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1.0 INTRODUCTION

1.1 Purpose

This procedure provides a tool to effectively prepare and safely execute confined space entry for the purposes of performing inspection and routine/emergency work activities.

1.2 Scope

This procedure establishes the requirements that apply to all confined space entry work conducted on Marathon Anacortes Refinery property.

2.0 REFERENCES

2.1 Marathon Standards, Policies & Procedures

- RSP-1121-020, Inert Entry
- RSP-1127-000, Confined Space Entry
- SAF-4005, Confined Space Entry

2.2 Government Regulations

- OSHA 29 CFR 1910.146, Permit-Required Confined Spaces
- OSHA 29 CFR 1910.147, The Control of Hazardous Energy (LO/TO)
- OSHA 29 CFR 1910.119, Process Safety Management of Highly Hazardous Chemicals
- WAC 296-809, Confined Spaces

3.0 DEFINITIONS

The following definitions are applicable to this procedure.

Table 1 Definitions

Term	Definitions
#1 Blind	Class 1: Isolation blinds or plugs falling in this classification are those which must be installed to isolate equipment or unit from active incoming and outgoing process and utility lines, and are full pressure rated.
#2 Blind	Class 2: Personnel entry, hot work. Usually, thin blinds that are not full pressure rated.
Confined Space	A space large enough and configured such that a person's entire body can enter and perform the assigned work; has limited or restricted means for entry or exit; and is not designed for continuous occupancy. Must have all 3 elements to meet the definition of a confined space.

Table 1 Definitions

Term	Definitions
Confined Space: Permit Required	Meets the definition of a confined space, plus: Contains or has the potential to contain a hazardous atmosphere. Contains a material that has the potential for engulfing an Entrant. Has an internal configuration such that an Entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section. A space that contains any other recognized serious safety or health hazard. Excavation 4 feet deep and greater. Above a floating roof tank that requires Entrants to access and egress via a ladder to the surface of the floating roof.
Double Block and Bleed	A process of positive isolation that requires two closed block valves with a bleeder valve between them in the open position. See R-11-032 for more information.
Entry	The action by which a person passes through an opening into a confined space. Entry is considered to have occurred as soon as any part of the Entrant's body breaks the plane of an opening into the space.
Entry Supervisor	An employee or business partner who supervises other employees to perform work done under a Confined Space Work Permit.
Inert Confined Space Entry	Any confined space where inert gas is utilized to reduce the potential for an explosive atmosphere (LEL). Nitrogen is commonly used as an inert gas for this purpose. Marathon Anacortes Refinery employees will not enter inert confined spaces.
Nitrogen Exclusion Zone	Any area where the oxygen concentration may be diminished to 19.5% or less through the use of an inert gas, such as nitrogen.

4.0 ROLES AND RESPONSIBILITIES

4.1 Owning Department

- Knows the confined space hazards, including information on the mode and the consequences of exposure.
- Provides appropriate instructions for preparation of the space for entry, including cleanup and isolation.
- Completes the Energy Isolation Plan (EIP) and verifies that it has all the necessary signatures and initials prior to the Entry Permit being issued (in accordance with R-11-032 Energy Isolation (Lockout/Tagout) and Blinding).
- Verifies blinds are in place with appropriate tags. If a Master Board is in use, Operations/Owning Department must verify the checklist is signed off for the current shift (must be in accordance with R-11-032).
- Specifies the testing and precautionary measures required to ensure the safety of the entry and the work to be done. Refer to R-14-004 Industrial Hygiene Program & Air

Monitoring Equipment for guidance on Atmospheric Testing, and R-11-005 for Safe Work Permitting.

- Contacts the Safety Department for assistance, as necessary.
- Addresses any potential mechanical integrity issues relative to the confined space prior to entry (e.g., tank roof metal thickness, stability of refractory) by calling Engineering or Inspections for further evaluation when suspected deficient or compromised.
- Reviews requirements and signs Safe Work Permits for all entries.
- Validates that Safe Work Permit conditions are acceptable, helps enforce Safe Work Permit conditions.
- Communicates in a timely manner to the Entry Supervisor the existence, location and potential hazards of each Confined Space (e.g., Joint Job Site Visit).
- Coordinates entry operations with the business partner, nearby operations, and any MPC employees working in or near the confined space.
- Ensures that required atmospheric testing is conducted prior to entry, as required. If the space is not accessed within two hours, a re-test of the atmosphere must be conducted.
- Ensures a sign is posted, such as "Danger – Permit Required Confined Space Do Not Enter," or a similar barrier as soon as the confined space is opened.
- Ensures that the Safe Work Permit is maintained at the job site during the entry operation.
- Ensures adequate Attendant personnel are present, and that proper emergency/ rescue equipment and other personal protective equipment are onsite as specified by the Safe Work Permit.
- Ensures Attendants have adequate communications methods with both Entrants and rescue services.
- Ensures that the names of assigned rescuers are available within the refinery and have been notified that they are assigned rescue duties.
- Maintains the assigned rescue team listing on the Safe Work Permit.
- Ensures that air-monitoring equipment (e.g., LEL/O_2 meters, gas monitor, etc.) have been bump tested/calibrated and are properly maintained per manufacturer's recommendations.
- Coordinates through the Entry Supervisor that the specified conditions on the Safe Work Permit have been satisfied.
- Notifies direct Supervision of any problem involved with the confined space entry.
- Informs the confined space entry work party of any area or operational conditions that may impact the confined space entry operation (e.g., nearby hot work, sewer draining operations).
- Cancels and removes the Safe Work Permit when the work is completed or if a prohibited work condition occurs.
- Completes the debriefing section on the Safe Work Permits.

4.2 Entrants

- All personnel who enter a confined space must maintain compliance with all applicable rules and regulations (i.e., state & federal).
- Marathon Anacortes Refinery has a sign-in/out requirement for all Entrants on the Confined Space Entrant Log (i.e., found on the back of the Safe Work Permit).
- Per R-11-005 Safe Work Permit, all Entrants must review the Safe work permit and sign the Servicing Group Acknowledgement on the completed JSA to verify they have read and understand the hazards involved.
- Must not enter confined space until Entry Attendant is on site and ready to perform duties.
- Provide signature on sign-in/out log when entering/exiting a confined space.
- Communicates with Entry Attendant as necessary to enable Entry Attendant to assess entrant status and to enable Entry Attendant to alert entrants of the need to evacuate the space.
- Alert Entry Attendant whenever:
    - There is any warning sign or symptom of exposure to a dangerous situation.
    - If exiting through a different opening other than the original opening; or
    - The Authorized Entrant detects a prohibited condition.
- Exit from the confined space as quickly as possible whenever:
    - An order to evacuate is given by the Entry Attendant or the Entry Supervisor.
    - There is any warning sign or symptom of exposure to a dangerous situation.
    - An evacuation alarm is activated.
    - The Authorized Entrant detects a prohibited condition.
- Must be trained as appropriate to properly use equipment needed to perform the work including testing, monitoring, ventilation, communications, PPE, lighting, barriers and shields, ingress and egress and rescue in an emergency.

