as the scope of work covered by the permit is completed or at the end of shift for work force working under the permit, which ever is shorter.
- O. Shall verify that all confined space entry points (including ventilation openings) are secured after the work for the day is complete, or the work is suspended and the workforce is not at the jobsite (e.g. lunch breaks, inclement weather).
- P. Shall verify that any problems encountered during the entry operations are captured on the Confined Space Entry Permit.
- Q. Shall verify that the rescue plan has been completed and personnel and equipment specified in the plan are in place.
- R. If off-site entry rescue services are employed in the rescue plan, shall verify their availability each day, prior to entry.
- S. If non-entry rescue is selected, shall ensure that retrieval systems or methods are used whenever an authorized entrant enters a permit space, and shall confirm, prior to entry, that emergency assistance would be available in the event that non-entry rescue fails.

5.8. Performing Authority

- A. Shall receive issued Confined Space Entry Permits from the Asset Operator / Designee.
- B. Shall verify that all Entrants and Authorized Entrants have signed the Confined Space Entry Permit to acknowledge their agreement to abide by the conditions documented on the permit.
- C. Shall observe the confined space entry work (to the extent possible) to verify that the work is performed within the conditions documented on the permit.
- D. Shall reassess the job site and revalidate the permit before work can resume if permitted work is interrupted or if the job site is left unattended, or if necessary, jointly with the Entry Supervisor, cancels the permit and returns it to the AO / AOD.
- E. Shall stop work, suspend the permit and notify the Entry Supervisor and AO / AOD if permit conditions are exceeded.

5.9. Rescue Personnel

- A. Shall provide documentation to the Entry Supervisor verifying that they have met regulatory required rescue training.
 - 1. Public emergency services, e.g. fire departments, are not required to provide training documentation.
- B. Shall execute the rescue plan as directed by the Attendant or Stand-by.

5.10. Safety Coordinators

- A. Shall review the previous year's permits by the end of February of the next year for conditions noted in section I of the permit that resulted in permit cancellation.

5.11. Stand-by

- A. Shall be positioned outside the Confined Space and shall do the following:
 - 1. Establish communication procedures with entrants.
 - 2. Warn unauthorized persons from approaching or entering the confined space while entry is underway.
 - 3. Shall stop work and inform entrants and the Entry Supervisor if unauthorized persons have entered the confined space.
 - 4. Implement the documented rescue plan as soon as any personnel appear to need assistance.

5.12. Safety and Security Team Leader

- A. Shall review the safety coordinators' reviews to determine if revisions to the Confined Space Entry Policy should be recommended.

6. General

6.1. Workplace Evaluation

- A. All USPL sites shall have a current survey of confined spaces (see Appendix VI Confined Space Workplace Survey).
- B. All confined space entry access points that can be entered without tools or keys shall be posted with a sign above or on the opening stating "Danger—Permit-Required Confined Space, Do Not Enter."

6.2. Isolation of the Confined Space

- A. Prior to entry, the confined space shall be isolated and secured in a zero-energy state in accordance with the current USPL Lockout Program.

7. Confined Space Entry Permit

7.1. Permit Management

- A. A Confined Space Permit is valid for no more than one work shift for the individuals working under the permit, or for the duration of the scope of work documented on the permit, whichever period is shorter.
- B. If confined space work is suspended or the job site is left unattended (including normal work breaks) during a shift, the permit shall be revalidated before further confined space work can continue. Revalidation involves inspecting the confined space for any change in previous conditions as well as conducting and documenting air monitoring.
- C. If permit conditions are exceeded (e.g. atmospheric conditions exceed current respiratory protection levels), work and the permit shall be suspended until the Asset Operator / Asset Operator Designee determines if changes can be made to the permit or if the permit should be cancelled and a new permit issued.
 - 1. If the Asset Operator / Asset Operator Designee determines that changes to the permit can be made, he / she shall document their approval of the changes by initialing the changes where they are documented on the permit.

- D. The Confined Space Permit shall be posted at the entryway of the confined space until the confined space work is completed or the permit expires.
- E. The original completed Confined Space Entry Permits shall be retained locally for a minimum of 12 months or until the reason for cancellation have been reviewed by the Safety Coordinator, whichever is longer.

7.2. General

- A. Before entering a confined space, an assessment shall confirm that other options not involving confined space entry have been considered and ruled out.
- B. All confined space work shall have a Confined Space Entry Permit completed before entry is allowed.
- C. Authorized entrants with the exception of rescue entrants shall not enter into a confined space with an IDLH atmosphere or with a Level 2 HITRA residual risk of "Very High".
- D. All personnel performing work on behalf of USPL have the responsibility and authority to stop any work they consider to be unsafe.
- E. The Entry Supervisor shall allow confined space entry only after the USPL Confined Space Entry Permit is completed. The permit includes:
 - 1. Level 2 HITRA for all Confined Space Entries that require an Attendant
 - 2. Authorization to Work form
 - 3. Confined Space Entry Permit (Appendix I)
 - 4. If applicable, a Cold Work Permit for Toxic Substance Exposure
 - 5. Identification of an Attendant or a Stand-by
 - 6. For Confined Space entries that require an Attendant, the Confined Space Entry Log (Appendix IV)
 - 7. If applicable, Post-Cleaning Certification for above ground storage tanks (Appendix IV)
 - 8. Rescue Plan
- F. Before third-party contractors begin working in confined spaces on USPL controlled sites, the AO/AOD shall inform in a timely manner and in a manner other than posting, the third-party contractors' authorized representatives of the existence and location of, and the danger posed by, each permit space. This can be as part of site orientation, pre-job tailgates, planning and scheduling (WMP), SSHEP, or other method to effectively and efficiently communicate the existence of confined spaces.

7.3. Confined Space Characterization and Permit Issuance

- A. Confined space entries shall be characterized to determine whether an Attendant is required or a Stand-by is required.
- B. The Entry Supervisor shall recommend to the Asset Operator that either an Attendant or a Stand-by is required for the AGT to initially enter the confined space for entry atmospheric monitoring to further characterize the space, if entry is necessary. See (Appendix II) for a flowchart depicting the confined space entry classification process.
 - 1. An Authorized Gas Tester may not be required to enter the space to characterize the atmosphere.
 - 2. If workforce personnel will not bodily enter the space (i.e. fit their entire body into space) to perform the work but only break the entryway plane (e.g. pushing a hose through the manway

of a tank), the Authorized Gas Tester is not required to bodily enter the space to characterize the atmosphere.

