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1 INTRODUCTION

1.1 Purpose

1.1.1 The purpose of this Safety Practice is to provide requirements to ensure that confined space entry work and rescue is performed safely at the site.

1.1.2 A properly authorized Safe Work Permit including completion of the confined space section and authorizing signatures is required for all confined space entry.

1.1.3 All applicable provisions of HS-SWI-001 *Safe Work Permit* (communication of job scope, equipment prep, joint job-site visit, etc.) shall be met in addition to this SWI to conduct confined space entry.

1.2 Scope

1.2.1 This Safety Practice applies to all personnel, employee or contractor, and visitors, visiting or working in or on Marathon Petroleum Co. LP owned, operated, or maintained facilities including, but not limited to, refineries, pipelines and pipeline rights-of-way, terminals, loading racks, tank farms.

1.2.2 This Safety Practice (SP) for Confined Space Entry represents a composite of petroleum industry safe practices for this type of task.

1.2.3 This is to be considered minimum acceptable standards and Marathon Petroleum Company SLC Refining Division policy under normal conditions.

1.2.4 More stringent requirements may augment this practice for any situation.

1.2.5 If a special need or problem is encountered, consultation with a Safety Professional should be considered before proceeding, keeping in mind that any alternative procedures must be at least as effective as these instructions in providing a safe work environment.

1.2.6 The requirement for Confined Space Attendant Reference Sheets will not go into effect until June 1, 2020.

1.3 Corporate References

The following sections describe references used to generate this Safety Practice.

1.3.1 Marathon Standards, Policies & Procedures

- RSP-1127-000 Confined Space Entry Standard Practice
- RSP-1121-010 Blinding and Energy Isolation
- RSP-1121-020 Safe Entry into Inert Atmospheres
- RSP-1128-000 Safe Work Permit
- RSP-1706-000 Lightning Safety

- SAF-4005 Confined Space Entry
- HS-SWI-024 Hot Work Authorization
- HS-SWI-011 Control of Hazardous Energy (Lockout/Tagout)
- HS-SWI-015 Electrical Safety
- HS-SSP-046 Lightning Safety
- HS-SWI-001 Safe Work Permit Procedure

1.3.2 Industry References

American Society of Safety Professionals (ASSP)

- ASSE Z117.1 Safety Requirements for Confined Spaces

American Petroleum Institute (API)

- API RP 2016 Guidelines and Procedures for Entering and Cleaning Petroleum Storage Tanks
- API PUBL 2026 Safe Access/Egress Involving Floating Roofs of Storage Tanks in Petroleum Service
- API STD 2015 Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks
- API STD 2217A Guidelines for Safe Work in Inert Confined Spaces in the Petroleum Industry
- NFPA 350 Confined Space Entry

1.3.3 Regulatory References

- 29 CFR 1910.146 Permit Required Confined Spaces
- 29 CFR 1910.147 Control of Hazardous Energy (LOTO)
- 29 CFR 1910.119 Process Safety Management
- 29 CFR 1910.1200 Hazard Communication Standard
- 29 CFR 1926 Subpart AA Confined Spaces in Construction

2 DEFINITIONS

The following terms and definitions are used in this Safety Practice.

Terms and Definitions

Term	Definition
Acceptable Entry Conditions	The conditions that must exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter, and safely work within, the space.
Active Entry Point	The approved point of entry/exit of personnel into the confined space.

Terms and Definitions

Term	Definition
Attendant	An individual, who has received training, comprehends the duties and responsibilities as required by this SP that is stationed outside a confined space to monitor entrants and to perform the duties specified by this SP.
Authorized Entrant	Authorized Entrant means an employee who is authorized by the entry supervisor to enter a permit space.
Barrier	A physical obstruction that blocks or limits access.
Blinding or Blanking	The absolute closure of a pipe, line, or duct, achieved by fastening a solid plate, threaded plug, or cap across its bore to completely cover it. The cover must: (a) at least cover the outer edge of a flange's mating surface, and (b) be capable of withstanding the maximum upstream system pressure.
Competent Person	Person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.
Confined Space	A space that: a) Is large enough and so configured that an employee can bodily enter and perform assigned work, and b) Is not designed for continuous employee occupancy, and c) Has limited or restricted means for entry or exit **Example:** tanks, vessels, towers, sewers, excavations 4 feet deep, vessel skirts, vaults and pits are spaces that may have limited means of entry.
Control	Action taken to reduce the level of any hazard inside a confined space using engineering methods (for example, by ventilation), and then using these methods to maintain the reduced hazard level. Control also refers to the engineering methods used for this purpose. Personal protective equipment is not a control.
Controlling Contractor	The employer that has overall responsibility for construction at the worksite. **Note:** If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer.
Directly Supervised Contractor (DSC)	A contract employee who is working directly for an MPC employee and working on behalf of MPC. (e.g., Maintenance coordinator, maintenance planner)
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.
Emergency	Any occurrence (including any failure of power, hazard control or monitoring equipment) or event, internal or external, to the permit space that could endanger entrants.

Terms and Definitions

Term	Definition
Engulfment	The surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.
Entrant	An individual, who has received training, comprehends the duties and responsibilities as required by this SP, is authorized to enter a confined space and to perform the duties specified by this SP.
Entry	The action by which any part of 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, whether or not such action is intentional, or any work activities are actually performed in the space.
Entry Employer	Any employer who decides that an employee it directs will enter a permit space.
Entry Permit	The written or printed document that is provided by the employer who designated the space a permit space to allow and control entry into a permit space and that contains the information specified in §1926.1206 of this standard.
Entry Rescue	Occurs when a rescue service enters a permit space to rescue one or more employees.
Entry Supervisor	An MPC employee or directly-supervised contractor filling the role of an MPC employee who is in charge of and with the authority and responsibility for the confined space and crew conducting the entry work and responsible for the duties listed under Section 3.2. The duties of the entry supervisor may be passed from one individual to another during the course of an entry operation provided it is documented appropriately on the SWP.
Hazard	A physical or hazardous atmosphere. Reference: See Hazardous Atmosphere definition below.
Hazardous Atmosphere	An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (escape unaided from a confined space), injury, or acute illness from one or more of the following: a) Flammable gas, vapor or mist in excess of 10% of its lower explosive limit (LEL). b) Airborne combustible dust at a concentration that meets or exceeds its LEL (obscures vision at a distance of 5 feet or less). c) Atmospheric oxygen concentration below 19.5% or above 23.5%. d) Any concentration of toxic material in excess of the applicable occupational exposure limit. e) Air temperature is greater than 110°F. f) Any other atmospheric condition that is immediately dangerous to life or health. **Note**: For air contaminants for which OSHA has not determined a permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the OSHA Hazard Communication Standard, 29 CFR 1910.1200, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Terms and Definitions

Term	Definition
Host Employer	The employer that owns or manages the property where the construction work is taking place.
Hot Work	Activities capable of providing a source of ignition (e.g., riveting, welding, cutting, burning, heating etc.)
Immediately Dangerous to Life or Health (IDLH)	**Immediately Dangerous to Life or Health (IDLH):** is any condition that (a) poses an immediate or delayed threat to life, (b) would cause irreversible adverse health effects, or (c) would interfere with an individual's ability to escape unaided from a permit space. **Unnoticed Affects:** Some materials, including hydrogen fluoride gas and cadmium fumes (a) may produce immediate transient effects, (b) even if severe, may pass without medical attention, and (c) are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from the recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be 'immediately" dangerous to life or health.
Inert Confined Space (Inerting)	A confined space where the existing atmosphere is intentionally displaced with a non-flammable gas such as nitrogen, rendering the space oxygen deficient and immediately dangerous to life and health. **Note:** For minimum requirements for inert entry, refer to *Entering and Working in Inert Atmospheres*.
Isolation or Isolate	The process by which a confined space is removed from service and completely protected against the release of energy and material into the space by such means as: a) blanking or blinding, b) misaligning or removing sections of lines, pipes, or ducts, c) lockout of all sources of energy, d) or blocking or disconnecting all mechanical linkages. **Reference:** For minimum requirements for isolation, refer to HS-SWI-011 Control of Hazardous Energy.
Limited or Restricted Means for Entry or Exit	A condition that has a potential to impede an employee's movement into or out of a confined space.
Line Breaking	The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.
Lower Explosive Limit (LEL)	The minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