4.3 Entry Supervisor

The Entry Supervisor must walk the energy isolation points and sign the Energy Isolation Plan (EIP) verifying all isolation is complete. The Entry Supervisor must inspect the equipment to make sure all entry requirements have been met. The Entry Supervisor shall identify and mitigate any hazards for the tasks their employees will perform. Entry Supervisor acknowledges all precautions and requirements of the Entry Permit. The Entry Supervisor conveys the precautions and requirements to the Entry Attendant and Entrants, including the following:

- The Entry Supervisor must be a Marathon Employee.
- If MPC elects to utilize a Directly Supervised Contractor (DSC) to fulfill the role of the Entry Supervisor, MPC must ensure the DSC has been trained as an Entry Supervisor.
- Reads and authorizes the entry into a permit-required confined space by signing the Entry Permit.

- Oversees entry operations.
- Knows the hazards that may be faced during entry, and ensures controls are in place and effective.
- Ensures pedestrian, vehicle, or other barricades are in place as necessary to protect entrants from external hazards and preventing accidental or unauthorized entry.
- Verifies and checks all the following:
  - The appropriate entries have been made on the permit.
  - All tests specified by the permit have been conducted.
  - All procedures and equipment specified by the permit are in place before approving the permit and allowing entry to the space, including communication devices for Entrant with Entry Attendant, and/or Entry Supervisor.
- Terminates the entry and cancels the permit when:
  - The assigned task or job has been completed.
  - A condition in the space that is not covered by the permit is discovered.
  - A hazardous condition outside the space has potential to affect the entry.
- Verifies that rescue services are available and that there is a way to contact them.
- Removes unauthorized individuals who enter or attempt to enter the permit-required confined space during entry operations.
- Determines that entry operations remain consistent with the terms of the Entry Permit, and acceptable entry conditions are maintained:
  - Whenever responsibility for a permit-required space entry operation is transferred, and
  - At regular intervals dictated by the hazards and operation performed within the space.
- Ensures that all Entrant(s) entering and working at the same level have an effective means of communication with the Entry Attendant.
- Coordinates entry operations when more than one group will enter the confined space.
- Ensures that there is safe access and egress for the confined space, and that the confined space has sufficient lighting.
- If the confined space entry is off site, the entry supervisor must inform the employees of the hazards associated with the confined space entry, coordinate the entry operations, and ensure that the permit is followed.

4.4 Entry Attendant

An Entry Attendant is required anytime entry is made into a confined space. The Entry Attendant (aka. Man-Watch or Hole-Watch) shall be stationed at the opening of the confined space as long as there are personnel inside. If this confined space is a tank roof, the standby shall be stationed at the top of the tank nearest point to the entry. The Entry Attendant shall:

- Read the Confined Space Entry Permit and check that:
  - The date and time are current.
  - Ensures that a Safe Work Permit has been issued for the confined space assigned.
- Makes certain that the Safe Work Permit:
  - is signed by the Owning Department Representative,
  - identifies the Confined Space Entry Supervisor,
  - lists the current date, time, and location,
  - is posted at the entrance of the confined space,
  - specifies continuous air monitoring, and
  - has current atmospheric test/air monitoring results recorded on it.
  - All the precautions are complied with.
- Know how to use the atmospheric testing monitors listed under other precautions.
  - Record atmospheric readings on the monitoring sheet.
  - Permit will be available at the job site.
  - Allow entry to only authorized Entrants.
  - Ensure all Entrants sign in and sign out, as they enter and exit.
  - Entry Attendant must remain outside the confined space during entry until relieved by another Entry Attendant, or Entry Permit is no longer required.
  - Know how to initiate the confined space evacuation plan.
  - Must be familiar with HazCom information associated with space to be entered.
- Be in contact with persons working in confined space at all times by:
  - Visual (i.e., when workers are in view).
  - Audio (i.e., radio communications device is required when workers are not in view).
  - Signaling system (i.e., when noise levels are high).
- Have Entrants evacuate the confined space if:
  - Ventilation stops.
  - Nearby vapor release that could affect Entrants.
  - Requested to leave confined space.
  - Atmosphere testing monitors alarm or fail to work properly.

- If any other unforeseen hazard arises.

- Keep lifelines orderly, untangled, and connected securely to a retrieval device or anchor outside the space, if lifelines are required.
- In the event of an emergency, know who to contact (i.e., Operations, Entry Supervisor, or Health & Safety Department personnel).
- Wear an orange FRC vest to be readily identifiable as the Entry Attendant.
- Are not to be assigned any duties other than monitoring the confined space atmosphere and activities in that atmosphere.

  Note: They can fire watch or hand/lower work materials down to Entrants, but not perform duties, which interfere with their Attendant duties.

4.5 Safety Department

A. Develops, administers, and updates the local confined space procedure/work instructions.

B. Ensures that at least one rescue team member is currently certified in first aid and CPR.

C. Reviews requirements and authorizes initial Safe Work Permits. Their Signature indicates at minimum a review/confirmation of the permit for reflection of current conditions, scope, and safeguards that support safe execution of the permitted work.

Exceptions: A Safety Department representative is not required to sign for: Vessel Skirts, Fin Fans, Cooling Water Fan Shrouds, and New Equipment not yet put into service.

D. Assists the Owning Department, Entry Supervisor, and or Servicing Groups when requested. This may include consulting on ventilation requirements, atmospheric monitoring practices, permit requirements, etc.

E. Conducts specific testing as requested by the Owning Department.

F. On at least an annual basis, reviews the Safe Work Permits to evaluate the overall confined space program effectiveness, and revises the program to correct any deficiencies found prior to authorizing subsequent entries. Examples of circumstances that may indicate a deficiency requiring a revision to the confined space program include, but are not limited to: – any unauthorized entry of a permit required confined space, – detection of a CS hazard not covered by the permit, – detection of a condition prohibited by the SWP permit, – a near-miss or injury occurs during entry, or – a change in use or configuration of a permit required CS.

5.0 HAZARD ID, EVALUATION AND COMMUNICATION - PERMITTING

All required documentation (i.e., identified below) must be available at the main entry point of the confined space. The Entry Supervisor and Operations will be responsible for ensuring all required documentation is complete and available.

If the opening is large enough for the worker(s) to fully enter the space, a permit is required even for partial body entry. Confined space entry permits are not required for partial body entry in spaces where the opening is not large enough for full body entry (i.e. except for head entry, due to atmospheric potential within the confined space). Head entries require a Confined Space Entry Permit.

Examples:

- An Electrician is working within an electrical cabinet that is too small for their entire body to fit within it. All electrical hazards have been isolated, and the Electrician is doing their best to position their body such that they can effectively work on the electrical components within the cabinet. This activity would not be permitted as a confined space.
- A worker needs to visually inspect the inside of a vessel that has previously contained hazardous materials. If the worker wants to enter their head into the space for visual inspection, a Confined Space Entry Permit would be issued.

5.1 Hazard Communication within a Confined Space

Marathon Anacortes Refinery has many tools to communicate Confined Space Hazards, including but not limited to: Joint Job Site Visits, Job Safety Analysis, and Permits. To ensure all confined space Entrants are aware of the hazards inside and outside the confined space during the entry, immediate communication capabilities are required between the Entrants and the Entry Attendant. Some acceptable forms of communication are verbal, radio, com-space communications, signaling system (i.e., when noise levels are high and only when within line of sight), or any other communication method pre-approved by the Marathon Health & Safety Department.