3. The Authorized Gas Tester shall sign the permit as an entrant if entry is necessary.
 4. The Authorized Gas Tester can enter the confined space, perform initial entry air monitoring and subsequently perform minor operational tasks (e.g. tank gauging, exercise valves, inspections) as long as the tasks will not change the classification of the confined space. The re-issuance of the permit for workforce entry will not be required in this case.
- C. The Entry Supervisor shall recommend to the Asset Operator that either an Attendant or a Stand-by is required for the workforce to enter the confined space to perform work.
- D. If a confined space cannot be completely isolated and there is a risk of engulfment, an early-warning system that continuously monitors for non-isolated engulfment hazards shall be provided. The system must alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space.

7.4. Confined Space Permit Cancellation

- A. The Entry Supervisor shall cancel the permit and document that all entrants are out of the confined space, and access points have been secured and labeled for any of the following reasons:
1. The work scope is completed.
 2. The end of the shift occurred.
 3. During the Authorized Gas Tester's initial air monitoring evaluation, conditions require the use of an Attendant rather than a Stand-by.
 4. The workforce is in the confined space and conditions change, requiring the use of an Attendant rather than a Stand-by.
 5. The Entry Supervisor determines the permit shall be cancelled for any reason.
- B. The Performing Authority shall return the expired permit to the AO / AOD.

7.5. DOT-Regulated Valve Pits and Vaults Only

7.5.1. Emergency Response

Entry without a Confined Space Permit can be made into a BP valve pit or vault to close a valve that stops the unplanned release of hydrocarbon if the valve pit / vault is not impacted by the release.

1. Impact is determined by performing air monitoring inside the space from the outside before entering to verify O₂ between 19.5% and 23.5%, and 0% LEL.
- A. A communication pathway shall be established with a supervisor, employee / contractor, or control center, just prior to entry.
- B. Continuous monitoring shall be performed while the technician is in the pit / vault.

7.6. Underground Electrical Manholes or Vaults

- A. Safe work practices as specified in the USPL Electrical Safety Program shall apply to work in underground electrical manholes or vaults (see USPL Electrical Safety Program Section 10.10 Underground Electrical Manholes or Vaults).
- B. Entry into a manhole or vault with energized equipment requires an attendant trained in CPR.

8. Confined Space Air Monitoring

- A. If the confined space previously contained product containing benzene, monitoring for benzene shall be conducted during non-entry monitoring and entry monitoring (if the AGT has to enter the space).
 - 1. For tanks that require a Post-Cleaning Certification, benzene monitoring on subsequent permits shall continue until benzene level of zero is achieved. Benzene monitoring for subsequent permits after zero level has been measured is only required if product is detected by other means (e.g. visual or odor).
 - 2. For other confined spaces, benzene monitoring shall be conducted if LEL measures above 0% or if product is detected by other means (e.g. visual or odor).
- B. If air monitoring detects contaminants, an assessment shall be performed using the respiratory protection tables in Appendix I of the Confined Space Permit to determine if a Cold Work Permit for Toxic Substance Exposure is required prior to entry into a confined space.
 - 1. If during initial AGT air monitoring any H₂S is detected, supplied air respiratory protection and a Cold Work Permit for Toxic Substance Exposure shall be required for entry.
- C. BP equipment used for air monitoring shall be in accordance with the USPL Air Monitoring policy.
- D. An Air Monitoring Plan shall be completed as part of the Confined Space Entry Permit for each confined space entered. See Appendix II for a flowchart depicting the confined space entry classification process.
- E. Entrants and / or the Contractor Representative are allowed to observe pre-entry testing and any subsequent testing. Requests to observe the testing should be coordinated with the Entry Supervisor.
- F. A bump test (function test) shall be performed on all electronic direct-reading air monitoring equipment, including that of contractors, each day before entry.
- G. Electronic direct-reading air monitoring equipment, including that of contractors, shall be calibrated within thirty days of the entry into the confined space.
- H. Expired detector tubes shall not be used to monitor air contaminants.
- I. Initial monitoring shall be completed no earlier than 2 hours prior to workforce entry.
- J. The knowledge and experience of the Authorized Gas Tester is relied upon to determine the extent of air monitoring needed to thoroughly characterize the atmosphere of the space. In general, if any LEL or contaminants are detected during the air monitoring, a more thorough sampling should be performed to determine the source extent of the contamination. Refer to the Air Monitoring policy for additional guidance.
- K. Results of initial air monitoring shall be recorded on the Confined Space Entry Permit.
- L. Continuous air monitoring shall be conducted for LEL and O₂, and results recorded on the Confined Space Entry Permit at least every two hours after workforce entry.
- M. If the space is vacant and air monitoring has not been performed within two hours, air monitoring shall be performed to verify conditions inside the confined space.
- N. If the space is vacant and reoccupied within two hours of the last documented reading, the AGT is allowed to resume air monitoring to verify atmospheric conditions inside the confined space are acceptable. If conditions are acceptable, the workforce is allowed to reenter the space.
- O. If there is a potential for contaminants to infiltrate the confined space from an external source, continuous air monitors shall be strategically placed outside the confined space.

- P. If personal air monitors are to be used for continuous air monitoring, the monitors shall be worn by *all* entrants.
- Q. Continuous monitors shall have an audible alarm.
- R. If specific contaminants are detected, e.g. benzene or ethanol, periodic air monitoring shall be performed within every 2 hours, from the time of initial workforce entry.
- S. If monitoring for specific contaminants, e.g. benzene, hydrogen sulfide, produces a “zero” reading during the initial daily monitoring, further periodic monitoring for those contaminants is not required for the duration of the permit, unless conditions change or the workforce requests further monitoring.
- T. Supplemental mechanical ventilation shall be off for at least 15 minutes prior to and during the performance of the initial monitoring of the interior of the space.

