

TABLE OF CONTENTS

<u>TITLE</u>	<u>PAGE #</u>
PURPOSE / INTRODUCTION	1
RESPONSIBILITY	1
EMPLOYEE TRAINING INCLUDING DOCUMENTATION	3
IDENTIFICATION OF CONFINED SPACES	4
PREVENTION OF UNAUTHORIZED ENTRY	4
CONFINED/ENCLOSED SPACE EQUIPMENT	4
PERMIT SYSTEM/ENTRY PROCEDURES	4
COMPLETION OF CONFINED SPACE ENTRY PERMIT	5
ENTERING THE CONFINED SPACE	7
EMERGENCY / RESCUE	8
COMPLETION OF CONFINED SPACE ACTIVITIES	8
EMERGENCY RESCUE EQUIPMENT	9
PROGRAM REVIEW	9
APPENDIX A – GLOSSARY	10
APPENDIX B – SAMPLE CONFINED SPACE ENTRY PERMIT	11
APPENDIX C – ENCLOSED SPACES	13

OSHA – PERMIT-REQUIRED CONFINED SPACES (29 CFR 1910.146)

**OSHA – ELECTRICAL POWER GENERATION, TRANSMISSION & DISTRIBUTION
(29 CFR 1910.269(e) – ENCLOSED SPACES)**

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

PURPOSE

The Tampa Electric Company (TEC) Permit-Required Confined and Enclosed Space Program is designed to ensure the safety of personnel required to enter and conduct work in confined and enclosed spaces.

INTRODUCTION

TAMPA ELECTRIC is dedicated to providing a safe and healthful workplace for its employees by communicating information concerning confined and enclosed spaces. This program applies to TAMPA ELECTRIC employees and contractors.

After assessing the confined spaces at the generating stations, TEC has decided to treat all confined spaces as permit-required. All manholes and vaults within Electric Delivery shall be treated as an enclosed space. Substation transformers will be treated as permit-required confined spaces and will follow this program. This will increase the safety for all confined space entrants.

RESPONSIBILITY

The Facility/Business Unit Director is responsible for the implementation and maintenance of the Permit-Required Confined and Enclosed Space Program.

The Vice President of Safety is responsible for reviewing and revising this program as necessary. Responsibilities supporting this objective may be assigned to others as designated.

Contractors are responsible for training their employee on the requirements for entering permit-required confined spaces and enclosed spaces. Contractors will provide an Entry Supervisor for confined spaces they are entering.

The TEC Contractor Supervisor or designee will review the Confined Space Permit prior to the first entry of a TEC confined space by a contractor. The review will be for completeness and accuracy and to ensure that contractor and their entry supervisors are familiar with the TEC requirements, hazards of the space to be entered and controls.

The Entry Supervisor is responsible for:

- a. Maintaining an accurate written log of entrants.
- b. Knowing the hazards associated with the space, including information on the mode of exposure and the signs, symptoms, and consequences of exposure. Verify that emergency plans and specified entry conditions such as permits, atmospheric tests, procedures, and equipment are in place before allowing entry. This includes ensuring hazardous energy controls are complete, and, all entrants are properly protected by Hazardous Energy Control, where applicable.

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

- c. Terminating entry and canceling the Confined Space Entry Permit when entry operations are completed, or if a new condition exists within the permit space.
- d. Removing unauthorized persons who enter or attempt to enter the permit space.
- e. Ensuring that entry operations remain consistent with the Confined Space Entry Permit and that acceptable entry conditions are maintained.
- f. Ensuring Confined Space Rescue Team is notified.
- g. The entry supervisor shall NOT leave the premises or site until permit is canceled.
- h. Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - 1. Warn the unauthorized persons that they must stay away from the permit space;
 - 2. Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and inform the authorized entrants, if unauthorized persons have entered the permit space.

