FREEPORT-McMoRan COPPER & GOLD

FCX Department of Occupational Health and Safety	SOP #		FCX-05
	Revision #		04
	Supersedes		03
Confined Space Policy	**Task Risk**	X	**High**
			Medium
			Low
			NA
Approval Date: 8/5/13	**Original Date:**		

Contents

1.0 Policy

This document establishes the minimum requirements and procedures for the health and safety of Freeport-McMoRan Copper & Gold employees and contract personnel working in, and in connection with, confined spaces	
Policy	All Freeport-McMoRan Copper & Gold employees and contract personnel are prohibited from entering any permit or non-permit required confined space unless they have been properly trained and equipped, at a minimum, as outlined within this policy.
Confined Space (CS)	A Confined Space is a space that meets all three of the below conditions: 1. It is large enough and so configured that a person can enter with their whole body and perform their assigned work 2. It has a limited or restricted means of entering and exiting (i.e. tanks, vessels, silos, storage bins, hoppers, vaults, etc.) 3. It is not designed for continuous occupancy (i.e. an individual could not occupy the space during normal operating conditions)
Types of Confined Spaces: Non-Permit and Permit Required	A Confined Space is classified as either a **Permit Required Confined Space (PRCS)** or a **Non-Permit Required Confined Space (NPRCS)**. **Permit Required Confined Spaces (PRCS)** are confined spaces that have one or more of the following characteristics: 1. Contains or has the Potential of containing a hazardous atmosphere 2. Contains a material that has the Potential for engulfing an entrant 3. 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 4. Contains any other recognized serious safety or health hazard

2.0 Responsibilities and Duties

2.1 Area Management's Responsibilities

It is the Area Management's responsibility to ensure compliance with this policy, procedure and the expectations outlined below.	
Maintain Confined Space Labeling & Restrictions	Ensure all confined spaces within their area of responsibility are identified and properly labeled (i.e. Danger- Confined Space Follow Confined Space Procedures) and if necessary blocked, to prevent entry and/or ensure individuals are aware that additional precautions are required before entering.
Meet FCX Training Requirements	Ensure that all personnel involved with the confined space entry program are properly trained per the requirements outlined within this document.
Review Contractor Requirements	Ensure that contractors working within confined spaces meet or exceed the requirements of this document.
Assess Confined Space Risks and Controls	Ensure the following assessments are completed, maintained and utilized: • Inventory of confined spaces (permit and non-permit) • Risk Review (i.e. HIRADC, risk register) and resulting control plan • Ensure employees understand risks and utilize controls • Audit to ensure compliance
Provide Equipment and Resources	Provide all necessary equipment and resources needed to implement and maintain the confined space entry program.
Maintain Document Control	Maintain all completed confined space entry permits according to the FCX Records Retention Policy for use in the annual confined space program review.
Perform Annual Confined Space Review	In conjunction with H&S will annually: • Review existing inventory of confined spaces within their area of control and their permit/non-permit status and ensure that any associated Risk Review plans are current • Audit permits associated with any permit-required confined space entries • Identify problems or issues that have arisen and which need to be resolved going forward • Document audit findings and file paperwork with the H&S department

2.2 Health and Safety Department Responsibilities

It is the Health and Safety Department's responsibility to support compliance with this policy, procedure and the expectations outlined below.	
Provide Program Support	The H&S Department will assist in the administration and maintenance of the Confined Space Labeling, Inventory, Risk Review (HIRADC), annual review and provide guidance for entries.
Perform Periodic Program Audits	The H&S Department will audit confined space entries for compliance on a periodic basis per a site H&S Manager established audit schedule.
Select, Maintain and Provide Training for Air Monitoring Equipment	The H&S Department will ensure air-monitoring equipment is properly selected, calibrated and maintained. In addition, coordinate with their areas to provide specialty training in area specific atmospheric testing and health hazards associated with confined space entry.
Maintain Rescue Team Capabilities	The H&S Department in conjunction with site management will maintain adequate rescue capabilities (on-site team or 3rd party team) for all confined spaces on property, and ensure these teams are trained in accordance with the requirements outlined within this document. **NOTE:** If a site must rely on third-party rescue, H&S personnel must audit training and rescue capability of the third-party.
Annually the H&S Department in conjunction with area management will Perform a Confined Space Program Review.	
Participate in Area Mgt Review	Participate in the area management review of program and cancelled permits.
Audit Rescue Team	• Review rescue team training • Review rescue team practice mock drill rescue exercises • Evaluate rescue team familiarity with the properties various confined space locations or site escort system which would direct rescue personnel to emergency locations • Evaluate rescuers' ability to respond to an unplanned CS emergency simulation (this includes third-party rescuers)
Evaluate CS Communication	Evaluate communication methods used in all aspects of the CS program: • Attendant-Entrant communication • Entry team-Rescue team communication
Compile Findings for Review	Compile all findings and recommendations for confined space program improvement for review by site management
Audit CS Entries	Perform periodic audits of actual confined spaces while in progress to evaluate compliance and understanding of employees.

2.3 Contractor Responsibilities

It is a Contractor's responsibility to comply with this policy, procedure and the below expectations.

Meet FCX Program Requirements	Any contractors working for Freeport-McMoRan Copper & Gold will meet or exceed the requirements of this document.
Provide Trained Contract Employees	Contractors will provide employees that have documented training in confined space entry, have been deemed "qualified" or competent, and can meet all requirements outlined within this document
Provide Calibrated Air Monitoring Equipment	Contractors will conduct atmospheric monitoring using their equipment and provide proof of calibration of monitoring equipment before use. **Note:** Atmospheric monitoring may be conducted by site personnel if; • Arrangements have been made in advance • Site Management has agreed to perform this function • Resources are available

2.4 Permit Required Confined Space (PRCS) Entry Team

A confined space entry team is the group of individuals assigned to complete a task within a confined space. A typical entry team consists of an entrant, an attendant, and the entry supervisor. For any Permit Required Confined Space (PRCS) entry, a minimum of two individuals are necessary**.**

These individuals will be classified as either the:

- Entrant **(individual entering the CS)**
- Attendant **(the individual staying outside and monitoring the CS)**

A person will also be designated as the Entry Supervisor (the attendant may also serve as the entry supervisor) and will be responsible for the confined space entry and ensuring that all safety precautions have been met.

Regardless of the role, all entry team members, attendants, entrants and entry supervisors, must:

Meet Training Requirements	All members of the Confined Space Entry Team must have current training in confined space entry.
Have Policy & Procedure Knowledge	All members of the Confined Space Entry Team must know and follow the requirements of this policy and procedure.
Be Familiar with Confined Space Risks and Controls	All members of the Confined Space Entry Team must be familiar with the controlled or potential hazards of the confined space during the entry, including route of exposure for chemical hazards, (e.g., inhalation, skin absorption, etc.); and signs, symptoms, and consequences of overexposure.

2.4.1. Duties of a PRCS Entry Supervisor

The entry supervisor may or may not have the formal title of supervisor and may also serve as an attendant, but NOT as an entrant. In addition, the duties of the entry supervisor may pass from one individual to another during the course of the entry operation.

