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1.0 Purpose

1.1 To protect all MPC and contract employees from the potential hazards of entry into confined spaces.

1.2 To provide the basis for safe entry, work in, and rescue from confined spaces that must be followed by MPC personnel and Contractor employees entering any confined space.

1.3 To verify and document that all steps have been taken to eliminate hazards and minimize the possibility of personal injury during confined space entry.

2.0 Application

2.1 This standard shall apply to all MPC and Contractor employees that will be involved in confined space entry operations.

3.0 Implementation

3.1 All confined space entry operations shall be conducted according to this standard in addition to all applicable regulatory standards.

4.0 Administration / 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.

Reference: For additional guidance, see Appendix A.

4.1 Owning Department

4.1.1 Knows the confined space hazards including information on the mode and the consequences of exposure.

4.1.2 Identifies potential hazards associated with the confined space.

4.1.3 Specifies the testing and precautionary measures required to ensure the safety of the entry and the work to be done.

4.1.4 Contacts the Safety Department for assistance, as necessary.

4.1.5 Reviews requirements and signs Safe Work Permits for all entries.

4.1.6 Ensures Attendants have adequate communications methods with both Entrants and rescue services.

4.1.7 Provides appropriate instructions for preparation of the space for entry including cleanup and isolation.

4.1.8 Ensures that the Safe Work Permit is maintained at the job site during the entry operation.

4.1.9 Validates that Safe Work Permit conditions are acceptable, signs the Safe Work Permit and helps enforce Safe Work Permit conditions.

4.1.10 Ensures adequate Attendant personnel are present and that proper emergency/rescue equipment and other personal protective equipment are specified by the Safe Work Permit.

4.1.11 Ensures that the **ERBO** is notified of all Confined Space Entries so that rescue can be coordinated.

4.1.12 Coordinates through the Entry Supervisor that the specified conditions on the Safe Work Permit have been satisfied.

4.1.13 Notifies direct Supervision of any problem involved with the confined space entry.

4.1.14 Cancels and removes the Safe Work Permit when the work is completed or if a prohibited work condition occurs.

4.1.15 Ensures that required atmospheric testing is conducted prior to entry, as required.

4.1.16 Ensures that air-monitoring equipment (e.g., LEL/O2 meters, gas monitor, etc.) has been bump tested/calibrated and is properly maintained per manufacturer's recommendations.

4.1.17 Ensures that all energy isolation and blinding requirements pursuant to RSW-0109-GV have been satisfied.

4.1.18 Informs the confined space authorized entrants of any area or operational conditions that may impact the confined space entry operation (e.g., nearby hot work, sewer draining operations).

4.1.19 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).

4.1.20 Addresses mechanical integrity issues relative to the confined space prior to entry (e.g., tank roof metal thickness, stability of refractory).

4.1.21 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.

4.1.22 Completes the debriefing section on the Safe Work Permits.

4.1.23 Coordinates entry operations with the contractor, nearby operations, and any MPC employees working in or near the confined space.

4.2 Entry Supervisor

Note: The MPC Entry Supervisor must be identified on the Safe Work Permit anytime MPC or

contractor personnel are in a Permit Required Confined Space.

4.2.1 Know and address the hazards that may be faced during entry, including the signs and symptoms and consequences of exposure.

4.2.2 Assure confined space entry workers are informed of any area or operational conditions that may impact the confined space entry operations (i.e. sewer draining). Also inform them of all hazards and precautions involved in the confined space entry.

4.2.3 The Entry Supervisor, along with the Safety Department, will identify potential hazards associated with the space and precautionary measures for inclusion on the permit.

4.2.4 Verify that the confined space is properly isolated from all energy and potential hazards (i.e. electrical, vapors, etc.) and that proper ventilation, as defined in Section 6.4, is in effect.

4.2.5 Coordinate entry operations when more than one group will enter the confined space.

4.2.6 At the end of entry operations record on the Work Permit, as required under Section VIII, any hazards confronted or created during the entry.

4.2.7 Verify that entrants and attendants understand the scope, requirements, and limits of the work defined in the permit and field verify that energy isolation is complete.

4.2.8 Verify by checking that appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures, precautions, and equipment specified by the permit are in place.

4.2.9 Ensure that a “Danger – Permit Required Confined Space – Do Not Enter” sign is posted at the confined space openings as soon as it is opened.

4.2.10 Terminate the entry if all entry operations covered by the permit are complete.

4.2.11 Terminates entry if a condition not allowed by the permit arises in the area or in or near the confined space.

4.2.12 Verify, with the ERBO, that rescue services are available. Also, ensure that a communication system is in place between the rescue service, attendant and the entrants.

4.2.13 Remove unauthorized individuals who enter or attempt to enter a confined space after being notified by attendants.

4.2.14 Determine when responsibility for a confined space entry operation is transferred and ensure that the operations remain consistent with the permit.

4.2.15 Communicate to the attendant the need for a temporary barrier to be placed over the confined space opening as required.

4.3 Attendant

4.3.1 Know the last material contained in the confined space and the hazards that may be faced during entry.

4.3.2 Be trained and aware of signs, symptoms, behavioral effects and consequences of exposure.

4.3.3 Must be trained on all applicable atmospheric monitoring equipment that will be used.

4.3.4 Ensure that a Confined Space Entry Permit has been issued and maintained on site during entry operations.

4.3.5 Maintain accurate count of entrants and their identities by means of the confined space entry roster.

4.3.6 Remain outside (Do Not Break the Plane) of the confined space during entry until relieved by another attendant.

4.3.7 Communicate with entrants (via voice, radio, visual observation, etc.) to monitor entrant status. Observe for change in conditions that may impact the safety of the entrants within the confined space.

4.3.8 Order entrants to evacuate immediately and cancel the Confined Space Entry Permit if:

4.3.8.1 the attendant detects behavioral effects of exposure

4.3.8.2 a prohibited condition occurs

4.3.8.3 a situation outside the space that could endanger entrants occurs

4.3.8.4 an uncontrolled hazard is detected within the space

4.3.8.5 the plant alarm system is activated

4.3.8.6 the attendant cannot effectively perform all their assigned duties

4.3.9 Prevent the fouling of air lines, extension cords and/or life lines. Ensure that life lines are secured to a retrieval device or anchored outside the space, if life lines are required.

4.3.10 Check that entrants meet the PPE requirements as required by the confined space entry permit and correct as necessary.

4.3.11 Review the requirements and conditions set on the confined space entry permit and sign the attendant section of the permit.

4.3.12 Ensure continuous monitoring is being performed and instruments are sampling air that is representative of the entrant's breathing zone.

4.3.13 Summon rescue and emergency services by agreed upon communication method.

4.3.14 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.

4.3.15 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.

4.3.16 Are not to be assigned any duties other than monitoring the confined space and the activities in that space. However, the attendant may fire watch or perform attendant duties for other confined spaces if it does not interfere with their primary attendant duties.

4.3.17 Ensure a temporary barrier is in place over the confined space opening when entry into the Confined Space is suspended.

NOTE: Confined Space Attendant Reference Sheets shall be posted at all active entry points to the Confined Space and include at a minimum: Unit Name, Equipment Name & Number with Picture, Equipment Drawing (if available) , Previous Material in Vessel, Signs and Symptoms of Exposure and Emergency Contact Information. Refer to SWP for Rescue and Fall Protection Plan. For excavations, the SWP may be utilized instead of the Confined Space Attendant Reference Sheet, pending all requirements outlined in the paragraph above are addressed.

4.4 Entrants

4.4.1 Know the hazards that may be faced during entry, including the signs or symptoms and consequences of exposure. The confined space data sheet and work permit shall be reviewed prior to initial entry.

4.4.2 Follow the confined space permit requirements as well as other appropriate confined space entry work practices. Review the Confined Space Data Sheet and Safety Data Sheet to understand any potential hazards of the entry.

4.4.3 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.

4.4.4 Communicate with the attendant so that attendant may monitor entrant status. The entrant must ensure that the attendant is on duty at the space and notify them before entering the space.