9. Rescue and Emergency Services

9.1. General Requirements

- A. All confined space entries shall have a documented emergency and rescue plan commensurate with the level of risk associated with the task that specifies in the plan to:
 - 1. summon either onsite and/or offsite emergency and rescue services in a timely manner
 - 2. rescue entrants from the confined space considering the hazard(s) identified and rescue method(s) required
 - 3. provide necessary emergency services to rescued employees
 - 4. prevent unauthorized personnel from attempting a rescue
- B. The Entry Supervisor, Attendants, Authorized Entrants, Stand-by, and rescue personnel shall review and understand the rescue plan and procedures prior to entering the Confined Space.

9.2. Self-Rescue

- A. Is prohibited if the Confined Space Entry requires an Attendant.
- B. Is prohibited if the Entry Supervisor determines that entrants would be impaired from exiting the space without aid.

9.3. Non-Entry Rescue

- A. Shall be allowed when the Stand-by, Attendant, or trained rescuer could successfully remove the entrant from the space without entering the space.
 - 1. For non-entry rescue involving a vertical entry greater than 5 feet in depth into a Confined Space, a retrieval line shall be attached to a full-body harness and a retrieval system set up at the time of entry using a mechanical lifting device or a fixed point with a mechanical lifting device outside the confined space. The use of a mechanical lifting device for rescue is exempt from the Lifting and Rigging policy requirements.
 - 2. For non-entry horizontal rescue, a retrieval line shall be attached to a full-body harness. The end of the retrieval line shall be outside the confined space but is not required to be connected to a mechanical retrieval device.
 - 3. If the retrieval line increases the overall risk of entry, the retrieval line can be detached temporarily. The rescue plan shall document the reasons for detachment of the retrieval line and the procedure for re-attaching the retrieval line to the authorized entrant.

- a) Detaching the retrieval line(s) of a single Authorized Entrant in a Confined Space shall not be allowed for non-entry rescue.

4. Whenever non-entry rescue is selected, the Entry Supervisor must ensure that retrieval systems or methods are used whenever an authorized entrant enters a permit space, and shall confirm, prior to entry, that emergency assistance would be available in the event that non-entry rescue fails.

9.4. Entry Rescue

- A. Rescuers shall be positioned at the job site for tank cleaning operations until the Post-Cleaning Certification has been issued.
Note: Tank cleaning contractors should have trained rescuers as part of their workforce.
- B. For entry rescue into confined spaces other than for tank cleaning operations, rescuers shall be capable of reaching the victim within 15 minutes.
- C. Rescue services shall be provided with information sufficient for the development of a rescue plan that includes at a minimum: confined space configuration, atmospheric and physical hazards, and a list of hazardous materials / products involved.
- D. Non-USPL employee rescue personnel shall be invited to the site prior to the start of confined space work as part of their development of the rescue plan.
- E. Non-USPL employee rescue services shall provide documentation to the Entry Supervisor verifying that they have met regulatory required rescue training.
 - 1. Public emergency services, e.g. fire departments, are not required to provide training documentation
- F. Rescue personnel using respiratory protection while performing rescue operations are exempted from the Cold Work - Toxic Substance Exposure Permitting process.

10. Training & Competency

- A. All USPL personnel serving in the roles listed below shall complete training as identified in the USPL Control of Work Training and Competency Matrix:
 - 1. Entry Supervisor
 - 2. Attendant
 - 3. Authorized Entrant
 - 4. Authorized Gas Tester
 - 5. Rescuers

11. Annual Confined Space Permit Review

- A. By the end of February of each year, the Safety Coordinators shall review permit Section D "Confined Space Permit Cancellation" for all the previous calendar year's issued confined space entry permits and identify problems encountered that should be addressed to improve the USPL confined space entry policy.
 - 1. The Annual Confined Space Permit Review form (Appendix V) shall be used to document this review.

2. Recommendations for program improvements shall be forwarded to the **Safety and Security Team Leader**.
- B. The **Safety and Security Team Leader** shall facilitate a management review of submitted comments to determine whether policy changes or modifications are required in its implementation and administration.

12. References

1. American Conference of Governmental and Industrial Hygienists, "Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment," 2007 edition.
2. American Gas Association, OSHA and DOT Office of Pipeline Safety Agreement, U.S. Department of Labor, Standard Interpretation, 5/24/1994.
3. ANSI/API, Standard 2015, "Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks," 6th ed., August 2001.
4. ANSI/API, Recommended Practice 2016, "Guidelines and Procedures for Entering and Cleaning Petroleum Storage Tanks," 1st ed., August 2001.
5. API, Publication 2026, "Safe Access/Egress Involving Floating Roofs of Storage Tanks in Petroleum Service," 2nd ed., April 1998.
6. OSHA, U.S. Department of Labor, Directive CPL 02-00-100-CPL 2.100, "Application of the Permit-Required Confined Spaces (PRCS) Standards, 29 CFR 1910.146," May 1995.
7. OSHA, U.S. Department of Labor, 29 CFR 1910.146, "Permit-Required Confined Spaces."
8. OSHA, U.S. Department of Labor, Preamble to 29 CFR 1910.146, all sections.
9. OSHA, U.S. Department of Labor, Standard Interpretations for 1910.146, 05/10/1993 through 08/06/2007, including 07/22/1998 – Requirement for Posting Signs for PRCSs.
10. OSHA, U.S. Department of Labor, 29 CFR 1910.1000, "Air Contaminants."
11. OSHA, U.S. Department of Labor, 1910.1200, "Hazard Communication."
12. OSHA, U.S. Department of Labor, 29 CFR 1910, Subpart G, "Occupational Health and Environment Control."
13. OSHA, U.S. Department of Labor, 29 CFR 1910, Subpart Z, "Toxic and Hazardous Substances"
14. OSHA, U.S. Department of Labor, 29 CFR 1926, Subpart AA, "Confined Spaces in Construction"

Appendix I

Confined Space Entry Permit

This example form is for reference only. For a downloadable version of the permit, go to the Documents and Records Management (DRM) site. The electronic version may be filled out online or printed and completed as hard copy.

Permit Number: CS - [redacted]

(Use the ATW number associated with this job; add an alpha character if more than one Confined Space Entry Permit is required.)