5.2 Permit Required Confined Space

Prior to entry, a Confined Space Entry Permit must be issued in accordance with the R-11-005 Safe Work Permit permitting process. All confined spaces will be considered permit required confined spaces unless formally evaluated by the Health & Safety Department and otherwise documented on Safe Work Permit (i.e., this includes tank roofs, and excavation/trenches greater than 4 feet deep).

All unoccupied confined spaces will have a "Permit Required Confined Space" or "Confined Space" sign that clearly indicates "Do Not Enter," and is placed over the entry of the space to ensure it is visible.

The Safe Work Permit and JSA must be posted at the entry site. At the conclusion of any entry operation, a debriefing shall take place regarding any hazards not identified in the Permit Process. The Entry Supervisor(s) shall note all unidentified hazards or abnormalities on the back of the Safe Work Permit. All the associated documentation and permits must be properly closed out. All closed out permits and documentation need to be turned over by Operations to the Marathon Safety Department for document retention.

The back of the Safe Work Permit will be used to log entrants into and out of the confined space. The Safe Work permit must identify who the Entry Supervisor and Entry attendant are. Entrants' names are required to be printed legibly on the Entrant log to ensure accountability reporting in the event of an emergency.

5.3 Reclassification of a Permit Required Confined Space to a Non-Confined Space

Tanks and excavations located outside of active/current process areas may be reclassified as non-confined spaces by the MPC Safety Department. Other types of confined spaces cannot be reclassified, including trenches. Although a reclassified space is no longer considered a permit required confined space, Safe Work Permits are

required, per RSP-1128-000. However, the SWP does not need to indicate the Confined Space Rescue Team Members, Confined Space Attendants, and the section of the SWP for Confined Space Entry & the entry and exit log are no longer required.

The following are requirements for reclassification of a permit required confined space to non-confined space: (a) A meeting with an MPC Safety Representative, MPC Maintenance Representative, Servicing Group Representative, Operations Supervision and Excavation Competent Person (as needed) will take place at the job site to evaluate the Permit Require-Confined Space for reclassification. Their reclassification meeting will address the following items at a minimum:

A. For Tanks:

A door sheet (approximately 10' x 8') must be cut in the side of the tank.

The tank must be cleaned and free of residues and materials (e.g., pontoons, roof seals, roof legs and/or gauge poles which are sealed to the floor and residues on the floor, walls and roof).

Note: Entry into pontoons will still require a confined space entry permit.

Continuous atmospheric monitoring is still required.

Additional precautions (e.g., PPE, additional continuous monitors, barriers, shields, lighting requirements, rescue equipment, etc.) will be determined during the reclassification meeting.

If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated, it may be reclassified as long as the hazards remain eliminated.

Note: Control of atmospheric hazards through forced air ventilation does not constitute elimination of the hazards.

6.0 HAZARDS COMMONLY PRESENT IN CONFINED SPACES

6.1 Oxygen Deficiency or Excess

No employee shall enter a confined space having oxygen content of less than 19.5%. Whenever practical, the oxygen content should be higher so that the person is not immediately required to leave the area. An oxygen content of 20.9% is a good rule of thumb for confined space entry. An area in excess of 23.5% oxygen shall not be entered.

Marathon Employees will not under any circumstances enter any vessel/equipment containing an inert atmosphere. For inert entry refer to Section 7.0.

6.2 Flammable Atmospheres

Confined spaces should be prepared and cleaned prior to entry, to zero percent LEL conditions if achievable. Any LEL readings shall be evaluated, and the source well understood and controlled prior to entry. Atmospheres which contain or could contain flammable gases or vapors shall not be entered if the concentration of gases or vapors in any part of the area is more than 10% of the lower explosive limit (i.e., except in the event of an emergency, and then only when employees are protected by equipment and techniques approved for such exposures).

Care must be exercised when entering a confined space with residual material left behind. Increases in ambient temperature or disturbing the material could result in the release of volatile organic chemicals (i.e., hydrocarbons) that could lead to a flammable atmosphere.

6.3 Toxic Atmospheres

The atmosphere in a confined space must be tested prior to entry to determine whether the space is safe for entry. Atmospheric testing will be conducted in a manner that is representative of the confined space's atmosphere. Considerations include space configuration and design, and the physical and chemical characteristics of suspected contaminants. Vertically configured confined spaces should be tested at various levels to ensure proper characterization of atmospheric conditions. If the atmospheric conditions inside the confined space have changed or have been suspected of change, further testing, monitoring, or re-evaluation of confined space is required. Atmospheres where contamination is above the permissible exposure limits but below values immediately hazardous to life or health, may be entered when respiratory protective equipment is properly worn (refer to R-14-008 Respiratory Protection Program). Atmospheres immediately hazardous to life may be entered only in the event of an emergency, and then only when employees are protected by equipment approved for such exposures. If the toxicity of an atmosphere is unknown, then full protective equipment is required. Entry into spaces that contain or could contain corrosive chemical or chemicals that are toxic through skin absorption shall require equipment to prevent skin and/or eye contact (refer to R-11-023 Personal Protective Equipment (PPE)).

6.4 Mechanical Hazards

Confined space areas containing parts which may move, or which contain mixers or other power-driven moving parts, shall not be entered until it is assured that such parts cannot move and that the hazardous mechanical energy has been controlled. This can be accomplished by:

- Open and lock circuit breakers or switches, or remove fuses, or disconnect wiring and tag location.
- Physically blocking the equipment to prevent movement.

6.5 Biological Hazards

Legionella in cooling water systems and other bacteria or biomass hazards should be assumed to exist for inspection or work on cooling towers. Procedure R-11-023 details the PPE required to prevent legionella exposure.

Wood used to construct cooling towers may have absorbed chemicals or biomass components during operation of the tower. Cooling tower work that generates dust may release chemicals and spores. For cooling tower work that generates dusts, HEPA respirators, dust goggles, Tyvek coveralls and work gloves are required (see R-11-023 for more details).

Workers should wash their hands and faces before eating, drinking, smoking or applying cosmetics. These products should be kept outside of the work area where contamination might occur. Potentially contaminated clothing and equipment should be disposed of or decontaminated before re-use.

6.6 Non-Isolated Engulfment Hazards

Any non-isolated engulfment hazard (e.g., Catalyst) shall have an early-warning system that continuously monitors for the non-isolated engulfment hazard. The system shall alert Entrants and Attendants in enough time for the Entrants to safely exit the space.

Example: Remote Camera Monitoring System for Catalyst removal with Entrants attached to lifelines. Non-Isolated Sewer Entry with a monitor for water flow.

6.7 Heat Stress

Confined Space Entries are not permitted in atmospheres with temperatures above 110 degrees Fahrenheit. If the need arises to go in a confined space with temperatures above 110 degrees Fahrenheit follow the Safety Variance process outlined in R-11-005.

For testing and work/rest regimes refer to R-14-005 Heat Related Illness and Prevention Plan.