Terms and Definitions

Term	Definition
Lockout	The placement of a lockout device on an energy isolating device, in accordance with HS-SWI-011, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed. Lockout devices utilize positive means such as locks, blank flanges and bolted slip blinds.
Monitor or Monitoring	The process used to identify and evaluate the hazards after an Authorized Entrant enters the space.
Non-Entry Rescue	When a rescue service, usually the Attendant, retrieves employees from a permit space without entering the permit space.
Oxygen Deficient Atmosphere	An atmosphere containing less than 19.5% oxygen by volume.
Oxygen Enriched Atmosphere	An atmosphere containing more than 23.5% oxygen by volume.
Owning Department	Refers to the department that owns and operates process, process-related and/or utility equipment, machinery, building, and/or systems.
Permit	For purposes of this SP, “permit” refers to Safe Work Permit authorizing confined space entry.
Permit Writer	An individual designated to prepare and authorize the "confined space" portion of the Safe Work Permit as specified in this procedure.
Physical Hazard	An existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to: a) Explosives, b) Mechanical, electrical, hydraulic and pneumatic energy, c) Radiation, d) Temperature extremes, e) Engulfment, f) Noise, or g) Inwardly converging surfaces. Physical hazard also includes chemicals that can cause death or serious physical damage through skin or eye contact (rather than through inhalation).
Prohibited Condition	Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.
Qualified Person	One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.
Rescue	Retrieving and providing medical assistance to, one or more employees who are in a permit space.
Rescue Service	The personnel designated to rescue employees from permit spaces.

Terms and Definitions

Term	Definition
Retrieval System	The equipment (including a retrieval line, full body harness, or wristlets (if appropriate) and a lifting device or anchor) used for non-entry rescue of persons from confined spaces.
Servicing Group Representative	A maintenance employee or contractor authorized as a representative to sign permits and conduct hazard discussions for anyone performing physical work in the refinery to fulfill their (maintenance or construction) responsibilities for the work instruction.
Safe Work Permit (SWP)	A work-authorizing process and record that is managed, prepared and issued by the Refining department that "owns" the equipment or is responsible for the area before certain work is conducted. **Notes:** a) It authorizes a specific scope of work for a specific time frame and is a prerequisite for performing work. b) It is used to assess hazards and to document requirements and conditions such as atmospheric monitoring results, personal protective equipment, confined space details, work requirements (e.g., hot tap, excavation and critical lift), emergency communications, and other potential hazard mitigation means and methods. c) The authorization coordinates and controls the work and is a form of agreement between the Safe Work Permit issuer and all personnel involved with the work.
Tagout	The placement of a tagout device on a circuit or equipment that has been deenergized, in accordance with HS-SWI-011, to indicate that the circuit or equipment being controlled may not be operated until the tagout device is removed. The employer ensures that: (a) Tagout provides equivalent protection to lockout, or (b) Lockout is infeasible and the employer has relieved, disconnected, restrained and otherwise rendered safe stored (residual) energy.
Test or Testing	The process by which the hazards that entrants may encounter in a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.
Ventilation	Controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of OSHA 1926.57-Ventilaiton.

3 ROLES AND RESPONSIBILITIES

In order to comply with the **29 CFR 1926 Subpart AA** where applicable and to provide clarity, MPC will assume the role of both Host Employer and Controlling Contractor in all Confined Space Entries. MPC will be responsible for assigning an Entry Supervisor identified on the Safe Work Permit (SWP), who will be responsible for overall entry operations.

3.1 Owning Department / Permit Writers

3.1.1 Ensure that confined spaces with permanent openings (vessel skirts, etc.) are labeled "**Danger – Permit Required Confined Space Do Not Enter Without Permit**".

3.1.2 Verifies that all energy isolation requirements have been satisfied.

a. Verify that the lockout/tagout log and blind list associated with the confined space is complete and signed.

b. Field verifies that the preparations for entry including steaming, LOTO, and blinding are completed prior to entry.

3.1.3 Identify potential hazards associated with the confined space and specify the testing and precautionary measures required to ensure the safety of the entry and the work to be done. Contact the Safety Department for assistance as necessary.

3.1.4 Provide appropriate instructions for preparation of the space for entry.

3.1.5 Ensure that the permit is posted at the job site during the entry operation.

3.1.6 Validate that permit conditions are acceptable, sign the permit and enforce confined space entry/work permit conditions.

3.1.7 Ensure adequate attendant personnel are present

3.1.8 Notify supervision of any problem involved with the confined space entry.

3.1.9 Cancel and revoke the permit when the work is completed or if a prohibited work condition occurs.

3.1.10 Transfer responsibility for the confined space when there is a change in permit writers or shifts.

3.1.11 Ensures that required atmospheric testing is conducted prior to entry and throughout entry, as required.

3.1.12 Verify that air-monitoring equipment (i.e., LEL/O_2 meters, gas monitors, etc.) are calibrated, and working properly.

3.1.13 Ensures that the Rescue Team is notified of all Confined Space Entries so that rescue team members can be coordinated.

3.1.14 Ensure attendants know how to and have a means to summon rescue services.

3.1.15 Verify that the servicing group representative understands the scope, requirements and limits of the work defined in the permit.

3.1.16 Coordinate through the entry supervisor that the specific conditions on the permit have been satisfied.

3.1.17 Inform the servicing group representative of any area or operational conditions that may impact the confined space entry operation (e.g., nearby hot work, sewer draining operations).

3.1.18 Ensure mechanical integrity issues relative to the confined space are addressed prior to entry (e.g., tank roof metal thickness, stability of refractory).

3.1.19 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.

3.1.20 Coordinate entry operations with the contractor, nearby operations, and any MPC employees working in or near each confined space.

3.1.21 Conduct a debriefing with each contractor when they have completed their work, and complete appropriate entry on the back of the field copy of the permit.

3.1.22 The Operations Shift Foreman shall make notification of termination/resumption of confined space entry due to prevailing lightening in the area.

3.1.23 Contacts the Safety Department for assistance, as necessary.

3.2 Entry Supervisors

3.2.1 Ensures the owning department has a complete understanding of the job's execution requirements and job scope to verify proper equipment isolation and preparation.

3.2.2 Ensures entry operations remain consistent with the Safe Work Permit and acceptable entry conditions are maintained.

3.2.3 Communicate any potential hazards that may be introduced to the job site as a result of performing work.

3.2.4 Verifies that Entrants and Attendants understand the scope, requirements, and limits of the work defined in the Safe Work Permit.

3.2.5 Verify by checking that appropriate entries have been made on the Safe Work Permit, that all atmospheric testing/air monitoring specified by the permit have been conducted and that all procedures, precautions, hazards, and equipment specified by the permit are in place before signing the permit and allowing entry to begin.

3.2.6 Field verifies that energy isolation is complete during joint job-site visit prior to signing the permit.

3.2.7 Inform the permit writer if and when the scope or nature of the job changes the conditions under which the confined space entry was originally authorized.

3.2.8 Conduct pre-job discussions to coordinate the work and verify that entrants and attendants are aware of the scope,

requirements, limitations, potential hazards and precautions specified on the permit.

3.2.9 Post a "Danger - Permit Required Confined Space Do Not Enter Without a Permit" sign as soon as the confined space is opened.

3.2.10 Verifies that rescue services are available and that the means for summoning them are operable.

3.2.11 Ensure that a radio with access to either the operations channel or the emergency channel is provided to an attendant and that the attendant knows the procedures established to maintain contact with entrants and other attendants.

3.2.12 Coordinate entry operations and activities when more than one group will enter the confined space to ensure other contractors are not endangered by their work activities.

3.2.13 Verify that instrumentation used for continuous monitoring by the outside attendant has datalogging capabilities, is functional, and calibration is current.

3.2.14 Verify that the attendant has received documented training on the use and operation of instrumentation provided to conduct continuous atmospheric monitoring.

3.2.15 Verify that the outside attendant is properly conducting continuous monitoring as required to ensure the sampling is representative of the location of the entrants and to ensure acceptable entry conditions are being maintained.

3.2.16 Know and communicate the hazards that may arise during entry operations, including the mode, signs and symptoms, and consequences of exposure.

3.2.17 Terminate the entry and cancel the permit:

- If all entry operations covered by the permit are complete; or
- If a condition not allowed or not addressed by the permit arises in the area or in the confined space.

3.2.18 Immediately notify the permit writer when a condition arises that is not allowed by the permit.

3.2.19 Provide appropriate briefings and instructions when responsibility for a confined space entry operation is transferred to a subsequent Entry Supervisor to ensure that the operations remain consistent with the permit and that acceptable entry conditions are maintained.