The Entry Supervisor is responsible for ensuring the safety of the entry team, for authorizing entry, and overseeing entry operations, as defined below.

Define all Risks and Controls	Establish in writing all **acceptable entry conditions** listing all the hazards and the procedures, actions, controls, and equipment needed to ensure a safe entry on the permit. (Include any hazards that may result from the work being performed.)
Conduct Pre-Entry Meeting	Conduct a pre-entry meeting to ensure that all hazards and associated controls have been established and that they have been communicated with all individuals involved or impacted.
Ensure Complete Atmospheric Testing	Ensure that the required atmospheric tests are: • Conducted and recorded per section ***4.3 Air Monitoring Procedures*** Conducted immediately prior to the entry to accurately reflect conditions at the time of entry • Conducted throughout the entry if required
Verify Entry Team Training	Ensure all training requirements for a specific confined space entry have been met.
Ensure Rescue Team Communication	Ensure that rescue services have been notified and are available, and that the means for summoning them are operable.
Verify Safe Entry Conditions	Ensure acceptable entry conditions (procedures, equipment and resources) are in place before anyone enters the space and that conditions remain safe throughout the entry.
Maintain Confined Space Permit	Maintain the confined space permit: • Authorize entry by signing the entry permit after all conditions for safe entry have been met • Post the completed, signed permit at the entrance to the space • Terminate the entry and cancel the permit when entry operations are complete or when uncontrolled hazards arise in or near the permit space • File the original canceled permit with the appropriate department
Evacuate Space if IDLH Conditions Exist	If hazardous conditions arise that are **Immediately Dangerous to Life and Health (IDLH)**, instantly evacuate the space and refer to section ***7.0 Immediately Dangerous to Life and Health (IDLH) Atmospheres***

2.4.2. Duties of the PRCS Attendant

Attendants (Hole-watch, Guards) must be located immediately outside the entry/exit point of the confined space and perform no other job activities that might interfere with their **primary duties (monitoring and protecting authorized entrants)** as listed below. Unless relieved by another attendant, and/or job activities are completed and all entrants of the space have evacuated.

The Attendant is responsible for monitoring and protecting entrants, as defined below.

Control PRCS Access	Control access to the PRCS: • Continuously maintain an accurate count of authorized entrants by name in the PRCS • Do not allow unauthorized persons to enter the area
Communicate with Entrants	Communicate with the authorized entrants at all times to monitor entrant status and to alert the entrants of the need to evacuate the space.
Monitor Entrant Activities	Monitor Entrants and working area to ensure acceptable entry conditions are maintained. Watch for: • Any hazards inside or outside of the confined space • Entrants showing any signs or symptoms of exposure to a hazards
Maintain Retrieval Lines	Tend any retrieval lines used in entry and ensure that lifelines remain taut when entrants enter bins, hoppers, silos, tanks, and surge piles where unconsolidated material is stored, handled, or transferred.
Stop Work and Evacuate the Space	Immediately stop work and evacuate the space when any one of the following takes place: • The attendant detects a non-acceptable entry condition • The attendant detects behavior changes in entrants • The attendant detects a situation outside the confined space that may endanger the entry team • The attendant cannot effectively perform all the duties • The air monitor alarms • Any “red flags” are indicated **Note:** If an entry team suspects that an air monitor is alarming due to a malfunction, evacuate the space until it has been determined otherwise.
Manage Emergency Situations	If an emergency situation arises: • Immediately call for the entrants to evacuate the space • Call for emergency assistance if necessary • Initiate **non-entry** rescue • Prevent unauthorized rescuers from entering the space

2.4.3. Duties of the PRCS Entrant

The entrant is the individual entering the space and performing work. In addition to the duties listed below, they must have knowledge and be appropriately trained with signed documentation for the applicable task or identified hazard they will be working around.

The Entrant is responsible for performing the work, ensuring their own safety, communicating any hazards with the attendant and evacuating the space immediately if hazards are recognized.

Communicate with Attendant	Maintain communication with the attendant throughout the entry, alert the attendant, and exit the space whenever there are warning signs or symptoms of exposure to a hazardous situation, or any "red flags" are detected.
Inspect for Hazards	Inspect for hazards not previously identified during initial entry and if any arise call for the entry team to evacuate the space until they are communicated and controlled.
Stop Work and Evacuate the Space	Immediately exit the confined space whenever: • Air monitor alarms • Air monitor stops functioning normally • Uncontrolled hazard is suspected or observed • Any entrant experiences signs or symptoms of exposure to hazards • Communication link between the entrant and attendant is broken • Conditions outside the space threaten the entrants or attendant • Attendant calls for an evacuation
Wear Designated PPE	Each authorized entrant into a permit required confined space shall: • Properly use designated equipment • Use a full body harness at all times • Use a retrieval line attached to the safety harness • Wear all required PPE **Note:** See section ***5.0. Equipment*** of this policy for more information

Note: Do not enter the space or begin working if controls are missing and stop work and evacuate the space immediately if any controls becoming missing or ineffective during the confined space entry.

3.0 Procedures

When entrance into any Non-Permit or Permit-Required Confined Space is required, follow section ***3.1 General Confined Space Entry Requirements***. Once these steps are completed and it has been determined that the confined space is Permit-Required, follow section ***3.2 Requirements for Permit Required Confined Space*** (when in doubt, use this additional permit-required procedure).

Note: All employees who enter a confined space must be trained according to section ***8.0 Confined Space Training***.

3.1 General Confined Space Entry Requirements

Step 1: Evaluate the Confined Space Hazards	
Identify the Hazards	Entry team must evaluate the space using the hazards checklist on the Confined Space Entry Permit or the site's Risk Assessment or HIRADC to ensure that there are no potential or actual hazards in the space. Identify and evaluate the potential or actual hazards of the space, before entering.
Develop and Outline a Plan	Develop a plan outlining the: • Acceptable entry conditions • Isolation of all hazards/energy sources • Necessary flagging, tagging, and barricading needed to prevent unauthorized or accidental entry into the space **Note:** If potential or actual hazards exist or other work could change conditions (ex. welding or cutting, using solvents in the space) the space is considered Permit-Required and section ***3.2 Additional Permit-Required Confined Space Requirements*** must also be followed**.**
Step 2: Prevent Unauthorized Entry	
Flag, Tag and/or Barricade the Area	Prevent unauthorized or accidental entry into the space by placing temporary railing, flagging, cones or other devices around the space opening. See the **FCX Guarding & Flagging Guideline** for more information.
Step 3: Isolate/Eliminate all Energy Sources	
Control the Energy-Follow LOTOTO Policies	Identify and isolate or eliminate all energy sources that could enter the space according to the **Lockout/Tagout (LOTOTO) - Control of Hazardous Energy Sources (FCX-04)**, before entering. **Note:** Energy is not just limited to electrical and can include fluids, mechanical, stored energy, etc.