The Authorized Entrant is responsible for:

- a. Knowing the existing and potential hazards of the space, including information on the mode of exposure, signs, symptoms, and consequences of exposure.
- b. Comply with the Hazardous Energy Control Program.
- c. Properly using all appropriate personal protective equipment.
- d. Maintaining communications with the attendant so the attendant can monitor the entrant's status and alert all entrants if the need to evacuate.
- e. Alerting the attendant when:
 - 1. A prohibited condition exists, or
 - 2. When signs or symptoms of exposure exist.
- f. Exiting the confined space immediately when:
 - 1. Ordered to do so, or
 - 2. The entrant recognizes the warning signs or symptoms of exposure, or
 - 3. A prohibited condition exists, or
 - 4. Notified by the facility emergency system.

The Attendant is responsible for:

- a. Knowing the existing and potential hazards of the space, including information on the mode, signs or symptoms, and the consequences of exposure, as well as the behavioral effects on the authorized entrants.
- b. Remaining outside the confined space during entry operations until relieved by another attendant.
- c. Maintaining visual or verbal communications as well as keep an accurate count of all entrants in the confined space.
- d. Monitoring activities inside the confined space and order an evacuation when:
 - 1. A prohibited condition exists, such as conditions not allowed by the Confined Space Entry Permit, or
 - 2. An entrant shows behavioral effects of a hazardous exposure, or
 - 3. An emergency exists outside the confined space, or

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

4. The attendant cannot effectively and safely perform the required duties.
- e. Summoning rescue and emergency services when an emergency exists.
- f. Warning unauthorized persons to avoid the confined space(s) and order their evacuation immediately if they have entered a Permit-Required Confined Space.
- g. Informing authorized entrants and the entry supervisor if unauthorized persons enter a Permit-Required Confined Space.
- h. Performing non-entry rescue, when possible.
- i. Performing no other duties that interfere with the attendant's primary duty to monitor and protect the authorized entrants.
- j. Ensuring appropriate precautions are in place whenever the space is left unattended to prevent unauthorized entry. This may be accomplished by, but not limited to, closing doors or hatches, erecting red barricade tape with proper note tag.

Members of the Confined Space Rescue Team are responsible for:

Taking all steps necessary to safely enter the confined space prior to assuming role of rescuer. These steps include:

- a. Ensuring implementation of Hazardous Energy Control
- b. Donning the appropriate PPE
- c. Evaluating the atmospheric conditions.

EMPLOYEE TRAINING

Target Audience – All employees and contractors who will be involved with a confined space entry shall receive training and information appropriate with their assigned duties (i.e. supervisors, entrants, and attendants).

This training shall be accomplished prior to the employee participating in an entry, and at least annually thereafter, or:

- Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.
- Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.

Confined Space Rescue Team members shall be trained in rescue prior to being assigned as a Confined Space Rescue Team member, and upon changes in existing spaces, or, at least annually thereafter. At least one member of the team shall hold a current First Aid and CPR Certification.

Frequency – Initially, then annually thereafter.

Methods – Training shall be accomplished through Computer-Based Training (CBT), PowerPoint, video, or other training materials determined adequate by the Safety Department.

At a minimum, the content of the training shall include;

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

- Purpose and application of program.
- Monitoring and Documentation requirements.
- Emergency Management and Notification procedures.
- Rescue procedures

Documentation – All employee training will be documented. Classroom training will require the attendees to sign a roster. When Computer Based Training is used, the training may be documented in a separate CBT program.

IDENTIFICATION OF CONFINED SPACES

The area management team shall ensure that all Permit-Required Confined Spaces have been identified using the definitions provided. Permit-Required Confined Spaces are identified with signage.

As new facilities are constructed, or as new spaces are identified those spaces will be identified with signage.

Signage will contain a message reading DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER or using other similar language.

PREVENTION OF UNAUTHORIZED ENTRY

During confined space entries, trained attendants will prevent unauthorized personnel from entering the confined space.

When entrance covers are removed from vertical entry-ways, the unattended openings shall be promptly guarded by a railing, temporary cover, or other temporary barrier that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space.

When entrance covers are removed from horizontal entry-ways, the unattended openings shall be guarded by a barricade to prevent accidental entry.

CONFINED/ENCLOSED SPACE EQUIPMENT

All equipment used during confined/enclosed space entry shall be inspected and maintained according to manufacturer instructions.

PERMIT SYSTEM/ENTRY PROCEDURES

General Requirements

A properly completed Confined Space Entry Permit Appendix B, is required prior to entering any confined space, and must be present at the entry site at all times during entry.