6.8 Multiple Compartment or Coupled Vessels

When multi-compartment or coupled confined spaces are to be entered, additional precautions are as follows:

- Atmospherically test the entire space.
- Verify that the space has been isolated and that engulfment, mechanical, and internal configuration hazards have been addressed.
- Position an Attendant at each active entrance/exit location (e.g., Manways, at internal manways of floating roof tanks when work is taking place above and below; work inside cyclones inside the Regen; Furnaces: Wind Tunnel, Convection Section, etc.).

  Note: It may not be necessary to have an Attendant at each entrance/exit provided they can adequately monitor the Entrants.
- Prepare a single Safe Work Permit for the entire space unless the confined space warrants otherwise (e.g., a catalytic regenerator).
- Coordinate, maintain, and control sign-in/sign-out logs for multiple active entrance/exit locations by an assigned Attendant to ensure that all Entrants are accounted for at the completion of entry operations.
- The alerting device to warn entrants to evacuate a confined space due to an unsafe condition must be enough to alert all entrants. The alerting device selected shall consider the size and/or configuration of the confined space and the work being performed in the confined space. The standard compressed air or hand pumped air horns may not be enough to alert entrants of an evacuation. In these situations, other more effective or louder alerting systems must be used (e.g., Confined Space Monitoring System with audible and visual alerts, strobe light, etc.).

6.9 Refractory Work Inside Confined Spaces

Additional hazard assessment and advance planning are necessary to determine the refractory materials and potential work exposures (for example, pH, arsenic, free silica).

Important: Include Safety Department involvement prior to entry.

6.10 Naturally Occurring Radioactive Material

Where exposure to Naturally Occurring Radioactive Material (NORM) is reasonably foreseeable, appropriate measures will be taken to restrict or limit employee exposure. Entry into a confined space will not be allowed without the use of appropriate Personal Protective Equipment if the dose rate inside the vessel/confined space exceeds 50 μR/hr or until steps have been taken to reduce the NORM level to below the allowable limit. Refer to SAF-4005 for more information on NORM.

6.11 Electrical Hazards within a Confined Space

All potentially hazardous electrical circuits shall be de-energized, locked and tagged. Electrical equipment utilized for tasks within a confined space shall be permitted in accordance with R-11-030 Hot Work Operations. All lighting and electrical equipment shall be protected against possible damage and kept clear of working spaces and walking surfaces. Cords shall be heavy duty and rated for industrial service. All electrical equipment shall be rated for the area classification in which it is to be used, protecting against the possible ignition of gases, vapors and dust. Contact Electrical Supervision for additional information on electrical ratings, area classifications, required electrical listings, and so forth.

7.0 INERT ENTRY

Refer to RSP-1121-020 Safe Entry into Inert Atmosphere.

8.0 ENERGY ISOLATION

8.1 General Isolation (Tanks, Columns, Vessels, Etc.)

Before employees are permitted to enter a confined space, it shall be isolated to preclude the entry of hazardous materials by of the following methods:

- Inserting the appropriate blinds in all flanges nearest to the confined space. If this is not feasible Operations, Maintenance, and Safety must agree to an alternate location. The piping between the blind and vessel shall undergo the same preparation as the vessel, and its atmosphere must be tested the same as the vessel. All number 2 blinds must be spaced on the vessel side of the blind unless there is another means (bleeder valve) in close proximity to the blind that allows for proper verification of its atmosphere.
- Removing a valve or spool piece as close as possible to the confined space.
- All sewer drains off vessels and columns must be blinded or broken away.
- Float chambers and gauge glasses should be cleaned, purged, and have blinds installed at the flange nearest to the equipment. If blinding is not practical, do the following:
    - Identify those that have not been blinded.
    - Steam through all bleeders.
- Atmospheric PSV's must be blinded underneath the block valve (i.e., vessel side).
- The first bullet of this list requires blinds at the flange nearest the equipment. Certain piping designs or access to flanges (as in some vessel skirts) do not permit this to

easily occur. Blinding locations should also consider the reason for entering the confined space, such as blinding outside the vessel skirt to water wash to prevent the skirt from accumulating material. In those circumstances, discuss the situation with the Health & Safety Department for alternative safe methods to be evaluated. A variance is not required if the Isolation Plan describes why blinds at the flange nearest the equipment are not possible or feasible. Safety is required to be notified on all initial confined space entries and will review the Energy Isolation Plan at that time, as needed.

- Removal of Flammable and Toxic Material: All possible liquid product/sludge should be drained and/or pumped/washed to remove residue. When washing equipment containing flammable or toxic material, grounded water nozzles are required. Dispose of material in accordance with hazardous waste procedures.
- Non-engineered inflatable plugs are prohibited when utilized for energy or hazard isolation (See Sewer Energy Isolation for exception).

Note: Refer to R-11-032, Energy Isolation (Lockout/Tagout) and Blinding for specific details and requirements.

The "water draw" blind may be left out for the purpose of cleaning tanks and performing cold work. Care needs to be exercised to prevent drawing sewer gases into the tank. Therefore, the water draw block valve should remain closed when draining of the tank is not required. The water draw blind is required when work, other than that listed above, is performed.

8.2 Sewer & Tunnel Energy Isolation

Sewer entry differs from other Safe Work Permit entries in that there rarely exists any way to completely isolate the space to be entered.

Exceptions: Plugging and ballooning with materials of construction that are compatible with the hazards.

Atmospheres may suddenly and unpredictably become lethally hazardous (engulfment, toxic, flammable, or explosive).

Additional hazard assessment and advance planning are necessary.

Tunnel entry differs from other Safe Work Permit entries, in that atmospheres may suddenly and unpredictably become lethally hazardous.

Additional hazard assessment and advance planning are necessary.

9.0 LARGE, COMPLEX AND HIGH WORKER DENSITY CONFINED SPACES

Additional hazard assessment and advanced planning are necessary for very large Confined Spaces that have any of the following characteristics or scenarios:

- 50 or more entrants simultaneously per shift.

  Note: This is based upon all entrants/companies performing work in the space.
- Confined Space Entry inside the Confined Space (e.g., work inside cyclones inside a regen vessel, large diameter piping between FCC and regen vessel), or
- Complex scaffold systems which include seal decks that separate the Confined Space.

The additional hazard assessment must be documented and consider at least the following:

- Personnel (Entrant) accountability in the event of an emergency.
- Personnel protection from falling debris, tools, and equipment.
- Alerting systems that can be heard and seen by all entrants in the event of an emergency.

  Note: Consider the noise levels when air movers and all work is going on in Confined Space.
- Additional Fire Watches and Hole Watches (Attendant) stationed inside the Confined Space.
- Additional Fall Protection Requirements (e.g., Tripod System for internal aligned manways on trays greater than 12 inches, Fall Protection for work inside Cyclones inside the regen, adequate tie-off points on scaffolding).
- Adequacy and quantity of access/egress locations based on the number of Entrants.
- Complexity of air movement system(s) and any hazards the system itself would introduce to Confined Space.
- Consideration of a Confined Space Monitoring System that has Closed-Circuit TV (CCTV), air monitoring, audio & visual alarms and voice communication system.
- Enhanced fire prevention/protection systems/equipment including charged fire hoses.

  Note: For Cold Weather, the hose maybe ran to the Confined Space but not charged this would require a person staged at the hydrant for immediate activation.

