KLM Technology Group
#03-12 Block Aronia,
Jalan Sri Perkasa 2
Taman Tampoi Utama
81200 Johor Bahru
Malaysia

CONFINED SPACE ENTRY

(PROJECT STANDARDS AND SPECIFICATIONS)

TABLE OF CONTENTS

Purpose

The purpose of this procedure is to:

- define the minimum conditions that must be met to assure employee and contractor safety during entry and work in confined spaces;
- serve as the written permit-required confined space program;
- comply with Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.146, Permit Required Confined Spaces, as well as various state occupational safety and health regulations regarding confined spaces; and
- comply with Department of Transportation (DOT) requirements to review American Petroleum Institute (API) Publication 2026, Safe Access/Egress Involving Floating Roofs.

Scope

1 Definition of a Confined Space

A confined space is a space that is large enough and so configured that a member of the workforce can partially or completely enter, travel through to an assigned work area and perform assigned work; has limited or restricted means for entry and exit; and, is not designed for continuous employee occupancy.

2 Personnel and Activities Covered by this Procedure

This procedure applies to all THE COMPANY Workforce in or on the company owned, operated, or maintained pipelines or facilities that enter a confined space.

3 Areas or Equipment Covered by this Procedure

Examples of equipment that may be confined space are, but not limited to:

- external floating roof tanks
- buried valve boxes, sumps or working platforms
- vessels, separators and tanks (entered by a man-way)
- pig/swab or scraper traps
- pits
- tank cars/trucks
- internal floating roof tanks
- pontoons of floating roofs
- footing excavations and bell bottom pier holes

This is a list of examples within THE COMPANY. Additional areas or equipment may also be considered confined spaces. If you have any questions, contact your Safety Specialist.

4 Exemptions from this Procedure

The following are exempt from this procedure:

- Hyperbaric chambers and dry habitats that are regulated by the United States Coast Guard;
- Tank berms (if dirt is sloped properly or stairways with handrails or ramps are provided); and
- Tank berms with concrete walls and stairways with handrails.

Prerequisites

- Only employees trained on this procedure are allowed to perform work involving Confined Space Entry.
- Confined Space Permit will be issued only after Safe Work Permit is completed.
- Persons conducting entry rescue must be trained to OSHA 1910.146 requirements.
- Attendants must be trained in cardiopulmonary resuscitation, blood-borne pathogens and first aid.
- At all times efforts must be made to assure that ONLY critical personnel are allowed to enter a Confined Space.
- As entrants are finished with assigned task they must exit the Confined Space to minimize the number of personnel within the Confined Space at all times

Glossary

Attendant

An individual stationed outside one or more Permit-Required Confined Spaces who monitors the authorized entrants and who performs all attendant's duties assigned in this procedure.

Authorized Entrant

Anyone, THE COMPANY employee or a contract personnel, who is authorized by THE COMPANY to enter a confined space. The Authorized Entrant is responsible to comply with all conditions and requirements on the permit. An Authorized Entrant may also be the Person-in-Charge.

Confined-Space

A space or area that meets all the following:

- Is large enough and so configured that an entrant could partially or completely enter, travel through to an assigned work area, and/or perform assigned work
- Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may limit means of entry)
- Is not designed for continuous occupancy

A confined space may lack adequate ventilation and may contain or produce dangerous air contaminants. It is not necessarily completely enclosed. It may be an area where air does not readily circulate to ventilate trapped contaminated air containing lighter than air gases, or where heavier than air gases may accumulate. Heavier than air gases may flow into low points and remain in ground depressions, open pits, and open holes. These gases can be dangerous if they are oxygen deficient, flammable, poisonous, toxic, or a combination of these conditions.

Examples of confined spaces include, but are not limited to:

- Closed or open tanks (including entry onto tank roofs);
- Vessels;
- Pits;
- Tank cars/trucks;
- Deep holes; and

- Compressor sub-flooring.

Contractor

A person who agrees to furnish materials or perform services at a specified price for construction. The person performing the work.

Emergency

Any occurrence (including any failure of hazard control or monitoring equipment) or event, internal or external, to the Permit Required Confined Space that could endanger the entrants (i.e. Persons Conducting the Work).

Engulfment

The surrounding and entrapment of a person by a liquid or fine substance that can be inhaled 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

The action by which a person's head and/or whole body passes through an opening into a Permit-Required Confined Space. Entry includes 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 Rescue The action by which a person passes through the opening into a permit-required confined space in which to rescue an injured or trapped entrant.