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

Tampa Electric Company shall authorize the Confined Space Entry Permit.

Prior to entry:

1. All additional required work permits, such as Hazardous Energy Control, Hot Work, Line Breaking, etc. shall be completed and approved; and
2. The power plant on-site Confined Space Rescue Team (minimum of 4) shall be notified (power plants only).
3. Prior to entry of a substation transformer confined space, a designated/trained rescuer shall be present.

Hazards of the confined space and scope of work shall determine equipment, tools, and personal protective equipment requirements.

The Confined Space Entry Permit is valid until the assigned work is completed but no longer than one shift. The entry supervisor may request an extension of the permit by notifying operations when work will extend past the normal end of a shift.

COMPLETION OF CONFINED SPACE ENTRY PERMIT

The confined space and scope of the work to be done shall be identified. All potential hazards shall be identified, evaluated, and controlled. Such as, but not limited to:

1. Hazardous energy sources (mechanical, electrical, hydraulic, pneumatic, etc.),
2. Hazardous inflows/outflows (chemical lines, steam, water, etc.),
3. Inherent confined space hazards (chemical/product residue, rust, organic decomposition, poor lighting, heat, engulfment, etc.), and
4. Hazards created by the work to be performed (falls, cutting/welding fumes, chemical vapors, potential ignition sources, heat, paint/spray fumes, etc.).
5. Hazards created by other companies / employers.

The means and methods to control the hazards shall be identified, such as, but not limited to:

1. Control of hazardous or potentially hazardous energy.
2. Utilization of specific hazardous energy control procedures.
3. Control of hazardous inflow/outflows (blanking, capping, disconnecting, etc).
4. Control of inherent confined space hazards (cleaning, lighting, purging, ventilation, etc.).
5. Control of work associated hazards (ventilation, PPE, Hot Work Permit, elimination of ignition sources, etc).
6. Wherever possible, confined spaces shall be provided with forced ventilation, to prevent the possible development of a hazardous atmosphere. Consideration shall also be made for the atmospheric conditions outside of the space that could be introduced into the confined space with forced ventilation.

Atmospheric Monitoring

No more than 30 minutes prior to initial entry, or if the space has been unoccupied for 30 minutes or longer, the space shall be tested for acceptable atmospheric conditions with a

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

properly calibrated direct reading monitor. When acceptable atmospheric conditions are NOT met, entry may be allowed with additional precautions as approved by Tampa Electric Safety Department, on a case by case basis.

The required acceptable conditions for entry are:

1. Oxygen – 19.5% minimum and 23.5% maximum concentration,
2. Explosives/Combustibles – Less than 10% of the lower explosive limit (LEL), and
3. Toxics/Hazardous Substances – For these common encountered substances utilize these values:
 - a. NH₃ (ammonia) less than 10 ppm
 - b. SO₂ (sulfur dioxide) less than 2 ppm
 - c. H₂S (hydrogen sulfide) less than 10 ppm
 - d. CO (carbon monoxide) less than 25 ppm
4. For Toxics/Hazardous Substances not listed above, consult TEC Safety Department.

Initial tests shall be conducted from outside the confined space without entry. Initial tests shall be taken at the top, middle, and bottom of the space and from the “breathing zone”.

Testing stratified atmospheres

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. If a sampling probe is used, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

Entry into the confined space is not allowed until acceptable atmospheric conditions have been met.

1. If atmospheric conditions are not acceptable, the reading shall be documented in the “Atmospheric Testing” section of the Confined Space Entry Permit, and entry discontinued until atmospheric conditions are made acceptable.
2. Once the atmospheric conditions become acceptable, the readings and the actions taken to make the conditions acceptable shall be documented in the “Control Measures Taken” section of the Confined Space Entry Permit.

Temperature extremes inside the space shall be assessed to prevent adverse effects to the Authorized Entrant(s).

A pre-job briefing shall be conducted with all personnel involved in the Confined Space Entry (entrants, attendants, entry supervisor) to include:

1. A review of the scope of the work to be done,
2. The potential hazards,
3. The means and the methods to control the hazards,
4. The atmospheric testing results,
5. The communication method to be used between,
 - a. The attendant and entrants,
 - b. The attendant and the Confined Space Rescue Team supervisor,
6. The actions to be taken in the event of an emergency.