The Large, Complex and High Worker Density Confined Spaces Hazard Assessment Checklist (RSP-1127-000 Appendix C) shall be completed when Confined Space meets any one of the requirements above are meet. The Large, Complex and High Worker Density Confined Spaces Hazard Assessment Checklist will be completed by an MPC Safety Professional and MPC Maintenance Representative knowledgeable in the work scope.

Reference RSP-1127-000 Section 9.6 for more information.

10.0 VENTILATION/AIR MONITORING REQUIREMENTS

10.1 Vapor Freeing

Vapor Freeing is usually done by ventilation. Prior to ventilating, steaming out and/or water washing of equipment to a closed system are standard preparation methods. This greatly reduces the level of vapors released to the atmosphere. The effectiveness of ventilation is dependent upon the number of air changes and efficiency of mixing of the air with the gas in the tank. Ventilation by supply air provides more efficient mixing than exhaust air but cannot be used if it creates a hazard near the discharge point.

10.2 Ventilation

Exhaust ducts must be placed at locations remote from air inlets and may require moving to various locations. Prior to entry, a minimum of five air changes is required where oxygen deficiency may exist, and ten air changes is required where toxic and/or flammable material is involved.

All fans and other equipment used for removing flammable gases or vapors shall conform to National Fire Protection Agency (NFPA) requirements and shall not create an ignition hazard. The installed air mover must be installed and grounded in accordance with R-11-029.

Note: Initial testing of atmospheric conditions will be done with the ventilation systems shut down for a minimum of fifteen minutes prior to testing. Subsequent testing will be conducted with the ventilation systems on to ensure that the contaminants are removed and that the ventilation system is not a source of contamination.

In practice, this means that ventilation systems will be turned on for gas freeing as the equipment is prepared. Once an Entry Permit is requested, the ventilation systems will be turned off for initial testing. Any re-checks, subsequent to the initial testing of atmospheric conditions, should be done with ventilation in service.

Ventilation shall always be maintained whenever personnel are in a confined space, and if the ventilation fails, the workers shall evacuate the confined space immediately. Natural ventilation is permitted but must be approved by the Health & Safety Department.

$Voulme\ \ of\ \ Storage\ \ Tank\ = \pi r^2 h$, where r = ½ diameter and h = height in feet

$Voulme\ of\ Storage\ Tank = 3.14 \times (55 ft)^2 \times 7\ ft \cong\ \ 66{,}500\ ft^3$

$$Minutes\ \ for\ one\ air\ change = \frac{Confined\ \ space volume\ (\ ft^3\ )}{Q\ or\ Fan\ Flow\ Rate (\ cfm\ )} = \frac{66,500\ ft^3}{9{,}000\ \ cfm} = \ 7.4\ \ minutes$$

$$Calculated\ air\ changes\ \ per\ hour\ \ \ = \frac{1\ air\ change}{7.4\ minutes} \times \frac{60\ min}{1\ hour}\ \ \cong 8\ air\ changes\ \ per\ hour$$

The Health & Safety Department must be notified for all initial entries and evaluate the ventilation as needed. Part of this evaluation might include the following methods. Required minimum air rates for individuals working inside space. Welders require a minimum of 2000 CFM of air per welder inside a confined space. Air flow through the confined space is calculated using the formula Q = AV, where:

- Q is the quantity of air passing through an opening in cubic feet per minute (cfm).
- A is the area of the opening or manway in square feet (ft2). For circular openings, the area is calculated from the equation Area = π r2.
- V is the measured average air velocity through opening in feet per minute (fpm).
- Example Calculation: A single fan is mounted on a manway near the top of a vessel that contains less than 10,000 ft3 of volume. Makeup air enters through a 30-inch man way near the bottom of the vessel at an average velocity of 450 fpm.

  To determine the air flow being drawn into the vessel, first determine the openings area:

  - A = (3.14) (1.25)2 = 4.9 ft2 cross sectional area; and then calculate the air flow.
  - Q = AV = 4.9 ft2 x 450 fpm = 2205 cfm.
  - Amount of time required to achieve 1 air change. This is based the cubic feet of the confined space and fan flow rate. See below.

10.3 Air Monitoring

Continuous air monitoring of confined spaces is required at all times while entrants are inside of the permitted space. As discussed in Section 6.3, air monitoring must be conducted in a manner that is representative of the confined space's entrant's atmosphere. The results shall be documented at hourly intervals beginning when initial

entry is made. The results must be documented. A passive type meter is not permissible for continuous air monitoring; the monitor must be equipped with a pump for sampling.

Industrial Scientific MX-4's and MX-6's with pumps are supplied at Marathon Anacortes. All monitoring data stored (i.e., logged) on the Marathon Industrial Scientific Equipment will automatically be downloaded each time it is docked on a docking station. This data can be retrieved by request to the Health & Safety Department.

Continuous air monitoring shall test for the minimum of:

- LEL
- CO
- O_2
- H_2S

Operations and Marathon Safety will determine if further testing is required prior to the initial entry, or as conditions change. If the confined space has not been accessed in two hours, Operations need to re-test the atmosphere for entry. The air monitor being used for continuous monitoring must be within reaching distance of the Entry Attendant or within constant line of sight. All air monitoring equipment used must be capable of producing an audible alarm.

11.0 WORK ON INTERNAL FLOATING ROOF TANKS

Work on internal floating roof tanks requires additional hazard assessments due to the associated risk of vapor, static electricity and exposure to liquids. Emergency egress must also be evaluated to ensure all Entrants can safely exit. The requirements to make entry onto a floating tank roof are listed below.

11.1 Pre-Inspection

The integrity of the floating roof must be evaluated by a competent person that is familiar with the inspection history, and can:

- Ensure the tank is within its specified inspection interval (per API-653).
- Identify concerns on the Inspection Report.
- Determine if the Tank Inspection Reports note any concerns or conditions that impact entry, and if so, further evaluate the noted concerns/conditions prior to entry.
- Verify that the floating roof is in good condition to walk upon by verifying Inspection Reports.
- Check with Operations to see if any operating conditions have changed since the last inspection report was completed (i.e., product changes, roof landed on legs, pressure surges into tank, tank overfill, and so forth).

11.2 Tank Operating Condition

- To make entry onto the floating roof, the tank must not have any product movement or floating roof movement.
- All lines in and out of the tank must be locked-out/tagged-out.
- Mixers must be shut down and isolated.

- All movement must be stopped for a minimum of two hours before entry to dissipate any product/material movement and allow discharge of accumulated static electricity.

11.3 Gas Monitoring/Entry Attendant

Continuous gas monitoring is required to alert Entrants of the following:

- Oxygen levels: 19.5% to 23.5%.
- LEL: not to exceed 10%.
- H_2S: not to exceed 10 ppm without respiratory protection.
- Benzene: must not exceed 1 ppm without respiratory protection.
- General Hydrocarbon: not to exceed 100 ppm without respiratory protection.
- Carbon Monoxide (CO): If CO exceeds 25 ppm evacuate confined space. Do not resume entry until the source of CO is understood, mitigated.
- The continuous monitor must be an Industrial Scientific MX6 or Area Rae and in a location representative of the breathing zone of the person performing the work.
- The Entry Attendant must be in a position to hear the audible alarm. If this cannot be achieved, then Area Raes must be used to ensure the Entry Attendant is aware of toxic or LEL atmospheres.
- The Entry Attendant must also have an air horn in their possession and be stationed on the top platform to observe any possible changing conditions.
- If supplied air is needed, an additional Bottle Watch is required and must be in constant communication with the Entry Attendant on the top platform.
- A rescue tripod is also required if the Entrants need assistance exiting the tank. Entrants must enter the tank with an appropriate harness to facilitate rescue if necessary.