4.4.5 Notify the permit issuer if the attendant abandons their post during entry.

4.4.6 Alert the attendant whenever the entrant recognizes any sign or symptom of exposure or danger and when a prohibited condition arises.

4.4.7 Exit the space as quickly as possible when ordered to do so by the attendant or entry supervisor, whenever a prohibited condition exists, a change in behavior is detected, the attendant leaves the space, a continuous monitor inside of the space alarms, an uncontrolled hazard inside or outside the space exists and when an evacuation alarm is activated.

4.5 Contractors

4.5.1 Each Employer (Contractor) who has employees entering an MPC Confined Space (CS) must assign an Entry Supervisor to oversee their entrants. The Contractor Entry Supervisor does

not have to be identified on the SWP**.**

4.5.2 Must follow all MPC and contractor company safety standard practices and regulatory standards. Verify that the specified conditions on the permit are adequate and have been met and are understood and followed.

4.5.3 Assure information communicated during the Joint Job Site Visit is conveyed to all personnel in their work crew.

4.5.4 Coordinate entry operations with the MPC entry supervisor, Maintenance supervisor, and other contract personnel when multiple parties are involved in the same confined space entry.

4.5.5 Inform the permit writer of any hazards created or confronted during the entry operations and if the job changes the conditions under which the confined space entry was originally authorized.

4.5.6 Inform the permit writer when the entry is complete and complete the debriefing / completion section of the work permit to include any hazards confronted.

4.5.7 Ensure that attendants and entrants are trained to perform assigned responsibilities and properly utilize related equipment.

4.5.8 Ensure that attendants and entrants are equipped with all necessary equipment and that the equipment is used and maintained in compliance with the manufacturer's recommendations.

4.5.9 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

4.6 Rescue Services

4.6.1 Perform assigned rescue functions.

4.6.2 Perform at least one confined space rescue drill every year.

4.6.3 Ensure that at least one rescue team member is currently certified in at a minimum first aid and CPR.

4.6.4 Ensure that MPC confined space entry rescue equipment is maintained and ready for immediate deployment.

4.7 Safety Department

4.7.1 Develop and maintain confined space data sheets for all equipment that will be entered as a confined space prior to entry.

4.7.2 Review atmospheric testing requirements and exposure control measurements specified on the Confined Space Data Sheet prior to performing initial confined space entry evaluation.

4.7.3 Reviews requirements and authorizes initial Safe Work Permits involving IDLH and inert entry.

4.7.4 Review job requirements, conduct initial atmospheric testing and authorizes (signs) confined space entry permits.

4.7.5 Develop, administer and update the LRD's confined space procedure.

4.7.6 At least annually, review confined space entry permits to evaluate the overall effectiveness of the confined space entry program.

4.7.7 Revise the Site Confined Space Program to correct deficiencies found to exist when measures taken under the SWP may not protect employees.

4.7.8 Representative samples of Confined Space Permits are reviewed monthly by the HESS Team.

4.8 Training Department

4.8.1 Assists the Safety Department in the development, implementation and administering of the refinery's Confined Space Entry Training program, including maintaining the Computer Based Training Module.

5.0 Definitions

5.1 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 into, and safely work within, the space.

5.2 Atmospheric Monitoring Equipment:

(a) Atmospheric 4 Gas Monitor - used to measure for atmospheric hazards in the general work area. At a minimum these monitors will be equipped with an internal pump, alarms and measure for O_2, LEL, CO and H_2S.

(b) Personal 4 Gas Monitor – used to measure for atmospheric hazards in the workers breathing zone. At a minimum, these monitors will be equipped with alarms and measure for O2, LEL, CO and H2S.

Notes:

1. All monitors must be calibrated as per the manufacturer's recommendations.
2. Specific jobs or circumstances may require testing for additional atmospheric hazards, (ex. Benzene, SO_2, etc.)
3. All employees must wear Personal H2S monitors at all times when in operating areas.

5.3 Attendant - An individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who must perform the duties specified in §1926.1209.

5.4 **Authorized Entrant** - An employee who is authorized by the entry supervisor to enter a permit space.

5.5 **Barrier** - A physical obstruction that blocks or limits access.

5.6 **Blinding -** 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.

Blinds include: blanks, slip plates, blind flanges, threaded caps, physical disconnects

The three types of blinds utilized include:

(a) Isolation

(b) Hydro-test

(c) Permanent

5.7 **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.

5.8 **Confined Space -** A Confined Space

(a) is large enough and so configured that an employee can bodily enter and perform assigned work,

(b) is not designed for continuous employee occupancy, and

(c) has limited or restricted means for entry or exit.

5.9 **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.

5.10 **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.

5.11 **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.

5.12 **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.

5.13 **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.

5.14 **Entry** - The action by which any part of a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and 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.

5.15 **Entry Employer** - Any employer who decides that an employee it directs will enter a permit space.

5.16 **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.

5.17 **Entry Rescue** - Occurs when a rescue service enters a permit space to rescue one or more employees.

5.18 **Entry Supervisor** - The qualified person fulfilling responsibilities as outlined in Section 4.2 of this standard practice.

5.19 **Hazard** - A physical or hazardous atmosphere. Reference: See Hazardous Atmosphere (5.19) definition below.

5.20 **Hazardous Atmosphere** - An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (i.e., escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

(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 (Note: This concentration may be approximated as a condition in which the dust obscures vision at a distance of five feet (1.52 m) or less.),

(c) Atmospheric oxygen concentration below 19.5%or above 23.5%

(d) Atmospheric concentration of any substance for which a permissible exposure limit is published in Subpart Z, Toxic and Hazardous Substances of 29 CFR 1000 and which could result in employee exposure in excess of the permissible exposure limit (Note: An atmospheric concentration of any substance that is not capable of causing death, incapacitation, and impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.), and/or

(e) 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.).

5.21 **Host Employer** - The employer that owns or manages the property where the construction work is taking place.

5.22 **Hot Work** - Repair, maintenance or construction activity, which requires the use of spark-producing equipment or may create an ignition source.

5.23 **Hot Work (Attended)** - Hot work that must be attended at all times by a designated fire watch with a dedicated means of extinguishment.

5.24 **Immediately Dangerous to Life or Health (IDLH)** - 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 confined 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.

5.25 **Inerting** - Displacing the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Note: This produces an IDLH oxygen-deficient atmosphere. For specific requirements for entering an inert confined space, refer to RSW-0143-GV.

5.26 **Isolation or Isolate** - The process by which a permit 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, or

(d) Blocking or disconnecting all mechanical linkages.

Reference: For minimum requirements for isolation, see RSW-0109-GV.

5.27 **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. Such conditions include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders.

5.28 **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.

5.29 **Lockout** - The placement of a lockout device on an energy isolating device, in accordance with RSW-0109-GV, 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.

5.30 **Lower Explosive Limit (LEL)** - The minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

5.31 **Monitor or Monitoring** - The process used to identify and evaluate the hazards after an Authorized Entrant enters the space.

5.32 **Non-Entry Rescue** - When a rescue service, usually the Attendant, retrieves employees in a permit space without entering the permit space.

5.33 **Non-Permit Confined Space** - A confined space that meets the definition of a confined space, but does not meet the requirements for a permit-required confined space.

5.34 **Oxygen Deficient Atmosphere** - An atmosphere containing less than 19.5% oxygen by volume.

5.35 **Oxygen Enriched Atmosphere** - An atmosphere containing more than 23.5% oxygen by volume

5.36 **Permit Required Confined Space** - A confined space that has one or more of the following characteristics:

(a) Contains or has a potential to contain a hazardous atmosphere,

(b) Contains a material that has the potential for engulfing an entrant,

(c) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section, or

(d) Contains any other recognized serious safety or health hazard.

5.37 **Permit Required Confined Space Program** -The employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

5.38 **Permit Writer** - An individual designated to prepare and authorize the "confined space" portion of the Safe Work Permit as specified in this document.

5.39 **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).

5.40 **Prohibited Condition** - Any condition in a permit space that is not allowed by the Safe Work Permit during the period when entry is authorized.

5.41 **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.

5.42 **Rescue** – Retrieving and providing medical assistance to, one or more employees who are in a permit space.

