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## Confined Space Protocol

### Overview

#### Purpose

This Devon Energy EHS Protocol defines what is required to protect workers from the hazards encountered in and around confined spaces, and establishes minimum requirements for entry into a confined space.


#### Scope

This protocol applies to all Devon operated equipment, facilities and all Devon employees.

Contractors will have their own program that meets or exceeds Devon's Confined Space Protocol.

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## 1.0 RESPONSIBILITIES

### Division/Business Unit Leadership

- Reinforce adherence to this protocol and provide resources for application of the protocol.
- Ensure employees are trained appropriately for working in or around a confined space.

### Line Supervisor

- Understand how this protocol applies to personnel in their area of responsibility.
- Ensure employees have training, skills, knowledge and understanding to comply with this protocol.
- Check periodically to ensure the requirements of this protocol are being met.

### Environmental, Health, and Safety

- Provide technical resources and tools for protocol application.
- Monitor compliance through the audit process.

### Devon Employees

- Adhere to the requirements of this protocol.
- Identify and report gaps in this protocol.
- Complete required training.

### Contract Company Representative

- Comply with regulatory requirements and follow the Devon EHS protocols.

## 2.0 TERMS AND DEFINITIONS

### 2.1 Confined Space Terms and Definitions

**Acceptable Entry Conditions** - conditions that must exist in a confined space to allow entry and to ensure that individuals involved with a confined space entry can safely enter.

**Attendant** - an individual stationed outside a confined space that monitors the Authorized Entrants, and performs all attendant's duties assigned in this Confined Space Protocol.

**Authorized Entrant** - an individual who is authorized by the Confined Space Entry Supervisor to enter a Permit-required confined space.

**Air Supplying Respirator (ASR)** - a device that provides breathing air. There are 2 types of ASR: Supplied Air Respirator and Self-Contained Breathing Apparatus (SCBA).

**Blind** - A piece of steel inserted between two flanges, or at the end of a flange, that stops the flow of gas or fluids by blocking of a section of pipe. Blinds must meet the specifications for the service and pressure they are in. See Blind Flange Spec Sheet (**Appendix D**) for additional details.

**Breathing Air** - air used in air supplying respirators meeting the following requirements.

- United States - ANSI/Compressed Gas Association Commodity Specification for Air (G-7.1-1989)
- Canada - Canadian Standards Association Z180.1.

**Confined Space** - a space that is large enough and so configured that:

- an individual's entire body can enter to perform assigned work;
- it has limited or restricted means for entry or exit; and
- it is not designed for continuous human occupancy (see **Appendix A** for examples of common confined spaces).

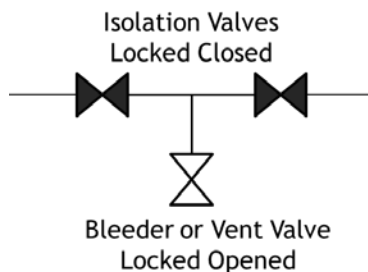
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**Confined Space Entry Permit** - a written document that authorizes and controls entry into a confined space.

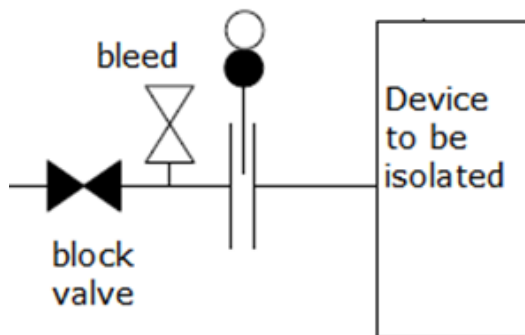
**Confined Space Entry Supervisor** - an individual, line supervisor, Devon employee, contract company representative authorized and responsible for

- verifying that acceptable entry conditions are present
- authorizing entry by issuing a confined space permit
- overseeing entry operations, and
- terminating entry as required by this protocol.

**Double Block and Bleed** - the isolation of a line, duct or pipe by closing and locking out two in-line valves and by opening and locking out a drain or vent valve in the line between the two closed valves.



**Double Isolation** - the isolation of a line, duct or pipe by closing and locking out a single in-line valve, installing a slip blind, and opening and locking a drain or vent valve in line between the valve and the slip blind.



**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, or crushing.

**Entry** - when any part of the entrant's body passes through an opening into a confined space.

**Hazardous Atmosphere** - an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to escape unaided from a confined space, injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10% of its lower explosive limit (LEL)



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- Airborne combustible dust at a concentration that meets or exceeds its LEL
- Atmospheric oxygen concentration below 19.5% or above 23.5%
- Atmospheric concentration of any substance for which an employee exposure would exceed the permissible exposure limit (PEL).
- Any other atmospheric condition that is immediately dangerous to life or health.

**Immediately Dangerous to Life or Health (IDLH)** - any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effect, or would interfere with an individual's ability to escape unaided from a confined space.

**Isolation** - the process by which a confined space is removed from service and is completely protected against the release of energy and material into the space by using lockout/tagout and at least one of the following methods:

- Blanking or blinding,
- Disconnecting Electrical Energy Sources
- Removing sections of lines, pipes, or ducts,
- Using a double block and bleed system, or
- Blocking or disconnecting all mechanical linkages.

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

- Contains or has a potential to contain a hazardous atmosphere
- Contains a material that has the potential for engulfing an entrant
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, a floor which slopes downward and tapers to a smaller cross-section, or contains any other recognized serious safety or health hazard

**Retrieval System** - the equipment (including a retrieval line, full body harness, and a lifting device or anchor) used for non-entry rescue of person(s) from permit-required confined spaces.

### 2.2 General Terms and Definitions

**Area** - individual operating fields or components that collectively comprise a Region, Areas normally include an area office.

**Area Office** - a field office with assigned employees that support an area. (e.g., Cuero, Artesia, etc.).

**Business Unit** - individual components that collectively comprise a Division. Business Units may also be referred to as Basins.

