



YUKON ENERGY CORPORATION
Confined Space Entry (CSE) Program



CONFINED SPACE ENTRY PROGRAM

Table of Contents

A MESSAGE FROM YUKON ENERGY	3
1.0 Scope	4
2.0 Definitions.....	4
2.1 From Yukon OH&S Regulations – Part 2	4
2.2 From CSA Z1006; Management of work in confined spaces	5
2.3 Other definitions	5
3.0 Identification and Hazard Assessment	6
4.0 Responsibilities.....	6
4.1 Directors/Managers	6
4.2 Supervisors, Lead Hands, & Project Managers	7
4.3 Workers entering the space.....	7
4.4 Standby Person(s)	8
4.5 Health & Safety	8
5.0 Confined Space Entry Permits.....	9
6.0 Atmospheric Testing & Monitoring.....	11
6.1 Prior to entering any confined space.....	11
6.2 Low Hazard Atmosphere.....	11
6.3 Moderate and High Hazard Atmosphere.....	12
6.4 IDLH Atmosphere.....	12
7.0 Ventilation Requirements	12
7.1 Low Hazard Atmosphere.....	12
7.2 Moderate and High Hazard Atmosphere.....	12
7.3 Natural Ventilation.....	12
7.4 Mechanical Ventilation	13
8.0 Isolation and Lockout of a Confined Space	13
9.0 Rescue Plans	13
10.0 Personal Protective Equipment (PPE).....	15
11.0 YEC Training.....	15
12.0 Contractor requirements.....	16
Appendix A - CSA Classification Pictograms.....	17
Appendix B – Record Retention Schedule	19

CONFINED SPACE ENTRY PROGRAM

A MESSAGE FROM YUKON ENERGY (Confined Space Entry)

Accidents in confined spaces may be rare, but they can result in serious injury or death. However, complying with appropriate confined space work standards, procedures and work methods will help minimize those risks and allow employees to work safely.

This Program is designed to complement and support other Yukon Energy safety standards.

All Yukon Energy workers involved in a confined space entry must be fully informed prior to entry and be prepared to respond to any emergency situation.

Your continued commitment to safe work practices will help to ensure both employee safety and the efficient operation of the power system.

1.0 Scope

The purpose of the **Confined Space Entry Program** is to effectively manage the safe entry into confined spaces; and to protect YEC employees and contractors from the hazards that may exist in these areas.

2.0 Definitions

2.1 From Yukon OH&S Regulations – Part 2

Confined Space ('the space') - Means an area, other than an underground mine, that:

- a) is enclosed or partially enclosed;
- b) is not designed or intended for human occupancy;
- c) has limited or restricted means for entry or exit that may complicate the provision of first aid, evacuation, rescue or other emergency response services; and
- d) is large enough and so configured that a worker could enter to perform assigned work.

Low Hazard Atmosphere - an atmosphere which is shown by pre-entry testing or otherwise known to contain clean, respirable air immediately prior to entry to a confined space and which is not likely to change during the work activity, as determined by a qualified person after consideration of the design, construction and use of the confined space, the work activities to be performed, and all ventilation, lockout and isolation controls required by the applicable regulations.

Moderate Hazard Atmosphere - means an atmosphere that is not clean respirable air but is not likely to impair the ability of the worker to escape unaided from a confined space in the event of a failure of the ventilation system or respirator.

High Hazard Atmosphere - means an atmosphere that may expose a worker to risk of death, incapacitation, injury, acute illness or otherwise impair the ability of the worker to escape unaided from a confined space, in the event of a failure of the ventilation system or respirator.

CONFINED SPACE ENTRY PROGRAM

Clean Respirable Air – means an atmosphere which is equivalent to clean, outdoor air that contains:

- a) Approximately 20.9% oxygen by volume;
- b) No measurable flammable gas or vapour as determined using a combustible gas measuring instrument, and
- c) No air contaminant in concentrations exceeding 10% of its applicable exposure limit in the Occupational Health Regulations.

2.2 From CSA Z1006; Management of work in confined spaces

Competent person – a person who possesses the knowledge, skills, training, and experience to enable him or her to perform an assigned duty, within the context of this standard.

Emergency Response Team - Means a group of persons trained, equipped, and available to respond to confined space emergencies.

Immediately Dangerous to Life or Health (IDLH) atmosphere– a hazardous atmosphere that poses an immediate threat to life, can cause irreversible adverse health effects, or can impair a person’s ability to escape.