5.43 **Retrieval Systems** - The equipment used for non-entry rescue of persons from permit spaces. This equipment includes

(a) A retrieval line,

(b) Chest or full-body harness,

(c) Wristlets/anklets, if appropriate, and

(d) A lifting device or anchor.

5.44 **Safe Work Permit** – 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:

(1) It authorizes a specific scope of work for a specific time frame and is a prerequisite for performing work.

(2) 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.

(3) 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.

5.45 **Tagout -** The placement of a tagout device on a circuit or equipment that has been deenergized, in accordance with RSW-0109-GV, 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.

5.46 **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.

5.47 **Ventilation** - Controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of OSHA 1926.57-Ventilaiton.

6.0 General Requirements

6.1 General

6.1.1 Vessel entry or entry into a confined space must receive careful and thoughtful consideration. Before any person physically enters any confined space at the Louisiana Refining Division, a Confined Space Entry Permit must be issued in accordance with this procedure and the Work Permit Standard Practice, RSW-0102-GV. The permit is an authorization and approval that specifies the location and work to be done. It certifies that all existing and potential hazards have been evaluated, and the necessary protective measures have and will be taken to insure the safety of each worker.

6.1.2 All personnel associated with confined space entry operations shall be trained in the duties they are expected to perform.

6.1.3 Contractors are informed during the safety orientation that confined spaces exist at the Louisiana Refining Division and that entry is allowed only through compliance with the Division's Confined Space Entry Standard Practice which requires a confined space entry permit prior to entry.

6.1.4 Until there is definite evidence to the contrary, it must be assumed that a tank or confined space is hazardous, immediately dangerous to life & health (IDLH) and that it contains toxic and/or flammable material. All necessary steps must be taken to clean and thoroughly

purge the vessel before any work is started.

6.1.5 If supplied breathing air is required for the confined space entrants, then the attendant must have breathing air immediately available.

6.1.6 Maintenance / Engineering personnel and Owning Department personnel shall evaluate any hazards associated with a confined space prior to the opening of such a space.

6.1.7 All confined space atmospheres must be tested prior to entry. Refinery personnel will conduct testing and monitoring of the atmosphere as outlined in Section 6.5 of this procedure.

6.1.8 All confined space entries require at least one attendant outside the space for the duration of entry operations. Attendants must wear a red or orange vest.

6.1.9 A system shall be in place for each confined space entry which allows the attendant and entrants to maintain communication (i.e. voice, sight, radio).

6.1.10 The attendant shall be equipped to summon rescue and emergency services by the agreed upon communication method.

6.1.11 Signs shall be posted at all open points of entry of a confined space to inform employees of appropriate warnings (i.e. "Danger - Confined Space - Enter By Permit Only"). All unauthorized individuals shall not proceed past the warning device.

6.1.12 When covers are removed from the confined space and the space is left unattended where the fall would be greater than six feet, temporary barriers (railing, covers, mechanical devices, etc.) shall be provided to prevent accidental entry (i.e. falling) into the confined space.

6.1.13 The Pre-safety Confined Space Entry Checklist shall be filled out by the Owning Department prior to the initial entry.

6.1.14 All initial entries shall require an evaluation and signature of a Safety Department representative.

6.1.15 After the initial entry, subsequent permits shall not require the signature of a Safety Department representative unless conditions change or the space is reconfigured which can result in additional hazards that must be evaluated.

6.1.16 PPE requirements, including respiratory protection, required by the initial Confined Space Permit shall remain in effect until the space is re-evaluated by a Safety Representative.

6.1.17 If the work scope or type of work changes (i.e. scaffold erection to welding; MIG welding to TIG welding) which would introduce potential hazards different than the hazards initially evaluated, the authorized entrant(s) shall notify the permit writer who will in turn notify the Safety Department to re-evaluate the space.

6.1.18 If the person performing the periodic air monitoring or monitoring for a subsequent permit suspects potential toxic material contamination, the Safety Department shall be notified for evaluation of the space.

6.1.19 All temporary lighting shall meet the electrical requirements for confined space outlined in section 8.1.5 of this standard practice.

6.1.20 Cable ladders must be securely fastened to the structure. Fall protection and a retractable lanyard must be utilized by all persons ascending/descending the ladder when a fall hazard of 6 feet or greater exists.

6.1.21 When using air powered tools inside confined spaces, consideration must be given to the effect on the vessel's atmosphere of introducing non breathing air quality air in to the vessel.

6.1.22 A list of all identified confined spaces at the Louisiana Refining Division will be maintained in the Safety Department.

6.1.23 Upgrading a Confined Space permit, Operations is required to call Safety to verify that PPE is adequate for the work and associated hazards that will take place. Safety does not need to sign-off on the permit. The MPC Operator, MPC ops. Maintenance Coordinator, MPC Maintenance Coordinator will be required to sign the permit for the upgrade.

6.1.24 Downgrading a Confined Space, Safety is required to recheck the space with atmospheric monitoring, document the readings, PPE requirements and sign-off on the permit. In addition, the MPC Operator, MPC Ops. Maintenance Coordinator, MPC Maintenance Coordinator will be required to sign the permit for the downgrade.

6.2 Preparatory Work And Precautions

6.2.1 Before any entry permit is issued, all preparatory work must be completed by the Owning Department and Maintenance.

6.2.2 The confined space must be properly blinded or isolated, tagged and signed off per blind and energy isolation lists. The confined space shall be blinded or disconnected at every nearest accessible flange unless otherwise approved by the department or Division Manager (i.e. blinding at Battery Limits during full unit and shutdowns.).

6.2.3 Any electrical connections into the confined space must be locked out and tagged out in accordance with the LRD "Energy Isolation Standard Practice".

6.2.4 Radiation source instruments shall be locked out or removed from the vessel in accordance with the LRD RSW-0113-GV "Radiation Safety Standard Practice."

6.2.5 Where exposure to 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.

6.2.6 Special planning is necessary to determine the potential exposures and protective measures for refractory work (arsenic / silica), pH, and Hexavalent Chromium. The LRD Exposure Control Measure Requirements for Maintenance/Construction Operations, RSW-A-003-GV, is to be referenced in these cases.

6.2.7 Vessels/confined spaces containing mechanical hazards, such as agitators, fans, or other power driven moving parts, will not be entered until it is assured that such parts are de-energized and isolated.

6.2.8 The vessel/confined space must be purged, steamed, washed, etc., as necessary to properly free the vessel of all contaminants. Special attention and preparation must be given to the removal of liquid product, sludge and residue, controlling escaping gas and vapors in the surrounding area, preventing unauthorized personnel in the area and controlling all and controlling all sources of ignition in the area. Steaming, flushing, etc. is not permitted when entry permits are issued.

6.2.9 The permit writer must determine if the work to be performed in the confined space will introduce additional hazards and if so they must ensure that measures are in place to control these hazards.

6.2.10 Employees entering and exiting a confined space must ensure that they are accounted for on the Confined Space Entry Roster. Either the back of the tan copy of the work permit or the supplemental Confined Space Entry Roster, RSW-0106-Form 01-GV, found in the FORMS Section of the HESS Standard Practices.

6.2.11 All entrants must also affix a personal lock to the corresponding lockbox as required by Energy Isolation Requirements.

6.2.12 All equipment (e.g. full body harness, lifeline, mechanical retrieval device, retractable lanyard, cable ladder, horn, radio, etc.) to be used or placed at the site for potential use during a confined space entry shall be inspected prior to entry to verify that it is free of defects, functions properly and is ready for use.

6.3 Hot Work (Welding, Cutting And Grinding) In Confined Spaces

6.3.1 See LRD Hot Work RSW-0185-GV Standard Practice

6.4 Ventilation

6.4.1 Ventilation will be maintained at all times during confined space entries. Whenever possible a bottom and a top manway should be opened, the vessel should be vented, and an air mover installed at the top of the vessel to ensure air flow. It must also be ensured that the air mover is bonded to the vessel. Air moving equipment shall be turned off at least 15 minutes prior to initial testing of atmosphere. After the initial is given atmospheric testing can be performed with air moving equipment running.