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

Rescue Requirements

To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an authorized entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. When a harness or wristlets/anklets are not used, The Entry Supervisor must supply written justification for the exception and add their signature on the Entry Permit in the space next to the PPE line item of the Pre-Entry Checklist.

The Confined Space Rescue Team shall be notified prior to entry.

Note: At Big Bend Station, the FGD, Coalfield and Stevedoring Operations Centers SHALL notify the Steam Side Operations Center rescue team leader (Senior Operator).

Enclosed Spaces

Spaces designated as enclosed spaces do not require application of the confined space permit. Prior to entry into enclosed spaces atmospheric conditions shall be monitored to insure acceptable entry conditions exist. Continuous monitoring shall be conducted while inside the enclosed space.

ENTERING THE CONFINED SPACE

A confined space entry attendant shall be stationed at the point of entry. The attendant shall remain at the opening at all times during the entry, and maintain contact by pre-determined designated means with the entrant(s) at all times.

The confined space atmosphere shall be continuously monitored at the breathing zone whenever a confined space is occupied. The attendant shall record at a minimum, approximately once per hour, the time and result of the readings on the Confined Space Entry Permit. Whenever the space becomes unoccupied for greater than 30 minutes, for whatever reason, the atmosphere shall be retested and documented prior to re-entry.

If the atmosphere becomes hazardous:

1. Entrants shall evacuate the space immediately;
2. Re-entry is not allowed until:
 - a. An acceptable atmosphere is achieved, and
 - b. A new Confined Space Entry Permit is issued.
3. The confined space shall be ventilated as needed to maintain an acceptable atmosphere.
4. Where the atmosphere cannot be maintained to an acceptable atmosphere but is maintained below the IDLH, the entrant(s) shall use personal protective equipment (PPE) as needed to perform assigned tasks.

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

5. The entrant(s) and attendant(s) shall remain alert for the development of any hazardous condition and immediately evacuate the confined space if any hazard is detected or perceived.
6. If the Confined Space Entry Permit expiration date and time have been exceeded, a new permit will be required to extend the entry.
7. If there is not enough space on the Confined Space Entry Permit for atmospheric monitoring readings and/or the entrants log an additional blank permit document may be attached to the original.

An attendant is required for all confined space entries.

EMERGENCY / RESCUE

Upon activation of the confined space rescue team, the Rescue Team Leader shall formulate a rescue plan covering the following topics:

1. Evaluation of Hazardous Energy Control procedures,
2. Evaluation of space-specific hazards,
3. Methods to control or eliminate hazards,
4. Identification of required rescue equipment, and
5. Method to activate EMS response.
6. Obtain any appropriate SDS's from 3E online.

In the event of a confined space emergency, at a power station, use a radio on the Plant Ops (Channel 1).

Energy Delivery will use the establish emergency procedure (mayday) on the emergency channel.

If the entrant is attached to a retrieval line, the attendant shall attempt to remove the entrant utilizing non-entry methods.

Only trained rescuers, under the direction of the rescue team leader, are authorized to enter the space for rescue purposes. There shall be a minimum of four (4) trained rescue personnel on duty always or no permit-required confined space entries can take place at power stations. In the event of an emergency requiring the assistance of the on-duty confined space rescue personnel:

1. All other confined space entries shall cease,
2. The Incident Commander will communicate when confined space work may resume, based on resource availability, to include rescue personnel and rescue equipment.

COMPLETION OF CONFINED SPACE ACTIVITIES

Upon completion of work in the confined space, the Entry Supervisor shall ensure the completion of the Post Entry Procedure Section on the back of the field copy of the permit.

For power stations, the completed permit will be turned into station operations. Face to face communication must occur between the Entry Supervisor and the SPO/TL or designee.

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

Completed permits will be retained at least one year by the Business Unit where the confined space is located.

EMERGENCY RESCUE EQUIPMENT

Emergency rescue equipment shall be inspected annually by qualified TEC employee or vendor.

PROGRAM REVIEW

Each Facility/Business Unit will review their confined space operations at least annually. A review of completed permits will be reviewed as part of this review. This review will be documented using a memorandum for record or other means to document its completion.

