

# 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
- Benzene
- Contractor Management
- Facility Release
- Hot Work
- Hydrogen Sulfide
- Lessons Learned
- Level 2 Hazard Identification and Task Risk Assessment (HITRA)
- Lockout/Tagout
- Permit to Work
- 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 Checklist shall be issued prior to entry into a confined space.	Section 7
3.	All Confined Space Entry Checklists shall be issued by an Asset Operator (or Designee) and received by a Performing Authority. At minimum, <i>two people must be involved in the checklist process.</i>	Section 5
4.	Confined Space Entry Checklists 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	Section 7

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	“Very High”.	
6.	Employees and contractors who engage in issuing confined space entry checklists, 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

## 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. H<sub>2</sub>S, CO benzene): and conditions (e.g. LEL, O<sub>2</sub>).

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.

**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 Checklist as long as each of the spaces that will be occupied are thoroughly assessed as part of the issuing process.

**Confined Space Entry Checklist**—The signed "Confined Space Entry Checklist" 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 Checklist 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 Checklist, observes entry operations, terminates entry and closes out the Checklist.

**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 PTW 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 Checklist 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 specific 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 Checklist 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 confined 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.

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## 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 list their name on the Confined Space Entry Checklist (Appendix I) and issue 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 Checklists to the Performing Authority or can delegate Checklist issuance to the AOD.
- F. Shall determine if changes can be made to a Checklist if Checklist conditions are exceeded or if the Checklist should be cancelled and a new Checklist issued
- G. Shall review the Level 2 HITRA to verify that the scope is appropriate, hazards and mitigations 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 confined space in a timely manner other than posting prior to commencing confined space entry on USPL controlled sites.

### 5.2. Attendants

- A. Name shall be listed on the Confined Space Entry Checklist 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 confined 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) Checklist 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 Checklist and list their name on the Confined Space Entry Checklist.
- B. Shall immediately evacuate the confined space when they recognize a warning sign or symptom of exposure, a dangerous condition, when Checklist 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. Name shall be listed on the Confined Space Checklist 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, 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 used by the 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 list name on the Confined Space Entry Checklist.
- B. Shall immediately evacuate the confined space when they recognize a warning sign or symptom of exposure, a dangerous condition, or when Checklist conditions are exceeded.

### 5.7. Entry Supervisor

- A. Shall complete the Confined Space Entry Supervisors Checklist for all confined space entries, and amend the Checklist 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 Checklist for presentation to the Asset Operator/AOD for Checklist issuance.
- D. Shall review air monitoring data and ensure appropriate respiratory protection is established.
- E. Shall authorize entry by the Authorized Gas Tester to perform initial air monitoring after the Asset Operator has issued the Confined Space Entry Checklist.
- F. Shall authorize entry for the workforce after the confined space classification has been approved by the AO/AOD 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 Checklist.
- K. Shall stop work and cancel the Checklist if an IDLH atmosphere is present.
- L. Shall verify the following when cancelling the Checklist:
  - 1. All entrants exited the space.
  - 2. The confined space entryway is secured.

3. The reasons for cancelling the Checklist are recorded on the Checklist form.
- M. Shall cancel the Checklist (jointly with the Performing Authority) as soon as the scope of work covered by the Checklist is completed.
- N. 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).
- O. Shall verify that any problems encountered during the entry operations are captured on the Confined Space Entry Checklist.
- P. Shall verify that the rescue plan has been completed and personnel and equipment specified in the plan are in place.
- Q. If off-site entry rescue services are employed in the rescue plan, shall verify their availability each day, prior to entry.
- R. If non-entry rescue is selected, shall ensure that retrieval systems or methods are used whenever an authorized entrant enters a confined 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 Checklists from the Asset Operator / Designee.
- B. Shall verify that all Entrants and Authorized Entrants have signed the Confined Space Entry Checklist to acknowledge their agreement to abide by the conditions documented on the Checklist.
- 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 Checklist.
- D. Shall reassess the job site and revalidate the Checklist before work can resume if work is interrupted or if the job site is left unattended, or if necessary, jointly with the Entry Supervisor, cancels the Checklist and returns it to the AO / AOD.
- E. Shall stop work, suspend the Checklist and notify the Entry Supervisor and AO / AOD if Checklist 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 Checklists by the end of February of the next year for conditions that resulted in Checklist 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 Team Leader

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

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# 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.