Post at the entryway of the confined space.		Confined Space Entry Permit (Use mm/dd/yyyy when entering dates. Use hh:mmam/pm when entering times.)			
A. General					
Date:	Location:	Time Issued:	am/pm	Time Expired:	am/pm
Note: This permit is valid for no more than one work shift for the individuals working under the permit, or for the duration of the scope of work documented on the permit, whichever period is shorter.					
Confined Space Name: [redacted]					
Scope of Work: List the tasks that are to be performed in the confined space this shift (e.g. Authorized Gas Tester entry to classify space, other work tasks), include the list of products or materials to be used in the confined space (e.g. welding rod, coatings, cleaners): [redacted]					
Air Monitoring					
1. AGT Identification: Authorized Gas Tester 1 (print and sign): [redacted] Authorized Gas Tester 2 (print and sign): [redacted]					
2. Check product(s) previously stored or that could potentially leak into space. Monitor for potential contaminants if the presence of contaminants is suspected or if LEL is detected. If there is a risk of CO existing in or infiltrating the space (i.e. exhaust infiltration), monitor for CO. If the confined space previously contained product containing benzene, monitoring for benzene shall be conducted during non-entry monitoring and entry monitoring (if the AGT has to enter the space).					
Product	Potential Contaminants to Monitor				
	Benzene	H₂S	Ethanol	TPH	
<input type="checkbox"/> Crude oil	X	X			
<input type="checkbox"/> Bunker fuel or Heavy fuel oil		X			
<input type="checkbox"/> Gasoline or NGL	X				
<input type="checkbox"/> Transmix (Potentially containing H ₂ S)	X	X			
<input type="checkbox"/> Transmix (No Potential H ₂ S)	X				
<input type="checkbox"/> Ethanol	X		X		
<input type="checkbox"/> Diesel or Distillate				X	
<input type="checkbox"/> Other: [redacted]					
Air Monitoring Sketch of confined space showing location of non-entry, entry, and continuous air monitoring points. Use location identification numbers, i.e. 1, 2, 3..... [redacted]					

Permit Number: CS - [redacted]

B. AGT conducts Non-Entry Monitoring				
Initial Air Monitoring Results – Non-Entry				
	Time	Reading	Location Number	Describe where the contaminant is coming from, is it currently emitting material, what's the relative size or extent of the contamination
O ₂ (%)				
LEL (%)				
CO (ppm)				
H ₂ S (ppm)				
Benzene (ppm)				
TPH (ppm)				
Other:				
1. Non-Entry Characterization of the Confined Space				
a. Is O ₂ 19.5% - 23.5%, LEL <10%, and applicable toxics below IDLH levels? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Stop - Entry Prohibited				
*Note: If the AGT can perform air monitoring for the area that will be occupied by the workforce without breaking the entryway plane with any part of their body (i.e. only the air monitoring probe breaks the entry wayplane), place a check in the NA box for Permit sections B2 and B3 and proceed to Permit section C1.				
2. Determination of Attendant or Stand-by for AGT Entry <input type="checkbox"/> Not Applicable				
a. H ₂ S (if applicable) 0 ppm? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA				
b. Is the Level 2 HITRA Risk Level Medium or Low for the tasks to be executed in the space this shift? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA				
c. Is the Post-Cleaning Certification for tanks attached? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA				
d. Is the space free of materials that could engulf an entrant, and configured such that an entrant is <u>not</u> at risk of being trapped or asphyxiated (e.g inwardly converging walls), and is free of any other recognized serious safety or health hazard as noted on the ATW? <input type="checkbox"/> Yes <input type="checkbox"/> No				
If any of the above questions are No, an Attendant is required and personnel entering confined space must be Authorized Entrants . Otherwise, a Stand-by is required.				
3. Authorization Signatures for AGT Entry <input type="checkbox"/> Not Applicable				
Entry Supervisor's Checklist for AGT Entry into the Space				
a. Entry Supervisor has verified that personnel serving in confined space entry roles have attested that they are trained. <input type="checkbox"/> Yes		d. The entry point where the entry/exit log (if required) will be maintained is identified. <input type="checkbox"/> Yes <input type="checkbox"/> NA		
b. Only one entry point has been designated as primary enter/egress point for confined space work. <input type="checkbox"/> Yes		g. Rescue Plan (commensurate with risk) is attached. <input type="checkbox"/> Yes		
c. Communication procedures used by Authorized/ Entrants and Attendants/Stand-by: <input type="checkbox"/> Voice <input type="checkbox"/> Two-way radio <input type="checkbox"/> Other: [redacted]		f. Cold Work Toxic Substance Exposure Permit has been issued and supplied air respiratory protection shall be used if any H ₂ S has been detected. <input type="checkbox"/> Yes <input type="checkbox"/> NA		
g. In addition to performing initial entry air monitoring, will the AGT be performing any minor operational tasks (e.g. tank gauging, exercise valve, inspections) while in the confined space, and no other work will be completed? <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes, Sections C can be skipped and Section D filled out at permit cancellation.				
Rescue Plan - Document or attach the plan to:				
1. Summon either onsite and/or offsite emergency and rescue services in a timely manner: [redacted]				
2. Rescue personnel in confined space: <input type="checkbox"/> Self Rescue (not allowed if an Attendant is required) <input type="checkbox"/> Non-Entry Rescue <input type="checkbox"/> Entry Rescue <input type="checkbox"/> Other: [redacted]				
3. Provide necessary emergency services to rescued employees: [redacted]				
4. Prevent unauthorized personnel from attempting a rescue: [redacted]				
Entry Supervisor: I verify that all items in the checklist have been reviewed and appropriately completed. I provide my authorization for entry by the AGT to perform initial air monitoring and any minor operational tasks.				
Entry Supervisor (print and sign name): [redacted]		Contact Number: [redacted]		
Asset Operator or AOD: I provide my authorization for entry by the AGT to perform initial air monitoring.				
AO or AOD (print and sign name): [redacted]				
Performing Authority: I have read and understand the above conditions and precautions. I understand I am responsible to stop work if I become aware that conditions of this permit are exceeded, and to notify the AO/ AOD and Entry Supervisor upon completion or interruption of this work.				
Performing Authority (print and sign name): [redacted]				
<input type="checkbox"/> Attendant: By signing below, I understand my responsibilities as Attendant and will stop work if the permit conditions are exceeded.				
<input type="checkbox"/> Stand-by: I shall warn unauthorized persons from approaching or entering the confined space while entry is underway, stop work and inform entrants and the Entry Supervisor if unauthorized persons have entered the confined space, and implement the documented rescue plan as soon as any personnel appear to need assistance.				
Attendant / Stand-by (print and sign name): [redacted]				
Authorized / Entrant(s) - AGT(s): By signing below, I acknowledge that I understand the hazards of the space, and I have reviewed and signed the LOTO procedure (if implemented). In addition, I acknowledge that I shall not perform any tasks that will cause the conditions of the confined space to change and will stop work if the permit conditions are exceeded. (print and sign name)				
[redacted]				