**Contract Company Representative** - a contractor who is assigned responsibilities, oversight and acts as Devon's on-site representative following and implementing the protocol steps as an employee would, for a specific task that requires adherence to Devon EHS Protocols.

**Division** - the division operations of Devon are Canada, Corporate, Marketing & Midstream, and U.S.

**Enterprise Classification Structure** - part of Devon's strategic plan for managing information assets. The ECS is the published list of all records classes, the period of time for retaining each and their designated disposition.

**Facility** - a collection of structures, piping, valves, vessels, tanks, compression, and processing equipment located in close geographic proximity, that are involved directly in the development, production, processing or delivery of oil and gas to market (e.g., a tank battery, drill site, well-site, compressor station, pipeline, and gas plant).

**Field EHS** - a titled position that provides EHS guidance and support within a Division.



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**Line Supervisor** - a titled position that has assigned authority and responsibility for financials, production, maintenance, projects and personnel for a defined area. In Devon, this could be any Supervisor, Superintendent, Foreman, or Assistant Foreman.

**Person In Charge (PIC)** - a person that has been authorized by Devon to perform specific tasks to comply with this Devon protocol and/or regulatory requirements related to EHS. The PIC is defined in all protocols in the second column of the protocol section.

**Region/District** - individual components that collectively comprise a Division.

### 2.3 Canadian Terms and Definitions

**Confined Space** - a restricted space which may become hazardous to a worker entering because of

- an atmosphere that is or may be injurious by reason of oxygen deficiency or enrichment, flammability, explosivity, or toxicity
- a condition or changing set of circumstances within the space that presents a potential for injury or illness, or
- the potential or inherent characteristics of an activity which can produce adverse or harmful consequences within the space.

**Entry** - when an entrant's head passes through an opening into a confined space.

**Utilidor** - an aboveground, insulated network of pipes and valves used to protect process piping from freezing.

3.0 PROTOCOL		
3.1 Confined Space Evaluation		
Step	Person In Charge (PIC)	Action
3.1.1	Line Supervisor	Evaluate the workplace to identify confined spaces. Use the Confined Space Evaluation Flowchart in <b>Attachment B</b> to evaluate if the confined space is a permit required confined space.
3.1.2	Line Supervisor	Communicate the confined space types and examples, along with associated hazards identified to employees and contractors. <b>Note:</b> Communication can be done through safety meetings, protocol training or orientation.
3.1.3	Employee	Label confined spaces that are easily accessed without the use of a key or tool with a danger sign shown in Confined Space Entry Sign section ( <b>Appendix B</b> ) or equivalent.
3.2 Confined Space Preparation		
Step	Person In Charge (PIC)	Action
3.2.1	Line Supervisor	Designate trained and qualified individual as the Confined Space Entry Supervisor for a specific project/job/task.
3.2.2	Line Supervisor	Notify Field EHS during the planning stage for a permit-required confined space entry.
3.2.3	Line Supervisor/Confined Space Entry Supervisor	Complete a Job Hazard Analysis (JHA) prior to performing any work associated with a permit-required confined space entry. <b>Note:</b> Refer to the Pre-Job Planning Protocol for the JHA process. <b>Note:</b> Rescue options must be reviewed during planning stage.



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3.2.4	Employee	Follow the Lockout/Tagout Protocol and isolate the permit-required confined space using the methods listed below: <ul style="list-style-type: none"> <li>• Double block and bleed</li> <li>• Blanking or blinding</li> <li>• Disconnecting equipment</li> <li>• De-energize electrical equipment</li> <li>• Securing moving parts</li> </ul>
3.2.5	Employee	Purge, steam, wash, or otherwise clean the permit-required confined space to free the space of contaminants, and dispose of waste according to the Waste Management Implementation Plan.
3.2.6	Employee	Verify that conditions are safe prior to opening a confined space. <b>Note:</b> Conditions inside the confined space may expose personnel removing entrance covers and positioned outside the confined space to hazardous conditions once the entrance cover is removed. Precautions include continuous monitoring while opening the vessel and ensuring all sources of ignition have been eliminated.
3.2.7	Employee/Confined Space Entry Supervisor	Post a danger sign at the confined space entrance when opening a confined space. This sign will stay in place until the confined space is closed. <b>Note:</b> Use the danger sign in <b>Appendix B</b> , or equivalent.
<b>3.3</b>	<b>Rescue and Emergency Services for Permit-Required Confined Spaces</b> If non-entry rescue cannot be performed for a permit-required confined space, then a rescue team must be on site.	
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>
3.3.1	Confined Space Entry Supervisor	Determine if non-entry rescue can be performed or if a rescue team is required based on the configuration and hazards of the confined space. <b>Note:</b> A rescue team is required if entanglement or obstruction hazards prevent non entry rescue.
3.3.2	Confined Space Entry Supervisor	Follow steps 3.3.3 - 3.3.4 for selection requirements if a rescue team is required. If non-entry rescue is used, follow steps 3.3.5 - 3.3.7. <b>Note:</b> Confined spaces with an entrance 4 feet above the work level are considered elevated. These confined spaces require a rescue team that has been trained on high angle rescue.
<b>Rescue Team Selection Requirements</b>		
3.3.3	Confined Space Entry Supervisor	Designate a rescue team or service that will be onsite and is appropriate for the permit-required confined space hazard(s) identified. <b>Note:</b> The Emergency Rescue Team section ( <b>Appendix C</b> ) lists the requirements that must be met by internal or external rescue teams.
3.3.4	Confined Space Entry Supervisor	Inform each outside rescue team or service of the hazards they may confront when performing rescue at the site.
<b>Non-entry Rescue</b>		