3.2.20 During the Post Joint Job Site Visit report any unanticipated hazards confronted or created during the entry.

3.2.21 Ensure adequate ventilation is provide when welding will occur in the confine space.

3.2.22 Removes unauthorized individuals who enter or attempt to enter a confined space after being notified by Attendants.

3.2.23 Ensures job completion is communicated to the Permit Writer.

3.2.24 Follows instructions as in Owning Department, which states to provide appropriate instructions for preparation of the space for entry including cleanup and isolation.

Note: 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.

3.3 Authorized Entrants

3.3.1 Understand potential hazards, including mode, signs, symptoms, and consequences of exposure.

3.3.2 Follow Safe Work Permit requirements as well as other appropriate confined space entry work practices.

3.3.3 Complies with the requirements and conditions set forth on the Safe Work Permit.

3.3.4 Exit from the space immediately when:

- Requested by the attendant or Entry Supervisor,
- A prohibited condition exists which is not allowed per the permit requirements,
- A change in behavior or sign or symptom of exposure is detected,
- A situation takes place outside the space that endangers entry,
- There is an uncontrolled hazard inside the space,
- The attendant leaves, or
- The plant alarm is activated.

NOTE: When a hazardous condition is suspected, the permit shall be revoked, and the permit writer notified.

3.3.5 Exits the confined space and notifies the Attendant or other appropriate personnel when a prohibited condition exists or when there are any warning signs or symptoms of exposure.

3.3.6 Properly use the equipment specified for the entry. Verify prior to entry that such equipment is free of defects.

3.3.7 To facilitate non-entry rescue, entrants must be attached to retrieval systems unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. The requirement for a safety harness and/ or lifeline may be waived by the Safety Department.

3.3.8 Understand communications requirements and plans and maintain communication (for example, voice, rope signals, radio, visual observation, etc.) with the attendant.

3.3.9 Ensure that an attendant is on duty before entering a confined space. Report to the permit writer any case where an attendant has abandoned his/her post during an entry.

3.3.10 Properly use the following types of equipment where applicable: testing, monitoring, ventilation, communications, lighting, barriers and shields ingress/egress (ladders) equipment, and personal protective equipment. Verifies prior to entry that such equipment is free of defects

3.3.11 Review the permit for changes following lunch, breaks, etc. prior to re-entry.

3.3.12 Does not distract the Attendant when not involved in the entry or work.

3.3.13 Sign-in/out log on permit when entering/exiting a confined space.

3.4 Attendants

3.4.1 Must be familiar with and capable of understanding what the last material in the confined space was and how it enters the body. The attendant must also be able to recognize potential confined space hazards, signs and symptoms of exposure (including possible behavior effects of hazard exposure), and consequences of exposure.

3.4.2 Be trained on the use and operation of instrumentation provided to conduct continuous atmospheric monitoring.

3.4.3 Know the product that was last contained in the confined space as defined on the permit and consults the SDS as necessary.

3.4.4 Ensure that a Safe Work Permit authorizing confined space entry has been issued for the confined space assigned. Also make certain that the permit:

- Is signed by all the Permit Writer,
- Identifies the Confined Space Entry Supervisor,
- Precautions noted on the permit have been satisfied,
- Has the current date, time and location on it,
- Posted at the entrance of the confined space,
- Has a current gas test recorded on it,
- Ensure atmosphere is re-tested mid-shift after initial testing.

3.4.5 Remain outside the confined space at all times during entry and work operations. An attendant shall never leave an occupied confined space unattended.

3.4.6 Maintain an accurate count, by name, of all persons working in the space. When the space is vacated, ensure that all personnel are accounted for. Any unaccounted personnel shall be reported to supervision immediately.

3.4.7 Check that entrants meet the PPE requirements as required by the permit prior to entry into the confined space.

3.4.8 Review the requirements and conditions set on the permit and sign on the back of the permit.

3.4.9 Observe activities inside and outside the confined space to determine if it's safe for entrants to remain in the space.

3.4.10 Keep lifelines orderly, untangled, and connected securely to a retrieval device or anchor outside the space.

3.4.11 Maintain communication (e.g., voice, rope signals, radio, visual observation, etc.) as established per the permit with the entrants, and other attendants as applicable, during entry to monitor entrant status.

3.4.12 Coordinate attendant communications and other responsibilities with other attendants in cases where multiple attendants are required or used.

3.4.13 Order entrants to evacuate the permit space immediately and notify permit writer and the Entry Supervisor when:

- A condition is observed which is not allowed per the permit requirements.
- A behavioral effect of hazard exposure in an entrant is detected.
- A situation is detected outside the space which could endanger the entrants.
- An uncontrolled hazard is detected within the space.
- Attendant must leave the monitoring location or is unable to perform required duties.
- The plant alarm system is activated.
- The time limitation on the permit or atmospheric testing has expired.

3.4.14 Attendants shall be equipped with a radio to provide immediate communication to summon rescue and other emergency services when entrants need assistance.

- During shutdowns and TARs, alternative notification provisions may be used in lieu of radios based on location and complexity of the confined space and outside attendant.

3.4.15 Perform non-entry rescues. If a rescue retrieval system to perform non-entry rescue is required, the attendant shall be trained and capable of using that equipment.

3.4.16 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.

3.4.17 At no time shall the outside attendant attempt a non-entry rescue in an emergency situation prior to summoning rescue/emergency services as stated on the permit and assuring a response is initiated.

3.4.18 Warn and advise unauthorized persons to stay away from or exit immediately the confined space. Also, the attendant must inform the entry supervisor if unauthorized persons enter the space or any problems develop with the entry operations.

3.4.19 Observe the continuous atmospheric monitor to be certain the atmosphere remains within the allowable limits for confined space entry.

3.4.20 Properly conduct continuous monitoring as required per the permit to ensure the sample is representative of the entrant's location and to ensure acceptable entry conditions are being maintained.

3.4.21 Attendants shall not be assigned or conduct any activities that interfere with monitoring the confined space atmosphere and activities in that confined space. However, they 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.

3.4.22 Notify appropriate personnel of any problems involved with the confined space entry.

3.4.23 Ensure that the permit is maintained at the job site during the entry operation.

3.4.24 Return Safe Work Permit and sign-in/sign-out sheets to the permit writer.

a. Upon completion of the job, or when work will not be performed on the next shift, the "field copy" of the permit, located at the job site, will be removed and turned over to the unit operator.

3.4.25 The attendant must wear a bright and easily identifiable vest.

3.4.26 Contact the permit writer for mid-shift atmospheric testing after initial testing, or when the confined space has been vacated for more than 2 hours. If the permit writer is unable to update the atmospheric test, revoke the permit and return it to the control room.

3.4.27 When a permit requires the use of respiratory equipment, the attendant may be required to use respiratory equipment to prevent exposure to the confined space contaminants.

3.4.28 In specific cases where multiple active entry points are established, an attendant shall be assigned at each such

point, and a means shall be established per the permit to jointly account for all authorized entrants (such as radio communication).

Notes:

1. Confined Space Attendant Reference Sheets will be developed for all Confined Spaces and include at the minimum:
    a) Unit Name,
    b) Equipment Name & Number,
    c) Picture of Equipment,
    d) Equipment Drawing (if available),
    e) Previous Material in Vessel (utilize the vessel SDS & decontamination procedure to populate),
    f) Signs and Symptoms of Exposure,
    g) Non-Entry/Fall Protection Plan, and
    h) Emergency Contact Information.
2. Confined Space Attendant Reference Sheets shall be posted at all active entry points (e.g., manways) to the Confined Space.
3. See Appendix C for Confined Space example Entry Template.
4. For excavations, the SWP may be utilized instead of the Confined Space Attendant Reference Sheet, pending all requirements outlined in (3.4.1) above are addressed.
5. Confined Space Attendant Reference Sheets are not required for Confined Spaces that did not previously nor currently contain a hazardous substance requiring an SDS (e.g., fin fans, cooling water tower shrouds/ cells, external floating roofs, vessel skirts, new equipment not yet put in service.)

3.5 Rescue Service (Facility Emergency Response Team)

3.5.1 Ensure rescue team members are trained to properly use the PPE and necessary rescue equipment to perform assigned rescue functions.

3.5.2 Ensure each rescue team member practices a simulated rescue operation annually.

3.5.3 Ensure that confined space rescue equipment is maintained and ready for immediate deployment.

3.5.4 The Emergency Response Coordinator or Designated Rescue Team member on scene is responsible for coordinating rescue activity in confined spaces.