Permit Number: CS - [redacted]

C. AGT conducts Entry Monitoring <input type="checkbox"/> Not Applicable								
Initial Air Monitoring Results – Entry								
	Time	Reading	Location Number	Describe where the contaminant is coming from, is it currently emitting material, what's the relative size or extent of the contamination				
O ₂ (%)								
LEL (%)								
CO (ppm)								
H ₂ S (ppm)								
Benzene (ppm)								
TPH (ppm)								
Other:								
1. Determination of Attendant or Stand-by for Workforce Entry <input type="checkbox"/> Not Applicable								
a. H ₂ S (if applicable) 0 ppm? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA								
b. Is the Level 2 HITRA Risk Level Medium or Low for the tasks to be executed in the space this shift? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA								
c. Is the Post-Cleaning Certification for tanks attached? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA								
d. Is the space free of materials that could engulf an entrant, and configured such that an entrant is <u>not</u> at risk of being trapped or asphyxiated (e.g. inwardly converging walls), and is free of any other recognized serious safety or health hazard as noted on the ATW? <input type="checkbox"/> Yes <input type="checkbox"/> No								
If any of the above questions are No, an Attendant is required. Otherwise, a Stand-by is required.								
2. Authorization Signatures for Workforce Entry <input type="checkbox"/> Not Applicable								
Entry Supervisor's Checklist for Workforce Entry into the Space								
a. Entry Supervisor has verified that personnel serving in confined space entry roles have attested that they are trained. <input type="checkbox"/> Yes				d. The entry point where the entry/exit log (if required) will be maintained is identified. <input type="checkbox"/> Yes <input type="checkbox"/> NA				
b. Only one entry point has been designated as primary enter/egress point for confined space work. <input type="checkbox"/> Yes				e. Rescue Plan (commensurate with risk) is attached. <input type="checkbox"/> Yes				
c. Communication procedures used by Authorized / Entrants and Attendants/Stand-by: <input type="checkbox"/> Voice <input type="checkbox"/> Two-way radio <input type="checkbox"/> Other: [redacted]				f. Cold Work Toxic Substance Exposure Permit has been issued. <input type="checkbox"/> Yes <input type="checkbox"/> NA				
Authorized Gas Tester Signature(s) – Continuous Monitoring								
I understand my responsibility to execute the air monitoring plan, to notify the Attendant / Stand-by, Entry Supervisor, or Entrants if any readings exceed the exposure limits for the applicable respiratory protection used, and will notify the Attendant / Stand-by or Entrants to evacuate the space if an IDLH atmosphere is present. Initial air monitoring has been performed prior to workforce entry in the confined space. I agree to perform continuous/periodic monitoring while the workforce is in the space.								
Authorized Gas Tester 1 (print and sign): [redacted]								
Authorized Gas Tester 2 (print and sign): [redacted]								
Entry Supervisor: I understand I am responsible to verify that all work executed in this confined space is in compliance with all requirements and conditions of this permit. I understand I am responsible to stop work and void permit if I become aware that conditions of this permit are exceeded, and to notify the AO / AOD upon completion or interruption of this work.								
Entry Supervisor (print and sign name): [redacted] Contact Number: [redacted]								
Asset Operator / Asset Operator Designee: I have reviewed the completed permit, and based on my review of the documented conditions with respect to the scope of work and affected equipment I believe that asset equipment involved or affected by this work has been prepared for this scope of work and that it is appropriate for the work to proceed.								
AO or AOD (print and sign name): [redacted]								
Performing Authority: I understand I am responsible to instruct individuals performing work under this permit to read and to document their understanding of this permit. I understand I am responsible to stop work if I become aware that conditions of this permit are exceeded, and to notify the AO / AOD and Entry Supervisor upon completion or interruption of this work.								
Performing Authority (print and sign name): [redacted]								
<input type="checkbox"/> Attendant: By signing below, I understand my responsibilities as Attendant and will stop work if the permit conditions are exceeded.								
<input type="checkbox"/> Stand-by: I shall warn unauthorized persons from approaching or entering the confined space while entry is underway, stop work and inform entrants and the Entry Supervisor if unauthorized persons have entered the confined space, and implement the documented rescue plan as soon as any personnel appear to need assistance.								
Attendant / Stand-by (print and sign name): [redacted]								
Authorized / Entrant(s): By signing below, I acknowledge that I understand the hazards of the space, and I have reviewed and signed the LOTO procedure (if implemented). In addition, I acknowledge that I shall not perform any tasks that will cause the classification of the confined space to change and will stop work if the permit conditions are exceeded. (print and sign name)								
[redacted]								
[redacted]								
[redacted]								
Continuous / Periodic Air Monitoring Data								
(Continuous air monitoring shall be conducted and results recorded below at least every two hours after workforce entry. If the space has been temporarily vacated and a 2 hour interval is reached, enter the scheduled time for monitoring and write "Space Vacated" next to the time. If available, use the Peak function of the air monitoring instrument for readings.)								
Time	Location	Oxygen (%)	LEL (%)	CO (ppm)	H ₂ S (ppm)	Benzene (ppm)	Other: [redacted]	AGT Initials

Permit Number: CS - [redacted]

Continuous / Periodic Air Monitoring Data (continued)								
Time	Location	Oxygen (%)	LEL (%)	CO (ppm)	H ₂ S (ppm)	Benzene (ppm)	Other: [redacted]	AGT Initials

D. Confined Space Permit Cancellation

Have all authorized / entrants exited the space? Yes No

Have the confined space access points been secured? Yes No

Reason for confined space permit cancellation: End of work scope End of work shift Other

If Other, describe any problems encountered during the entry operation: [redacted]

Entry Supervisor (print and sign name): [redacted]

Appendix I: Air Monitoring Plan

A. Toxic Contaminant Air Monitoring Instruments and Equipment

The following table provides guidance on direct reading gas detection instruments and equipment that can be used for Toxic Contaminant testing for confined space entry initial gas testing.