Example - a high hazard atmosphere where the concentration of oxygen or flammable or toxic air contaminants would cause a worker without (or failed) respiratory protection to be fatally injured or would have irreversible and incapacitating effects on that worker’s health.

2.3 Other definitions

Person-In-Charge (PIC) – Means the worker responsible for all workers in a work group, or groups, working on or around the same related power system facilities, with education, experience and training in the recognition, evaluation and control of confined space hazards.

Standby Person – Means a worker, or workers, assigned to monitor and tend to the needs of other workers inside a confined space.

Qualified person – Means a person who has education, experience and training in the recognition, evaluation and control of (confined space) hazards.

Worker – a person employed by or under the day-to-day control of Yukon Energy Corporation.

3.0 Identification and Hazard Assessment

- 3.1** Each confined space must be identified and a hazard assessment conducted to determine:
- a) The level of hazards that exist in the space;
 - b) Whether or not a worker may be required to enter the space to perform regular or emergency work activities; and
 - c) A means of controlling or eliminating the hazards to ensure the safety of the workers.
- 3.2** If a space is identified as a confined space and workers must not enter the space, it must be posted with a sign or other effective means identifying the nature of the hazard and the prohibition of entry.
- 3.3** If a worker encounters an area they feel may be a confined space, but it has not been previously identified as such, the worker shall:
- a) Immediately contact the H&S department to inform them of the possible confined space;
 - b) The worker and the H&S department will use the **YEC Decision Generator Worksheet** to assess the space;
 - c) If the assessment deems the area to be a confined space, the the YEC H&S department will complete the **YEC Confined Space Hazard Assessment** form; and
 - d) No work will proceed in the space until a final determination of the status of the space, and a hazard assessment is completed.

4.0 Responsibilities

4.1 Directors/Managers

Are responsible to ensure that:

- a) All aspects of the Confined Space Entry Program are implemented and followed;
- b) Supervisors, Leadhands, and Project Managers are trained and competent to oversee confined space entry tasks;
- c) By way of periodic audits, verify that works comply with confined space entry policies, procedures, and regulations; and
- d) Review and authorize confined space entry permits as required.

4.2 Supervisors, Lead Hands, & Project Managers

Are responsible to ensure that:

- a) **Prior to entry**, an approved confined space entry permit is in place;
- b) Adequate steps have been taken to eliminate or control all hazards identified by the assessment, and any other hazards present or that may be introduced by the nature of the work;
- c) Equipment isolation is performed in accordance with established YEC LOTO procedures;
- d) All CSE workers are adequately trained in confined space entry, and that safety equipment necessary to perform rescue activities is in place;
- e) All workers are trained in the work procedures to execute the work;
- f) Workers use the safety equipment necessary to safely perform the work;
- g) All CSE workers are adequately trained to operate and calibrate air quality testing and monitoring equipment;
- h) All workers under their direction are made aware of the confined space requirements, procedures and of their roles and responsibilities with respect to them;
- i) All standby persons are in place and made aware of their responsibilities and duties under the entry permit;
- j) A copy of the confined space entry permit is posted at or near each entrance to the confined space;
- k) Review and authorize confined space entry permits as required; and
- l) Review cancelled CSE permits, sign and forward to Records Management for retention.

4.3 Workers entering the space

Workers entering confined spaces must:

- a) Be aware of all conditions and requirements of the CSE Permit, including the YEC Confined Space Hazard Assessment;
- b) Acknowledge that they understand and will comply with the conditions and requirements by signing the CSE Permit;
- c) Sign in and out of the space with the confined space standby person (including date and time of entry or exit) each time they enter or exit the space;
- d) Immediately signal for all work to stop and evacuate the space should there be a change in atmospheric conditions, or if the safety of workers in the space is in question due to changing work conditions or concerns regarding the safe isolation of the space;
- e) Not allow or undertake work outside the scope of the CSE Permit; and
- f) Maintain contact with the standby person(s).

4.4 Standby Person(s)

4.4.1 **All confined space entries require the use of a standby person.**

4.4.2 For a Low or Moderate Hazard Atmosphere –
As defined in section 2.1 and OH&S Regulations 2.28, the standby person shall:

- a) Be stationed at or near the entrance to the space as identified in the YEC Confined Space Hazard Assessment;
- b) Check on the well-being of worker(s) inside the space at least every 20 minutes;
- c) Have a means to immediately summon rescue personnel; and
- d) Be available to be summoned by the workers or others at any time.