3.5.5 Develop and maintain confined space entries and pre-plan procedure and equipment required for a rescue.

3.5.6 Review the contractor written rescue pre-plan prior to inert entries.

3.6 Contract Employees

3.6.1 Be certified by their employers to have had requisite training and experience.

3.6.2 Must follow all MPC and contractor company safety procedures and regulatory standards.

3.6.3 Use and maintain all safety and air monitoring equipment in compliance with manufacturer's recommendations.

3.6.4 Ensures contractor Entrant's representative informs the Permit Writer when they have completed their entry and completes the debriefing section on the Safe Work Permit.

3.6.5 During multi-craft work, the crafts creating any hazards must properly notify Entry Supervisor and take measures to evacuate the space as necessary so that corrective action can be taken to mitigate hazards.

3.7 Contractor Supervision

3.7.1 Certify that all employees have successfully completed required training courses.

3.7.2 Verify that the specified conditions on the permit are adequate and have been met and are understood and followed.

3.7.3 Inform the permit writer (MPC Representative) if and when the nature of the job changes the conditions under which the confined space entry was originally authorized.

3.7.4 Ensure that attendants are competent with all equipment they are required to use (e.g., atmospheric monitoring, communications etc.).

3.7.5 Use and maintain all safety and air monitoring equipment in compliance with manufacturer's recommendations.

3.7.6 Contractor entrant's representative must inform the permit writer when they have completed their entry and report any hazards confronted or created during the entry for the debriefing.

3.7.7 Coordinate all work with supervision of other employers.

3.8 Contractor Coordinator

3.8.1 Ensure that the contractor's employees are properly trained and certified for conducting confined space entries and that these activities at the site are performed in compliance with this procedure.

3.8.2 The MPC contractor coordinator will provide the contractor with the following information:

a. The refinery confined space program.

b. Any precautions or procedures used to protect employees working in or near the space.

c. Operations in the vicinity which need to be coordinated with entry activities.

3.8.3 Audit confined space entries where multiple employers are simultaneously performing work to ensure the procedures established to coordinate entry operations are being adhered to.

3.9 Safety Department

3.9.1 Develop, administer, and update the confined space procedure.

3.9.2 Conduct specific testing as requested by permit writers.

3.9.3 Review requirements and authorize the initial confined space permit.

3.9.4 Annually audit the confined space entry work procedure and review permits to evaluate the overall confined space entry program effectiveness and revises the program to correct deficiencies.

3.9.5 Retain terminated permits in accordance with the "Corporate Records Retention Policy."

3.10 Training Department

3.10.1 Provides training materials that have been prepared in conjunction with the Safety Department that adequately prepares Permit Writers and users to be compliant with the Safe Work Permit process.

3.10.2 Maintain training certifications for all personnel affected by this program (e.g., MPC permit writers, entry supervisors, entrants, attendants, rescue service personnel, etc.).

4 PRACTICES

4.1 Identification of Confined Spaces

4.1.1 Common confined spaces encountered in the refinery are listed in Appendix B.

Important:

a. A confined space that could be entered inadvertently must have a warning sign posted or a similar barrier (for example, vessel skirt, building crawl space).

b. A confined space that is opened must be clearly marked or labeled with a warning sign or a similar barrier on or near all confined space entry points until the space is closed.

Example of Warning Sign: "Danger – Permit Required Confined Space Do Not Enter."

4.2 Blinding and Energy Isolation

4.2.1 Confined spaces shall be isolated in accordance with HS-SWI-011 *Control of Hazardous Energy*.

4.2.2 Sight glasses and float chamber will be drained and flushed prior to entry.

4.2.3 Drain valves shall be safely positioned.

4.2.4 Nuclear radiation-type gauges shall be de-energized and checked by a qualified individual for proper LOTO and leakage.

4.2.5 All personnel shall adhere to energy isolation requirements. See HS-SWI-011 *Control of Hazardous Energy*.

4.3 Confined Space Entry Authorization

4.3.1 Prior to any entrance into any confined space, the Confined Space section of the Safe Work Permit must be completed.

4.3.2 Permits shall be prominently displayed and maintained at the confined space.

4.3.3 Permits are valid for a maximum of 12 hours. If it becomes necessary to continue work beyond the shift for which the permit was issued, the permit may be extended another 12 hours not to exceed 24 consecutive hours in total.

4.3.4 The permit shall not remain in the field when there is no entry in progress for more than 2 hours. The attendant shall return the permit and sign-in/sign-out sheets to the control room collection point.

4.3.5 Upon completion of the job or when work will not be performed on the next shift, the copy of the Safe Work Permit located at the job site and any corresponding sign in/sign out sheets will be removed and turned over to the owning department. The original will then be removed and matched with the field copy. The permit can then be forwarded to the Safety Department for record retention.

4.4 Atmospheric Testing General Requirements

4.4.1 Ensure a Safe Work Permit authorizing Confined Space Entry is processed prior to entry into a confined space.

4.4.2 Test every space atmosphere for LEL, oxygen, carbon monoxide, hydrogen sulfide and toxic gasses as determined necessary by the Permit Writer. Oxygen must be tested first to ensure sufficient oxygen is available to obtain an accurate flammable gas measurement. Results shall be noted on permit.

4.4.3 All confined spaces are considered hazardous atmospheres until pre-entry testing and verification demonstrates otherwise.

4.4.4 Initial testing and any re-testing shall be performed in an area that:

a. Provides a representative sample of the location that the entrants will be working inside the confined space.

b. Reflects the conditions of the work activities.

4.4.5 If the confined space has to be entered to complete a check of the atmosphere, perform testing as the confined space is entered and after all other conditions of the permit are satisfied.

4.4.6 Initial atmospheric testing shall be conducted from the outside with the ventilation turned off. The ventilation must be off long enough (at least 15 minutes) to assure steady state conditions. The time will vary depending on the size and configuration of the space.

a. Atmosphere must be between 19.5% and 23.5% oxygen content.

b. No entry shall be made when O_2 is less than 19.5% or greater than 23.5% except:

- Under emergency circumstances to perform entry rescue operations.
- Per *Entering and Working in Inert Atmospheres.*

c. For oxygen levels less than 19.5%, wear

- a self-contained breathing apparatus (SCBA), or
- a positive pressure airline respirator equipped with an escape cylinder

d. For cold work, atmosphere must be less than 10% LEL on a combustible gas detector before entry is authorized.

e. For hot work, atmosphere must be 0% LEL on a combustible gas detector before entry is authorized.

f. Toxic contaminants (e.g., benzene, ammonia, caustic, acid, etc.). Any concentration in excess of the recognized exposure limits (PEL or TLV) renders the atmosphere hazardous.

g. Airborne combustible dusts (i.e., sulfur) must be less than its LFL (Lower Flammable Limit) (approximated as a condition in which the dust obscures vision at a distance of five feet or less).

h. Airborne combustible dusts (for example, sulfur) in high enough concentrations can be explosive. Use ventilation, wet methods, or other means as needed to control combustible

dusts in confined spaces as to not create an explosive atmosphere.

i. Other potential hazards as applicable, such as radiation, pH, temperature, etc.

4.4.7 Vessels possessing a radiation gauge shall have an external and internal survey conducted per the Radiation Safety Program before a Confined Space Entry Permit is issued.

4.4.8 When a department is unable to perform the tests for toxic contaminants or other type hazards, the permit writer or area supervisor will contact the Safety Department for assistance.

4.4.9 Testing equipment shall be calibrated, used and maintained in accordance with the manufacturer's recommendations.

4.4.10 Entrants shall be given the opportunity to witness monitoring.

4.4.11 When the initial atmospheric testing results are acceptable and representative, determine if the work to be done in the space will introduce additional hazards.

4.5 Continuous Monitoring

4.5.1 Continuous monitoring for combustible gases, oxygen, and toxics (as applicable) is required for all confined spaces.

4.5.2 Continuous monitoring detection equipment shall be capable of data logging.

4.5.3 Ensure continuous monitoring instruments are direct-reading devices that have a visual readout and audible alarm that can be set to alarm at contaminant threshold and condition limits.

4.5.4 The permit writer shall designate the location of the instrument's sample hose to ensure the sample is representative of the entrant's location and to ensure acceptable entry conditions are being maintained and ensure that sample requirements are clearly communicated to the Entry Supervisor.

Note: Consideration must be given for confined spaces inside confined spaces, which may still require personal multi-gas monitors.