Toxic Contaminant	Dräger Tubes (colorimetric) (Order No.)	Dräger Tube Standard Measuring Range	Dräger CMS Chips (Order No.)	Dräger CMS Chip Standard Measuring Range	Direct Reading Multi-gas portable monitor	Photoionization Detector (PID)	Benzene specific PID (UltraRae)
Benzene	81 01 841	0.5-10ppm	64 06 600	0.05-2.5ppm	N/A	N/A	X
	67 28 071	5-50ppm		0.2-10ppm			
	81 01 741	15-420ppm	64 06 030				
Hydrogen Sulfide (H ₂ S)	67 28 041	0.5-15ppm	64 06 050	2-50ppm	X	N/A	N/A
	81 01 831	1-200ppm	64 06 150	20-500ppm			
Total Petroleum Hydrocarbons (TPH)	81 01 691	10-300ppm	64 06 200	20-500ppm	N/A	X	X**
	67 30 201	100-2,500ppm					
Ethanol	81 01 631 (Alcohol)	25-2,000ppm	64 06 370	100-2,500ppm	N/A	X*	X**

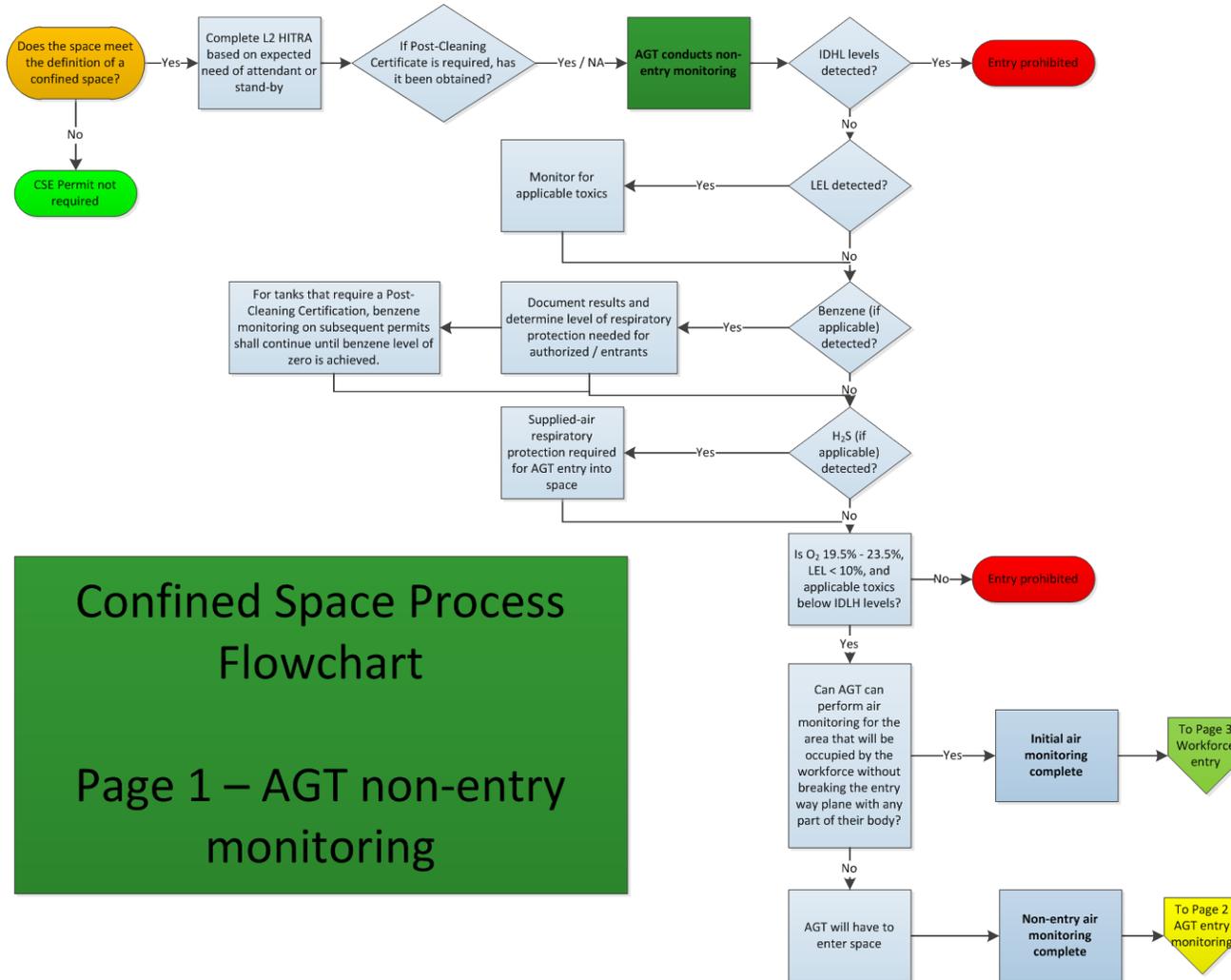
X - Can be used for real-time monitoring of contaminant.
 N/A - Not Applicable
 * - Can be used for real-time monitoring of contaminant providing it is the only contaminant present. For instance, a PID can be used to measure ethanol for entry into an ethanol storage tank. It cannot be used to measure ethanol concentrations to enter a space contaminated with a gasoline/ethanol blend.
 ** - Can be used providing the Benzene Sep-tube is not in-place allowing the instrument to measure Total Hydrocarbons and ethanol is not part of a mixture. (See * above)