11.4 Entry Requirements

- Tripod required for descending/climbing the internal tank ladder.
- Mechanical ventilation is to be used and bonded, unless impractical or not feasible.
- Safety/ERT must be notified and available to respond prior to entering roof. The rescue plan must be approved by Safety/ERT prior to entry.

12.0 CONFINED SPACE RESCUE

Confined space rescue equipment is often required to be set up and available for immediate use. This equipment may include:

- Rescue tripod and winch for vertical entries exceeding 5 feet. All Entrants must have a full body harness capable of being connected to the tripod and winch and rated as a Class III harness. The confined space rescue plan will indicate if Entrants are required to stay connected while inside space.
- Standby respiratory protection appropriate for the hazards encountered within the confined space.

A Confined Space Rescue Plan must be developed and documented for every confined space entry. The Confined Space Rescue Plan Form is available in this document. All Rescue Plans can be categorized into the following three levels:

- Level 1: This type of rescue is defined as "self-rescue." No atmospheric or physical hazards would prevent the individual from egressing the confined space.
- Level 2: This type of rescue is defined as "non-entry rescue". Trained Rescuers can extricate the victim through a pre-installed system (Ex: ROSE man-lift, tripod). No additional persons from outside the space will make entry for rescue.
- Level 3: This type of rescue is defined as "entry rescue". All level 3 rescues must be made by trained and qualified members of the Marathon Rescue Squad. Entry rescue implies that a trained and qualified person must make entry into the space to assist the individual with egress.

The Confined Space Rescue Form is required to be completed prior to entry into the space and will be valid until entry is no longer needed or changes to the configuration of the space impacts the Rescue Plan. The Rescue Plan must be kept with the permit in the field to ensure it is easily accessible to Emergency Responders. The Entry Supervisor and a member of the Health & Safety Department will complete the Rescue Plan prior to entry.

The members of the Rescue Squad and Health & Safety Department respond to all rescue alarms. The fire truck and other emergency response vehicles contain SCBA and rescue equipment. With the rescue equipment in the Rescue Van and the specialized training of the Rescue Squad, the safe extrication of the victim(s) may be performed. The main functions of the Rescue Squad are to extricate and eliminate hazards to other workers involved in the control of the emergency.

- A minimum of 3 Rescue personnel must be onsite and releasable if there is an active confined space entry. It is the responsibility of the Operations/Owning Department to verify Rescue Personnel are onsite.

13.0 PERMIT AUDITING AND DOCUMENTATION RETENTION

Area Supervisors (Operations, Maintenance, and Safety) will conduct a comprehensive assessment of a statistically representative sample of the permitting process in each area at least annually. The assessment will provide an overall evaluation of the permit system including:

- Equipment preparation
- Identification and isolation of hazardous energy sources
- Jobsite visits/mutual understandings
- Permit development and issuance
- Work progression and completion

All confined space Entry permits shall be retained for 40 years as part of the OSHA employee exposure records. The following documents must be retained:

- All Confined Space Safe Work Permits
- Entrant Log Sheets
- Atmospheric Monitoring Sheets

- RSP-1121-020-FORM01 Safe Entry into Inert Atmospheres Pre-Entry Checklist (see Attachment 2)

14.0 TRAINING

All employees involved with confined space entry will be required to receive the following training:

- Hazards (i.e., general and specific) associated with confined spaces.
- Training of the permit system and other procedural requirements.
- Air monitoring for flammable or toxic atmospheres.

All business partners involved with confined space entry will receive training on the following topics:

- Space classification (i.e., permit or non-permit).
- Hazards and operations within or near the space.
- Prior experience with the space.
- Any precautions or procedures that were implemented for the protection of employees in or near the confined space.
- Marathon Anacortes Refinery specific air monitoring equipment.

15.0 REVIEW AND REVISION HISTORY

Revision #	Preparer	Date	Description
1	Paula Bremer	5/29/2025	Updated Content Custodian to Andrew Johnson and Approver to Amber Larsen.
2	Andrew Johnson	4/16/2026	5-year Line by Line Review. Removal of R-11-017-F01 and CSE pre plan example added to end of this document.
3	Adam Avery	09/08/2026	Line by line review to comply with RSP 1308, Unified Permitting and E-Permitting.

16.0 ATTACHMENT 1 – SAFE ENTRY INTO INERT ATMOSPHERES PRE-ENTRY CHECKLIST SAMPLE (RSP-1121-020-FORM01)

Marathon Petroleum Company LP

Safe Entry into Inert Atmospheres Pre-Entry Checklist

(RSP-1121-020-FORM01)

Personnel participating in the completion of Pre-Entry Checklist	
Name	**Department / Position**
	HES Professional - Leader
	Area Operations Foreman or Designated Representative
	Area Maintenance Coordinator or Designated Representative
	Inert Entry Contractor Representative
	Nitrogen Contractor Representative

Section 1 - Work Preparation and Planning

Question	Answer		Comments/Findings
	yes	no	
(1) Has a pre job planning meeting been conducted prior to beginning inert entry operations?	☐	☐	
(2) Have the training records for all personnel involved in the inert entry been verified as current by MPC personnel?	☐	☐	
(3) Does the work permit accurately reflect the requirements and conditions of the inert entry operations?	☐	☐	

SAMPLE

Section 2 - Inert Gas

Question	Answer		Comments/Findings
	yes	no	
(4) Has the inerting gas been verified to contain less than 0.5% oxygen?	☐	☐	
(5) Is the inert gas supply adequate to maintain an inert atmosphere of less than 4% oxygen?	☐	☐	
(6) Is there an adequate back up supply of inert gas immediately available and connected to the primary inert gas supply manifold?	☐	☐	
(7) Is a qualified person monitoring the inert gas supply and available to immediately switch to the back supply if necessary?	☐	☐	

Marathon Petroleum Company LP

Safe Entry into Inert Atmospheres
Pre-Entry Checklist

(RSP-1121-020-FORM01)

Section 3 - Attendant and Back Up Attendant

Question	Answer		Comments/Findings
	yes	no	
(8) Has the restricted area outside of the opening of the inerted confined space been defined by MPC personnel?	☐	☐	
(9) Is the inert entry attendant designated on the permit and will they be positioned at the vessel opening during entry operations?	☐	☐	
(10) Has a back-up inert entry attendant been designated and will they be controlling access to the restricted area?	☐	☐	
(11) Is the back-up entry attendant designated to maintain a log of workers entering and exiting the restricted area?	☐	☐	

Section 4 - Warning Signs

Question	Answer		Comments/Findings
	yes		
(12) Have "Danger – Inert Confined Space" signs been posted at ladders and stairs leading to the restricted area and in the immediate area of the restricted area openings?	☐	☐	