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# 7. Confined Space Entry Checklist

## 7.1. Checklist Management

- A. A Confined Space Entry Checklist is valid for no more than seven days for the individuals working under the Checklist, or for the duration of the scope of work documented on the Checklist, whichever period is shorter. If the confined space work requires a Level 2 HITRA, the Checklist is valid for no more than one day, or for the duration of the scope of work documented on the Checklist, whichever period is shorter. See TRCT for specific examples of work that requires a Level 2 HITRA.
- B. If confined space work is suspended or the job site is left unattended (including normal work breaks), the Checklist 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 reestablishing continuous air monitoring.
- C. If Checklist conditions are exceeded (e.g. atmospheric conditions exceed current respiratory protection levels), work and the Checklist shall be suspended until the Asset Operator / Asset Operator Designee determines if changes can be made to the Checklist or if the Checklist should be cancelled and a new Checklist issued.
- D. The Confined Space Entry Checklist shall be posted at the entryway of the confined space until the confined space work is completed or the Checklist expires.
- E. The original completed Confined Space Entry Checklists shall be retained locally 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 Checklist 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 Checklist is completed. The Checklist includes:
  1. Level 2 HITRA for all Confined Space Entries deemed as "high" risk level in accordance with the TRCT.
  2. Permit to Work form
  3. Confined Space Entry Checklist (Appendix I)
  4. Identification of an Attendant or a Stand-by
  5. For Confined Space entries that require an Attendant, the Confined Space Entry Log (Appendix III)
  6. If applicable, Post-Cleaning Certification for above ground storage tanks (Appendix IV)
  7. 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 other than posting, the third-party contractors' authorized representatives of the existence and location of, and the danger posed by, each confined space. This can be as part of site orientation, pre-job tailgates, planning and scheduling (WMP), or other method to effectively and efficiently communicate the existence of confined spaces.

## 7.3. Confined Space Characterization and Checklist 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 list their name on the Checklist 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 Checklist 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. This recommendation shall be documented on the Confined Space Entry Checklist Section B by checking the applicable box for Attendant Required or Standby Required.
- 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 Checklist Cancellation

- A. The Entry Supervisor shall cancel the Checklist 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 date is past the end date of the checklist.
  - 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 Checklist shall be cancelled for any reason.
- B. The Performing Authority shall return the expired Checklist to the AO / AOD.

#### 7.5. DOT-Regulated Valve Pits and Vaults Only

##### 7.5.1. Emergency Response

Entry without a Confined Space Entry Checklist 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, providing all potential hazards have been identified on the PTW.

- 1. Impact is determined by performing air monitoring inside the space from the outside before entering to verify O<sub>2</sub> between 19.5% and 23.5%, and 0% LEL.
- 2. Record air monitoring data in Section E of the PTW.
- 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.

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## 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 Checklists shall continue until benzene level of zero is achieved. Benzene monitoring for subsequent Checklists 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 of the Confined Space Entry Checklist to determine if respiratory protection is required prior to entry into a confined space.
1. If during initial AGT air monitoring any H<sub>2</sub>S is detected, supplied air respiratory protection 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 Checklist 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 per the requirements of the manufacturer.
- 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 Checklist.
- L. Continuous air monitoring shall be conducted for LEL and O<sub>2</sub>.
- 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, 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 work shift or upon expiration of the Checklist whichever is first, 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 confined 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

---

## 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 Checklist Review

- A. By the end of February of each year, the Safety Coordinators shall review Checklist Section F "Confined Space Checklist Cancellation" for all the previous calendar year's issued Confined Space Entry Checklists and identify problems encountered that should be addressed to improve the USPL Confined Space Entry policy.
  1. The Annual Confined Space Checklist Review form (Appendix V) shall be used to document this review.
  2. Recommendations for program improvements shall be forwarded to the Safety Team Leader.
- B. The Safety 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 Checklist