6.4.2 Air flow indicators must be placed on each air mover and manway to insure adequate airflow is being achieved.

6.4.3 The plant air system will normally be used to supply air movers for confined space entry (Note: The plant air system is not backed up with nitrogen). The instrument air system shall not be used as ventilation for a confined space.

6.4.4 The attendant shall instruct all entrants to immediately leave the confined space if the ventilations system fails and immediately notify the permit issuer.

6.4.5 The source end of either the utility hose (connection at the air supply source) or the power cord for electrically driven equipment, used to supply air movers for confined space entry ventilation shall be tagged with the following verbiage, "Caution – Do Not Disconnect – In Use for Confined Space Entry Ventilation System". (See Appendix 10.1)

6.4.6 The Permit Issuer and Attendant shall ensure that the air being drawn into the confined space does not pose a hazard as a result of equipment in the vicinity of the confined space entry (i.e. process equipment emissions, vehicle / compressor exhaust, etc.).

Exception: Entries into heaters do not require air movers due to the natural air flow; however a lower & upper manway must be open.

6.5 Atmospheric Testing & Monitoring

NOTE: The Entry Supervisor should reference the appropriate Safety Data Sheet (SDS), RSW-A-002-GV (LRD Hazard Characterization and Respiratory Protective Equipment Selection Guide) or other hazard guides to obtain Permissible Exposure Limits (PEL) and guidance in establishing acceptable atmospheric conditions. If in need of assistance in conducting atmospheric testing, contact the Safety Department.

6.5.1 All confined spaces shall be tested for 1. oxygen content, 2. flammable vapors, and 3. toxic substances (in that order). All other hazards, such as temperature, shall also be evaluated.

6.5.2 A Safety Department representative shall conduct the initial atmospheric testing prior to entry. The Owning Department will assume responsibility for subsequent testing. All testing/monitoring shall be recorded on the Work Permit.

6.5.3 Continuous atmospheric monitoring using a calibrated direct reading instrument is required for all confined space entries using equipment with audible, visual, and vibrating alarms.

6.5.4 Initial atmospheric monitoring will be performed in all areas of the confined space. Continuous atmospheric monitoring will be performed with the measuring device extended into the confined space which represents the breathing zone of the entrants.

6.5.5 In some cases confined space entrants must wear a personnel atmospheric monitor as required by RSW-A-024-GV (Continuous Monitoring Matrix).

6.5.6 Entrants shall be given the opportunity to witness all atmospheric monitoring.

6.5.7 All atmospheric monitoring equipment shall be direct reading and calibrated as defined by the manufacturer's recommendations.

6.5.8 Gas tests will be made after all blinding, disconnecting, steaming and other preparatory work has been completed and in as short a time as practical prior to the start of work. In every instance a test must be taken within two hours prior to start of work.

6.5.9 When work is not started within two hours of the time the gas tests were taken, another

test must be made by the owning Department with results shown and signed by the person making the second test.

6.5.10 The permit issuer must retest the space if there is an absence in the confined space of more than two hours or any event occurs that may change the conditions of the confined space.

6.5.11 If the confined space has to be entered to complete the evaluation of the atmosphere, the testing shall be conducted as the confined space is entered.

6.5.12 The permit writer must clearly indicate the sampling point in the space on the safe work permit. The sampling point must be representative of the breathing zone of entrants.

6.5.13 Any special precautions (i.e. respiratory protection) required by the initial entry evaluation shall remain in place until a re-evaluation normally conducted by the Safety Department or Shift Supervisor determines the precautions are not required.

6.5.14 Also, the following information is provided as guidelines for issuing confined space entry permits once the space/vessel has been prepared. Each job, depending on conditions, may require a more stringent evaluation. Atmospheric testing shall be conducted in the following order:

6.5.15 **Oxygen Concentration**

6.5.15.1 Less than 16%: Entry shall NOT be made into an atmosphere containing less than 16% by volume except under emergency circumstances to perform entry rescue operations utilizing specialized equipment as necessary to ensure the safety of personnel, or for the purposes of conducting an Inert Entry provided there is an approved Inert Entry Plan.

6.5.15.2 16%-19.4%: entrant(s) must wear a supplied breathing air respirator(s) with an auxiliary self-contained air supply or a Self- Contained Breathing Apparatus (SCBA).

6.5.15.3 19.5%-23.5%: Entry without a supplied air respirator or SCBA is acceptable provided that all other exposure limits are met, (LEL, toxicity, etc.)

6.5.15.4 Greater than 23.5%: Entry shall NOT be made into an oxygen enriched atmosphere except under emergency circumstances to perform rescue operations utilizing specialized equipment as necessary to ensure the safety of personnel.

6.5.16 **Flammable Gases/Vapors**

6.5.16.1 Atmospheres containing flammable gases and vapors between 0% and 10% of the lower explosive limit require the use of Self-Contained Breathing Apparatus (SCBA) or air-line respiratory equipment with emergency egress cylinder. Cold work is allowed only if the atmosphere contains less than 10% of the lower

explosive limit. Hot work may not be performed above 0% LEL.

6.5.16.2 Entry into a confined space is not permitted if the combustible limit is or above 10% LEL.

6.5.16.3 Atmospheres containing flammable gases and vapors in excess of 10% of the lower explosive limit will not be entered except when the entry is an "Inert Entry" and the O_2 content is less than 5% or in an emergency and then only when personnel are protected by equipment approved for such exposures.

6.5.16.4 Specialized monitoring equipment is required to measure the LEL in atmospheres containing less than 10% oxygen. The LRD Safety Department will coordinate the use of this equipment and monitoring.

6.5.17 Toxic Materials

6.5.17.1 Atmospheres that have been tested and no toxic material detected may be entered without respiratory protection.

6.5.17.2 Atmospheres containing toxic materials but below values immediately dangerous to life or health may be entered when the proper protective equipment is worn. Refer to LRD RSW-A-002-GV Protective Equipment Selection for guidance determining respiratory protection.

6.5.17.3 Atmospheres containing toxic materials immediately dangerous to life and health may be entered only in an emergency and then only when employees are protected by equipment approved for such exposure.

6.5.17.4 Atmospheres where the toxicity is not known will require supplied air respiratory equipment and eye and skin protection.

6.5.17.5 Atmospheres which contain or could contain corrosive materials or materials which are toxic through skin absorption will require personal protective equipment to prevent skin and/or eye contact.

6.5.18 Combustible Dust

6.5.18.1 Airborne combustible dusts (i.e. sulfur, coke dust) in high enough concentrations may be flammable and explosive.

6.5.18.2 Utilizing wet methods or other means as needed to control combustible dusts in confined spaces as to not create an explosive atmosphere.

6.5.19 Temperature Extremes Inside Confined Spaces

6.5.19.1 Confined space entry is not permitted if the temperature exceeds 110 degrees Fahrenheit inside the confined space.

6.5.19.2 Supervisors shall maintain oversight and communications with entry personnel in order to implement protective measures if symptoms of heat stress occur.

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

6.5.19.4 Periodic evaluations of the temperature inside the confined space shall be performed to assure the temperature remains under 110 degrees Fahrenheit.

6.5.19.5 Contractors working in a Confined Space which has an internal temperature greater than 85 degrees f. must have a written Heat Injury Prevention Plan.

6.5.20 Inclement Weather Conditions

6.5.20.1 See LRD Lightning Protection Standard Practice, RSW-0147-GV.

6.5.21 Inert Or Immediately Dangerous To Life Or Health (Idlh) Atmospheres

6.5.21.1 See LRD Safe Entry Into INERT Atmosphere Standard Practice, RSW-0143-GV.

6.6 Use Of Toxic And / Or Flammable Materials In Confined Spaces

6.6.1 Work in confined spaces frequently requires the use of toxic or flammable materials. These include but are not limited to coatings, linings, paints, cements, and solvents. The following guidelines apply when using these materials:

6.6.1.1 Quantities of toxic or flammable materials brought into or used in confined spaces will be limited to the smallest amount consistent with efficient use.

6.6.1.2 Containers will be designed to minimize evaporation and spillage. Safety cans or small squeeze bottles are preferable when applicable.