Blind, Break or Double Block and Bleed all Lines	• All pipes entering the space that carry gas, liquid, or other materials must have an effective means of isolation such as blinding the line(s) or breaking the line(s). Where equipment, operations or conditions will not allow blinding or disconnecting and dis-aligning, double blocking with a bleeder (located between the block valves) may be utilized to isolate pipelines. • Where one of these cannot be accomplished, **an exemption permit must be completed** and reviewed by a qualified individual and then a signature of approval obtained by the manager of the area or designee.
Step 4: Atmospheric Monitoring	
Use an Air Monitor to Detect Hazards	Test the atmosphere immediately prior to entry and conduct monitoring as described in ***4.3 Air Monitoring Procedures.***

Once the above steps have been completed and it has been determined that the confined space is **Non-Permit Required** see section ***3.3 Requirements for Reclassifying a Permit-Required Confined Space to a Non-Permit Required Confined Space***, the entry can begin. Always follow any **Safe Operating Procedures** for the space being entered (where applicable), and if conditions inside or outside the space change, evacuate and re-evaluate. If it has been determined the space is Permit-Required continue to the next section.

3.2 Requirements for Permit-Required Confined Spaces

If it has been determined that the confined space is Permit-Required, a Confined Space Permit must be completed see the Forms/ Permit section of this document, and follow these additional steps.

Step 5: Designate Entry Team Roles	
Determine	Designate authorized entrants, attendants, and entry supervisor see section ***2.4 Permit Required Confined Space (PRCS) Entry Team*** of this Guideline for individual duties.
Step 6: Conduct Pre-Entry Meeting	
Communicate Hazards	The Entry Supervisor will conduct a pre-entry meeting to ensure the following has been established and communicated with all Entrants, Attendants, and any other employees who may affect conditions of the confined space. This should include people working in or around the confined space (maintenance, operations, safety, rescue, etc.)
Review Hazard Controls	Review the Acceptable Entry Conditions: • All hazards/risks and associated controls • Review applicable MSDS/SDS and post at opening to space • Required PPE • Atmospheric testing • Communication procedures

Step 7: Notify Rescue Services	
Communicate Entry with Rescue Team	Notify rescue services of the planned entry to ensure availability and to inform them of location and hazards involved.
If Unavailable Do Not Enter	If rescue services are not available, the confined space entry may not continue.
Step 8: Ventilate Appropriately	
Maintain Ventilation	Maintain ventilation throughout the entry if there is a potential for the atmospheric conditions in the confined space to become unacceptable. Immediately evacuate the space if ventilation equipment stops working.
Step 9: Stage Equipment	
Set up Equipment for Entry	Provide any equipment necessary for safe entry into permit spaces as outlined within section ***5.0 Equipment.***
Step 10: Confined Space Permit	
Review, Post and Update Permit	For each permit-required confined space: • Complete the permit and keep a copy posted at the space. • Complete a new permit at the start of each shift, any time the space is left unattended, or when the entry crew changes. The permit will be updated anytime safety or health conditions inside the space change during entry.
Step 11: Enter the Space	
Begin Entry and Ensure Safety	Enter the space while the attendant keeps watch and ensure that all acceptable safe entry conditions are maintained.

<table>
<tr><th colspan="2">Step 12: Evacuating the Space</th></tr>
<tr><th>If…</th><th>Then…</th></tr>
<tr><td>The air monitor detects an atmosphere that falls outside the acceptable entry conditions…</td><td rowspan="7">Evacuate the Space</td></tr>
<tr><td>The air monitor stops functioning normally…</td></tr>
<tr><td>An uncontrolled hazard is suspected or observed…</td></tr>
<tr><td>An entrant experiences signs or symptoms of exposure to hazards…</td></tr>
<tr><td>The communication link between the entrant and attendant is broken…</td></tr>
<tr><td>Conditions outside of the space threaten the entrants or attendant…</td></tr>
<tr><td>The attendant calls for an evacuation…</td></tr>
<tr><td rowspan="3">A rescue becomes necessary…</td><td>The attendant will activate the emergency response process and attempt a non-entry rescue using the retrieval system.</td></tr>
<tr><td>All personnel must remain outside the space</td></tr>
<tr><td>Responders shall attempt non-entry retrieval if possible.</td></tr>
<tr><td>Rescue entry is necessary…</td><td>Only properly trained and equipped responders may enter the space.</td></tr>
<tr><td colspan="2">NOTE If a space is evacuated, re-entry will not be allowed until an evaluation is completed to determine the cause of the evacuation and the risks associated with it have been addressed.</td></tr>
</table>

Step 13: Review, Closeout and Notify Appropriate Departments	
Notify Rescue Team	Notify the appropriate departments and rescue service after entry operations are complete.
Review the Entry	When the entry has been completed review the entire entry operation to determine if the measures taken were adequate to protect employees.
Closeout Permit	Finalize the Permit and file with the appropriate department

3.3 Requirements for Reclassifying a Permit-Required Confined Space to a Non-Permit Required Confined Space

Always assume that a confined space is Permit-Required. When reclassifying the space to Non-Permit Required document that all hazards in the space have been eliminated.

Use the first step of the Confined Space Entry Permit, the site's Risk Assessment, HIRADC or another form that contains:

- The date
- The location of the space
- The reasons for the determination
- The signature of the person making the determination

This documentation shall be made available to each employee entering the space.

If…	**Then…**
The permit space poses no actual or potential atmospheric hazards…	The permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated. **(Control of atmospheric hazards through forced air ventilation does not constitute elimination of hazards.)**
All hazards within the space are eliminated without entry into the space…	
All hazards, atmospheric and non-atmospheric, are eliminated prior to entry…	A PRCS listed in the inventory may be "reclassified" as a non-PRCS, by entry supervisor
Any change of conditions in the space which introduces new hazards to the space…	An immediate re-evaluation of the space before entry shall be required

Note: Based on the evaluation of the hazards, a qualified person shall classify the confined space as either a permit-required confined space (PRCS) or non-permit confined space (NPCS). All confined spaces shall be treated as permit spaces until determined to be otherwise. Any NPCSs shall be periodically re-evaluated to verify proper classification.

4.0 Air Monitoring Requirements

4.1 Air Monitoring Equipment

Air Monitoring Equipment will be Selected and Maintained by the H&S Dept. unless agreed upon by all parties involved.	
Air Monitor Selection	Air monitoring equipment will be selected by a qualified individual based on the hazards of the entry. As the monitor's sensors are gas specific, these determinations must be documented with area SOPs/Risk Registers/HIRADC/JSA.
Air Monitor Calibration	Calibration will be performed per the manufacturer's specifications and records will be kept according to the Records Retention Program

4.2 Acceptable Air Monitoring Levels

All confined space atmospheres must be tested, in the following order:	

Oxygen Deficiency or Enrichment	Acceptable entry conditions for Oxygen within confined spaces is between 19.5-23.5%
	Confined spaces containing:
	• **Oxygen Deficient** (less than 19.5% oxygen) is considered hazardous
	  ○ Entry shall not be made without self-contained breathing apparatus (See section ***7.0 Immediately Dangerous to Life or Health (IDLH) Atmospheres***)
	• **Oxygen Enriched** (over 23.5% oxygen) is considered and hazardous
	  ○ Entry shall not be made until levels are reduced to acceptable levels

Flammable Gases	Atmospheres greater than ten percent (10%) of the **lower explosive limit (LEL)** of the flammable gas shall be considered as flammable or potentially flammable or explosive, and immediately evacuated. Air monitors must be specifically calibrated for the type of flammable gas used in the space or a conversion factor utilized. **Note**: When oxygen concentrations are less than 10% the readings obtained for the LEL may be inaccurate. Refer to the manufacturer's recommendations for the appropriate actions in such instances.