4.6 Re-testing

4.6.1 Re-testing for oxygen and flammable gases must be performed and documented on the SWP. Re-testing of toxic vapors must be performed and documented on the SWP:

a. Prior to re-entry after an absence of two hours or more.
b. Retest confined spaces at least midway through the maintenance shift.
c. After an event that may have changed conditions in the space.

d. Work extensions.
e. Re-issuance of the SWP.

4.6.2 Consider retesting for other hazards on a case-by-case basis and specified on the Safe Work Permit, if required.

4.6.3 Re-testing for other hazards must be considered on a case-by-case basis and specified on the permit if required.

4.6.4 Provide an opportunity for each Authorized Entrant or that employee's representative to witness the atmospheric monitoring of the confined space.

4.7 Ventilation

4.7.1 When ventilation is required for control of acute atmospheric hazards, ambient air shall be used to bring the confined space atmosphere to safe levels.

4.7.2 Attendants shall require confined space occupants to immediately leave the space when ventilation systems fail.

4.7.3 When ventilation is required, the permit writer and attendant shall ensure that the inducted air does not represent a health concern from sources such as vehicle exhaust or process emissions.

4.7.4 Mechanical ventilation is required prior to non-inert entry of any vessel that has been previously inerted with nitrogen.

4.7.5 Mechanical ventilation equipment shall be properly bonded to the confined space to prevent static electricity.

4.7.6 Mechanical ventilation is required anytime welding occurs inside a confined space at a rate of 2000 CFM per a welder.

4.7.7 The Permit Writer/Entry Supervisor and Attendant ensure that the inducted air does not represent a health concern from sources such as vehicle exhaust or process emissions.

4.8 Respiratory Protection

4.8.1 Respiratory protection selection shall be based on atmospheric test results.

4.8.2 Supplied-air respirator (air meeting specifications of CGA-G7, Type I, Grade D) with five-minute egress cylinder or Self-Contained Breathing Apparatus (SCBA) must be used in atmospheres less than 19.5% oxygen or other potential IDLH atmospheres.

4.8.3 For emergency and rescue entries, SCBAs or supplied-air respirators with five-minute egress cylinders shall be worn unless the atmosphere is verified to be non-hazardous.

4.8.4 When a permit requires the use of respiratory equipment, the attendant may be required to use respiratory equipment to prevent exposure to the confined space contaminants.

4.9 Non-Isolated Engulfment Hazards

4.9.1 Any non-isolated engulfment hazard (e.g. Catalyst) shall have an early-warning system that continuously monitors for the non-isolated engulfment hazard.

4.9.2 The system shall alert Authorized Entrants and Attendants in sufficient time for the Authorized 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 upstream to monitor water flow.

Note: See RSP-1121-020 for all Inert Confined Space Entries.

4.10 Confined Space Equipment

4.10.1 As the Host Employer, MPC must ensure the following equipment is in place and functioning as required prior to entry:

a. Testing and Monitoring Equipment,

b. Ventilation Equipment,

c. Communication equipment necessary for Attendant(s) assessing Authorized Entrant's status in confined spaces,

d. Personal Protective Equipment (PPE), if feasible engineering and work-practice controls do not adequately protect the Authorized Entrant(s),

e. Lighting equipment,

Important:

1. Lighting equipment shall be approved for ignitable/combustible properties for the potential hazards of the confined space (i.e., gases, vapors, dust).
2. Lighting equipment shall be sufficient to allow Authorized Entrants to see well enough to work safely and exit the space quickly in the event of an emergency.
3. Lighting equipment shall meet the minimum illumination requirement of 5-foot candles.
4. Emergency egress lighting shall be available as back-up to primary lighting in event the Confined Space loses primary lighting during an emergency. The Emergency Egress Lighting equipment shall be approved for ignitable/combustible properties for the potential hazards of the confined space (i.e., gases, vapors, dust). Lighting equipment shall meet the minimum illumination requirement of 5-foot candles.
5. For purposes of emergency egress lighting, a battery powered back-up lighting system shall be used when feasible. In the event a battery powered back-up lighting system is not feasible, a head lamp approved for the potential hazards of the confined space shall be worn on the hard hat. A hand-held flashlight is permitted

in lieu of a head lamp in cases where welding protection equipment or other personal protective equipment prevents the use of a head lamp and in situations where only a portion of the entrant's body will pass through the opening into the Confined Space (e.g., exchanger).

4.10.2 Barriers and shields to protect Authorized Entrants from hazards outside the space (e.g., Jersey Barrier for CSE along roadway),

4.10.3 Ladders, needed for safe entry and exit by Authorized Entrants,

4.10.4 Rescue Equipment that is not supplied by the rescue service, and

4.10.5 Any other equipment necessary for safe entry into, safe exit from and rescue from permit required confined spaces.

4.11 Rescue and Emergency Services

4.11.1 Rescue of entrants that require entry into confined spaces will be performed by the SLCRD ERT or by local emergency services or designated rescue-trained contractors.

4.11.2 Only trained personnel may enter a confined space for rescue purposes. Non-entry rescue may be performed provided the rescuer is trained to properly use such equipment.

4.11.3 As per RSP-1121-020, MPC will not enter into Inert Confined Spaces.

4.11.4 Rescue personnel must be trained in basic first aid and CPR.

4.11.5 Adequate rescue team personnel must be available within the refinery during an active confined space.

4.11.6 In the event of a confined space rescue, all other active confined space entries requiring ERT rescue personnel shall be revoked.

4.11.7 Emergency/rescue personnel will operate in accordance with the site emergency response plan and ERT SOP.

4.11.8 Emergency/rescue personnel can only enter the confined space when equipped with SCBAs or positive-pressure airline respirators equipped with escape bottles and other appropriate protective equipment and only when an attendant is stationed by the confined space entry.

4.11.9 Emergency response personnel will perform the rescue under guidance of the Emergency Response Coordinator, senior ERT member, or Rescue Team Leader.

4.11.10 If MPC utilizes a third-party Rescue Contractor, MPC must:

a. Evaluate the prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazards identified.

b. Evaluate the prospective rescue services ability with

- Rescue-related tasks and equipment,
- Rescuing entrants from the permit space or types of permit spaces identified, and
- Equipment functioning properly.

c. Select the rescue team or service from those evaluated that

- Has the capability to reach the victim(s) within a time frame that is appropriate for the CS hazards,
- Is equipped for, and proficient in, performing the needed rescue services, and
- Agrees to notify the employer immediately in the event that the rescue service becomes unavailable.

d. Inform each contract rescue team or service of the potential hazards at the site.

e. Allow the rescue team or service selected access to all permit spaces to develop rescue plans and practice rescue operations.

4.11.11 Material Safety Data Sheets will be made available to medical facilities treating exposed employees.

4.11.12 For entries, at a minimum, the following emergency rescue equipment shall be immediately available at the refinery:

- Hoisting device to extricate personnel from the confined space.
- Extra and independent supplied air respirators as required by the scope of the work and the rescue pre-plan.
- Harnesses, ropes, tools, etc., needed to extricate personnel.
- Medical response equipment for use by trained MPC medical personnel.
- Stretcher and means to lower injured personnel to ground.
- Provisions for summoning assistance.
- Personal protective equipment required for entry.

4.11.13 To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a Confined Space unless the harness or retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant.

4.11.14 Retrieval systems shall meet the following requirements:

a. Each authorized entrant shall use a full-body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head. Wristlets/anklets may be used in lieu of the full-body harness if it can be demonstrated that the use of a full body-harness is infeasible or creates a greater hazard and that the use of wristlets/anklets is the safest and most effective alternative.

b. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.

4.11.15 Examples of When Not to Use a Retrieval System:

a. the space has obstructions or turns that prevent pull on the retrieval line from being transmitted to the Entrant,

b. an Entrant being rescued with the retrieval system would be injured because of forceful contact with projections in the space, or

c. the retrieval line cannot be controlled so as to prevent entanglement hazards with the equipment or with the airline for an Entrant using an air-supplied respirator.

4.11.16 Authorized employees, entrants, and outside attendants must be familiar with procedures for summoning rescue and emergency services.

4.11.17 MPC employees who are designated Confined Space Rescue Team Members must meet RSP-1127-00 Requirements.

4.12 Transference of Entry Supervisor Responsibilities

4.12.1 In the event the responsibilities of the Entry Supervisor are transferred, the existing Entry Supervisor shall clearly and affirmatively provide an appropriate briefing of the permit to the subsequent Entry Supervisor to ensure that the entry operations remain consistent with the permit and that acceptable entry conditions are maintained.