6.6.1.3 Continuous ventilation will be provided in sufficient quantity and as designed to control fire and health hazards.

6.6.1.4 Atmospheres shall be tested and/or evaluated to provide positive assurance that hazards do not exist. In no instance shall flammable vapor concentrations exceed 10% of the lower explosive limit. If the vapor concentration exceeds 0% of the lower explosive limit, respiratory protection will be required. Atmospheres will be continuously monitored.

6.6.1.5 Sources of ignition will be eliminated when flammable liquids are used.

7.0 Special Situations

7.1 Sewer Entries

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

7.1.2 The Owning Department must identify all incoming and outgoing connections in the manhole, as per drawing and field verification.

7.1.3 The Servicing and Owning Departments must develop a plan to isolate and bypass the sewer, which must include:

- 7.1.3.1 Isolation list with two sewer plugs (double block) being utilized for each sewer coming into and out of the manhole that will be entered, sewer plugs should not be installed in the same sewer where the CSE occurs.
- 7.1.3.2 Temporary hose/pump/piping locations for the sewer bypass
- 7.1.3.3 Vapor controls of the open manholes, downstream venting, i.e., tarps, sandbags, etc. with appropriate atmospheric testing.
- 7.1.3.4 Notifying affected Units of the sewer isolation so that the sewer usage is eliminated and/or minimized during the isolation.

7.1.4 The Owning Department must disconnect or blind any processes that are draining into the identified sewer. Pneumatic sewer plugs may only be used for isolation of sewer lines that cannot be blinded.

7.1.5 Sewer pipe and manhole(s) shall be cleaned to remove debris prior to plugging by the Servicing Department, to prevent damage to the plug. This cleaning must be completed without entry into the sewer.

7.1.6 When the sewers have been cleaned, the isolation plugs (pneumatic) can be installed by the Servicing Department (outside of the confined space).

- 7.1.6.1 Monitor pressure of the sewer plugs (per manufacturer recommendation) throughout the entirety of the CSE.

7.1.7 After the plugs are installed, the Servicing Department must implement the sewer bypass plan.

7.1.8 Once the isolation is in place, the work space must be cleaned and gas-freed. The atmosphere within the space must be tested.

7.1.9 Hot Work A is prohibited.

7.1.10 A hard ladder shall be utilized for access/egress of the sewer entry.

7.1.11 A rescue tripod shall be utilized

7.1.12 All other confined space entry procedures shall be followed.

7.2 Entry Onto The Roof Of An Open Top Floating Roof Tank

7.2.1 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.

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

7.2.3 Prior to entry onto the roof of an external floating roof tank, the Safety Department shall conduct the initial evaluation of the space from the platform at the top of the tank. If entry onto the floating roof or into the confined space area is required to complete the evaluation, all requirements in this section shall be followed.

7.2.4 At minimum, a full-face air respirator with protections from organic vapors and H2S will be

required to access the floating roof of all crude oil tanks. The Safety Department will dictate the respiratory protective equipment required for all other entries onto external floating roof tanks.

7.2.4.1 For inert entry, the Confined Space Attendant must have supplied breathing air immediately available. For all other entries, other mitigations will be required for the attendant, but the like PPE required for the entrants must be readily available for the attendant. This will be evaluated upon initial entry by the Safety Department. For example, work that would require a half-face inside the space would require the attendant to have a half-face available in case the conditions change on the exterior.

7.2.5 Prior to descending onto the roof, the roof must be visually inspected by the owning Department from the access platform for potential physical hazards and stability. If there is any doubt about the integrity of a floating roof, contact the Inspection Department to ensure metal thickness is acceptable for access.

7.2.6 Entrants shall not be allowed to begin work on an open top floating roof, which is out of floatation (sitting on its legs) until:

7.2.6.1 The space below the roof has been opened and ventilated, and

7.2.6.2 Atmospheric testing has been conducted both above and below the open top floating roof and the conditions allow the issuance of an entry permit.

7.2.6.3 An exception to the above section is to only allow employees access to a floating roof out of floatation for the purpose of ventilating the internals of the tank. This entry shall require supplied breathing air, bunker gear and continuous atmospheric monitoring to ensure safe levels.

7.2.6.4 Prior to entry onto the roof, precautions must be taken to prevent roof rotation.

7.3 Entry Onto The Roof Of An Internal Floating Roof Tank

7.3.1 Under no circumstance shall permission be given to enter onto the roof of an internal floating roof tank with a plastic, Petrex, aluminum or fiberglass roof while the tank is in service or has product in it.

7.3.2 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:

7.3.2.1 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);

7.3.2.2 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 and gas free tanks. If supplied breathing air is required, the attendant must have supplied breathing air immediately available.

7.3.2.3 The entrant must wear a full body harness and lifeline attached to a fixed point outside the space when ascending or descending into the tank;

7.3.2.4 The attendant must be on the top platform with immediate communications and non-entry rescue capabilities (i.e. radio);

7.3.2.5 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.

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

7.3.2.7 For safety guidelines for entry into an internal floating roof tank see Safety Guidelines for Tank Entry, RSW-A-009-GV.

For safety guidelines for entry onto a floating roof tank see Safety Guidelines for Tank Entry, RSW-A-009-GV.

7.4 Multi Craft Work Coordination

7.4.1 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

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

7.4.1.2 Personal protective equipment

7.4.1.3 Hot work precautions

7.4.1.4 Communications

7.4.1.5 Additional confined space precautions

7.4.1.6 Atmospheric monitoring requirements

7.4.1.7 Identifying hazards of one group that may affect others and ensure protective measures are provided for others that may be affected

7.4.2 All specific procedural requirements must be documented on the safe work permit.

7.4.3 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.

Note: 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.

Note: A Job Safety Analysis (JSA) or similar can be used to enhance the procedure specified via the safe work permit.

7.5 Entry Into Vessels With Multiple Compartments Or Coupled Together

7.5.1 When multi-compartment or coupled confined spaces are to be entered, the following additional precautions are required:

7.5.1.1 Atmospheric testing must be conducted to represent the atmosphere of the entire space;

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

7.5.1.3 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;

7.5.1.4 Coordinate, maintain and control the sign in/sign out roster for multiple active entrance/exit locations by an assigned attendant to ensure that all entrants are accounted for (i.e. one sign in/sign out roster located at the base of a tower with multiple entrances and attendants).

7.5.1.5 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.

7.6 Large, Complex And High Worker Density Confined Spaces

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

7.6.1.1 50 or more entrants simultaneously per shift (This is based upon all entrants/companies performing work in the space).

7.6.1.2 Confined Space Entry inside the Confined Space (e.g., work inside cyclones inside a regen vessel, large diameter piping between FCC and regen vessel, tank

floating roof pontoons).

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

NOTE: The requirements for large, complex and high worker density confined spaces do not apply to excavations unless specified by the Owning Department or Safety Professional

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

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

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

7.6.2.3 Alerting systems that can be heard and seen by all entrants in the event of an emergency.

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

7.6.2.5 Additional Fall Protection Requirements (e.g., Tripod System for internal aligned man ways on trays greater than 12 inches, Fall Protection for work inside Cyclones inside the regen, adequate tie-off points on scaffolding).

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

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

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

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

7.6.3 The Large, Complex and High Worker Density Confined Spaces Hazard Assessment Checklist (Appendix C) 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.

7.7 Channel Heads / Shell Covers

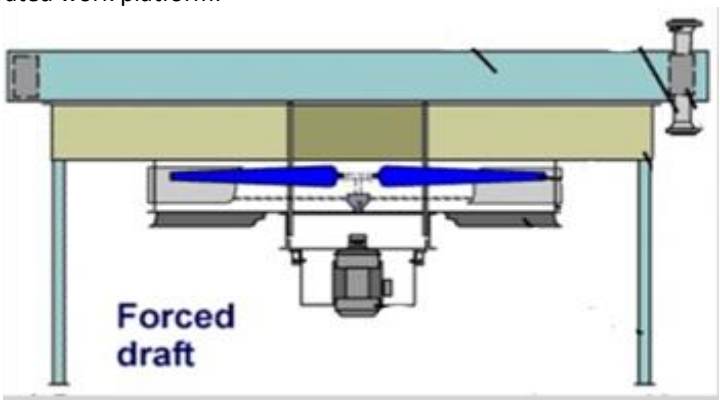
7.7.1 Channel heads / shell covers ≤ 4 feet in depth are **not** considered a confined space. Safety must be notified to initially evaluate the channel head and set the appropriate precautions (i.e. PPE requirements, continuous monitoring, etc.)