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3.3.5	Confined Space Entry Supervisor	Ensure emergency equipment is available at the worksite for non-entry rescue (e.g., tripod, first aid kit, AED, etc.)
3.3.6	Confined Space Entry Supervisor	Use retrieval systems whenever an authorized entrant enters a confined space, unless the retrieval equipment increases the overall risk of entry, or does not contribute to the rescue of the entrant. <b>Note:</b> If a retrieval system cannot be used, a rescue team must be available.
3.3.7	Confined Space Entry Supervisor	Require entrants to wear a full body harness with a lifeline attached to the D-ring to allow for non-entry rescue. <b>Note:</b> Lifeline will remain attached to the rear D ring of the harness at all times while inside the confined space. <b>Note:</b> Only designed/approved retrieval systems will be used for retrieving employees from CSE.
<b>3.4</b>	<b>Confined Space Permit Process</b>	The permit process is to ensure that entry conditions are safe, engineering controls have been installed, and PPE has been identified prior to entry.
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>
3.4.1	Confined Space Entry Supervisor	Review the JHA during the Pre-Task Tailgate and identify additional site-specific conditions, measures, and entry procedures prior to entry.
3.4.2	Confined Space Entry Supervisor	Verify all energy sources which are potentially hazardous to the entry team are isolated and secured by lockout before personnel are allowed to enter the confined space.
3.4.3	Confined Space Entry Supervisor	Provide a safe means of access and egress at all times when the confined space is entered and/or exited from above or below grade. <b>Note:</b> This could include a portable ladder or scaffolding that is installed and secured for climbing.
3.4.4	Confined Space Entry Supervisor	Ensure all these conditions are met before entry: <ul style="list-style-type: none"><li>• Air-operated (pneumatic) or explosion-proof (Class 1, Division 1 per the National Electrical Code) electrical tools must be used whenever there is a danger of explosion or fire, or obtain a hot work permit before use of unclassified tools.</li><li>• Properly bond or ground equipment to prevent static sparks, and</li><li>• Use a GFCI with all electric tools and equipment.</li></ul>
3.4.5	Employee/Confined Space Entry Supervisor	Use explosion proof lighting equipment, and ensure cord and plug lighting is protected with a Ground Fault Circuit Interrupter (GFCI) while working within the confined space.
3.4.6	Confined Space Entry Supervisor	Provide fire extinguisher(s) at the worksite, if flammable or combustible materials are present.



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### 3.5 Testing and Monitoring Requirements

Prior to entry into a confined space the atmosphere will be tested to determine if it is safe to enter, and if there are additional PPE requirements for entrants. If the Confined Space Entry Supervisor is required to enter the confined space to perform atmospheric testing, an air supplied respirator is required until the testing is completed. Allow employees or their representative to witness testing.

Step	Person In Charge (PIC)	Action
3.5.1	Confined Space Entry Supervisor	Perform a bump check each day before use, and if a monitor fails the bump check then a full calibration must be performed. <b>Note:</b> Follow manufacturer's recommendations for routine calibration of monitors.
3.5.2	Confined Space Entry Supervisor	Record the calibration date and monitor serial number on the Confined Space Entry Permit ( <b>Attachment C</b> ).
3.5.3	Confined Space Entry Supervisor	Conduct the initial test of the confined space atmosphere using a monitor equipped with a pump, sampling for the components listed below, in the order they are listed. <ul style="list-style-type: none"><li>oxygen content,</li><li>flammable vapor concentrations (LEL),</li><li>Carbon Monoxide (CO), and</li><li>any known or potentially toxic material concentrations in the confined space (e.g., Hydrogen Sulfide (H<sub>2</sub>S), benzene).</li></ul> <b>Note:</b> When the confined space has ventilation installed, the system will be shut down 5 minutes prior to the test and remain off during the test.
3.5.4	Confined Space Entry Supervisor	Sample for NORM following the NORM Implementation Plan
3.5.5	Confined Space Entry Supervisor	Test the atmosphere for at least the minimum response time specified by the test monitor manufacturer, including the time it takes for the sample to travel through the sample tubing. <b>Note:</b> When monitoring for entries involving a decent into atmospheres that may be layered, the atmospheric envelope should be tested a distance of approximately 4 feet (1.22 m) in the direction of travel and to each side. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.
3.5.6	Confined Space Entry Supervisor	Record the initial atmospheric tests on the Confined Space Entry Permit.
3.5.7	Confined Space Entry Supervisor	Follow the steps listed below when a confined space entry is required to perform the atmospheric tests. <ul style="list-style-type: none"><li>Complete and document on the permit that all of the permit conditions have been met, except for the test results.</li><li>Use an air supplied respirator and follow the Respiratory Protection Implementation Plan.</li><li>Have a rescue team onsite during the entry.</li></ul>





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3.5.8	Confined Space Entry Supervisor	Evaluate the test results to determine if they are within acceptable parameters.	
		Oxygen	19.5 to 23.5% atmospheric concentrations for employee work areas.
		LEL	10% or less. <b>Note:</b> Any reading between 0 and 10% LEL must be fully investigated to identify and understand the source and determine if a Confined Space Permit should be issued.
		CO	25 ppm or less. (ACGIH – Threshold Value Limit)
		Toxic Level	Exceeds the Permissible Exposure Limit (PEL) or Occupational Exposure Limit (OEL) <b>Note:</b> For PEL, see MSDS.
		H <sub>2</sub> S	10 ppm or less.
		Benzene	0.5 ppm
		<b>Note:</b> Sampling for H <sub>2</sub> S and Benzene is required when there is a potential for exposure. <b>Note:</b> While entry can be made at 10% LEL, there is the potential to have other toxic hazards that need to be considered. <b>Note:</b> Methane calibrated monitors are not appropriate for all hazards. See manufactures instructions for additional details.	
3.5.9	Confined Space Entry Supervisor	Stop the confined space permitting process and determine cause if the test results do not meet the parameters.	
3.5.10	Confined Space Entry Supervisor	Re-clean and re-test or install ventilation as per section 3.7 and re-test, the space.	
3.5.11	Confined Space Entry Supervisor	Provide continuous atmospheric monitoring inside the confined space while occupied by entrants.	
3.5.12	Confined Space Entry Supervisor	Re-test the atmosphere of the confined space after it has been left unoccupied for more than 15 minutes and document the results on the confined space entry permit.	
<b>3.6</b>	<b>Confined Space Reclassification</b> A confined space can be reclassified from a permit required to a non-permit required confined space if there are no hazards or potential hazards in the space.		
<b>Step</b>	<b>Person In Charge (PIC)</b>	<b>Action</b>	
3.6.1	Confined Space Entry Supervisor	Reclassify a permit-required confined space to a non-permit-required confined space if: <ul style="list-style-type: none"> <li>The confined space poses no actual or potential atmospheric hazards <b>Note:</b> LEL must be 0% before reclassifying a permit required confined space to a non-permit required confined space.</li> <li>All hazards within the space are eliminated without entry into the space, and</li> </ul>	