4.12.2 Transference of Entry Supervisors shall be documented in Section VI of the SWP.

4.13 Canceling Confined Space Entry Authorization

The permit is canceled when:

a. The expiration time on the permit is reached without being renewed.

b. The confined space entry work is completed as described on the permit.

c. The entrant, attendant, or anyone else observes a condition that is not allowed under the permit.

- The permit writer and the Entry Supervisor(s) shall be immediately notified.
- Entry work shall stop and not resume until the hazardous situation or prohibited condition has been mitigated, gas retesting has been conducted, and a new permit is completed.

4.14 Entry Completion

When entry operations are complete, when the designated time expires, or the permit is canceled for any other reason, the permit is no longer valid. Under no condition shall a permit remain posted for more than two hours without an active entry. The attendant shall return the permit and sign-in/sign-out sheets to the control room.

5 TRAINING AND AUDITING

5.1 Training on Confined Space Entry

5.1.1 The confined space entry work party (e.g., attendants, entrants and supervisors) must be trained to perform their assigned duties as required in 29 CFR 1910.146 and this Safety Practice.

5.1.2 Permit writers must complete all required training, including field qualification via the Confined Space Entry Permit Training Field Qualification Checklist, prior to being authorized to issue Confined Space Entry Permits.

5.1.3 All contract companies are responsible for ensuring that all employees who will be involved in confined space entry operations are trained in the duties they are assigned.

5.2 Auditing

5.2.1 The Safety Department will review this work instruction at least annually. This review will include an examination of permits, specific entry audit findings, and any concerns expressed by site employees. Revisions to this program and training materials will be made as necessary.

6 CONTRACTORS

6.1 Entering Confined Spaces

MPC shall inform contractors that confined spaces must only be entered after obtaining a Safe Work Permit.

6.2 Working with Hazards

In order to provide a safe work environment, inform the contractor via the Safe Work Permit of

a. hazards identified,
b. precautions or procedures, and
c. other operations nearby.

6.3 Debriefing

Conduct a debriefing via the Safe Work Permit regarding hazards confronted.

7 SPECIAL CONSIDERATIONS

7.1 Confined Space Entry Permitting Multiple Craft and Large Jobs Guidelines During Tar and Construction Operations

7.1.1 In the event multiple crafts/employers will be working in the same confined space, all crafts/employers shall convene and utilize the Safe Work Permit as a means of developing and implementing procedures to coordinate entry operations. Coordination and procedural considerations must include:

(a) Equipment preparation (e.g., equipment lines, valves, vessels, tanks), LOTO, electrical and general precautions pertaining to the entry,

(b) Personal protective equipment,

(c) Hot work precautions,

(d) Communications,

(e) Additional confined space precautions,

(f) Atmospheric monitoring requirements, and

(g) Identifying hazards of one group that may affect others and ensure protective measures are provided for others that may be affected.

7.1.2 All specific procedural requirements must be documented on the Safe Work Permit. Acknowledgement of the procedures by employees is verified through being listed on the Safe Work Permit. The Entry Supervisor must ensure all Entrants under their control understand these procedural requirements.

Notes:

(1) The Safe Work Permit, in addition to local safe work permit and confined space entry procedures, is the crafts/employees' procedure for executing safe entry into the confined space.

(2) A Job Safety Analysis (JSA) or similar can be used to enhance the procedure specified via the Safe Work Permit.

7.1.3 MPC Entry Supervisor or designee for the Confined Space entry will meet with the permit writer and define what contractors he is representing and what work scope will be conducted in the Confined Space during his shift.

7.1.4 Permit Writer will complete the permit based on the most stringent requirements of any of the work activities to be encountered in the Confined Space.

7.1.5 MPC Entry Supervisor or designee will sign in Section VI of the SWP as the MPC Contractor Coordinator.

7.1.6 MPC Entry Supervisor or designee will review the field copy of the permit with each respective Contractor Entry Supervisor and have them sign in Section VI of the SWP as the Contractor Rep/Foreman.

7.1.7 If work scope changes during the covered SWP period:

a. STOP WORK.

b. Pull the Confined Space Entry permit.

c. Notify the Permit Writer.

7.1.8 If Permit Writer and Entry Supervisor approves the change in the scope of the work:

a. Update the SWP to reflect the scope change and any new requirements and verify the adequacy of the safeguards and job site preparation, or

b. Write a new permit to cover the new scope of work.

c. MPC Lead Foreman or designee will sign off Section VII of the SWP when the work is complete or at the end of the permit period.

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

a. 50 or more entrants simultaneously per shift,

Note: This is based upon all entrants/companies performing work in the space.

b. 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

c. Complex scaffold systems which include seal decks that separate the Confined Space.

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

a. Personnel (Entrant) accountability in the event of an emergency,

b. Personnel protection from falling debris, tools, and equipment,

c. 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 the CS.

d. Additional Fire Watches and Hole Watches (Attendant) stationed inside the CS,

e. 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),

f. Adequacy and quantity of access/egress locations based on the number of Entrants,

g. Complexity of air movement system(s) and any hazards the system itself would introduce to the CS,

h. Consideration of a CS Monitoring System that has Closed-Circuit TV (CCTV), air monitoring, audio & visual alarms and voice communication system,

i. Enhanced fire prevention/protection systems/equipment including charged fire hoses.

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

7.1.11 The Large, Complex and High Worker Density Confined Spaces Hazard Assessment Checklist (Appendix A) shall be completed when the 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.

7.2 Tunnels

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

7.2.2 Additional hazard assessment and advance planning are necessary.

7.3 Multiple Compartment or Coupled Vessels

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

a. The entire space shall be atmospherically tested.

b. Verify that the space has been isolated and that engulfment, mechanical, and internal configuration hazards have been addressed;

c. Position an attendant at each active entrance / exit location. It may not be necessary to have an attendant at each entrance / exit provided they can adequately monitor the entrants;

d. A single permit shall be prepared for the entire space unless special provisions warrant otherwise.

e. Sign-in/sign-out sheets shall be coordinated, maintained and controlled by an assigned single attendant to assure that all entrants are accounted for.

f. The alerting device to warn entrants to evacuate a confined space due to an unsafe condition must be sufficient 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 sufficient to alert entrants of an evacuation. In these situations, other more effective or louder alerting systems must be used (e.g., CS Monitoring System with audible and visual alerts, strobe light, etc.).

Note: Whistles shall not be used, as they are utilized to signal crane lifts.

7.4 Sewer Entry/Conduit Vault

7.4.1 Sewer entry differs from other permit entries in that (with the exception of plugging and ballooning with materials of construction that are compatible with the hazards) there rarely exists any way to completely isolate the space to be entered. Atmospheres may suddenly and unpredictably become lethally hazardous (engulfment, toxic, flammable or explosive). Additional hazard assessment and advance planning are necessary.

7.4.2 Entry into sewers must be coordinated with all operating areas to ensure that drainage of products into the work area does not occur.

7.4.3 The following precautions must be taken for sewer entry work where lines have not been isolated or have been isolated by means other than blinds:

a. Continuous monitoring must be performed.

b. Work must be halted during heavy rainstorms to prevent a sudden surge of water engulfing the entrant(s).

c. Sewer entries must not be performed when hot work is taking place near any of the branch sewers connected to the sewer being entered.

d. Attendants shall be notified when hazardous materials are released into sewers while entry is being made.

e. Provisions must be made to protect the entrants from all hazardous materials the sewer could contain.

f. Supplied air respirators will be required for all sewers.

7.5 Floating Roof Tanks

7.5.1 For specific rules regarding entry into floating roof tanks, see *Entry onto the Roofs of Floating Roof Storage Tanks.*

Important: Under no conditions shall permission be given to enter a covered internal floater with a plastic, Petrex, aluminum or fiberglass roof while tank is in service or has product in it.

7.5.2 A confined space entry permit may be issued for entry into an internal floating roof tank with a steel pan or pontoon roof if all of the conditions below are met:

a. The roof shall not be more than 10 feet below the fixed roof and should always be as high as possible. Exception: This does not apply to clean water (i.e. hydro-testing);

b. All mixers and lines to or from the tank must be locked and tagged out. When entering onto floating roof in tanks, supplied air respiratory equipment is required, except for clean water tanks. If supplied breathing air is required, the attendant must have supplied breathing air immediately available.

c. When entering onto floating roof in tanks, use the listed respiratory protection, for Class I flammable liquids (for example, gasoline), use a SCBA or supplied air respirator with five-minute escape provisions on ALL entries, and as directed by the Entry Supervisor, for Class II liquids (for example, distillates) and hydro-test water.

d. Use a winch or other rescue device with mechanical advantage equipped with fall protection capability when ascending and descending into the tank.

e. Have Entrants wear a full-body safety harness and lifeline. If there is an entanglement hazard, the Entrants may remove the lifeline after reaching the pontoon or floating roof, provided one person stays at the bottom of the ladder with the lifeline as an observer for the others, and the lifeline must be reattached before exiting back up the ladder

Important: A breathing apparatus harness is not acceptable as a full-body harness

f. An SCBA or supplied air respirator must be available to the Attendant on the roof, if required.