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

CS

Confined Space Checklist

CS -   
(Add inside VMS Entry - 4)

Issue Date		Confined Space Name																		
Expiration Date																				
<b>Air Monitoring Guide</b>		<b>Scope of Work</b> <small>(list tasks to be performed, list of products/materials to be used)</small>																		
Product <small>(check products previously stored that could potentially leak into space)</small>	Benzene	H <sub>2</sub> S	Ethanol																	
	Total HC																			
Crude Oil	●	●																		
Bunker Fuel / Heavy Fuel Oil	●	●																		
Gasoline or NGL	●																			
<del>Gasoline</del> (potentially containing H <sub>2</sub> S)	●	●																		
<del>Gasoline</del> (no potential H <sub>2</sub> S)	●																			
Ethanol	●		●																	
Diesel or Distillate	●		●																	
Air Monitoring Sketch of Confined Space Showing Location of Non-Entry, Entry and Continuous Air Monitoring Points. NOTE: Use Location Identification Numbers (e.g. 1, 2, 3 ...).																				
Section A - General Information	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Date</th> <th style="width: 65%;">Authorized Gas Tester (print name)</th> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>		Date	Authorized Gas Tester (print name)							<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Date</th> <th style="width: 65%;">Attendant or Stand-by (print name)</th> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>		Date	Attendant or Stand-by (print name)						
Date	Authorized Gas Tester (print name)																			
Date	Attendant or Stand-by (print name)																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Date</th> <th style="width: 65%;">Authorized / Entrant(s) (print name)</th> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>		Date	Authorized / Entrant(s) (print name)							<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Date</th> <th style="width: 65%;">Entry Supervisor (print name)</th> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>		Date	Entry Supervisor (print name)							
Date	Authorized / Entrant(s) (print name)																			
Date	Entry Supervisor (print name)																			

CS Confined Space Checklist

CS -  (Additional VMO 009 - 4)



Respiratory Protection Criteria for USPL						
Gas	Non-Hazardous	IDLH	Half-Face Air Purifying Respirator	Full-Face Air Purifying Respirator	Supplied-Air Respirator	
Oxygen	19.5% to 23.5%	< 19.5% or > 23.5%	--	--	--	
LEL	0%	≥ 10%	--	--	--	
Carbon Monoxide	< 35 ppm	> 1200 ppm	--	--	35 to 1200 ppm	
Benzene	< 1 ppm	> 500 ppm	1 to 10 ppm	1 to 50 ppm	1 to 500 ppm	
Hydrogen Sulfide	< 10 ppm	> 100 ppm	--	--	10 to 100 ppm	
Total HC (Gasoline)	< 300 ppm	≥ 1300 ppm	300 to 1300 ppm	300 to 1300 ppm	300 to 1300 ppm	
Diesel Fuel	< 25 ppm	> 600 ppm	25 to 250 ppm	250 to 600 ppm	500 to 600 ppm	

B1: AGT Conducts Non-Entry Monitoring									
Test for Substance	Action Trigger	IDLH Limits	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Oxygen	< 19.5% or > 23.5%	< 19.5% or > 23.5%							
LEL	≥ 1%	≥ 10%							
Carbon Monoxide	≥ 35 ppm	> 1200 ppm							
Benzene	≥ 1 ppm	> 500 ppm							
Hydrogen Sulfide (H <sub>2</sub> S)	≥ 10 ppm	> 300 ppm							
Total HC (Gasoline)	≥ 300 ppm	≥ 1300 ppm							
Diesel Fuel	≥ 25 ppm	> 600 ppm							
Other									
Substances listed above do not exceed IDLH levels? If any checkbox is 'No', STOP - NO ENTRY PERMITTED.			<input type="checkbox"/> Yes						
			<input type="checkbox"/> No						