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		<ul style="list-style-type: none"> <li>Physical hazards remain eliminated.</li> </ul>
3.6.2	Confined Space Entry Supervisor	<p>Stop the entry and reclassify a non-permit-required confined space to a permit-required confined space if:</p> <ul style="list-style-type: none"> <li>Testing indicates the atmosphere is outside of the parameters listed in 3.5.8.</li> <li>LEL is above 0%.</li> <li>Any hazard arises or is introduced into the confined space.</li> </ul>
3.6.3	Confined Space Entry Supervisor	Provide continuous atmospheric monitoring inside the confined space while occupied by entrants.
3.6.4	Confined Space Entry Supervisor	Use the Confined Space Entry Permit Form to document the reclassification.
<b>3.7</b>	<b>Ventilation</b>	
	Provide adequate ventilation in all buildings, pits, rooms, vaults, or other enclosed areas to protect employees from dangerous working conditions resulting from accumulation of hazardous concentrations of flammable vapors, toxic gases, or an oxygen deficient or enriched environment.	
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>
3.7.1	Confined Space Entry Supervisor	Provide general mechanical ventilation when potential atmospheric hazards exist after the space has been purged and cleaned.
3.7.2	Confined Space Entry Supervisor	Consideration should be given to the volume of the space to be ventilated, the output capacity of the ventilating device and the distribution of air within confined space, when ventilation is implemented on a confined space.
3.7.3	Confined Space Entry Supervisor	<p>Provide general mechanical ventilation when welding or cutting is done in a confined space that is less than 10,000 cubic feet per welder, or in a confined space having a ceiling height of less than 16 feet. The minimum rate of ventilation will be 2,000 cubic feet per minute per welder.</p> <p><b>Note:</b> 10,000 ft<sup>3</sup> is equal to 1,781 Bbl.</p>
3.7.4	Confined Space Entry Supervisor	Set up and operate ventilation equipment per the manufacturer's instructions or guidelines.
3.7.5	Confined Space Entry Supervisor	Use intrinsically safe ventilation if used in an area with flammable vapors, or liquids.
3.7.6	Confined Space Entry Supervisor	Bond the ventilation equipment to the confined space if the space is constructed of metal.
3.7.7	Confined Space Entry Supervisor	<p>Take precautions to prevent workers from being exposed to contaminated air.</p> <ul style="list-style-type: none"> <li>Duct away exhaust ventilation to prevent exposure for attendants, and other individuals in the area.</li> <li>Locate portable internal combustion engines (e.g., welding machine, air compressor, vehicles, etc.) away from a confined space, to prevent exhaust being pulled into the confined space.</li> </ul>
3.7.8	Confined Space Entry Supervisor	Re-test the atmosphere after ventilation equipment has been installed and running.



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		Note: Re-testing the atmosphere verifies that no contaminants are being pulled into the confined space as a result of the ventilation.
<b>3.8</b>	<b>Confined Space Entry Permit</b>	
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>
3.8.1	Confined Space Entry Supervisor	Determine the Personal Protective Equipment required for safe entry into a confined space. Respiratory protection can be used if ventilation does not reduce toxic gas level below acceptable levels.  Note: No entry is allowed if the LEL is greater than 10 %.
3.8.2	Confined Space Entry Supervisor	Complete the confined space entry permit addressing the minimum requirements listed below: <ul style="list-style-type: none"> <li>• Date, time and duration of the entry permit (12 hour maximum duration or until the end of the shift)</li> <li>• Site/location of the permit space to be entered</li> <li>• Equipment name</li> <li>• Purpose of Entry and work to be performed</li> <li>• Confined Space Entry Supervisor's name</li> <li>• Entrants' name and name of company</li> <li>• Attendants' name and name of company</li> <li>• Hazards of the permit space to be entered</li> <li>• Measures used to isolate the confined space, and eliminate or control confined space hazards.</li> <li>• Means of communication</li> <li>• Personal Protective Equipment Requirements</li> <li>• Name of instrument, model/type, serial number, and calibration date of instrument used to perform the sampling</li> <li>• Tester's name</li> <li>• Acceptable Entry Conditions</li> <li>• Monitoring Results</li> <li>• NORM levels</li> <li>• Emergency Services and Phone Numbers</li> <li>• Emergency equipment required to be on-site</li> <li>• Any other information which is necessary to ensure employee safety</li> <li>• Any additional permits, such as for hot work, that have been issued for the permit space</li> </ul>
3.8.3	Confined Space Entry Supervisor	Sign the entry permit before entering or allowing entry into the confined space, and make the completed permit available on location at the time of entry. The confined space permit will be left with the attendant at the entrance to the space.  Note: The confined space permit will be made available for all entrants to review prior to entry into the confined space.