7.7.2 Channel heads/ shell covers > 4 feet in depth **are** considered a Permit Required Confined

Space and all Confined Space requirements are to be adhered to.

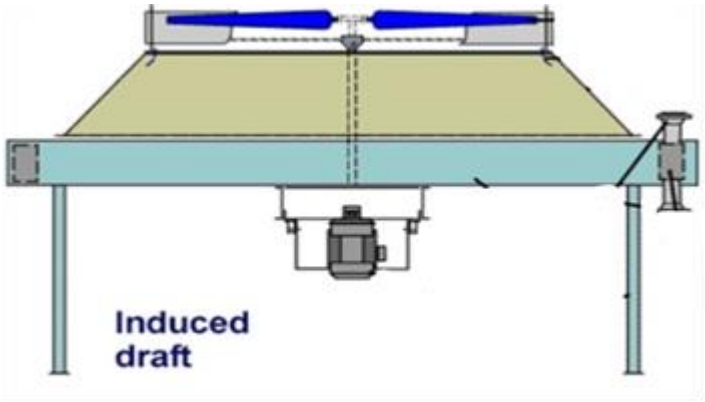
7.8 Fin Fans

7.8.1 For forced draft fin fans as pictured below, entry will not be deemed a permit required confined space entry. Access to all components (drive assembly, ring, blades, etc.) shall be done from the bottom of the fan. Suitable means of access shall be provided in the form of an elevated work platform.



7.8.2 The owning department shall ensure that the ambient temperature within the fan's supporting structure is less than 110 degrees Fahrenheit prior to work being permitted. The individual work group performing work will then be responsible for ensuring temperature stays below 110 degrees Fahrenheit for work to continue. Consult Safety to develop a cooling plan if the temperature is above 110 degrees Fahrenheit.

7.8.3 For induced draft fin fans as pictured below, entry from the top of the fan will be deemed a permit required confined space. Any access required from the bottom of the fan's tube bundle will not require a confined space permit yet shall follow the provisions listed in 7.8.2.



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

7.9.1 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. Although a reclassified space is no longer considered a permit required confined space, Safe Work Permits are required, per RSW-0103-GV Work Permit Standard Practice. 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.

7.9.2 The following are requirements for reclassification of a permit required confined space to non-confined space:

7.9.2.1 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:

7.9.2.2 Tanks:

7.9.2.2.1 A door sheet (min. 4 x 6 feet) must be cut in the side of the tank.

7.9.2.2.2 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).

7.9.2.2.3 Continuous atmospheric monitoring is still required.

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

7.9.2.2.5 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.

7.9.2.3 Excavations:

7.9.2.3.1 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).

7.9.2.3.2 Excavations outside of active/current battery limits may be reclassified if the excavation does not have “limited or restricted means for entry or exit.”

7.9.2.3.3 To achieve unrestricted entry or egress the excavation must have ladders or ramps every 25 feet along the perimeter.

7.9.2.3.4 Continuous atmospheric monitoring is still required.

7.9.2.3.5 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.

7.9.3 Working in a Reclassified Non-Confined Space shall require the following:

7.9.3.1 Notice RSP-1127-000-FORM02 to be posted at the job site once the space as been determined a Non-Confined Space. The Notice shall state the following:

7.9.3.1.1 Date & Time the space was reclassified

7.9.3.1.2 Individuals involved in making the reclassification determination

7.9.3.2 For Tanks, continuous atmospheric monitoring is required inside the tank once it has been reclassified.

7.9.3.3 For Excavations, continuous atmospheric monitoring may be required in reclassified excavations based upon the work scope.

7.9.3.4 All entrants shall leave reclassified spaces any time an uncontrolled hazard arises.

7.9.3.5 Reclassified spaces that have been evacuated because of an uncontrolled hazard must be re-evaluated, to determine if they can remain reclassified as a non-confined space, by a representative of the MPC Safety Department before they can be re-entered.

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

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

8.0 Confined Space Rescue And Equipment

8.1.1 The Shift ERBO will ensure rescue and emergency services are available at all times during confined space entry operations as per NFPA 350. See appendix F for additional information.

NOTE: The permit writer shall notify the Shift ERBO of confined space entry. The Shift ERBO shall notify 001 of confined space entries.

8.1.2 Non-Entry Rescue

8.1.2.1 Non entry rescue may be performed provided the rescuer is trained to properly use such equipment.

8.1.2.2 Retrieval Systems or other methods shall be used whenever an authorized entrant enters a confined space, unless the retrieval equipment increases the

overall risk of the entry or does not contribute to the rescue of the entrant(s).

8.1.2.3 Retrieval systems would not normally be used in the following situations:

8.1.2.3.1 The space has obstructions or turns that prevent pull on the retrieval line from being transmitted to the entrant;

8.1.2.3.2 An entrant being rescued with the retrieval system would be injured because of forceful contact with projections in the space; or

8.1.2.3.3 The retrieval line cannot be controlled so as to prevent entanglement hazard with the equipment or with the airline for an entrant using an air-supplied respirator; or.

8.1.2.3.4 Excavations, unless specified by the Owning Department or Safety Professional. For example, a retrieval system may be indicated for entry to a deep trench box. Retrieval systems would still be applicable to permit-required confined spaces inside an excavation such as sumps, bell-bottom pier holes, deep and confined footing excavations, etc.

8.1.2.4 If retrieval systems are used, each authorized entrant shall use a full body harness with a retrieval line attached at the center of the entrants back near the shoulder level. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the confined space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.

8.1.2.5 A mechanical device shall be available to retrieve entrants from confined spaces more than 5 feet in vertical height.

8.1.3 Entry Rescue

8.1.3.1 The MPC Safety Professionals will determine the rescue classification type during the initial Confined Space entry and notate it on the Confined Space Permit. The confined space rescue classification will be communicated to the Shift ERBO. See appendix G for additional information.

8.1.3.2 Confined space rescue plans are available for each confined space classification. Confined space classification, equipment and personnel required will be determined prior to each confined space entry.

8.1.3.3 Only those personnel trained in Confined Space Entry Rescue shall perform such rescues. At no time shall an individual who is not fully trained in this function attempt a confined space rescue by entering the space. Rescue Team personnel must be trained in CPR and Basic First Aid, at a minimum.

8.1.3.4 The Louisiana Refining Division's Rescue Team will provide confined space entry

rescue services for all confined space operations at this facility. A minimum of four Rescue Team members must be on site during any confined space entry.

8.1.3.5 The Rescue Team can be activated for rescue by dialing Extension 2500 on any plant phone or by activating the emergency button (orange) on a plant radio. The Rescue Team will handle all rescue responses under the guidance of the Rescue Team Leader.

8.1.3.6 The following emergency rescue equipment must be immediately available at the refinery:

8.1.3.6.1 Hoisting device to extricate personnel from the confined space;

8.1.3.6.2 Extra and independent supplied air respirators required for the rescue;

8.1.3.6.3 Harnesses, ropes, tools, etc., needed to extricate personnel;

8.1.3.6.4 Medical response equipment for used by trained MPC medical personnel;

8.1.3.6.5 Stretcher and means to lower injured personnel to the ground;

8.1.3.6.6 Provisions for summoning assistance; and

8.1.3.6.7 Personnel protective equipment required for entry.

8.1.3.7 Upon notification of a confined space emergency, the Shift Supervisor will dispatch the Rescue Team per plant emergency procedures.

8.1.3.8 In the event that employees are transported offsite for medical treatment, SDSs shall be made available to the medical facilities treating exposed employees.