B. Respiratory Protection Criteria for USPL

Gas	Non Hazardous (no respiratory protection required)	Immediately Dangerous to Life or Health (IDLH)	Half-Face Air Purifying Respirator if:	Full-Face Air Purifying Respirator if:	Supplied-Air Respirator (SCBA or air-line)
Oxygen (% volume)	19.5% to 23.5%	<19.5% or >23.5%	NA	NA	NA*
LEL	0% LEL	10% LEL	NA	NA	NA
Carbon Monoxide (ppm)	< 35 ppm	> 1200 ppm	NA	NA	35 to 1,200 ppm
H ₂ S (ppm)	< 10 ppm	> 100 ppm	NA	NA	10 to 100 ppm
Benzene (ppm)	< 1 ppm	> 500 ppm	1 to 10 ppm	1 to 50 ppm	1 to 500 ppm
Ethanol (ppm)	< 1000 ppm	**	1,000 ppm to 10% LEL*	1,000 ppm to 10% LEL*	1,000 ppm to 10% LEL*
Total Hydrocarbons (ppm) (as gasoline)	< 300ppm	**	300 ppm to 10% LEL*	300 ppm to 10% LEL*	300 ppm to 10% LEL*

* USPL policy prohibits any entry into an IDLH environment.
 ** IDLH is limited by 10% LEL being an IDLH criterion.

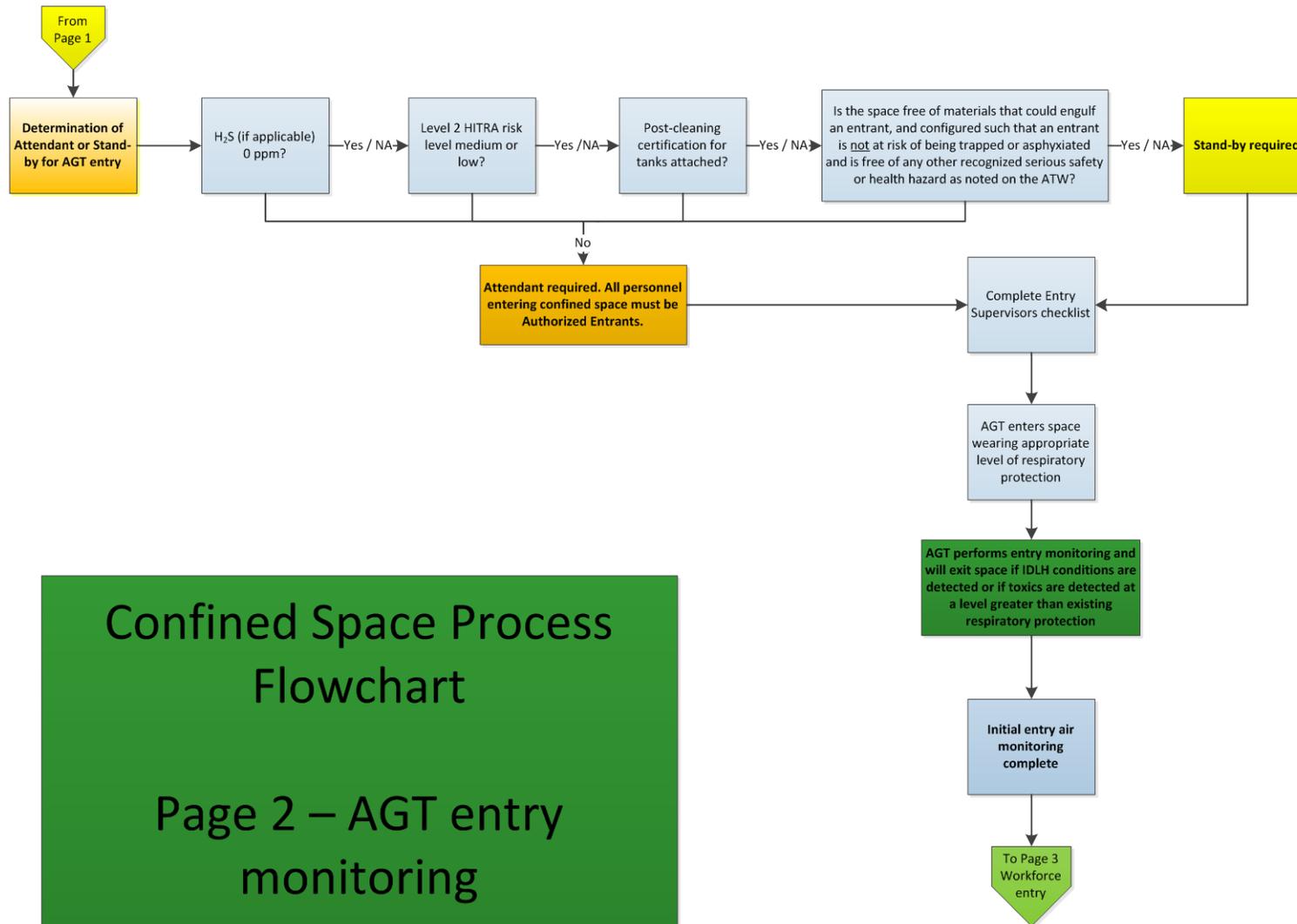
Appendix II Confined Space Process Flowchart - Page 1