Toxicity	If a toxic substance is determined to be in the confined space a Material Safety Data Sheet (MSDS) or other chemical information should be consulted for assistance in determining: • Type of PPE needed • Potential health effects • Permissible Exposure Limits • Any other information needed to safely conduct the work **Note:** Alarms on monitors should be adjusted to match the acceptable entry conditions. For example, if half-face respirators are in use for sulfur dioxide, and the acceptable entry condition is defined as 10X the exposure limit for sulfur dioxide, the alarm point should be set accordingly. Otherwise, the alarm may sound continuously. Refer to the **FCX IH Field Guide** for more information on exposure limits. In some cases, FCX has adopted an exposure limit that is lower than regulatory requirements.

4.3 Air Monitoring Procedures

Air monitoring may occur at various stages in a confined space entry (such as during ventilation to remove atmospheric hazards), but must be done immediately prior to entry. Additionally, all confined space atmospheres must be tested at a minimum of three levels (top, middle, bottom) this is necessary for the potential for layering of heavy and light gases and vapors.

Step 1: Pre-Use Inspection	
Examine the Air Monitoring Equipment	Prior to use: • Verify current calibration • Verify battery charge • Zero air monitor sensors- Confirm all sensors are operating and at normal levels. When zeroing your instrument ensure it is in non-polluted fresh air • Bump Test- Expose the instrument to a gas and verify that it responds correctly according to manufacturer's specifications
Step 2: Prior to Opening	
Test Area Outside the Space	If a potential hazardous atmosphere exists within the space, prior to opening the cover, test the atmosphere around the opening
Relieve pressure where applicable	If a space is under pressure, ensure it is relieved prior to opening the space.

Step 3: Open the Space	
Monitor for Hazards	Gradually release/open the access-way while testing —if conditions indicate a risk to the person conducting the evaluation, back away to a safe point, then resume testing once levels have reached safe values. **Note:** Pre-testing of the atmosphere should be through small cover openings or by cracking open the cover and utilizing a sampling probe attachment with the monitoring instrument.
Step 4: Test in Front of Entrants	
Stratified Atmosphere	When monitoring for entries involving a descent into atmospheres that may be stratified, the atmospheric envelope should be tested a distance of approximately **4 feet (1.22 m)** in the direction of travel and to each side.
Slowly Sample for Air Monitor Response	When using a sampling probe, the entrant's rate of progress should be slowed to accommodate the sampling speed and air monitor response.
Step 5: Continue Monitoring	
Continuous Monitoring may be Required	Continuous monitoring is necessary if: • The atmosphere hazards have not been completely eliminated • New or additional atmospheric hazards result from the tasks being performed in the space • Unacceptable atmospheric conditions can re-occur within the space due, for example, near-by processes or activities, as well as by worked performed within the space
To Discontinue Monitoring	To discontinue monitoring, none of the three atmospheric conditions (oxygen rich/deficient; toxic; >10% of LEL/LFL) can exist or have a potential to exist. For larger or more complex situations, an alternative is to utilize individual monitors that the entrant wears into the space.
Step 6: Reacting to Alarms	
If a Hazardous Atmosphere is Detected	If a hazardous atmosphere is detected during entry: • Evacuate the space immediately • Determine how the hazardous atmosphere developed
Implement new Controls to Protect Entrants	Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place
Review and Verify Controls	The entry supervisor or attendant shall verify that the space is safe for entry and that the pre-entry measures and a new confined space permit completed

Step 7: Continually Record Findings and Communicate	
Record and Communicate Issues	Whenever hazardous atmospheres are identified or experienced, such information must be recorded on the entry permit and communicated to other departments who may have occasion to enter such space.

WARNING: If work has been interrupted for any time or people have left the space, all air monitoring procedures outlined herein must be repeated before work is resumed.

5.0 Equipment

The following equipment and any other equipment necessary for safe entry into permit spaces will be provided as defined by the acceptable entry conditions.

Personal Protective Equipment (skin, hearing, respiratory, eye protection)	Personal protective equipment will be specifically selected for the hazards that the employees will be exposed, so that they may safely-perform the permit-required confined space entry. Employees shall wear and must be trained and proficient in the use of that PPE.
Communication Devices/System	Communication devices will be provided to ensure continuous contact between all entrants and attendants. **Note:** Prior to entry ensure the communication system/equipment between attendant and entrant, attendant and emergency providers and rescue equipment is fully functional
Intrinsically Safe Equipment	Any electrical equipment used within the PRCS must be rated for explosive atmospheres if the potential for an explosive atmosphere exists This includes: • Lighting equipment • Air monitors • Communication devices • Ventilation equipment • Rescue and emergency equipment
Compressed Gases	Tanks or cylinders of compressed gases (acetylene, oxygen, etc.) other than breathing air are prohibited in confined spaces. Hose extensions shall be used when welding or cutting is required. All welding leads and cutting torch hoses shall be removed from the space when not in use.
Full Body Harness	A full body harness must be worn at all times unless the entry supervisor determines the use of the full body harness is infeasible or creates a greater hazard, then wristlets may be used if they offer a safer alternative and must be noted on the permit or PRCS SOP. **Note:** To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an entrant enters a PRCS, unless the retrieval equipment would

	increase the overall risk of entry or would not contribute to the rescue of the entrant. If this retrieval equipment will not be worn, an exemption form must be completed and keep on file with Department.
Electrical Equipment in Wet Conditions	When work in wet or damp confined spaces is performed, all electrical equipment used shall be of a design so as to prevent moisture or water from accumulating in enclosures, circuit breakers, etc. To accomplish this, all connections shall be in "approved" enclosures. Ground Fault Circuit Interrupters (GFCI) shall be used.
Entrances and Exits	Ladders, ramps or other effective means for proper egress will be provided.
Retrieval Lines and Mechanical Devices	Each entrant shall use a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head to ensure the successful removal of the entrant in a remote retrieval situation. The other end of the retrieval line must be attached to a mechanical device or fixed point outside any PRCS, in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device will be used for any vertical PRCS 5 feet (1.52 m) deep or greater. Tripods or other retrieval equipment shall be available and set up prior to entry into the space. **WARNING**: Self-retracting lifelines that rely upon fall speed in order to lock must not be used. Anchor points must be selected to ensure that the user's torso remains above the original level of the material. **Note:** To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an entrant enters a PRCS, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. If this retrieval equipment will not be worn, an exemption form must be completed and keep on file with Department.

6.0 Ventilation

Employees shall not be in a space where a hazardous atmosphere exists unless ventilation can be provided to eliminate the hazard, or another means of control has been established (i.e. Particulate respirators, SCBAs, etc.) Purge, flush or ventilate the permit space as necessary to eliminate or control atmospheric hazards. Ventilate continuously whenever the work inside the space will put contaminants into the air (i.e. sandblasting, painting, solvent cleaning, welding, etc.).