4.4.3 For a High Hazard Atmosphere
As defined in section 2.1 and OH&S Regulations 2.29; or
where risk of Engulfment or Entrapment or other recognized serious health or safety risk, the standby person(s) shall:

- a) Be stationed at the entrance to the space and continuously attend to the standby duties;
- b) Visually observe or otherwise continuously monitor the well-being of the worker (s) inside the space;
- c) Be equipped and capable of immediately effecting rescue using lifting equipment if required; and/or be capable of initiating rescue by summoning the designated rescue team;
- d) Be available to be summoned by the worker (s) or others at any time; and
- e) Prevent the entanglement of lifelines and other equipment.

4.4.4 Standby Person Entering the Space

A standby person shall not enter a confined space unless another qualified confined space worker is available to perform the standby duties; and, **it is safe to do so.**

4.5 Health & Safety

The YEC H&S department will:

- a) Ensure CSE Program documents are current and accurate;
- b) Ensure that workers are issued, and have access to, current and accurate CSE documents;
- c) Ensure all records of confined space training, rescue training and practice drills are filed and maintained as specified in **Appendix A – Record Retention Schedule.**

CONFINED SPACE ENTRY PROGRAM

- d) Coordinate CSE training for YEC workers as required; and
- e) Ensure that confined spaces are identified and assessed for hazards; and clearly marked with signage.

5.0 Confined Space Entry Permits

5.1 **An entry permit is required for ALL confined spaces at Yukon Energy.**

5.2 A confined space entry permit is the space-specific, written, safe work documentation that includes:

- a) The Person-In-Charge (PIC) of the work in a confined space;
- b) The location of the confined space;
- c) The scope of work to be completed in the space;
- d) The duration the permit is in effect;
- e) A list of the entrants and standby person(s);
- f) Identification of the hazards within the space that workers will or could be exposed to, as identified, but not limited to, those described in the YEC Confined Space Hazard Assessment;
- g) The precautions, safeguards or procedures necessary to control or eliminate the hazards including any LOTO requirements;
- h) Confined space entrant log;
- i) Confined space air quality log; and
- j) Confined space rescue plan.

5.3 The PIC is responsible for the work to be completed within a confined space is responsible for ensuring an entry permit is created and authorized prior to entry into the space.

5.4 The permit shall be posted at each confined space entrance and shall only be updated or altered by:

- a) the Person-In-Charge;
- b) the standby person with the latest information regarding the workers (names, times) entering/exiting the space; or
- c) the standby person recording the latest atmospheric tests.

CONFINED SPACE ENTRY PROGRAM

- 5.5** Permits for entry into a confined space must be re-authorized and re-signed by the Person-In-Charge (PIC) when the following occurs:
- a) There is a change in the work crew;
 - b) After each shift change; and
 - c) After a change of the Person-In-Charge (PIC)
- 5.6** A permit is valid **only for the scope of work for which it is written**. Any deviation from that scope of work will render the permit invalid and work will be suspended until such time as the Person-In-Charge (PIC) or their designate reassesses the hazards associated with the modified work scope, ensures the necessary safeguards are put in place, and re-authorizes and signs the permit.
- 5.7** The entry permit must be reviewed and signed by each worker, prior to entering the confined space, indicating they understand and agree to comply the permit contents and requirements.
- 5.8** Permit durations for entry into confined spaces other than those noted above may extend beyond a single shift, change in work crew or Person-In-Charge (PIC) and remain valid for up to one (1) year from the original date of authorization under the following circumstances:
- a) The scope of work is routine in nature (carried out on a daily, weekly or monthly basis);
 - b) The scope of work is well defined and does not change;
 - c) The hazards in the space are deemed low risk and can be adequately minimized or controlled;
 - d) Workers entering the space review the conditions of the permit prior to each entry and sign the permit indicating they understand its contents and requirements and will adhere to same; and
 - e) Only workers identified on the permit, performing scope of work identified, may enter the space.
- 5.9** All completed confined space permits and accompanying confined space documents shall be forwarded to Records Management for retention. See **Appendix A – Record Retention Schedule**.

6.0 Atmospheric Testing & Monitoring

6.1 Prior to entering any confined space

6.1.1 Atmospheric testing must be carried out by a trained person using equipment that has been maintained in accordance with the manufacturer's specifications.