8.1.4 Emergency Rescue Equipment

8.1.4.1 For entries, at a minimum, ensure the following emergency rescue equipment is immediately available at the refinery:

8.1.4.1.1 hoisting device to extricate personnel from the confined space

8.1.4.1.2 extra and independent supplied air respirators as required by the scope of the work and the rescue pre-plan

8.1.4.1.3 harnesses, ropes, tools, etc., needed to extricate personnel

8.1.4.1.4 medical response equipment for use by trained MPC medical personnel

8.1.4.1.5 stretcher and means to lower injured personnel to ground

8.1.4.1.6 provisions for summoning assistance
8.1.4.1.7 PPE required for entry.

8.1.5 Confined Space Equipment

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

8.1.5.1.1 Testing and Monitoring Equipment

8.1.5.1.2 Ventilation Equipment

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

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

8.1.5.1.5 Lighting equipment

8.1.5.1.6 Emergency egress lighting

8.1.5.1.7 Barriers and shields to protect Authorized Entrants from hazards outside the space

8.1.5.1.8 Ladders, needed for safe entry and exit

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

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).

9.0 Training

9.1 Confined Space Training will be provided to all MPC personnel involved in confined space entry operations. This training will be provided upon initial assignment and annually thereafter. All documentation and training records will be maintained in the Training Department.

9.2 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.

10.0 Auditing

10.1 The LRD HESS Committee will conduct monthly audits of the Confined Space Entry Program to ensure compliance with this Standard Practice and all regulatory requirements.

11.0 References

MPC References

RSP-1121-010	Blinding and Energy Isolation
RSP-1121-020	Safe Entry into Inert Atmospheres
RSP-1128-000	Safe Work Permit
SAF-4005	Confined Space Entry
RSP- 1127-000	Confined Space Entry Standard Practice
RSW-A-003-GV	LRD Exposure Control Measure Requirements for Maintenance/Construction Operations
RSW-A-002-GV	LRD Protective Equipment Selection Guide
RSW-A-001-GV	PPE Reference Guide
RSW-0109-GV	Energy Isolation Standard Practice
RSW-A-024-GV	Continuous Monitoring Standard Practice
RSW-0102-GV	Safe Work Permit Standard Practice
RSW-0143-GV	Safe Entry into INERT atmospheres Standard Practice
DOC.LIB. NO.	311.6

Industry References

American Society of Safety Engineers (ASSE)

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

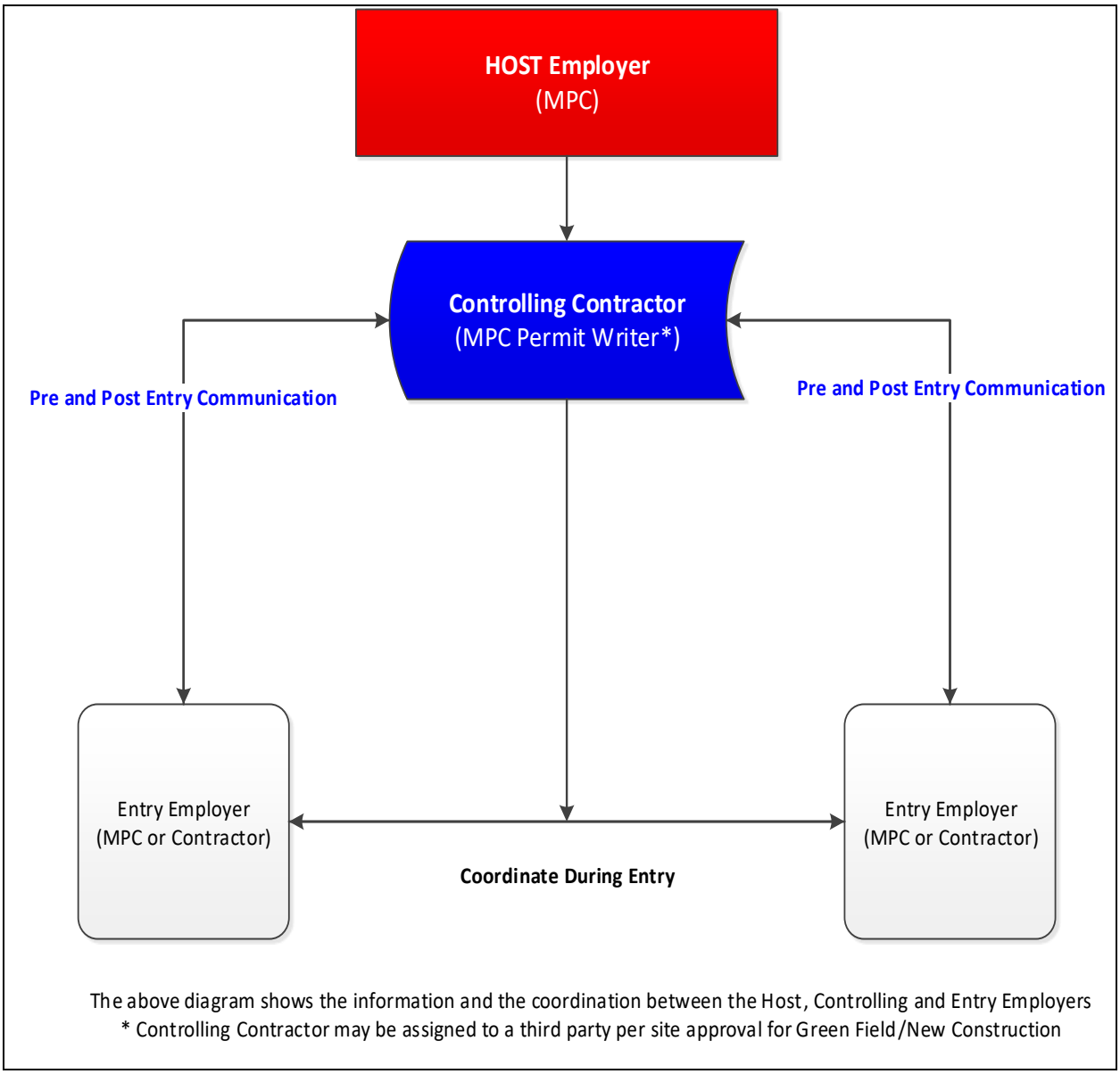
Regulatory References

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	Appendix E, Hazard Communication Standard
29 CFR 1926 Subpart AA	Confined Spaces in Construction

12.0 Appendix

12.1 Appendix A: Host Employer, Controlling Contractor And Entry Employer Flow Chart

B.1 Flow Chart The following is the Host Employer, Controlling Contractor and Entry Employer Flow Chart.



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

Reference: For the most up-to-date, working copy of this checklist: Ctrl + Click to follow link above.

Appendix C: Reclassified Non-Confined Space Notice

Reference: For the most up-to-date, working copy of this notice: Ctrl + Click to follow link above.

Appendix D: Pre-Safety Confined Space Entry Checklist

Reference: For the most up-to-date, working copy of this notice: Ctrl + Click to follow link above.

Appendix E: Do Not Disconnect Tag

Appendix F: Table A.10.9.1 Confined Space Rescue Team Staffing Decision Table

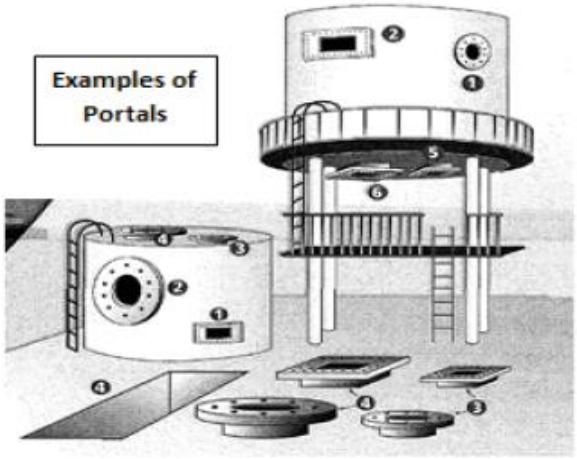
Table A.10.9.1 Confined Space Rescue Team Staffing Decision Table