Hazardous Atmosphere

An atmosphere that may expose employees to a risk of death, incapacitation, and impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10% of the lower flammable limit (LFL);
- Airborne combustible dust at concentrations that meet or exceeds the LFL;
- Atmospheric oxygen concentration below 19.5 or above 23.5%;
- Atmospheric concentration of any substance for which a dose or permissible exposure limit (PEL) is published in OSHA and which could result in employees exposure in excess of its dose or PEL;

- An atmospheric concentration of any substance that is not capable of causing death (i.e., incapacitation, impairment of ability to self-rescue, injury, or acute illness) due to its health effects is not covered by this provision.
- Any other atmospheric condition that is immediately dangerous to life or health
    - For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Material Safety Data Sheets (MSDS), published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions

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 effects or that would interfere with an individual's ability to escape by themselves from a confined space.

Isolation

The process by which a confined space is removed from service and completely protected against the release of energy and material into the space by such means as: Blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages.

Non-Permit Confined Space

A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm. The Confined Space Entry Permit must be completed to document decisions made in determining classification.

Originator

The originator of the Confined Space Entry Permit is the person requesting permission to enter a confined space. This person is responsible for assuring necessary steps have been taken to eliminate the possibility of confined space injuries.

Oxygen Deficient Atmosphere

An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere

An atmosphere containing more than 23.5 percent oxygen by volume.

Permit Required Confined Space

A confined space that has any 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 or by a floor which slopes downward and tapers to a smaller cross-section
- Contains any other recognized serious safety or health hazard

Person-in-Charge

The Team Leader responsible for the assets, or their designated THE COMPANY employee representative, or Qualified Person In Charge, that has overall responsibility for determining acceptable conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

The Person-in-Charge cannot be a contractor; however, the Person-in-Charge can be a third party inspector who is acting as the Company representative.

- A Person-in-Charge also may serve as an Attendant or as an authorized entrant, as long as that person is trained and equipped as required by this procedure for each role he/she fills.
- The duties of the Person-in-Charge may be passed from one individual to another during the course of entry operations if recorded on the Entry Permit.

Potential

The possibility of a space containing or developing a hazardous atmosphere or other safety hazard. The history of the equipment or the activity to be performed in the space should be taken into consideration when determining if a potential exists.

Qualified Third Party PIC Contractors

A Contractor separate and distinct from the contractor performing the work, (or a third party who does not work for the contractor, but works directly on behalf of THE COMPANY) who has been trained in THE COMPANY applicable procedures, and understands the hazards, risks, exposures, and associated impact to operations from the activities in the facility.

Requestor/Work Owner

The person who selects, hires, or oversees the work of a contractor.

Rescue Service

Usually an outside company or agency (such as an ambulance, helicopter medivac, or contractor) that will be available (on-call or in attendance) to respond to a notification that assistance is required for performing rescue.

Retrieval System

The equipment (including a retrieval line, chest or full-body harness, and a lifting device or anchor) used for non-entry rescue of persons from a permit-required confined space.

Safe for Entry with Ventilation

The atmosphere in the space after ventilation is not expected to approach a hazardous atmosphere. This is necessary so that if the ventilation shuts down for any reason, the workers will have enough time to recognize the hazard and either exit the space or restore the ventilation. A guideline of 50 percent of the level of flammable or toxic substances that would constitute a hazardous atmosphere may be used to make the determination that atmospheric conditions are safe (i.e., 50% of 10% LFL is 5% LFL, 50% of 25 ppm PEL for carbon monoxide is 12.5 ppm, 50% of 5 ppm PEL for hydrogen sulfide is 2.5 ppm, etc.).

Side Entry

Entryways not more than 3½ feet above the level at which work is to be performed

Testing

The process to identify and evaluate hazards in a confined space. Testing includes specifying the tests that are to be performed in the confined space. Testing enables the Person-in-Charge to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during entry.

Top Entry

Vertical Entry. Entryways more than 3½ feet above the level at which work is to be performed.

Ventilation

The process of removing or displacing contaminants from a space or, of supplying oxygen to an oxygen deficient atmosphere. There are two types of ventilation: Forced air dilution ventilation and local exhaust ventilation.