**Confined Space Process
Flowchart**

**Page 1 – AGT non-entry
monitoring**

Appendix II
Confined Space Process Flowchart - Page 2

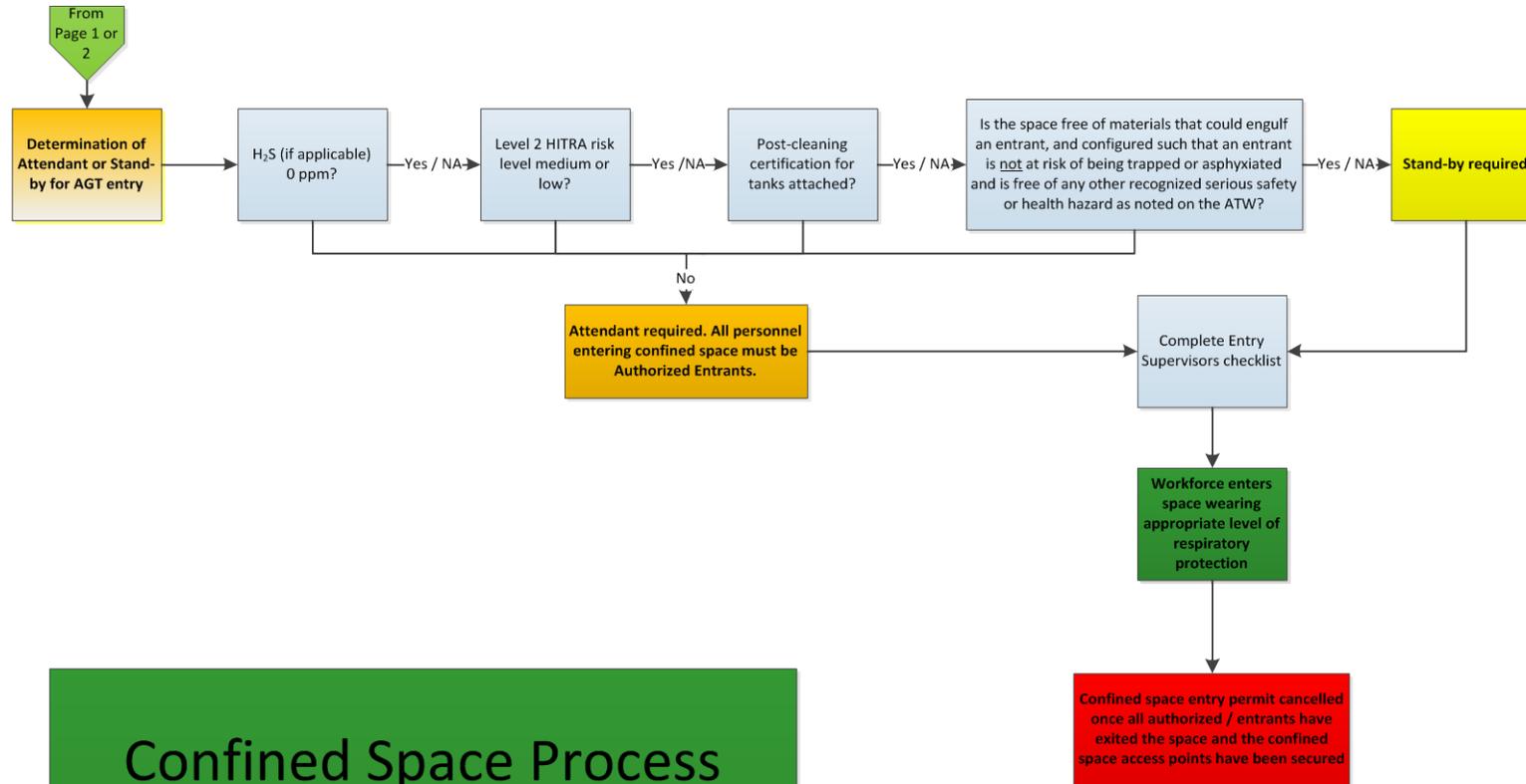


**Confined Space Process
Flowchart**

**Page 2 – AGT entry
monitoring**

Appendix II

Confined Space Process Flowchart - Page 3



Confined Space Process Flowchart
Page 3 – Workforce entry

Appendix IV Post-Cleaning Certification

This example of the Post-Cleaning Certification form is for reference only. For a downloadable version of the form, go to the Documents and Records Management (DRM) site.

Post-Cleaning Certification

This form is to be completed by an Authorized Gas Tester to certify that the confined space is clean and all gas/product has been eliminated. Any item below that is found to be unacceptable must be corrected, and the confined space must be re-monitored and certified as acceptable before any work in the space can begin.

Confined Space Permit No: CS - _____

Note: If certification will be used for multiple days, make copies and enter new confined space permit number above.

Equipment to be certified (print): _____

Date and time of certification (print): _____

Name of Authorized Gas Tester (AGT) conducting the certification (print): _____

Company Name of Authorized Gas Tester (AGT) conducting the certification (print): _____

Asset Operator / Asset Operator Designee accepting the certification (print): _____

Mark each accordingly: **A** (acceptable), **U** (unacceptable), or **N/A** (not applicable); or check "Yes" or "No"

1.	Internal structural pipes notched/drilled at lowest point:		5.	Floating-roof components:	
	a. Center pipe column			a. All pontoons	
	b. Pipe columns			b. Legs	
	c. Bracing			c. Leg sleeves	
	d. Internal ladder			d. Ladder sleeves	
	e. Column sleeves			e. Anti-rotation device	
2.	Gauging components:			f. All the walls	
	a. Gauge wells			g. Bottom side of roof	
	b. Internal floats		6.	External piping:	
	c. Gauge pole			a. Blinds	
3.	Internal piping and components:			b. Valves	
	a. Inlet nozzles			c. Pressure-relief piping	
	b. Nozzle ports			d. Bypass piping	
	c. Diffuser nozzles			e. Sample lines/valves	
	d. Suction troughs			f. Nozzles/nozzle ports	
	e. Sumps			g. All lines isolated	Yes <input type="checkbox"/> No <input type="checkbox"/>
	f. Sump drains		7.	Floor:	
	g. Floating suction devices			a. Clean of all debris	
	h. Heating coils			b. Scale removed	
	i. Water draws			c. Heavy scale blasted	
	j. Open-ended piping systems		8.	Other:	
	k. Roof drain system			a. Roof drains	
4.	Seal system:			b.	
	a. Primary			c.	
	b. Secondary			d.	
	c. Tube seal (diesel)			e.	
	d. Foam log seal removed	Yes <input type="checkbox"/> No <input type="checkbox"/>		f.	

Authorized Gas Tester (AGT) certifies confined space is clean and free of gas/product (sign): _____

Asset Operator / Asset Operator Designee accepts that the inspection and testing was performed (sign) _____ Date of Certification: _____ Time of Certification: _____ am/pm

This form is valid until the conclusion of the project.

Revision Date: July 8, 2014

Next Review Date: July 8, 2019

Paper copies are uncontrolled and valid only at the time of printing. The controlled version of this document can be found in DRM in the HSSE Policies folder.

Effective Date: December 31, 2014