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

APPENDIX A – GLOSSARY

Attendant – An individual who is stationed outside one or more confined spaces to monitor the authorized entrants and to perform all duties assigned in this program.

Authorized Entrant – An employee who is authorized by the employer to enter a Permit-Required Confined Space.

Confined Space – An enclosure or space that has all of the following characteristics:

1. has adequate size and configuration for a person to bodily enter and perform assigned work; and
2. has a limited or restricted means for entry or exit (tanks, vessels, silos, storage bins, transformers, hoppers, pits with walls 4 feet or more); and
3. is not designed for continuous employee occupancy.

Enclosed Space – A working space, such as a manhole, tunnel, or shaft, that has a limited means of egress or entry, that is designed for periodic employee entry under normal operating conditions, and that under normal conditions does not contain a hazardous atmosphere, but that may contain a hazardous atmosphere under abnormal conditions.

Entry – Entry occurs whenever any part of the body breaks the plane of an opening into a confined space.

Entry Supervisor – a person (such as a supervisor or equivalent, crew leader, contractor foreman) responsible for:

- a. determining if acceptable entry conditions are present at a Permit-Required Confined Space where entry is planned,
- b. authorizing the entry,
- c. overseeing entry operations,
- d. terminating entry in the event of an emergency or hazardous condition; and
- e. ensuring that all aspects for rescue are in place, including planning, equipment, communications and trained manpower.

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

- a. contains or has the potential to contain a hazardous atmosphere;
- b. contains a material that has the potential for engulfing an entrant;
- c. has converging walls, a floor that slopes downward, or an internal configuration that could trap or asphyxiate an entrant, or
- d. contains any other recognized serious safety or health hazard

Note: All confined spaces within Energy Supply are considered permit-required confined spaces.

Retrieval System – The Equipment used for non-entry rescue of persons from Permit-required Confined Spaces, which may include:

- | | |
|----------------------|-------------------------------|
| a. retrieval line | c. wristlets/anklets |
| b. full-body harness | d. a lifting device or anchor |

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

APPENDIX B – SAMPLE CONFINED SPACE ENTRY PERMIT

(Page 1 of 2)



No 00000000000

CONFINED SPACE ENTRY PERMIT

Date Issued _____ Time Issued _____ Expiration Date _____ Time _____

Space to be Entered _____ Company _____

Purpose of Entry _____

POTENTIAL HAZARDS (check all that apply)

☐ Oxygen Rich/Deficient	☐ Chemical	☐ Pneumatic	☐ Engulfment	☐ Falling Debris
☐ Toxic Gas	☐ Hydraulic	☐ Mechanical	☐ Entrapment	☐ Temperature Extreme
☐ Flammable Atmosphere	☐ Electrical	☐ Combustible Dust	☐ Fall	☐ Other: _____

CONTROL MEASURES & SPECIAL CIRCUMSTANCES TAKEN FOR HAZARDS INDICATED ABOVE:

ATMOSPHERIC TESTING (Pre-entry & each time the space is vacant for more than 30 mins)

Air Monitoring Instrument – Model/Serial # _____ Calibration Current? ☐ Yes

Test For	Permissible Entry Level	Pre-entry Conc / Time	Test 2 Conc / Time	Test 3 Conc / Time	Test 4 Conc / Time
1. % Oxygen	19.5% to 23.5%				
2. Explosive (%LEL)	< 10% LEL				
3. Carbon Monoxide (CO)	< 25 PPM				
4. Toxic Gas/Vapor _____	< _____ ppm				
5. Tester's Initials					

PRE-ENTRY CHECKLIST

Yes	No	N/A	
			Pre-Entry atmospheric tests performed.
			Pre-Entry Meeting held with all participants.
			HEC (Lockout) Procedure completed
			Ventilation system operational (Specify Method): _____
			PPE provided and used according to hazards in the space
			Full Body Harness If "NO" full body harness, then ☐ Wristlets/Anklets or ☐ other _____
			Mechanical retrieval device at space for vertical entry of 5 feet or more.
			Low voltage lighting and tools required and provided.
			Hot Work Permit Required.