B2: Characterization of Confined Space and Determination of Entry			NA	No	Yes
Non-entry monitoring H <sub>2</sub> S at 0 ppm.					
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
Level 2 HITRA Risk Level is Medium or Low for the tasks to be executed in the space this shift.					
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
Post-Cleaning Certification for tanks attached.					
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
The space is free of materials that could engulf an entrant.					
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
The space is configured such that an entrant is NOT at risk of being trapped or asphyxiated.					
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
The space is free of any recognized serious safety or health hazard as noted on the PTW.					
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					
If ANY RESPONSE in the statements above is 'NO', then an ATTENDANT IS REQUIRED and personnel entering the confined space MUST BE AUTHORIZED ENTRANTS AND AN ENTRY LOG MUST BE MAINTAINED.				<input type="checkbox"/> Attendant Required	
				<input type="checkbox"/> Standby Required	

AGT Entry:		
The entry point is identified.	<input type="checkbox"/>	<input type="checkbox"/>
Supplied air respiratory protection shall be used if any H <sub>2</sub> S detected.	<input type="checkbox"/>	<input type="checkbox"/>
Entry Supervisor has verified personnel, serving in confined space, attest they are trained.	<input type="checkbox"/>	<input type="checkbox"/>
Only one entry point has been designated as primary enter / egress for confined space work.	<input type="checkbox"/>	<input type="checkbox"/>
Rescue Plan (commensurate with risk) is below and / or attached.	<input type="checkbox"/>	<input type="checkbox"/>
Communication procedures used by Authorized / Entrants and Attendants / Stand-by	<input type="checkbox"/> Voice	
	<input type="checkbox"/> Two-Way Radio	

CS Confined Space Checklist

CS -  (ADD OR EDIT WORKSHEET - 4)

**Section C: Rescue Plan**

Describe the method to summon emergency and rescue services in a timely manner.

Check the method used to rescue personnel in the confined space

<input type="checkbox"/>	Self-Rescue (not allowed if an Attendant is required)
<input type="checkbox"/>	Non-Entry
<input type="checkbox"/>	Entry Rescue
<input type="checkbox"/>	Other

Describe how necessary emergency services will be provided to rescued employees.

Describe how unauthorized personnel will be prevented from attempting a rescue.

**Section D: Entry Monitoring**

Can the AGT perform air monitoring for the area occupied by the workforce without breaking the entryway plane with any part of their body? **If the response is "Yes", skip the rest of Section D.**

Test for Substance	Action Trigger	IDLH Limits	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Oxygen	< 19.5% or > 23.5%	< 19.5% or > 23.5%							
LEL	≥ 1%	≥ 10%							
Carbon Monoxide	≥ 35 ppm	> 1200 ppm							
Benzene	≥ 1 ppm	> 500 ppm							
Hydrogen Sulfide (H <sub>2</sub> S)	≥ 10 ppm	> 100 ppm							
Total HC (Gasoline)	≥ 300 ppm	≥ 1300 ppm							
Diesel Fuel	≥ 25 ppm	> 600 ppm							
Other									

**D2: Characterization of Confined Space and Determination of Entry**

	NA	No	Yes
Non-entry monitoring H <sub>2</sub> S at 0 ppm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Level 2 HITRA Risk Level is Medium or Low for the tasks to be executed in the space this shift.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Post-Clearing Certification for tanks attached.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The space is free of materials that could engulf an entrant.		<input type="checkbox"/>	<input type="checkbox"/>
The space is configured such that an entrant is NOT at risk of being trapped or asphyxiated.		<input type="checkbox"/>	<input type="checkbox"/>
The space is free of any recognized serious safety or health hazard as noted on the PTW.		<input type="checkbox"/>	<input type="checkbox"/>

If **ANY RESPONSE** in the statements above is 'NO', then an **ATTENDANT IS REQUIRED** and personnel entering the confined space **MUST BE AUTHORIZED ENTRANTS AND AN ENTRY LOG MUST BE MAINTAINED.**

<input type="checkbox"/>	Attendant Required
<input type="checkbox"/>	Standby Required