SAMPLE

Section 5 - Air Monitoring and Atmospheric Conditions

Question	Answer		Comments/Findings
	yes	no	
(13) Does the inert entry contractor have a plan to continuously monitor the internal atmosphere of the inert confined space for O2, LEL, and temperature?	☐	☐	
(14) Does the inert entry contractor have a plan to continuously monitor the inert confined space effluent gases for LEL, H2S, CO?	☐	☐	
(15) Is the oxygen concentration in the inert confined space being maintained less than 4%?	☐	☐	

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Marathon Petroleum Company LP

Safe Entry into Inert Atmospheres
Pre-Entry Checklist

(RSP-1121-020-FORM01)

Question	Answer		Comments/Findings
	yes	no	
(16) Are all other atmospheric conditions of the inert confined space being met? (LEL, H2S, CO, temperature)	☐	☐	
(17) Has testing been completed to confirm that hazardous levels of nickel carbonyl do not exist?	☐	☐	
(18) Has testing been conducted to ensure that inert gas back pressure does not reach hazard levels?	☐	☐	
(19) Has equipment used to analyze the confined space and effluent gases been properly calibrated for use in oxygen deficient atmospheres?	☐	☐	

Section 6 - Personal Protective Equipment and Emergency Rescue

Question	Answer		Comments/Findings
	yes	no	
(20) Will inert confined space entrants and attendants utilize a positive pressure helmet style full face piece airline supplied respirator with an auxiliary self-contained escape unit?	☐	☐	
(21) Is a back-up air supply of equal capacity to the primary supply immediately available to pressurize the airline system?	☐	☐	
(22) Does the back-up attendant have PPE similar to the inert entrant immediately available to don to assist in an emergency?	☐	☐	
(23) Will a trained person continually monitor the breathing air supply of all entrants and attendants and be immediately available to switch to the back- up supply?	☐	☐	
(24) Will a hardwired or radio communication system be used by the entrants, attendants, and personnel stationed on the platforms and ground to maintain communications between all personnel?	☐	☐	

SAMPLE

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Marathon Petroleum Company LP

Safe Entry into Inert Atmospheres
Pre-Entry Checklist

(RSP-1121-020-FORM01)

Question	Answer		Comments/Findings
	yes	no	
(25) Has a communications radio been provided to the nitrogen truck operator so the inert entry supervisor can direct them to switch to the back-up inert gas supply?	☐	☐	
(26) Will all entrants wear a full body harness with a life line attached to a retrieval device outside the vessel?	☐	☐	
(27) Have rescue provisions been established by the inert entry contractor and has MPC personnel verified their rescue capabilities?	☐	☐	
(28) Is the facility's rescue team available on site to supplement the inert entry contractor rescue team?	☐	☐	
(29) Has a written rescue pre-plan been developed by the inert entry contractor?	☐	☐	

Section 7 – Catalyst Removal / Loading

Question	Answer		Comments/Findings
	yes	no	
(30) Is adequate lighting provided inside the inerted vessel?	☐	☐	
(31) If pneumatic tools are used, are they powered with nitrogen?	☐	☐	
(32) Are provisions in place to cover the openings of the inerted vessel with a physical barrier when left unattended?	☐	☐	
(33) Will catalyst be removed in a manner to prevent catalyst buildup on the walls or accumulation that could result in an engulfment hazard?	☐	☐	
(34) Are personnel prohibited from entering the inerted confined space and being supported by the catalyst during the removal process?	☐	☐	
(35) During inert entry, will the entrants remain above the catalyst and their lifeline remains taut?	☐	☐	

SAMPLE

Marathon Petroleum Company LP

Safe Entry into Inert Atmospheres
Pre-Entry Checklist

(RSP-1121-020-FORM01)

Question	Answer yes	Answer no	Comments/Findings
(36) For multiple bed reactors, will additional attendants be positioned on the trays above the entrants removing catalyst?	☐	☐	

Comments:

#	Recommendations, Corrective Actions, Opportunities for Improvement	Responsible Person	Due Date

SAMPLE

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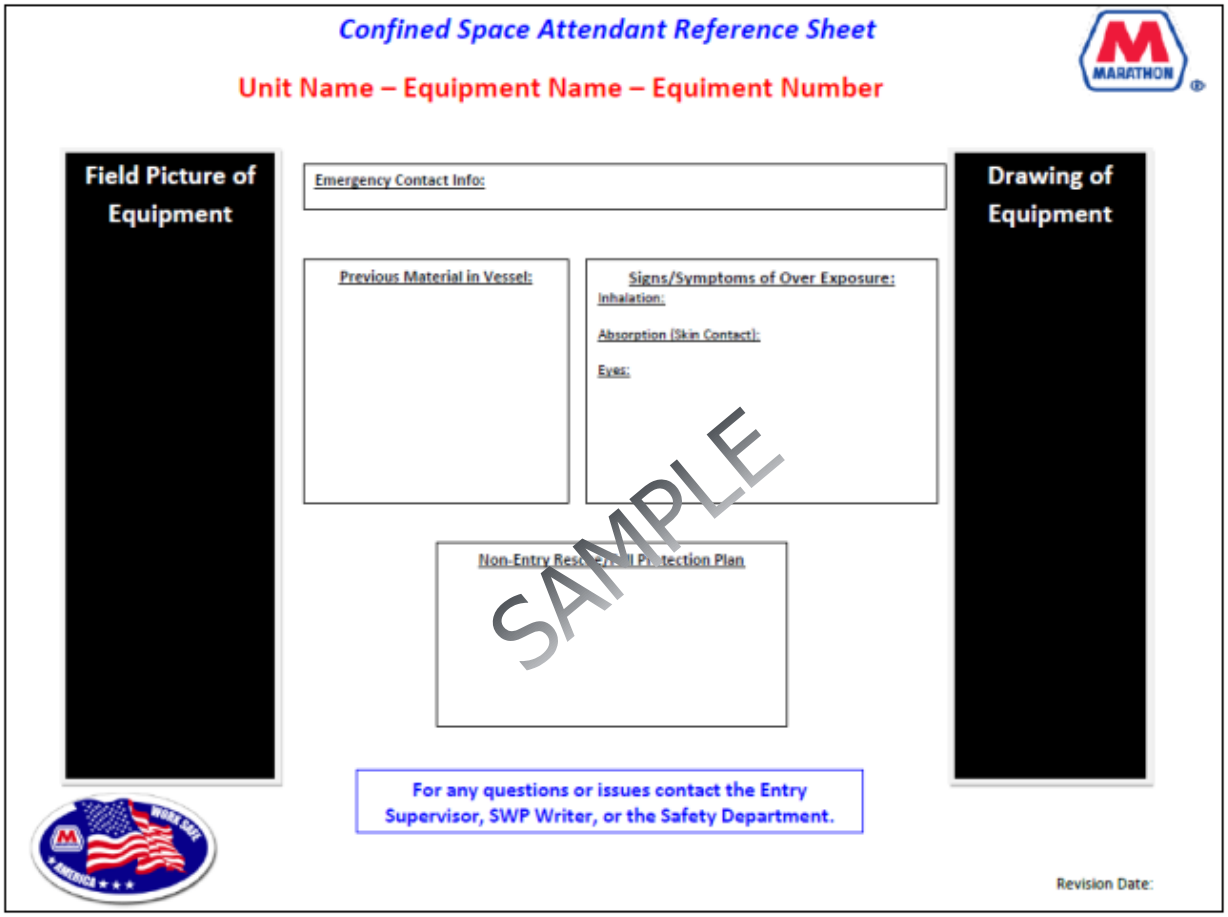
17.0 ATTACHMENT 2 – CONFINED SPACE ATTENDANT REFERENCE SHEET TEMPLATE SAMPLE (RSP-1127-000)