EMERGENCY AND RESCUE

Has Rescue Team been notified? ☐ Yes Radio Equipment # _____

Method of Communication between: Entrant and Attendant _____

Energy Supply Communication Between Attendant & Rescue Team via Radio Channel #1.

TEC/CONTRACTOR ENTRY SUPERVISOR: _____
Print Signature

TEC ENTRY APPROVAL: _____
Print Signature

TOP – CONTROL ROOM/OPS COMPLEX COPY

BOTTOM – FIELD PERMIT

Rev 3/2019

TAMPA ELECTRIC COMPANY PERMIT-REQUIRED CONFINED AND ENCLOSED SPACE PROGRAM

APPENDIX B – SAMPLE CONFINED SPACE ENTRY PERMIT

(Page 2 of 2)

ATTENDANTS (Print Name)

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ENTRANTS LOG

All entrants must be signed in and time recorded when they enter and exit the space.

ENTRANT (Print Name)	Time in	Time out	Time in	Time out	Time in	Time out	Time in	Time out	Time in	Time out

ADDITIONAL ATMOSPHERIC TESTING

(Pre-entry & each time the space is vacant for more than 30 mins)

Test For	Permissible Entry Level	Test 5 Conc / Time	Test 6 Conc / Time	Test 7 Conc / Time	Test 8 Conc / Time
1. % Oxygen	19.5% to 23.5%				
2. Explosive (%LEL)	< 10% LEL				
3. Carbon Monoxide (CO)	< 25 PPM				
4. Toxic Gas/Vapor _____	< _____ ppm				
5. Tester's Initials					

POST ENTRY PROCEDURE

Yes	No	N/A	
			1. Tools, equipment, other gear removed from space.
			2. Manholes, hatches, plates, doors replaced and/or secured with Danger Barricade Tape & Danger Tag.
			3. Present Shift's work has been completed and inspection of the confined space has been performed.
			4. Turn in station issued radio.
			5. Return completed permit to operations, face to face communication must occur between the Entry Supervisor and the SPO/TL or designee.
Comments: _____ 			
This Confined Space Entry Permit is closed.			
Entry Supervisor's Signature: _____ Date: _____ Time: _____			

Permits will be maintained for at least 1 year.

TOP – CONTROL ROOM/OPS COMPLEX COPY

BOTTOM – FIELD PERMIT

Rev 3/2019

APPENDIX C – ENCLOSED SPACES

PURPOSE

The purpose of this appendix is to provide information and guidance for personnel to safely enter and conduct work in Enclosed Spaces in Electric Delivery in accordance with OSHA 29 CFR 1910.269 (a) & (e).

TEC has classified all manholes and vaults as enclosed spaces providing that all hazards other than what employees are trained in have been eliminated (i.e. water and atmospheric conditions).

Definitions

- **Enclosed Space** – A working space, such as a manhole, vault, tunnel, or shaft, that has a limited means of egress or entry, that is designed for periodic employee entry under normal operating conditions, and that under normal conditions does not contain a hazardous atmosphere, but that may contain a hazardous atmosphere under abnormal conditions.
- **Entry** – Entry occurs whenever any part of the body breaks the plane of an opening into a confined space.

GENERAL REQUIREMENTS

- That it has been determined by testing with a gas monitor that the lid can be removed safely.
- That the atmospheric conditions are safe for entry by testing the air quality at different levels all the way to the bottom with a gas monitor.
- After testing of the atmosphere with a gas monitor, the only hazards remaining are energized cables which employees have received training on hazards and how to perform the work safely.

RESPONSIBILITIES

Anytime a TEC employee or contractor enters an enclosed space, manhole or vault, rescue personnel shall be on site and prepared for rescue prior to entry and have equipment necessary to conduct a rescue. When the space is occupied there shall be at least two continuous gas monitors in the space and a Supplied Air Respirator System (SARS) on site for the rescuer, including a five-minute escape bottle. Should there be need for a rescue, any attendant trained in Enclosed Space rescue shall perform the rescue provided the continuous gas monitor is not in alarm. If the monitor is in alarm and can't be cleared the rescuer trained for the SARS shall don the SARS unit before entering the space for rescue.