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

These activities must be performed from outside the confined space:

Ventilate Working Areas	The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall

	continue until all employees have left the space.
Supply Air from Clean Source	Ensure that fresh air introduced into the space is from a clean source and that contaminants are not being drawn into the space.
Continuously Monitor	The atmosphere within the space shall be continuously monitored as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

WARNING: Inerting a space will control a fire/explosion risk, but it may also introduce an IDLH atmosphere, and may affect the operation of the test equipment. DO NOT enter an inerted space until consulting with your health and safety professional to determine appropriate measures and controls to proceed. Refer to the IDLH section of this document

7.0 Immediately Dangerous to Life or Health (IDLH) Atmospheres

Immediately dangerous to life or health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space. Examples include, atmospheres that are oxygen deficient (less than 19.5%) or oxygen enriched (greater than 23.5%), or a flammable mixture that is greater than 10% of the LEL, or when the toxic gases have reached their IDLH limits.

Confined spaces with an immediate danger to life or health (IDLH) should not be entered unless entry is a rescue performed by a properly trained and equipped emergency rescue team and the following criteria in this section is met.

7.1 Non-Rescue IDLH Entry Requirements

Situations may come up where personnel believe that it is necessary to enter an IDLH space for a reason other than a rescue, such as the prevention of a severe production interruption. In this case, all feasible efforts must be made to eliminate the IDLH atmosphere, such as purging with air or an inert gas, or by ventilating the space.

If these efforts are not successful, and an IDLH space must still be entered to prevent a severe event, then:	• A qualified Health & Safety Professional with expertise in confined space entry and a Manager-level or higher department leader shall discuss the need for actually entering into the space • A plan of action will be developed and documented and new permit completed, meeting the requirements defined below. • An exemption form must be completed and approved by management

The following is required for entry into an IDLH confined space:	
Intrinsically Safe Equipment	Use of any electrical equipment in areas where a flammable atmosphere exists must be intrinsically safe. This determination is made during the pre-entry atmosphere survey. An atmosphere reading 10% of the lower explosive limit (LEL) shall be considered a flammable atmosphere for these purposes.
Respiratory Protection	Use of respiratory protection (pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA) and skin protection that is appropriate for the IDLH atmosphere.
Trained Attendant	Assignment of a trained attendant or, when needed, more than one trained attendant, located outside the IDLH atmosphere
Communication System	Communication (visual, voice, or signal) is maintained between the entrants and the attendants located outside the IDLH atmosphere.
Backup Rescue Team	A backup rescue team is located immediately outside the IDLH atmosphere, and is trained and equipped with the following in order to provide prompt and effective emergency rescue: • Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA • Appropriate skin protection for the IDLH atmosphere • Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry

8.0 Confined Space Training

Awareness Training: Will be provided to all employees who work in or around confined space areas	
Awareness Training Requirements	• Informing employees that a policy and procedure exist and must be followed • Explaining that additional training needed to perform work in confined space • Recognition of confined spaces and confined space danger signs • Resources for further information
CS Entry Team Training: Confined Space Entry Training shall be provided to all employees entering confined spaces. All training shall be documented. This training will consist of Entrant, Attendant and Entry Supervisor training.	

Entrant Training Requirements	• General Hazards associated with confined spaces
	• Review of this policy, procedure and an explanation of permit and program requirements
	• Emergency procedures and response
	• Significant Risk Identification and critical and mitigating controls
	  ○ Atmospheric, engulfment, physical/chemical
	  ○ IDLH conditions – what might create an IDLH condition, and the requirements to work under IDLH conditions
	• Relevant regulations and standards
	• The use of all equipment for safe entry
	• Air monitoring equipment use and procedures
	• Review of energy control procedures
	• Duties and responsibilities of confined space entry team
	• General Site Specific Training requirements
	• Review of “red flags” that could indicate unsafe conditions or behaviors

Attendant Training Requirements	• Entrant training requirements • Responsibilities of a confined space Attendant • Duties, responsibilities and procedures for both routine and emergency operations • Non-entry emergency rescue/retrieval from confined spaces • General Site Specific Training requirements
Entry Supervisor Training Requirements	• Entrant training requirements • Attendant training requirements • Responsibilities and duties of a confined space Entry Supervisor • General Site Specific Training requirements

General Site Specific Training Requirements	• Procedures for summoning rescue team or other emergency services • Use of site specific air monitoring equipment • Locations of confined spaces in the employees' work area • Explanation of the specific hazards associated with the confined space to be encountered ○ Signs and symptoms of hazard overexposure • The hazard for which the PPE was selected, and the proper use, inspection, care and maintenance, and limitations of PPE and other safety equipment • Supplemental training, information, or a briefing to maintain competency when there are changes in procedures or equipment
Qualified Person Training	
Qualified Person Training Requirements	• Entrant training requirements • Attendant training requirements • Entry-Supervisor training requirements • General Site Specific Training requirements
Confined Space Trainer: A Confined Space Train-the-Trainer course shall be provided to all employees who deliver Confined Space Training and all training shall be documented.	
Confined Space Trainer Requirements	• Entrant training requirements • Attendant training requirements • Entry-Supervisor training requirements • General Site Specific Training requirements • Completion of Standardized FCX TTT Curriculum
Confined Space Train the Trainer (TTT) Requirements	• Entrant training requirements • Attendant training requirements • Entry-Supervisor training requirements • Completion of Standardized FCX TTT Curriculum • Previous Industry Experience

Rescue Team Training: All rescue personnel are to be certified/properly trained to perform their assigned duties. **Note:** Sites that do not have a site rescue team must evaluate the response capability of the local emergency responders.

Rescue Team Minimum Training Requirements	It shall include at a minimum: • The rescue plan and procedures developed for each type of confined space and potential hazard the rescue team could encounter • 24 hrs. of Ropes Training • CS Entrant, Attendant and Entry Supervisor Training • Current First Aid, AED and CPR training
Rescue Team Recommended Training Requirements	Recommended: • First Responder certification or greater • Incident Command training • Regular training as specified by level of rescue to maintain certification • SCBA training

Annual Refresher Training Requirements: Annual refresher training shall be required of all **Entrants, Qualified Persons and Rescue Teams**. This training shall cover the above topics for each specific level of knowledge ensuring that each individual maintains the appropriate skills and levels of proficiency. In addition, refresher training shall include information or "lessons learned" from the annual review of entries.

Rescue Team Annual Training Requirements	Each member of the rescue service shall practice making confined space rescues once every at least annually, by means of simulated rescue operations in which they remove dummies, mannequins, or persons from actual confined spaces or from representative confined spaces resembling all those to which the rescue service could be required to respond in an emergency.