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3.8.4	Confined Space Entry Supervisor	<p>Cancel the Confined Space Entry Permit if any of the conditions below occur:</p> <ul style="list-style-type: none"> <li>• The entry operations covered by the entry permit are completed,</li> <li>• A prohibited condition under the entry permit arises in the confined space,</li> <li>• An emergency situation occurs,</li> <li>• There is a change in the job or configurations of the space, inside or outside, that creates a hazard for the entrants, or</li> <li>• The permit expires.</li> </ul>
3.8.5	Confined Space Entry Supervisor	<p>Debrief all Devon employees and contractors involved in a confined space entry regarding any hazards confronted or created in permitted spaces during entry operations.</p> <p><b>Note:</b> Document debriefing on <b>Attachment D</b> or equivalent.</p>
<b>3.9</b>	<b>Entry-Related Personnel Duties</b>	
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>
3.9.1	Confined Space Entry Supervisor	<p>Ensure Authorized Entrants:</p> <ul style="list-style-type: none"> <li>• Understand the hazards that may be faced during entry, including information on the exposure mode, signs or symptoms, and consequences.</li> <li>• Properly use equipment.</li> <li>• Communicate with the attendant as necessary to enable the attendant to monitor entrant status, and alert entrants of the need to evacuate the space.</li> <li>• Alert the attendant whenever the entrant recognizes any warning sign or symptoms of exposure to a dangerous situation or detects a prohibited condition.</li> <li>• Exit from the confined space as quickly as possible when an order to evacuate is given by the attendant or entry supervisor, or evacuation alarm is activated.</li> </ul>
3.9.2	Confined Space Entry Supervisor	<p>Ensure Attendant:</p> <ul style="list-style-type: none"> <li>• Continuously maintains an accurate count of authorized entrants in the confined space and documents on the Entry Exit Log (<b>Attachment D</b>).</li> <li>• Remains outside the confined space during entry operations, until relieved by another attendant.</li> <li>• Understands the hazards that may be faced during entry, including information on the exposure mode, signs or symptoms, and consequences.</li> <li>• Has awareness of possible behavioral effects of hazard exposure in authorized entrants.</li> <li>• Monitors activities inside and outside the space to determine if it is safe for entrant to remain in the space.</li> </ul>



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		<ul style="list-style-type: none"> <li>Prevents unauthorized persons from approaching or entering a confined space while entry is underway, and notifies entry supervisor if unauthorized entry is attempted.</li> <li>Does not perform duties that might interfere with primary duty to monitor and protect the authorized entrants.</li> <li>Communicates with authorized entrants to monitor entrant status, and alert entrants of the need to evacuate the space.</li> <li>Summons rescue and other emergency services as soon as it is determined that authorized entrants may need assistance to escape from confined space hazards.</li> </ul>
3.9.3	Attendant	<p>Order the authorized entrants to evacuate the confined space immediately if one of the following occur:</p> <ul style="list-style-type: none"> <li>Atmospheric conditions outside the allowable parameters in step 3.5.8.</li> <li>A prohibited condition</li> <li>The behavioral effects of hazard exposure in an authorized entrant are detected</li> <li>A situation outside the space that could endanger the authorized entrants is detected, or</li> <li>The attendant cannot effectively and safely perform all the assigned duties</li> </ul>
3.9.4	Confined Space Entry Supervisor	<p>Follow confined space entry supervisor duties:</p> <ul style="list-style-type: none"> <li>Understand the hazards that may be faced during entry, including information on the exposure mode, signs or symptoms, and consequences.</li> <li>Verify the following before endorsing the permit and allowing entry to begin: <ul style="list-style-type: none"> <li>Appropriate entries have been made on the permit,</li> <li>All permit specified tests have been conducted,</li> <li>Procedures and equipment are in place, and</li> <li>Equipment has been isolated</li> </ul> </li> <li>Determine when responsibility for a confined space entry operation is transferred, and ensure entry operations remain consistent with terms of the entry permit and acceptable entry conditions are maintained.</li> <li>Terminate entry and cancel the permit, as required.</li> <li>Verify that rescue services are available, and the means for summoning them operable.</li> <li>Remove unauthorized individuals who enter, or attempt to enter the confined space during entry operations.</li> </ul>
<b>3.10</b>	<b>Contractor Confined Space Entry Work</b>	
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>
3.10.1	Line Supervisor	Inform the contractor that the workplace contains confined spaces, and confined space entry is allowed only through compliance with a written



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		confined space program and site-specific entry procedures that meet regulatory requirements.		
3.10.2	Line Supervisor	<p>Obtain information about the written confined space entry procedures that the contractor plans to follow for the specific work to be performed, and review the required duties of all employees and contractors. This includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>• The Confined Space Entry Supervisor</li> <li>• Authorized Entrant</li> <li>• Attendant, and</li> <li>• Rescue Services and emergency contact information</li> <li>• Training requirements and documentation</li> </ul>		
3.10.3	Line Supervisor	<p>Inform the contractor of the hazards identified and Devon's experience with the specific confined space to be entered, and any precautions or procedures that Devon has implemented for the protection of employees in or near confined spaces where the contractor will be working.</p> <p><b>Note:</b> Use the Pre-Task Tailgate, to communicate the above information and transfer responsibilities to the contractor.</p>		
3.10.4	Line Supervisor	Provide contract personnel that will be entering a permit required confined space, copies of Safety Data Sheets to review, for materials that were inside of the confined space prior to entry.		
3.10.5	Confined Space Entry Supervisor	Obtain copies of the contractor's permits and related documents associated with the entries performed at a Devon location, for filing and review as listed in section 3.11 and 4.0.		
<b>3.11</b>	<b>Review</b>			
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>		
3.11.1	Field EHS/Line Supervisor	<p>Conduct an annual review of confined space entry permits and associated Entry/Exit logs from the past 12 months (<b>Attachments C and D</b>) by the Devon business unit.</p> <p><b>Note:</b> This can be performed during the annual EHS review.</p>		
3.11.2	Field EHS	Document and create corrective actions to address findings from the annual review into the Devon Corporate Incident Management System.		
<b>4.0</b>	<b>RECORDKEEPING</b>			
<b>Step</b>	<b>Person in Charge (PIC)</b>	<b>Action</b>		
4.1.1	Employee/Contract Company Representative	Forward all confined space records to the Line Supervisor for filing.		
4.1.2	Line Supervisor	File the records from Section 4.1.1 as noted below:		
4.1.3	<b>Record</b>	<b>File Location &amp; Number</b>	<b>Retention Period</b>	<b>Record Series Code</b>
	Entry Permits	See Field Office File Directory	CY + 3 Years	EH45



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Entry/Exit Log

See Field Office File  
Directory

CY + 3 Years

EH45

**Note:** The Records Management Enterprise Classification Structure Code is listed as a reference, which should be used when records are sent to stored records.