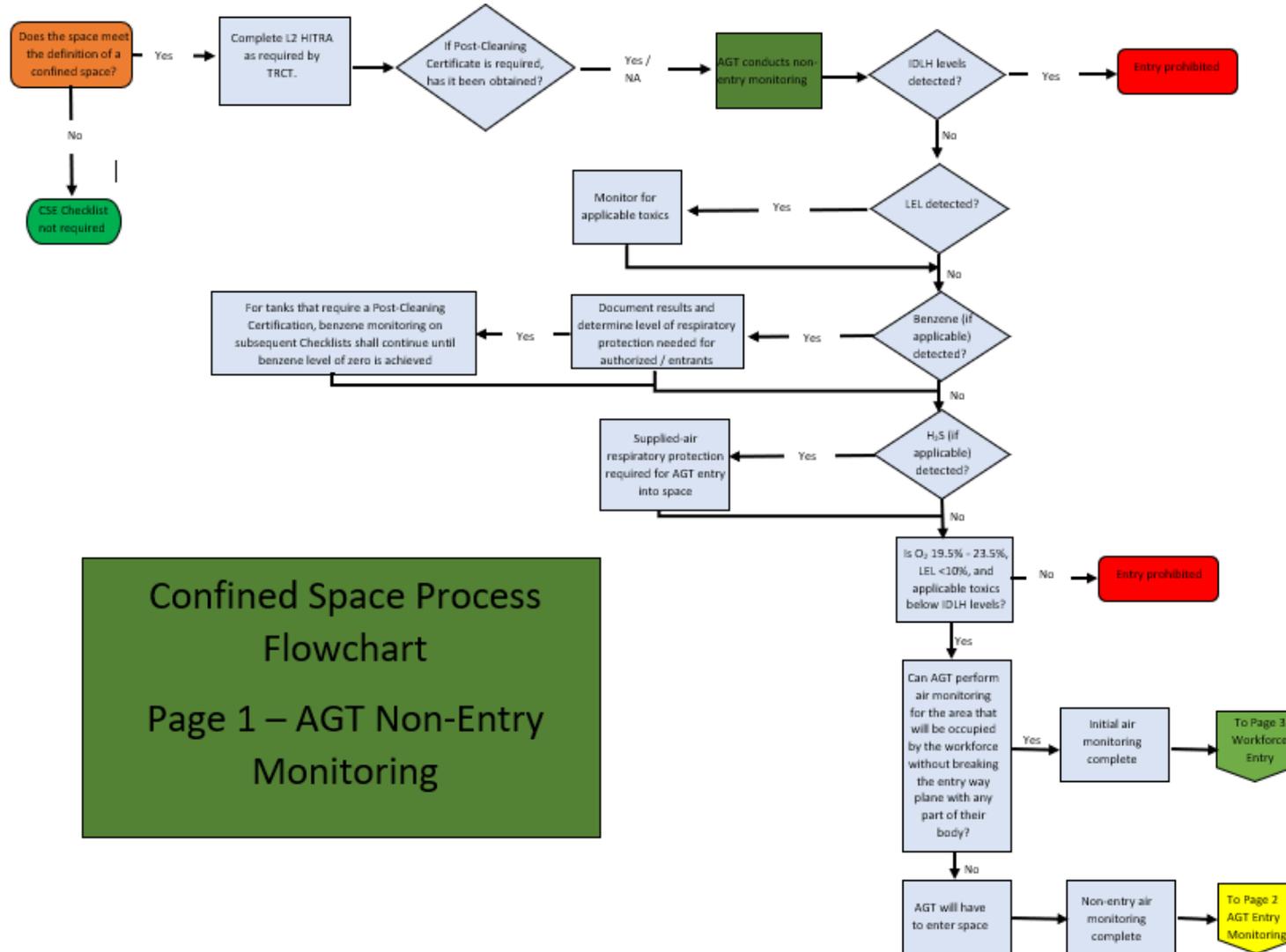
**Section E: Cancellation**

Confined space access points secured.  Yes

Reason for confined space checklist cancellation.