Important: The Attendant cannot use the SCBA or supplied air respirator for entry rescue purposes.

g. An outside Attendant must be stationed on the top platform with immediate communications and non-entry rescue capabilities (radio, back-up person, etc.).

h. Entrants shall not be allowed to descend onto an internal floating roof, which is out of floatation (sitting on its legs) until the space below the roof has been opened and ventilated, the atmospheric testing has been conducted both above and below the internal floating roof, the conditions allow the issuance of an entry permit and precautions have been taken to prevent roof rotation.

i. Continuous atmospheric monitoring of the confined space must be conducted if any product is in the tank.

7.6 Floating Roof Tanks: Open Top Floating Roof Storage Tanks

7.6.1 Any entry onto a storage tank's external floating roof shall be considered a confined space when the roof is more than four feet from the top of the tank.

7.6.2 All mixers and lines to or from the tank must be locked and tagged out.

7.6.3 Conduct a pre-job meeting with facility and contractor personnel which includes the following personnel to review the proposed work, potential hazards, entry conditions, and emergency plans:

a. Designated Entry Supervisor,

b. Permit Writer,

c. Entrant(s),

d. Attendant(s), and

e. Designated rescuers.

7.6.4 Prior to descent visually inspect the open-top floating roof from the platform for potential physical hazards and stability.

Important: If there is any doubt about integrity of a floating roof, contact the Inspection Department to ensure the metal thickness is within API specifications for personnel access.

7.6.5 Entrants shall not be allowed to descent onto an open-top floating roof, which is out of floatation (sitting on its legs) until

a. the space below the roof has been opened and ventilated,

b. atmospheric testing has been conducted both above and below the open-top floating roof, and

c. conditions allow the issuance of a Safe Work Permit.

7.7 Inert Entry

For specific rules regarding Inert Entry, see *Entering and Working in Inert Atmospheres and RSP-1121-020*

7.8 Excavations

7.8.1 Prior to issuing a permit for an excavation/trench, an Excavation/Trenching/ Boring/Pile Driving/Cutting Permit and any subsequent Daily Excavation/ Trenching Inspection Reports must be issued.

7.8.2 For specific rules regarding excavations, see HS-SWI-021 *Trenching and Excavation.*

7.9 Hot Work Inside Confined Spaces

7.9.1 Provisions shall be made to ensure adequate ventilation for each person conducting Hot Work in the confined space. Cutting or welding operations must be performed such that an additional hazard to personnel is not created.

7.9.2 Mechanical ventilation shall be required when welding occurs inside of confined spaces (2000 CFM per a welder). Certain large and/or open air confined spaces (e.g., heaters, open tanks, excavations, etc.) may be exempt from this requirement provided there is adequate natural ventilation.

7.9.3 Precautions shall include an inspection of hoses and torches for leaks prior to use.

7.9.4 A multi-gas continuous monitor is required in all Confined Spaces. The location of the sample hose must be representative of the Entrants breathing zone. Fumes can be created by cutting or welding on surfaces which are galvanized, contain chromium, or lead contaminated and may require additional respiratory protection or other control measures to limit personnel exposure.

7.9.5 When welding is suspended and the space is vacated for more than 15 minutes (e.g., lunch, breaks, shift change, etc.) all electrodes are to be removed from their holders and the machine turned off and/or disconnected from its power source.

7.9.6 If the hot work in the confined space involves the use of gas welding/burning and the work is stopped and the space vacated for more than 15 minutes (e.g., lunch, breaks, shift change, etc.), the

(a) torches and hoses must be removed, or

(b) hoses (oxygen and fuel gas or inerting gasses) disconnected from the regulators.

7.9.7 Any gas cylinders used in welding or cutting process must be stored, staged or located outside the vessel or confined space.

7.9.8 For use of air powered tools inside confined spaces, give consideration to the effect on the vessel's atmosphere of introducing non-breathing air quality air into the vessel.

7.9.9 Fire extinguishers must be positioned in close proximity to all hot work operations inside the confined space.

7.9.10 Confined spaces that have a large quantity of combustible materials must have a charged fire hose or other water source available to immediately extinguish a combustible fire.

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

7.9.11 Hot Work Authorization

For specific rules regarding hot work, see HS-SWI-024 *Hot Work Authorization.*

7.10 Refractory Work Inside Confined Spaces

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

7.10.2 At a minimum, a full-face respirator shall be required when conducting refractory work.

7.10.3 Provisions shall be made to protect entrants from falling refractory.

7.11 Temperature Extremes Inside Confined Spaces

7.11.1 Confined space entry is not authorized if the dry bulb (air) temperature exceeds 110°F inside the confined space.

Notes:

a) The 110°F limit is based on industry experience.

b) There is no formal OSHA standard relating to heat stress limits.

c) The use of this limit needs to be applied in conjunction with procedures that involve proactive employee feedback and Supervisor oversight.

7.11.2 Workers should be rotated as necessary to prevent heat stress.

7.11.3 When temperatures in the confined space exceed 70°F, give consideration to heat stress prevention for workers entering the confined space and any personnel in protective clothing outside the confined space.

7.11.4 Additional consideration must be given to heat stress prevention for personnel in impermeable protective clothing while working in confined spaces.

7.12 Inclement Weather Conditions

If lightning threatens or is active in the area, refer to the Lightning policy HS-SSP-46.

7.13 Confined Space De-classification

7.13.1 Tanks and excavations located outside of active/current process areas may be declassified as non-confined spaces by the MPC Safety Department. Other types of confined spaces cannot be declassified, including trenches. Although a declassified 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.

7.13.2 The following are requirements for declassification 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:

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 declassified as long as the hazards remain eliminated.

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

For Excavations:

- The excavation must have a sufficient protective system (e.g., sloped, benched, or sheeting) and have at least one sloped vehicle ramp (i.e., large enough to support a full-size truck).

- Excavations outside of active/current battery limits may be reclassified if the excavation does not have “limited or restricted means for entry or exit.”
- To achieve unrestricted entry or egress the excavation must have ladders or ramps every 25 feet along the perimeter.
- Continuous atmospheric monitoring is still required.
- 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.

b. Working in a Declassified Non-Confined Space shall require the following:

- A Notice to be posted at the job site (e.g., Tank entrance, Excavation entrance) once the space as been determined a Non-Confined Space. The Notice shall state the following:
- Date & Time the space was reclassified, and
- Individuals involved in making the reclassification determination.
- For Tanks, continuous atmospheric monitoring is required inside the tank once it has been reclassified.
- For Excavations, continuous atmospheric monitoring may be required in declassified excavations based upon the work scope.
- All entrants shall leave declassified spaces any time an uncontrolled hazard arises.
- Declassified spaces that have been evacuated because of an uncontrolled hazard must be re-evaluated, to determine if they can remain declassified as a non-confined space, by a representative of the MPC Safety Department before they can be re-entered.
- Reference Appendix D

7.14 Other Special Considerations

7.14.1 Isolation procedures are not required for radiant and convection tubes in heaters (all burner fuels and steam purge including soot blowers do require isolation from the heater) as long as all the tubes have maintained mechanical integrity.

7.14.2 The permit writer must consider that some confined spaces may contain pyrophoric material that will ignite flammable material in the presence of air.

7.14.3 The permit reflects conditions at the time of issuance. If conditions change, work must be stopped, and the permit writer and unit operators contacted.

7.14.4 Each confined space shall be evaluated for the potential presence of asbestos (gaskets, packing, etc.) during job planning activities. If positive confirmation cannot be determined, entries must assume the presence of asbestos.

7.14.5 Any temporary enclosures at confined space entry points shall be constructed only after approval by the permit issuer.

7.14.6 During confined space entry into cooling towers, determine what chemical additives shall be isolated. NOTE: Isolation of chemicals may be required multiple days prior to entry.

7.14.7 A permit shall be required prior to entry of personnel into excavations, trenches, roll off boxes, sewers, and other containers over 4 feet in depth.