9.0 Definitions

Confined Space Definitions	
Acceptable entry conditions	The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space. This includes a risk management plan that incorporates all safety-related aspects of the entry (e.g. ventilation equipment, LOTOTO requirements, allowable concentrations of air contaminants, remote rescue plan, etc.) **Note:** Care must be taken to identify and evaluate the potential for conditions to change within the space as a result of the work being done (e.g. application of coatings, welding, removal of sludge, etc.)
Attendant	An individual stationed outside a permit required confined space who monitors the authorized entrants and who performs all the attendant duties assigned in the confined space program. An attendant will watch only one space at a time. This responsibility can be rotated. The attendant shall never break the plane of the entrance into the confined space nor shall they leave their post (unless relieved by another attendant or the entrants exit the space).
Authorized Entrant	An employee who will be entering the confined space and is aware of the hazards, PPE requirements, acceptable entry conditions, and communication procedures prior to entry
Blanking or Blinding	The absolute closure of a pipe, line or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line or duct with no leakage beyond the plate.
Confined Space	A Confined Space is a space that meets all three of the below conditions: 1. It is large enough and so configured that a person can enter with their whole body and perform their assigned work 2. It has a limited or restricted means of entering and exiting (i.e. tanks, vessels, silos, storage bins, hoppers, vaults, etc.) 3. It is not designed for continuous occupancy (i.e. an individual could not occupy the space during normal operating conditions)
Double Block and Bleed	The closure of a line, duct or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.
Emergency	Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants or attendant(s)
Engulfment	The surrounding and effective capture of a person by a liquid or semi-solid capable of flowing

Entry	The action by which a person passes through an opening into a 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.
Entry Permit	The written document provided by the entry supervisor to allow and control entry into a permit required space. Valid for one shift only; must be posted at the entrance of the space. A copy of the permit should be retained for one year for audit verification purposes.
Entry Supervisor	The person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry, overseeing entry operations, and for terminating entry. The entry supervisor may or may not have the formal title of supervisor. **Note:** An entry supervisor may also serve as an attendant but may NOT serve an entrant. In addition, the duties of the entry supervisor may pass from one individual to another during the course of the entry operation. The entry supervisor will not enter the space at anytime.
Hazardous Atmosphere	An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury or acute illness from one or more of the following: 1. Flammable gas, vapor, or mist greater than 10% of the lower flammable or explosive limit (LFL or LEL) 2. Airborne combustible dust at a concentration that meets or exceeds its LFL **Note:** This concentration may be approximated as a condition in which the combustible dust obscures vision at a distance of 5 feet (1.5 meters) or less 3. Atmospheric oxygen concentration below 19.5% or above 23.5% 4. Atmospheric concentration in excess of the occupational exposure limit for any substance that is capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects and which could result in employee exposure in excess of its dose or permissible exposure limit 5. Any other atmospheric condition that is immediately dangerous to life or health (e.g. heat).
Hazard Identification-Risk Assessment-Determination of Controls (HIRADC)	A systematic risk management process in which a team reviews a task to identify potential hazards, assesses the risk based on likelihood and potential severity, and defines control measures to reduce risk to a tolerable level. Each FCX operation has defined a HIRADC process consistent with OHSAS 18001 and the FCX guideline titled Hazard Identification and Risk Assessment- FCX-09.
Hot Work Permit	A written authorization to perform operations (e.g. riveting, welding, cutting, burning, and heating) capable of providing a source of ignition. (See **FCX Hot Work & Permit Policy FCX-06**.)
IDLH (Immediately	Any condition that poses an immediate or delayed threat to life or that would

Hazardous to Life or Health)	cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a confined space. Guidance on IDLH values is available from Material Safety Data Sheets and H&S regulatory agencies. The US National Institutes of Occupational Safety & Health (NIOSH) publishes guidance on IDLH values in NIOSH's online Pocket Guide to Chemical Hazards (refer to www.cdc.gov/NIOSH). Always consult with area Health and Safety representatives before dealing with any conditions associated with IDLH.
Isolation	The control of all energy sources such that the potential for exposure does not exist. Examples of isolation may include: blanking of supply lines, a double block and bleed system, lockout/tagout/tryout of all sources of energy, breaking or disconnecting a line to stop flow, and blocking or disconnecting all mechanical linkages.
Lower Flammable Limit (LFL), Lower Explosive Limit LEL)	The minimum concentration of a gas, vapor or dust in air (expressed in percent volume), which will ignite if an ignition source is present.
Lifeline	In contrast to retrieval lines, the purpose of a lifeline is to prevent the user from being engulfed due to voids in loose, unconsolidated material. Self-retracting lifelines that rely upon fall speed in order to lock may not be used in this application. Anchor points must be selected to ensure that the user's torso remains above the original level of the material.
Non-Permit Confined Space	"Non-permit confined space" means a confined space that does not contain any hazard capable of causing death or serious harm, and does not have the potential to contain any atmospheric hazard capable of causing death or serious harm.
Permit Required Confined Space	Permit Required Confined Spaces (PRCS) are confined spaces that have one or more of the following characteristics: 1.) Contains or has the Potential of containing a hazardous atmosphere 2.) Contains a material that has the Potential for engulfing an entrant 3.) 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 4.) Contains any other recognized serious safety or health hazard
Qualified Person	An individual who, through combined education, training, experience, and process knowledge, has demonstrated that he/she is capable of recognizing, evaluating, and effectively identifying controls.

Reclassification	A space classified as a permit-required confined space may be reclassified as a non-permit confined space under certain procedures where permit required definition hazards have been eliminated before work begins. Reclassification can be temporary or permanent. In either case, the change in status must be documented in writing and must follow the SOP for reclassification. See Section IV, C for details.
Retrieval System	Equipment (including a retrieval line, full-body harness, wristlets if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.
Serious Health or Safety Hazard	Any condition that poses an immediate or delayed threat to life, or that would cause irreversible health effects or that would interfere with an individual's ability to escape unaided from a permit space. Examples include but are not limited to heat, electricity, and falls.

10.0 References

The following sources were used in the development of this document

- 29 CFR 1910.146; Permit-required Confined Spaces
- 29 CFR 1910.146 Appendix B; Procedures for Atmospheric Testing
- 29 CFR 1910.146 Appendix F; Rescue Team or Rescue Service Evaluation Criteria
- 30 CFR 56.16002; Bins, hoppers, silos, tanks, and surge piles
- ANSI/ASSE Z117.1-2009; Safety Requirements for Confined Spaces

11.0 Records

The following records must be retained according to the FCX Records Retention Policy

- Employee Training Records
- Confined Space Permit
- Annual program review
- Calibration Records
- Equipment inspection records
- Exemption Documents

12.0 Revision History

2009 Rev 1	Initial Release	
2012 Rev 2	This update includes many changes from the previous version, some minor and some significant. As a result, it should be considered a complete re-write of the document. Users should review it in its entirety.	1. Corrects errors in the previous version 2. Clarifies "Hazardous Atmosphere" and "Acceptable Entry Conditions" 3. Encourages operations to use their Hazard Identification / Risk Analysis / Determination of Controls process with confined space entry 4. Clarifies links with other FCX guidance documents 5. Clarifies entries involving conditions that are Immediately Dangerous to Life or Health 6. Clarifies expectations on emergency response training, capabilities, and drills for internal CS rescue teams 7. Clarifies expectations for sites that rely on external confined space rescue resources 8. Clarifies retrieval lines (used for non-entry rescue) and lifelines (used to protect and entrant from engulfment hazards) 9. Updates forms that are provided as examples 10. Clarifies requirements for isolation of lines into a confined space 11. Change to entry supervisor duties – can be the attendant but cannot be the entrant
2013 Rev 3	This update includes many changes from the previous version, some minor and some significant. As a result, it should be considered a complete re-write of the document. Users should review it in its entirety.	1. Included section 2 Policy & modified some verbiage in sec. 3 Purpose & Scope 2. Moved Definitions to Appendix B 3. Included sec. 3 Confined Space Classification 4. Reorganized sec. 4 Area Management responsibilities a. Moved rescue team oversight under Safety b. Extrapolated Annual Review Requirements 5. Moved H&S Responsibilities below Area Management Responsibilities a. Included: Program Support, Periodic Audits (Est. by H&S manager), Selection of air monitors, Maintenance of Rescue Team Capabilities, Extrapolated Annual Review: Audit-Rescue