Entry Supervisor (print and sign name)

## Appendix II Confined Space Process Flowchart - Page 1



Confined Space Process  
Flowchart  
Page 1 – AGT Non-Entry  
Monitoring

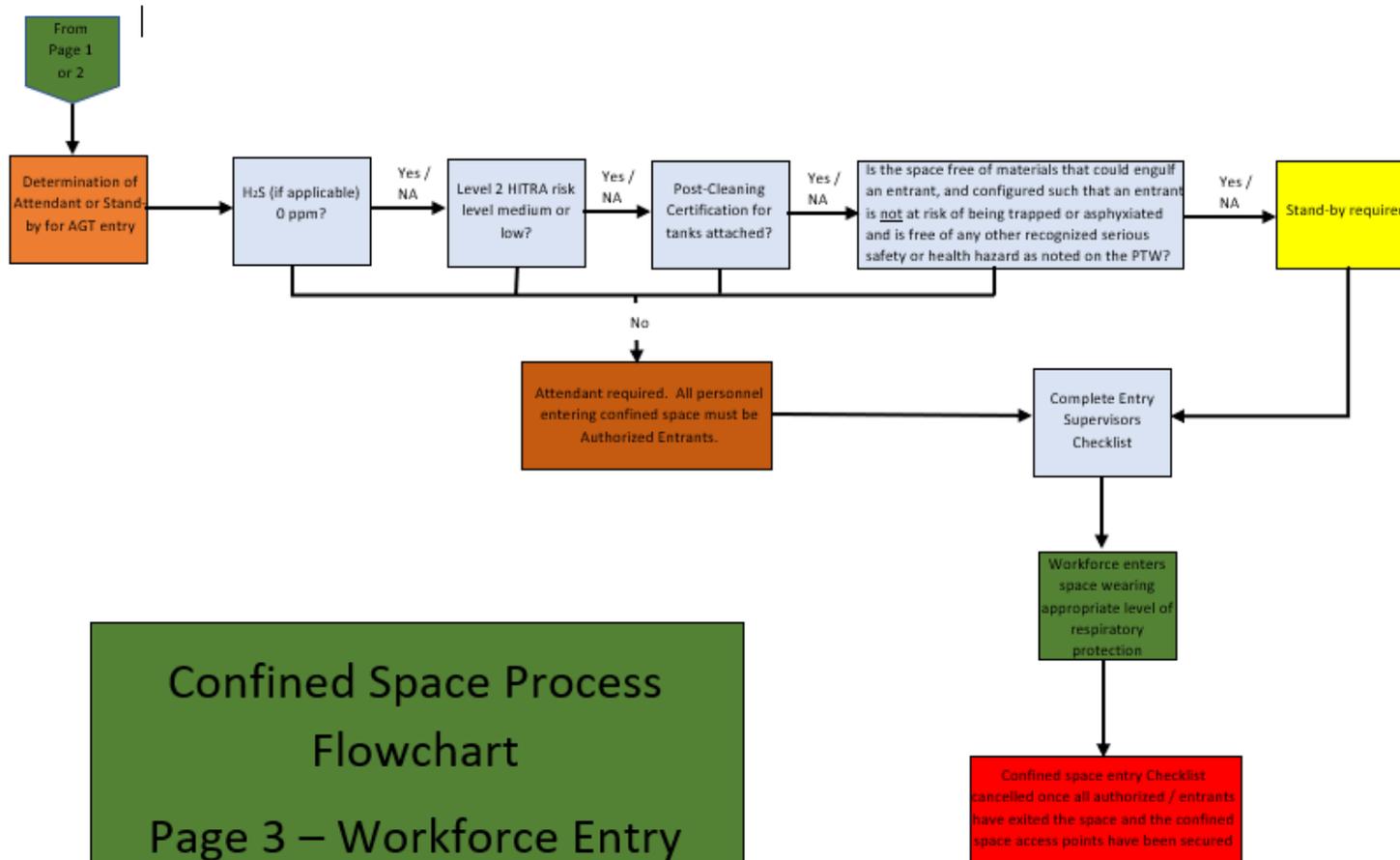
Revision Date: DRAFT

Next Review Date:

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## Appendix II Confined Space Process Flowchart - Page 2