Reference: For the most up-to-date, working copy of this notice, go to:

http://cbgrs20/red/copyout.aspx?lib_no=32&doc_no=3547



Confined Space Attendant Reference Sheet

Attendant Guideline Duties:

- Be trained and capable of understanding and recognizing:
  - Potential confined space hazards, signs and symptoms, and consequences of exposure
  - The use and operation of instrumentation provided to conduct atmospheric monitoring and retrieval systems.
  - Products that were last contained in the confined space as defined on the permit and consult the SDS as necessary.
  - In all applicable Safety Policies.
- Ensure that a Safe Work Permit has been issued for the confined space assigned.
- Remain outside the confined space at all times during entry and work operations.
- Maintain an accurate count, by name, of all persons working in the space.
- Check the entrants meet the PPE requirements as required by the permit.
- Wear a bright and easily identifiable vest.
- Maintain communication with the entrants and other attendants as applicable.
- Coordinate attendant communications with other attendants in cases where multiple attendants are required.
- Be equipped with a radio to provide immediate communication to summon rescue and other emergency services when entrants need assistance.
- At no time shall an attendant attempt rescue by entering a confined space. An attendant may perform non-entry rescue utilizing an in-place retrieval system.
- Do not allow unauthorized persons to enter the confined space.
- Properly conduct continuous monitoring to ensure the sample is representative of the entrant's location.
- Attendants can serve as fire watches for hot work inside the confined space or hand/lower work materials to entrants at the permit writer's discretion; all other tasks are prohibited.
- Return Safe Work Permit and sign-in/sign-out sheets to the permit writer.
- Contact the permit writer for an atmospheric test near the midpoint of the servicing group shift or when the confined space has been vacated for more than two hours.
- Use respiratory equipment as required to prevent exposure to the confined space contaminants.

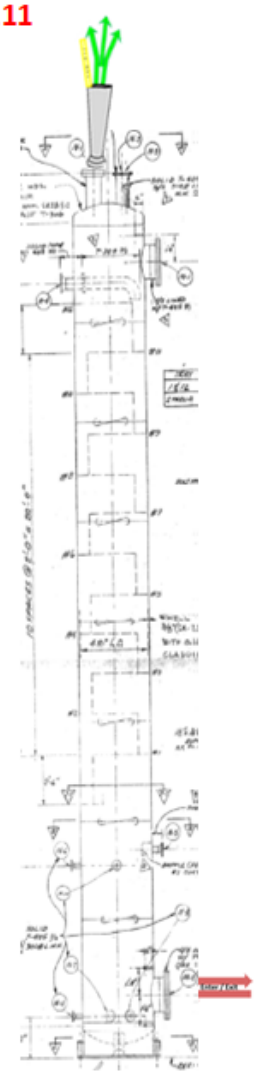
SAMPLE

Revision Date:

19.0 ATTACHMENT 3 – CONFINED SPACE ENTRY PRE-PLAN (EXAMPLE)

Contact Safety for Equipment Specific Plan

C-111



Scope of Work:
- Open clean and Visual Inspection
- Replace Demister Mat
- Dense loading of catalyst.

Vessel Stats:
- Height: 40' (seam to seam)
- I.D: 48"
- Volume: 1,835 cu. ft.
- Metallurgy: Carbon / 304 SS CLADDING
- Space between internal trays: 2'
- Manways: 2 Horizontal (20")
- Other:

Last Chemical(s) Contained:

Signs and Symptoms of Exposure:
- Causes skin irritation
- Causes eye irritation
- May cause cancer
- May cause damage to organs through prolonged or repeated exposure
- Harmful to aquatic life with long lasting effects
- May be fatal if swallowed and enters airways

Atmospheric Testing:
- ISC MX6/MX4
  - O_2
  - LEL
  - CO
  - H_2S
- Extendable probe

Ventilation:
- Air Mover Type: 6" AIR HORN
- Air Mover Rating: 2560 CFM
- Air Changes per Hour: 10 air changes required prior to entry. See aspiration chart.

Rescue:
- See attached Rescue Plan

Potential Hazards:
- Fall hazards.
- Contact with chemicals
- Physical hazards (struck by, against, noise).

Hazards Mitigation:
- Follow R-11-017 on confined space entry (air monitoring, hole watch, etc.)
- Follow MPC SWP
- Proper Communication
- 100% fall protection (when necessary).
- Utilization of all appropriate PPE for the task. (review PPE matrix).

General Considerations:
- Refer to SWP and PPE matrix for selection of protection levels.
- Additional PPE may be needed for certain work activities.
- Use JSA
- Maintain good communications during the duration of the job.
- Vessel will have adequate illumination and emergency egress lighting shall be implemented (intrinsically safe).

Prepared By: _Jedd Larson

Date: 8/19/24

Anacortes Refining

Confined Space Pre-Plan – C-111

Confined Space Pre-Entry Rescue Plan

Confined Space Designation (Vessel/Tank Number):	C-111 XHGO Stripper
Confined Space Permit #	Plan to be used for duration of T/A
Space Location:	Zone A, Crude Unit
Description of Confined Space:	Column, 40' tall 48" in diameter
Chemicals/Hazards Encountered:	Hydrocarbons possible, column to be cleaned prior to entry
Staging Location (Roof/Manway, etc...):	Access way 1, south of F-101
Method of Rescue:	☐ Self Rescue ☐ Non-Entry Rescue ☒ Entry Rescue
Confined Space Entry Level:	☐ Level I ☐ Level II ☒ Level III
Identify Anchoring Points:	Strong back will be rigged for entry

Rescue Equipment Requirements

Rescue Tripod	☐	Haul Line	☐	Lowering Line	☐	Safety Line(SRL)	☐
Raise System	☒	Lowering System	☒	Belay System	☐	Anchor System	☐
Stokes Basket	☒	SKED	☒	Back Board	☐	Harness/Lanyard	☐
Trauma Kit	☐	Ventilation Fan(s)	☒	Supplied Air	☐	Escape Pack	☐
SCBA	☐	Half Respirator	☐	Full-Face Resp.	☐	Lighting	☐

Additional Equipment: Patient Condition will dictate.

Confined Space Specifications

Man-way Size:	20"
Number of Entry Points:	2
Man-way Locations:	Side of column
Internal Obstructions:	Trays

Tactics and Strategies

- **Work stage will determine rescue needs and equipment. Rescue team will look to remove entrant out closest man way. Yates Spec pack might be best option for packaging patient.**
- **Lowering system will be needed once entrant is removed from column to lower to ground.**

Additional Comments

- **Confined space entry attendant staged at every entry and exit point.**

Required Signatures **Safety Notification Sufficient for Level 1 & 2*

Entry Supervisor:	(Print/Sign)	Date:	
Safety Rep. :	(Print/Sign)	Date:	