		Team, CS Communication, Compilation of Findings 6. Moved Contractor Responsibilities below H&S Responsibilities 7. Broke out gen. entry team requirements 8. Reorganized Layout of entry team requirements 9. Reorganized Procedures section, moving NPRCS and PRCS in continuous steps a. Included exemption process for Step 3 Isolate/Eliminate Energy sources when all pipes cannot be blinded, broken or double blocked and bled b. Generalized Step 4 Atmospheric Monitoring and referred to section 6 Air Monitoring c. Generalized Step 9 Stage Equipment and referred to section 7 Equipment d. Included in Step 10 Requirement to complete an new permit at the start of a new shift, anytime it's left unattended or when the entry crew changes e. Included table breaking down Step 12 Evacuating the space f. Combined Review and Closeout to one complete step 10. Broke down Reclassifying PRCS to NPRCS with if-then table 11. Broke down Air Monitor Procedure into: a. Equipment, Acceptable levels, Procedures- Included Testing in Font of Entrants 12. Expanded Equipment to include items previously listed under PRCS Procedures 13. Reorganized Ventilation Section 14. Reorganized IDLH Section 15. Reorganized and Expanded CS Training Section a. General Site Specific Training Requirements b. Confined Space Trainer Training Requirements c. Rescue Team Training Requirements 16. Added Exemption Documents to Records Section 17. Included Rescue Team Evaluation Form 18. Exemption Request Form
2013 Rev 4	This update corrects minor formatting issues	In section 3.0 and 3.2 references to other section numbers were numbered incorrectly. This has been corrected.

Appendix A – Significant Risk Reference Guide

Global Significant Risk Assessment – Confined Space

Potentially Fatal Risk	Critical Controls to Reduce or Eliminate
Atmospheric Hazards Introduced	Air Monitoring; heat monitoring
	MSDS Review and approval process
	Attendant to monitor
	Ventilation of the space
	Isolation and purging of lines into space
	Hot work permit
	Rotation of employees out of the space
	No use of compressed gases in a space
	Life line/rescue equipment/rescue plan
	Critical Behaviors – following procedures; responding to alarms; monitoring co-workers; proper completion of pre-job review based on permits; understanding the risks and controls prior to doing work
Hazards introduced from other work in area	Attendant to recognize other potential risks
	Pre-job planning and review of other work in area
	Signage and notification for other work groups
	Communication between work groups
	Critical Behaviors – checking area prior to entry for other work groups; communicating between work groups; thorough completion of pre-job risk reviews
Physical Hazards (Fire, entrapment/engulfment, radiation, heat stress, overhead hazards)	Attendant to recognize/monitor potential risks/hazards
	LOTOTO of energy sources
	Ventilation of the space
	Lifeline, retrieval equipment, escape/rescue plan
	Isolation of incoming lines to mitigate entrapment/engulfment potential
	Communication from work groups
	Air Monitoring the space for gasses
	Access control to avoid overhead hazards
	Hot Work Permit
	Pre-Job risk review to identify risk factors and controls
	Shielding for radiation

Physical Hazards (Fire, entrapment/engulfment, radiation, heat stress, overhead hazards	Monitoring space for heat and rotation of employees
	Use of radios for communications with attendant
	Intrinsically Safety Equipment
	Critical Behaviors – Thorough completion of area work permits and pre-job inspections or evaluations; evaluating and understanding potential hazards associated with confined space; Notifying attendant if signs or symptoms occur
Electrical or other energy sources	LOTOTO of energy sources; energy sources directly or indirectly associated with the work or space
	Lifeline, escape/rescue plan
	Emergency Response Personnel that understands the hazards of the work being performed
	Use of a qualified person in pre-job planning and risk review (ie., ECC or electrician)
	Pre-Job risk review to identify risk factors and controls
	Critical Behaviors – Following LOTOTO procedures; addressing concerns to qualified individual; conducting pre-job planning and risk review; stop work if concerns arise
Caught in mechanical or moving parts	Attendant to recognize/monitor potential risks/hazards
	LOTOTO of all energy; Isolation of moving parts associated with or near the confined space
	Guarding on moving parts
	Lifeline, retrieval equipment, escape/rescue plan
	Pre-Job Risk Assessment to identify internal risk hazards
	Critical Behaviors - Following LOTOTO procedures; conducting pre-job planning and risk review; stop work if concerns arise
Physical Demand/Capabilities	Entry Supervisor needs to review capabilities
	Permits – Identify risks of space and physical demand or capabilities
	Emergency Response Resources
	Critical Behaviors – Make supervisor aware of any limitations; Notify attendant if signs and symptoms occurs

Red Flags – Indicate potential unsafe behavior or lack of controls
Lack of monitoring equipment used in space
Employee complaints or showing signs or symptoms
No attendant present at the space opening
Change in atmosphere (smell, sight, sound)
Lack of gas monitoring results
Lack of life lines or other rescue equipment
No means of communication (ie., radios)
No ventilation equipment in area
No response from entrants in space
Attendant doing other duties in addition to role as attendant
Attendant not present or doing other work
People working around the area of the confined space that are not part of the confined space entry
Smoke, fumes, or other indication around the space
New work starts in area
Lack of barricading or access control to reduce overhead hazards
Missing fall protection or retrieval system
Incomplete applicable permits
Incomplete Pre-Job to determine other risk factors
Incomplete Confined Space Permit or other applicable permits
Employees completing task with lack of understanding work
Contactors not understanding controls or requirements of confined space
No response from entrants

Appendix B- Confined Space Forms and Permits

Rescue Team Evaluation Form
Exemption Request Form
Inventory/Survey/Evaluation Form
Confined Space Entry Permit

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Confined Space Recue Team Evaluation Form

The purpose of this form is to evaluate confined space rescue providers. An evaluation must be completed for each provider considered. Mark each column yes or no, and provide notes as necessary. ***If there are any "No" answers, this must be addressed before work can continue, a new provider must be sought, or an exemption form must be completed and approved by area management.***

Provider:	Date:
Contact Name:	Phone Number:

Initial Evaluation

Evaluation Item	**Yes**	**No**
The rescue team can arrive in time as required by the hazards of the confined space		
Rescue service is available during the times that confined spaces will be entered		
Rescue teams meet the requirements of the confined space OSHA standard		
Confined space attendant has the communication means to easily contact the rescue team if needed		
If required, rescue team can perform rescue in hazardous atmospheric environments		
If necessary, rescue team can provide vertical entry and elevated rescue services		
Rescue team is trained in medical care and emergency response		
Rescue team has the necessary equipment to perform rescue, or is familiar with the company's equipment and hazards/risks		

Evaluation Performed By:	**Date:**

Performance Evaluation

A performance evaluation should be performed annually if the rescue service passes the initial evaluation.