### 5.0 TRAINING REQUIREMENTS

Step	Person in Charge (PIC)	Action
5.1	Line Supervisor	Verify that Devon employees who will be involved in confined space entry have been trained on this protocol before assigning them to confined space entry duties.
5.2	Line Supervisor	Verify confined space entry supervisors, attendants and rescue teams receive appropriate training and are familiar with the duties of their positions.
5.3	Line Supervisor	Verify contractors performing confined space entry activities have the required regulatory training for the task and are trained on their procedure.
5.4	Line Supervisor	Verify that the Confined Space Entry Supervisor has been trained by successfully completing the hands on validation checklist.

### 6.0 REFERENCES

29 CFR 1910.146, Permit-required Confined Spaces  
ACGIH - Threshold Limit Values for Chemical Substances and Physical Agents  
ASME B16.48-2010, Line Blanks  
ANSI/ASSE Z117.1-2009, Safety Requirements for Confined Spaces  
API Publication 2015, Safe Entry and Cleaning of Petroleum Storage Tanks  
NIOSH - Pocket Guide to Chemical Hazards  
NFPA 326: Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair



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### Appendix A - Confined Space Examples

The list below has examples of confined spaces that may be encountered while working on Devon field locations. Each confined space must be evaluated on a case by case basis depending on the hazards present and configuration.

Types of Confined Spaces	
Mud pits	Bins
Cellars	Compressor coolers
Frac tanks	Compressor crank case
Flow pits	Cooling towers
Process vessels	Valve boxes (i.e., frost boxes, vaults, utilidor)
Storage tanks	Canopy boxes
Fan shrouds	Production equipment (e.g. heater treater, saltwater tank, separator, etc.)





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### Appendix B - Confined Space Entry Sign





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## Confined Space Protocol

### Appendix C - Emergency Rescue Teams

Provide the outside rescue team or service selected with access to the confined space from which rescue may be necessary, so that the rescue service can develop appropriate rescue plans, and practice rescue operations.

Rescue teams must meet the following criteria:

- Must be available for rescue operations at all times.
- Must be able to meet the following requirements:
  - Provide the appropriate PPE needed to conduct confined space rescues safely and are trained so they are proficient in the use of PPE.
  - Practice making confined space rescues at least once every 12 months.
  - Provide trained employees to perform assigned rescue duties.
  - Provide at least one member of the rescue team that holds a current certification in first aid and cardiopulmonary resuscitation.
- Must be willing to perform rescue on the employer's workplace sites.
- Must be able to communicate effectively and immediately when a rescue is needed.
- Must provide sufficient means for rescue into spaces that pose significant atmospheric hazards.
- Must have the equipment and knowledge to perform elevated rescue.
- Must have the necessary skills to perform medical evaluations, patient packaging, and emergency response.
- Must have the necessary equipment to perform rescue.

Follow guidelines for retrieval systems

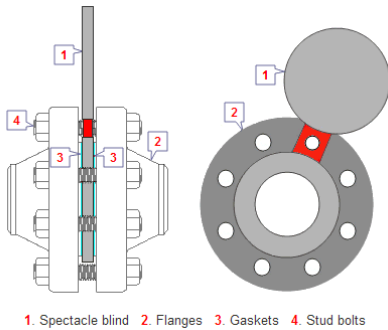
- Each authorized entrant will use a full body harness with a retrieval line attached to it.
- Attach the other end of the retrieval line to a mechanical device designed for personal retrieval, or fixed point outside the confined space so that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.
- A mechanical device designed for rescue will be available to retrieve personnel from vertical type confined spaces more than five feet deep.

Provide MSDS or written information of the substance to the medical facility treating an exposed entrant.

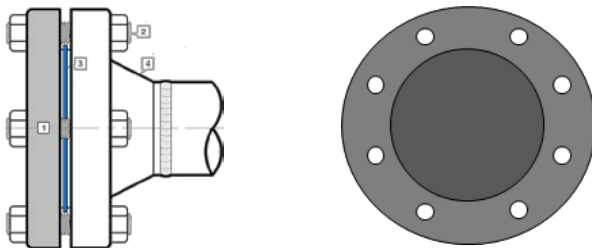
## Confined Space Protocol

### Appendix D - Blind Flange Spec Sheet

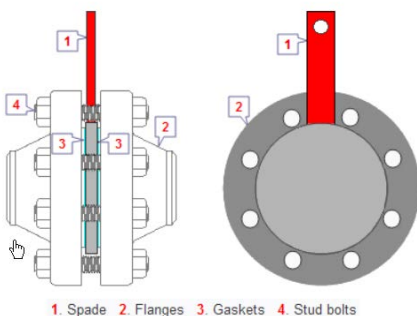
**Spectacle Blind** - a steel plate cut into two discs of a certain thickness. The two discs are attached to each other by a section of steel similar to the nose piece of a pair of glasses. One of the discs is a solid plate, and the other is a ring, whose inside diameter is equal to that of a flange opening.



**Blind Flange** - a plate for covering or closing the end of a pipe.



**Pancake Blind** - a blind that is temporary inserted between two flange faces in a line to block the flow. The blind has a handle that is used to insert and remove the blind. This blind is also referred to as a skillet blind, slip blind, spade blind, or a fan tail blind.