IF	THEN
The confined space has no obstructions or entanglement hazards and the Entrant is properly attached to a retrieval system,	One Rescuer is needed to perform a non-entry rescue.
The confined space has obstructions or entanglement hazards, the Entrant is not attached to a retrieval system, no potential atmospheric hazards exist, and vertical extraction is not required,	Three Rescuers are needed to perform an emergency entry to effect rescue: 1 rescue Attendant 2 rescue Entrants
The confined space has obstructions or entanglement hazards, the Entrant is not attached to a retrieval system, no potential atmospheric hazards exist, and vertical extraction is required,	Five Rescuers are needed to perform an emergency entry to effect rescue: 1 rescue Attendant 2 rescue system operators (with assistance from plant personnel) 2 rescue Entrants
The confined space has obstructions or entanglement hazards, the Entrant is not attached to a retrieval system, potential atmospheric hazards exist, SAR cannot be used (requiring SCBA) and vertical extraction is not required,	Five Rescuers are needed to perform an emergency entry to effect rescue: 1 rescue Attendant 2 person entry team 2 rescue Entrants
The confined space has obstructions or entanglement hazards, the Entrant is not attached to a retrieval system, potential atmospheric hazards exist (requiring SAR), and vertical extraction is not required,	Six Rescuers are needed to perform an emergency entry to effect rescue: 1 rescue Attendant 2 rescue Entrants 2 backup rescue Entrants 1 air supply operator
The confined space has obstructions or entanglement hazards, the Entrant is not attached to a retrieval system, potential atmospheric hazards exist, SAR cannot be used (requiring SCBA), and vertical extraction is required,	Seven Rescuers are needed to perform an emergency entry to effect rescue: 1 rescue Attendant 2 rescue system operators (with assistance from plant personnel) 2 rescue Entrants 2 backup rescue Entrants
The confined space has obstructions or entanglement hazards, the Entrant is not attached to a retrieval system, potential atmospheric hazards exist (requiring SAR), and vertical extraction is required,	Eight Rescuers are needed to perform an emergency entry to effect rescue: 1 rescue Attendant 2 rescue system operators (with assistance from plant personnel) 2 rescue Entrants 2 backup rescue Entrants 1 air supply operator
An employee activates a fall arrest system and is suspended in a harness requiring rope rescue,	Four Rescuers are needed to perform a pickoff rescue: 1 rescue Attendant 2 rescue system operators (with assistance from plant personnel) 1 Rescuer

Appendix G: Vessel Rescue Classification

CHECK ALL BOX'S THAT ARE APPLICABLE TO THE CONFINED SPACE

	Unit:_____ Equipment:_____ Elevation:_____ (When Applicable)
	CS Type 1: Side Portal; Restricted (24-inches or less)
	CS Type 2: Side Portal; Unrestricted (greater than 24-inches)
	CS Type 3: Top Portal; Restricted (24-inches or less)
	CS Type 4: Top Portal; Unrestricted (greater than 24-inches)
	CS Type 5: Bottom Portal; Restricted (24-inches or less)
	CS Type 6: Bottom Portal; Unrestricted (greater than 24-inches)
	CS Type 7: Other; _____ _____ _____



13.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Converted to Control Format. Provided an exception for confined space definition to allow for large excavations and temperature limit.	Roger Gautreau	Refinery Management Team	6/20/2008	6/30/2008
1	Revisions in accordance with MPC Refining Standard Practice	Safety Department	Refinery Management Team	06/01/2010	07/01/2010
2	Revised 4.3.7,4.4.5,6.2.11, and 6.13.3	Safety Department	Safety Department	8/6/2011	8/6/2011
3	Added definitions 6.9,5.10 and 5.12 & added section 6.25 regarding NORM	Safety Department	Safety Department	9/13/2011	9/13/2011
4	Added definitions of hazardous and non-hazardous confined space. Added continuous monitoring requirements in section 6.11 and changed requirements for working in various oxygen concentrations to align with Corporate Standard Practice	Safety Department	Refinery Leadership Team	8/2/2012	8/2/2012
5	Section 6.7 was added to exclude channel heads and shell covers ≤ 4ft in depth from being classified as a confined space.	Safety Department	Refinery Leadership Team	11/6/2012	11/6/2012
6	Section 6.11.4 was revised to include the tagging of electrically driven equipment used to ventilate confined spaces.	Safety Department	Safety Department	3/13/2013	3/13/2013
7	3 Year Review; No changes	Safety Department	Safety Department	6/1/2013	6/1/2013
8	MSDS changed to SDS in sections 5.21.6 , 6.12.24 & 6.14.4	Safety Department	Safety Department	8/20/2013	8/20/2013

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
9	Rearranged definitions to be in order. Added a definition of Cold Work, Gas Free and Hot Work. Added section 6.1.13 concerning the pre-safety confined space entry checklist. Added to section 6.12.20.2 to refer to the LRD Respiratory Protection Standard for guidance determining respiratory protection. Added the pre-safety checklist as an appendices.	Amanda Hall	VPP Committee-5/27/2014 RLT-5/29/2014	5/29/2014	5/29/2014
10	Updated 6.4.4 to state that for inert entry the CSE attendant must have breathing air immediately available but other entries will be assessed by Safety upon initial entry. Updated 6.11.1 that once initial atmospheric testing is done the air moving equipment can remain running for mid-shift gas test	Amanda Hall	RLT – 8/7/2014 VPP Committee-7/17/2014	8/14/2014	8/14/2014
11	6.4.4 Statement about breathing air on crude tanks was deleted previously by accident.	Amanda Hall	Safety	3/25/2015	3/25/2015
12	Added section 6.7 declassification of tanks	Amanda Hall	RLT- 3/26/2015 VPP Committee-3/12/2015	4/1/2015	4/1/2015
13	Added section 6.1.24 Upgrading a Confined Space Permit and 6.1.25 Downgrading a Confined space.	Amanda Hall	VPP 10/22/2015 10/29/2015	11/13/2015	11/13/2015
14	3 year review – no changes	Wes Merrifield	Safety	5/31/2016	5/31/2016

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
15	**Revisions in accordance with MPC Refining Standard Practice RSP-1127-000.** • **Reformatted Standard.** • **Continuous Monitoring Req.** • **Confined Space Attendant Cards Req.** • **"Hot work in a Confined Space" section removed and transferred it to the new Hot Work Standard (RSW-0185-GV).** • **Emergency egress lighting req. (headlamps)** • **Confined Space reclassification changes. (new form)** • **Each contractor must assign an Entry Supervisor to oversee their entrants.** • **Large Complex and High Worker Density Confined Spaces section added (new form)** • **Updated confined space rescue requirements.** • **Electrical Section removed.** • **Added new definitions.** • **Added additional references.** • **Added Heat Protection Policy Req. for contractors to the standard and Pre-Safety Checklist.** • **Added additional appendices.**	**Douglas Senette**	**RLT 09/07/17** **VPP 08/28/17**	**08/28/2017**	**10/02/17**

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
16	3 year review-grammatical corrections	Safety Department	Safety	5/21/2019	5/21/2019
17	Updated confined space checklist. PMOC # 50596	A. Fortie	VPP- 4/26/2019 RLT- 5/16/2019	5/24/2019	5/24/2019
18	Corrections for Attendant Cards	Safety Department	Safety	8/9/2019	8/9/2019
19	Conditionally exempted excavations from requirements for non-entry rescue retrieval systems and Large, Complex, and High Worker Density Confined Spaces.	Charley Sellards	VPP – 10/2/2019 RLT – 10/17/2019	11/11/2019	12/1/2019
20	Additional language regarding fin fans added to section 7.8.	Quinn LeBlanc	VPP – 06/04/2020 RLT – 06/11/2020	06/11/2020	06/11/2020
21	Updated confined space entry notification to ERBO.	Safety	VPP – 7/15/2020 RLT – 7/30/2020	7/30/2020	8/31/2020
22	Added language regarding full-face resp. protection to 7.2.4	David Wilkinson	VPP-8/12/20 RLT-10/16/20	10/21/20	11/20/20
23	Added CSE Sewer Procedures	Nick Martin	VPP & RLT Committee	3/12/21	4/1/21
24	Three year review. No changes	Travis Gregory	VPP Review	1-27-2023	1-27-2023