Confined Space Process  
Flowchart  
Page 3 – Workforce Entry

## Appendix II

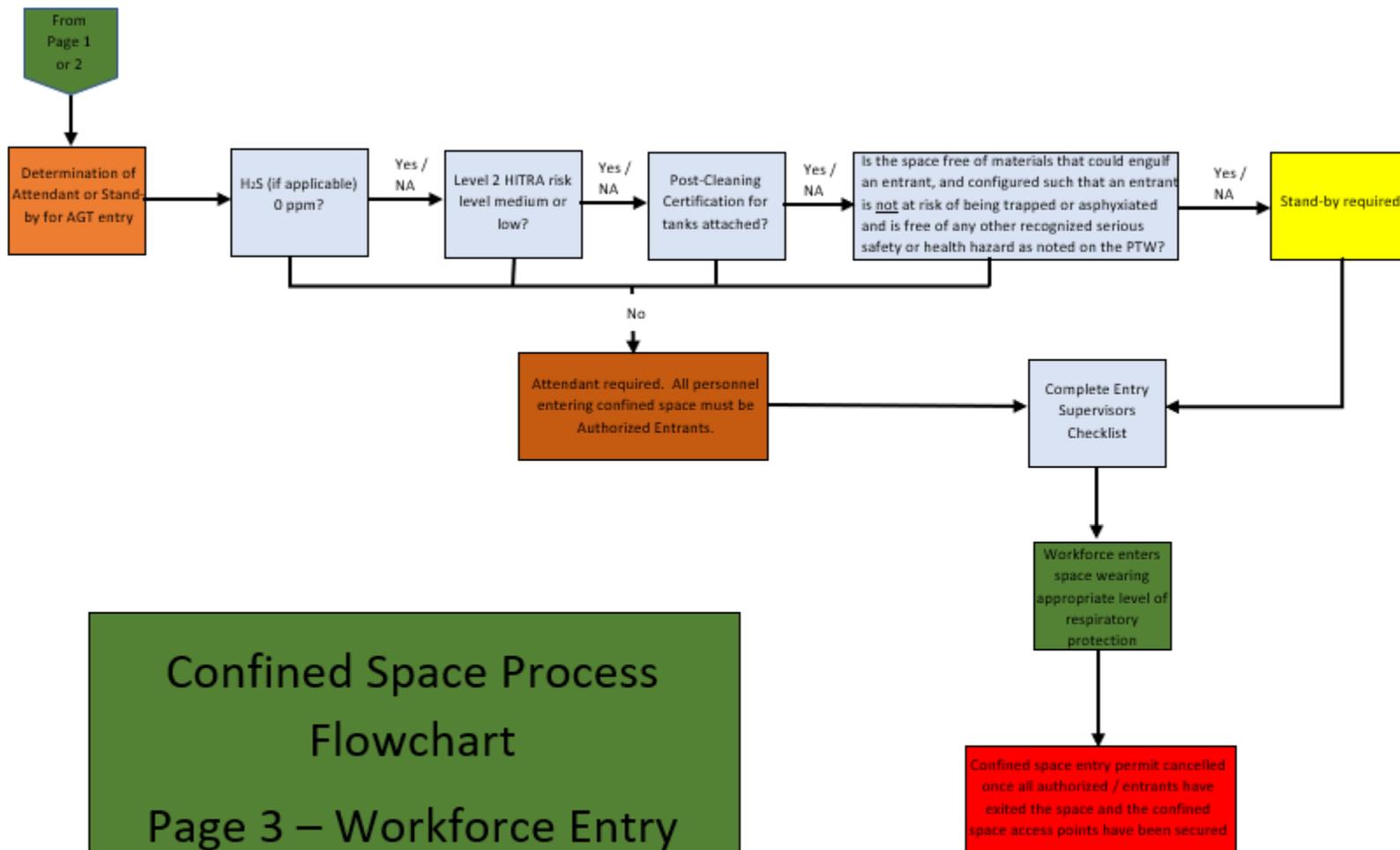
Revision Date: DRAFT

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### 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 Checklist No: CS - \_\_\_\_\_

Note: If certification will be used for multiple days, make copies and enter new confined space checklist 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

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Effective Date: DRAFT

Next Review Date:

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