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### Appendix D - Blind Flange Spec Sheet (Continued)

#### ASME B16.48 - Dimension of Class 150 Raised Face Blinds

Nominal Pipe Size (in)	Inside Diameter, (in)	Outside Diameter, (in)	Centerline Dimension, (in)	Thickness, (in)	Web width $w_t$ , (in)
0.5	0.62	1.75	2.38	0.12	1.50
0.75	0.82	2.12	2.75	0.12	1.50
1	1.05	2.50	3.12	0.12	1.50
1.25	1.66	2.88	3.50	0.25	1.50
1.5	1.90	3.25	3.88	0.25	1.50
2	2.38	4.00	4.75	0.25	2.00
2.5	2.88	4.75	5.50	0.25	2.00
3	3.50	5.25	6.00	0.25	2.50
3.5	4.00	6.25	7.00	0.38	2.50
4	4.50	6.75	7.50	0.38	2.50
5	5.56	7.62	8.50	0.38	3.00
6	6.62	8.62	9.50	0.50	3.00
8	8.62	10.88	11.75	0.50	3.00
10	10.75	13.25	14.25	0.62	4.00
12	12.75	16.00	17.00	0.75	4.00
14	14.00	17.62	18.75	0.75	4.25
16	16.00	20.12	21.25	0.88	4.25
18	18.00	21.50	22.75	1.00	4.50
20	20.00	23.75	25.00	1.12	4.75
24	24.00	28.12	29.50	1.25	5.50

#### NOTES:

- (1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
- (2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except  $T_h \geq T + t$ , where  $T$  is the ring height specified in ASME B16.20.
- (3) The thickness of the web (or tie bar) dimension,  $w_t$ , shall be as determined by paragraph. 4.1.36 in ASME B16.20



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### Appendix D - Blind Flange Spec Sheet (Continued)

#### ASME B16.48 Dimension of Class 300 Raised Face Blinds

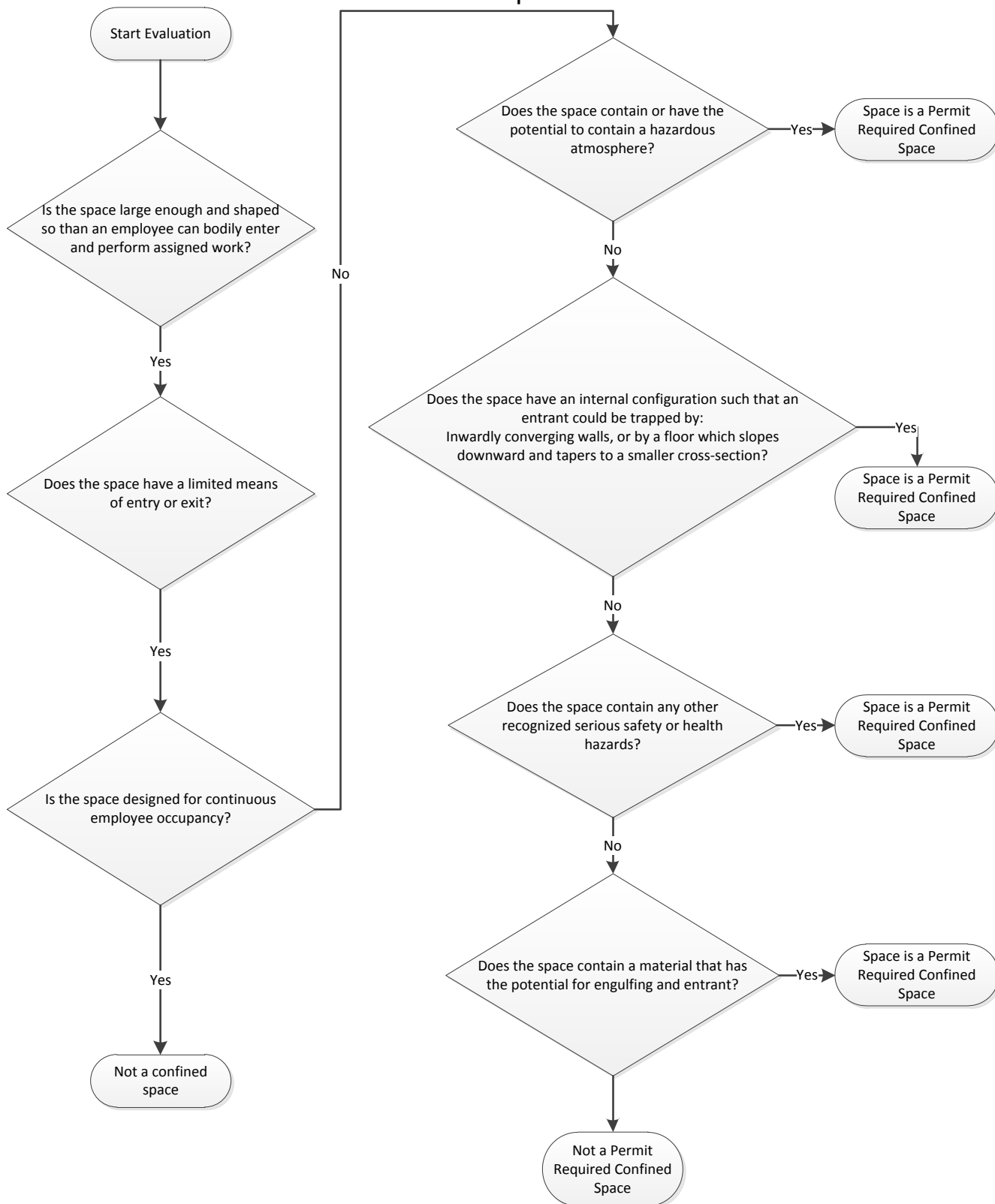
Nominal Pipe Size (in)	Inside Diameter, (in)	Outside Diameter, (in)	Centerline Dimension, (in)	Thickness, (in)	Web width <i>wt</i> , (in)
0.5	0.62	2.00	2.62	0.25	1.50
0.75	0.82	2.50	3.25	0.25	1.50
1	1.05	2.75	3.50	0.25	1.50
1.25	1.66	3.12	3.88	0.25	1.50
1.5	1.90	3.62	4.50	0.25	1.50
2	2.38	4.25	5.00	0.38	2.00
2.5	2.88	5.00	5.88	0.38	2.00
3	3.50	5.75	6.62	0.38	2.50
3.5	4.00	6.38	7.25	0.50	2.50
4	4.50	7.00	7.88	0.50	2.50
5	5.56	8.38	9.25	0.62	3.00
6	6.62	9.75	10.62	0.62	3.00
8	8.62	12.00	13.00	0.88	3.00
10	10.75	14.12	15.25	1.00	4.00
12	12.75	16.50	17.75	1.12	4.00
14	14.00	19.00	20.25	1.25	4.25
16	16.00	21.12	22.50	1.50	4.25
18	18.00	23.38	24.75	1.62	4.50
20	20.00	25.62	27.00	1.75	4.75
24	24.00	30.38	32.00	2.00	5.50