7.14.8 Portable drop lights shall be minimum 16/3 SO or SOW type UL/FM approved and possess a glass globe and protective cage. Halogen temporary lighting is prohibited in the refinery without a Hot Work Permit. See HS-SWI-015 *Electrical Safety* for details.

7.14.9 Piping 16” or greater and so configured that it can be bodily entered shall be considered a confined space.

7.14.10 The space underneath trailers is not considered a confined space if 8-foot sections of skirting on 2 opposing sides is removed.

7.14.11 Cooling water tower shrouds with a door sheet removed and the fan isolated are not considered confined space as long as the employees stay above the deck and do not enter the cooling water tower cell.

8 PROGRAM REVIEW

8.1 Procedure Review

The Safety Practice will be reviewed every 3 years.

9 REVIEW AND REVISION HISTORY

9.1 History of Revisions

The Table 1 provides the revision history for this Safety Practice.

Table 1 Revision History

Revision	Date	Change Author	Reason for Change
1.0			Original Issue

Appendix A: Large, Complex and High Density Work Confined Space Hazard Assessment Checklist

C.1 Checklist The following is the Large, Complex and High Density Work Confined Space Hazard Assessment Checklist (RSP-1127-000-FORM01)

Marathon Petroleum Company LP

Large, Complex and High Density Work Confined Space Hazard Assessment Checklist

(RSP-1127-000-FORM01)

Hazard Assessment Conducted On:	
Completed By:	**Date:**
This space is determined to be Large, Complex and/or High Worker Density Confined Space due to the following:	
☐	50 or more Entrants per shift
☐	Confined Space Entry inside the Confined Space (e.g. Work inside cyclones inside a Regen Vessel)
☐	Complex scaffold systems which include seal decks that separate the Confined Space.
The additional checked hazards have been identified and mitigation measures are in place to eliminate the hazards	

	Hazards	Hazard Mitigation
☐	Inability to account for Personnel (Entrant) in the event of an Emergency.	
☐	Falling debris, tools, and equipment into Entrants work area	
☐	Unable to hear and/or see the alerting system used to notify Entrants of an emergency evacuation	
☐	Hot Work or Confined Space Inside Confined Space not visible to exterior Fire Watch/Hole Watch	
☐	Fall Hazards inside the space (e.g. aligned internal manways, work inside cyclones, scaffolding construction/anchor points)	
☐	Limited egress locations based upon number of Entrants	
☐	Hazards introduced into the confined space by ventilation systems (Combustible Material, High Noise, etc.)	
☐	Hole Watch (Attendant) is unable to maintain communication with all Entrants	
☐	Unable to verify the atmosphere at locations representative of all Entrants	
☐	Radiography Impact to the Authorized Entrants	
☐		

10 APPENDIX B - CONFINED SPACE EXAMPLES

Examples of confined spaces, where this procedure may apply:

- Bag Houses (with limited egress)
- Boilers
- Cooling Water Towers
- Dumpsters/Roll-off Boxes (> 4’ deep)
- Electrical Crawl Spaces
- Electrical Transformer Cases
- Elevator Shaft
- Exchangers
- Fan Enclosures
- Filters
- Fin Fans
- Floating Roofs on Storage Tanks
- Frac Tanks
- Heaters
- Open ended pipes (> 16” diameter)
- Pits or Sumps
- Product Distillation Columns
- Product Storage Bins
- Process Reactors
- Process / Storm Water Sewers (> 4’ deep)
- Rail Cars
- Tank Trucks
- Tanks
- Trenches & Excavation (> 4’ deep)
- Process Vessels
- Vessel Skirts (with limited egress)

Appendix C: Confined Space Entry Reference Sheet Template

E.1 Template The following is the Confined Space Entry Reference Sheet Template (**RSP-1127-000-TEMP**).

Confined Space Attendant Reference Sheet

Unit Name – Equipment Name – Equiment Number

Field Picture of Equipment	Emergency Contact Info:	Drawing of Equipment
	Previous Material in Vessel:	Signs/Symptoms of Over Exposure: Inhalation: Absorption (Skin Contact): Eyes:
	Non-Entry Rescue/Fall Protection Plan	
	For any questions or issues contact the Entry Supervisor, SWP Writer, or the Safety Department.	

Revision Date:

Appendix C: Confined Space Entry Reference Sheet Template, Continued

E.1 Template (continued)

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.

Revision Date:

Appendix D: Declassified Non-Confined Space Notice

D.1 Notice The following is the Declassified Non-Confined Space Notice (RSP-1127-000-FORM02).

Marathon Petroleum Company LP

Reclassified Non-Confined Space Notice

(RSP-1127-000-FORM02)

Equipment Name:		
Equipment Number:		
Location:		
Date of Re-Classification of CS:		Time of Re-Classification of CS:
Re-Classification Team Members:		
QUESTIONS		ANSWERS
1)	Continuous atmospheric monitoring **shall be** required inside the tank.	
2)	Continuous atmospheric monitoring **may be** required in reclassified excavations based upon the work scope.	
FOR TANKS		
3)	A door sheet (approximately 10' x 8') has been cut in the side of the tank.	
4)	The tank has been cleaned and free of residues and materials	
5)	Additional precautions (e.g. PPE, additional continuous monitors, barriers, shields, lighting requirements, rescue equipment, etc.) have been established, as needed.	
FOR EXCAVATIONS		
6)	The excavation has a sufficient protective system (e.g., sloped, benched, or sheeting) and has at least one sloped vehicle ramp (i.e., large enough to support a full size truck).	
7)	The excavation is located outside active/current unit battery limits.	
8)	To achieve unrestricted entry or egress the excavation has ladders or ramps every 25 feet along the perimeter.	

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.

SAFE WORK PERMIT CONFINED SPACE TRACKING LOG

☐Vessel ☐Tank ☐Excavation/Trench ☐Other: _____ Initial Entry Permit #: _____ WO #: _____

Description of Space:

Equipment # / Location:

Record of Gas Check(s). Record the initial gas check witnessed by Safety Department in the highlighted column below. Subsequent gas checks shall be recorded prior to downgrading of controls. Though every Space must undergo gas testing prior to any Entry, the lapse of a mid-shift check update while the space is not covered by a permit does not constitute another initial entry by the Safety Department unless the status of the isolation has changed.

DATE										
TIME	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM	AM PM
O_2	%	%	%	%	%	%	%	%	%	%
LEL	%	%	%	%	%	%	%	%	%	%
CO	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
H_2S	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Temp.	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F
Benzene	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Other:____										
Equip. #:										
Last Calib:										
Initials:										

The Safety Department and Initial Entry Permit Writer will Review This Section Together:

Requirements & Authorized Waivers. The checked PPE and Confined Space Precautions below are *required* to enter this Confined Space. Any requirements that are downgraded or waived for the Space shall be crossed off then dated &

initialed to the left of the item. The Safety Department shall also sign at the bottom to authorize any applicable waivers.

PPE

☑ Clear Safety Glasses (or glasses with side shields)	☐ Lanyard for Fall Protection in space	☐ Other:
☑ Hard Hat	☑ Gloves (type): _____	_____
☑ Personal H_2S Monitor	☐ Other Boots (list): _____	_____
☑ Fire Retardant Clothing	☐ Disposable Coveralls	
☑ Safety-Toed Footwear	☐ High Visibility Clothing	Respiratory Protection:
☐ Hearing Protection	☐ Rain Suit	☐ Supplied Air (list type):
☐ Goggles (worn)	☐ Asbestos PPE	_____
☐ Personal SO_2 Monitor	☐ Welder's PPE	☐ Air Purifying (list Mask & Cartridge Type): _____
☐ Face Shield	☐ Electrical PPE (list calorie): _____	_____
	☐ Chemical Clothing (list class): ____	

Confined Space Precautions:

☐ Temperature below: _____°	☐ Coordinate Multi-Craft Work	☑ Air Siren or Radio
☑ Rescue Personnel Available	☐ Inert Entry (Restricted Area Precautions)	☐ Communications Procedures (list): _____
☐ Hazards Discussed (list): _____	☐ Excavation(s) >4' (Ladders & Shoring Precautions)	☐ Explosion Proof Lighting Required
☑ Entry Approval Signage Posted	☑ Attendant(s) with Vest (list #): ____	☑ Body Harness
☑ Forced Air Ventilation Required	☑ Continuous Air Monitor	☑ Life Line
☐ Tripod with Winch Required		☐ Other: _____

Initial Entry Approved by: _____ **Date:** _____

Waiver(s) Issued by: _____ **Date:** _____