Training	**Yes**	**No**
All rescuers are trained on Permit Required Confined Space entry		
All rescuers are trained and proficient on the use of personal protective equipment and rescue equipment		
Rescuers have advanced training in CPR and first aid		
All rescuers have documented at a minimum 24 hrs of rope rescue/retrieval training		
Rescue team can perform atmospheric testing and has documented trained on the equipment used		
Safety	Yes	No
Rescue team performs safely and efficiently		
Rescue team can focus on personnel safety		
Knowledge	**Yes**	**No**
Rescue team understands confined space permits and can obtain relevant information from them		
Rescue team understands hot work permits and can obtain relevant information from them		
Rescue team understands MSDSs/SDSs and can obtain relevant information from them		
The rescue team is familiar with hazards that may occur outside the space that may put them at risk		
Rescue	**Yes**	**No**
If necessary, the rescue team can provide rescue from small space openings		
If necessary, the team can perform high angle rescue		
The rescue team has a rescue plan for each type of confined space they may enter		
The rescue team can practice their rescue plans in similar spaces		
The rescue team has practiced implementing this confined space rescue plan within the last 12 months with a simulated rescue operation		

Evaluation Performed By:	**Date:**

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Confined Space Exemption Request Form

When any portion of this policy cannot be met, an exemption must be completed. Complete this form with a detailed description of the area and reason for a Confined Space Entry exemption request. A task review by an engineer or other qualified individual to consider other controls must be completed prior to submitting to the division manager. Approval from the division manager or higher is required prior to proceeding with the confined space entry.

Date:	**Time:**	**Division Manager:**
Location of Activity:		
Purpose of Activity:		
Description of Request:		
Justification:		
Control Measures:		
Signature of Requestor:		
Signature of Division Manager or Delegate:		

*When completed give a copy of all related documentation to the division record keeper for filling purposes.

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Confined Space Inventory/Survey/Evaluation Form

Department	Date:
Area:	Location:
Space Description:	

Section I-Confined Space Determination

Evaluation Item	Yes	No
Is the space large enough and so configured that an employee can enter and perform assigned work? Note: Primarily intended for full or whole body entry		
Does the space have limited or restricted means for entry or exit? **Note:** Doorways and other portals through which a person can walk are not considered to be limited means for entry or exit. (i.e. Tanks, vessels, silos, storage bins, hoppers, and vaults)		
Is the space NOT designed for continuous employee occupancy? **Note:** answer NO if the space is designed for people to be able to occupy it, even during normal operating conditions.		

If all three (3) answers are YES, this is classified as confined space, proceed to Section II.

Section II-Determining Permit Required Confined Space

Evaluation Item	Yes	No
Does the space contain or have a potential to contain a hazardous atmosphere? **Note:** Exposures to combustible dusts or flammable mixtures, oxygen deficiencies, that may expose employees to the risk of death, incapacitation, acute illness or impair self-rescue		
Does the space contain a material that has the potential for engulfing an entrant? (i.e. Liquids or granular/flowable solids)		
Does the space have an internal configuration such as inwardly converging walls or a sloping floor that could trap or asphyxiate an entrant?		
Does the space contain another serious safety or health hazard? (i.e. Radiation, noise, electricity, moving parts of machinery, etc.)		

If any of the four (4) answers is YES, this is classified as a permit required confined space.

Complete a permit system form.

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Confined Space Entry Permit

DIVISION:	DEPARTMENT:
LOCATION OF CONFINED SPACE:	DATE:
SHIFT: DAY NIGHT	CONFINED SPACE ID#:
ENTRY SUPERVISOR NAME:	APPROVAL SIGNATURE:
ENTRY ATTENDANT(S) NAME(S):	
AUTHORIZED ENTRANT(S) NAME(S):	

If 'NO' to all questions in Section A (below), this space may be classified as a Non-Permit Required Confined Space (sign below)

Name_____ **Signature**_____

STEP 1 – ARE HAZARDOUS ENERGY SOURCES / CONDITIONS PRESENT?

Section A – Hazard Checklist			Section B – Hazard Checklist		
YES	**NO**	**HAZARD**	**YES**	**NO**	**HAZARD**
		Hazardous Atmosphere (including the potential)			Pre-Opening Hazards
		Sloping or converging walls or floors			Flammables / Fire
		Engulfment / Entrapment			Toxic Gases / Corrosive Material
		Any other serious safety hazard			Hazardous Energy
Type of serious hazard:					Conditions Outside Space
If yes to any question in section A (above) the space must be classified as PERMIT REQUIRED. Other serious safety hazards are those in which an injury of serious nature is reasonably likely to occur if specific controls are not applied.					Falls / Falling Objects
					Lighting / Noise
					Biological Hazards
					Other

STEP 2 – PREPARATION PROCEDURES

PRE-ENTRY AIR TESTING			DONE	PROCEDURE	DONE	PROCEDURE
GAS	**ACCEPTABLE**	**READING**		Pre-Entry Checklist		Lighting / Hearing Protection
Oxygen	19.5 - 23.5 %			Oxygen Pre-Entry Reading		Thermal Protection
LEL	< 10 %			Chemical Cleanout Electrical		Hydraulic Protection
Toxics	< PEL / TLV			Ventilation Purge Time		Radiation Protection
Other				Lock out / Tag out / Try out		Traffic Control / Barricading
Date of last calibration:				Mechanical Isolation		Pneumatic Isolation
Test Instrument and #				Fall Protection		Hot Work Permit

REQUIRED EQUIPMENT

REQUIRED	EQUIPMENT	REQUIRED	EQUIPMENT
	Ventilator		Hand / Foot Protection
	Respirator		Body Protection
	Atmospheric Monitor		Ground Fault Provided
	Blocking Device		Lighting
	Harness		Spark-proof Tools
	Tripod - Emergency Escape Apparatus		Ladder / Safe Access
	Eye Protection		Fire Extinguisher
	Hearing Protection		Intrinsically Safe Radio / Phone
	Other:		

ACCEPTABLE ENTRY CONDITIONS

DONE	ACTION	DONE	EQUIPMENT
	Review Permit with Attendant and Entrant		All Safety Equipment Available
	Entry Permit Posted at Portal		MSDSs Reviewed
	Preparation / Isolation Procedures Done		Pre-Opening Hazards Eliminated
	Traffic Control / Barricading Done		Employees Task Trained
	Attendant/Entrant Communication Tested		Atmospheric Tests Satisfactory
	CSE / Crews, Emergency Services		Surrounding Areas Free From Vapors and Other Hazards

CONTINUOUS ATMOSPHERIC MONITORING

GAS	ACCEPTABLE	TIME	READING	TIME	READING	TIME	READING
Oxygen	19.5 – 23.5 %						
LEL	<10%						
Toxics	< PEL / TLV						
Other							

LEL = Lower Explosive Limit
PEL = Permissible Exposure Limit
TLV = Threshold Limit Value

Post Entry Cancellation of Permit by Confined Space Entry Supervisor _____