**NOTES:**

- (1) Hole size (where required due to bolt spacing) shall be the same as the flange bolt hole and located such that it will not interfere with bolting between two flanges.
- (2) Oval or octagonal ring shapes may be provided; only the oval ring is illustrated for simplicity. Ring dimensions shall be in accordance with ASME B16.20, except  $Th p T + t$ , where  $T$  is the ring height specified in ASME B16.20.
- (3) The thickness of the web (or tie bar) dimension,  $wt$ , shall be as determined by paragraph 4.1.36 in ASME B16.20



### Attachment B - Confined Space Evaluation Flowchart



Attachment C - Confined Space Entry Permit



<b>Division:</b>	<b>Field Office:</b>	<b>Date:</b>
Equipment Name and Location:		
Purpose of Entry:		

**CONFINED SPACE REQUIREMENTS (CHECK BOXES THAT APPLY)**

EQUIPMENT PREPARATION	COMMUNICATION	EMERGENCY PERPARDNESS
<input type="checkbox"/> Lines Double Blocked and Bled <input type="checkbox"/> Lockout/Tagout Implemented <input type="checkbox"/> Lines Disconnected <input type="checkbox"/> Lines Blinded <input type="checkbox"/> All Liquids Drained <input type="checkbox"/> Moving Parts Secured <input type="checkbox"/> Adjacent Areas Protected from Sparks <input type="checkbox"/> Hot Work Permit (See 5.5 in Hot Work Protocol) <input type="checkbox"/> Equipment Grounded	<input type="checkbox"/> Job Planning/JHA Complete <input type="checkbox"/> All Personnel Trained <input type="checkbox"/> Pre-Task Tailgate <input type="checkbox"/> Protocols and Work Procedures Reviewed <input type="checkbox"/> SDS Reviewed / Accessible <input type="checkbox"/> Communication Methods _____ <input type="checkbox"/> EHS Representative Notified	<input type="checkbox"/> Emergency Plans Reviewed <input type="checkbox"/> Assembly Points Established <input type="checkbox"/> Rescue Team On Site <input type="checkbox"/> Non-Entry Rescue <input type="checkbox"/> Retrieval System <input type="checkbox"/> Full Body Harness <input type="checkbox"/> Emergency Contact Information  Fire Phone #: _____  Medical Phone #: _____ Address: _____  And/or GPS: _____

PPE EQUIPMENT	ADDITIONAL SAFETY CONTROLS	HAZARDS FOR SPACE
<input type="checkbox"/> Gloves <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Personal Monitor (4 Gas/Single) <input type="checkbox"/> Respirator _____ <input type="checkbox"/> Goggles <input type="checkbox"/> Face Shield Additional Protective Clothing _____	<input type="checkbox"/> Explosion Proof Equipment <input type="checkbox"/> Fall Protection <input type="checkbox"/> Fire Extinguisher Size _____ Type _____ No. _____ <input type="checkbox"/> Scaffolding <input type="checkbox"/> Wash Facilities <input type="checkbox"/> Water/Liquids Available (Heat Stress) <input type="checkbox"/> Other: _____	<input type="checkbox"/> Electrical <input type="checkbox"/> Ventilation <input type="checkbox"/> Entrapment <input type="checkbox"/> Engulfment <input type="checkbox"/> Dust <input type="checkbox"/> Poor Visibility <input type="checkbox"/> Falls <input type="checkbox"/> Other Hazards _____

**ATMOSPHERIC TESTING (Initial monitoring, and re-testing after space is unoccupied for 15 minutes or more)**

Manufacturer:	Serial No.:	Cal Date:
Signature of Person Performing Atmospheric Tests:		Date & Time:
	Acceptable Limits	_____ am/pm
Oxygen	19.5-23.5%	_____ am/pm
LEL	< 10 %	_____ am/pm
CO	< 25 ppm	_____ am/pm
Sample for any known or potentially present toxic material concentrations as identified in 3.5.3		
Toxic/Benzene	< PEL/OEL (.5)	_____ am/pm
H <sub>2</sub> S	< 10 ppm	_____ am/pm
NORM	See NORM Implementation Plan	_____ am/pm

CONFINED SPACE ENTRY SUPERVISOR SIGNATURE  CONFINED SPACE ENTRY SUPERVISOR PRINT NAME  ATTENDANT SIGNATURE (S)  ATTENDANT PRINT NAME (S)  ATTENDANT COMPANY	Permit Start Time: _____  Permit Valid Until: _____	This permit will be valid for a maximum of twelve (12) hours, end of current shift, end of job, or whichever event occurs first. Any unscheduled work stoppage and/or emergency condition will nullify this permit.  <input type="checkbox"/> Permit re-classified to Non-Permit-required Confined Space  CONFINED SPACE ENTRY SUPERVISOR SIGNATURE & TIME OF COMPLETION: _____
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