All test results must be recorded on the applicable confined space entry permit document and posted at/near the entry into the space along with the date and time the test was taken, and the name of the person performing the test.

6.1.2 Where pre-entry atmospheric testing indicates there is a contaminant present in the space or the space has an oxygen level below 19.5% or above 23% oxygen by volume, the space must be cleaned, purged or vented to control or eliminate the hazard. The space must be re-tested prior to any workers entering the space.

6.1.3 If at any time the oxygen level within a confined space falls below 19.5% by volume or exceeds 23% by volume, or the monitoring instrument detects a flammable gas or vapour, or any concentration of other air contaminant exceeds 10% of its applicable exposure limit in the Occupational Health Regulations the space must be immediately evacuated and no worker shall enter the space until such time as it has been sufficiently ventilated and is tested to contain only clean respirable air.

6.2 Low Hazard Atmosphere

6.2.1 For confined spaces where a hazard assessment has identified that the expected atmospheric condition meets the low hazard criteria, air quality testing must be conducted **immediately prior to entry into the space**, and continuously thereafter while workers are in the space¹.

6.2.2 Pre-entry testing must be repeated each time all workers have vacated the space for more than 20 minutes.

6.2.3 A representative sampling of the air quality must be taken and recorded at no more than 1 hour intervals while workers are in the space.

¹ At least one entrant in the space must wear a personal gas monitor while in the space.

CONFINED SPACE ENTRY PROGRAM

6.3 Moderate and High Hazard Atmosphere

6.3.1 For confined spaces where a hazard assessment has identified that the expected atmospheric condition meets the moderate or high hazard criteria, air quality testing must be conducted **immediately prior to entry into the space**, and continuously thereafter as long as workers are in the space.

6.3.2 Pre-entry testing must be repeated each time all workers have vacated the space.

6.3.3 A representative sampling of the air quality must be taken and recorded at no more than 1 hour intervals while workers are in the space.

6.4 IDLH Atmosphere

Entry is **not permitted** into any space that is found to have an IDLH atmosphere. A space that is found to have an IDLH atmosphere must be reassessed by the Person-In-Charge (PIC) and H&S Department to determine if or how work will be performed in the space.

7.0 Ventilation Requirements

7.1 Low Hazard Atmosphere

7.1.1 Confined spaces with a low hazard atmosphere do not require ventilation if they are continuously monitored and shown to contain clean respirable air; or have a volume greater than 1.8 m³ (64 ft³) per occupant, will be occupied for less than 15 minutes and the work generates no contaminants other the exhaled air.

7.1.2 In all other situations the space must be ventilated and the workers must be supplied with a minimum of 85 m³/hr (50 cfm; 2.9 m/s) of clean respirable air.

7.2 Moderate and High Hazard Atmosphere

Each space must be ventilated continuously while workers are inside the space to maintain an atmosphere where any airborne contaminants are controlled and maintained below applicable exposure limits.

7.3 Natural Ventilation

7.3.1 The atmosphere in a confined space may be controlled by natural ventilation systems.

7.3.2 Where natural ventilation is used, the rate of airflow through the space must be monitored to ensure that it is sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits.

7.3.3 Natural ventilation must not be used in a high hazard atmosphere or where such ventilation could draw other than clean respirable air into the space.

CONFINED SPACE ENTRY PROGRAM

7.4 Mechanical Ventilation

- 7.4.1 Systems must be designed, installed and maintained in accordance with established engineering principles and as specified in written procedures; and be located and arranged in a manner that provides adequate ventilation in the space;
- 7.4.2 Systems should control contaminants produced in that space at the source with either an exhaust system or by general dilution, or a combination of both;
- 7.4.3 Maintain concentrations of airborne contaminants below applicable exposure limits.
- 7.4.4 Mechanical ventilation must also be used for spaces where high ambient temperatures are present.

8.0 Isolation and Lockout of a Confined Space

Before a worker enters a confined space:

- 8.1 All potentially dangerous energy sources that may pose a hazard to workers, must be de-energized or disconnected, and locked out.
- 8.2 Adjacent piping or other equipment which contains or has contained a hazardous substance, that may pose a hazard to workers, must be disconnected, or otherwise isolated by blanking, blinding, other equivalent engineered system, or other equally effective system acceptable to the Director of Occupational Health and Safety where the adjacent piping is hazardous due only to its pressure, temperature or volume.
- 8.3 The closing of one or more valves in a line must not be used as a means of isolation.
- 8.4 Where the above isolation measures are not possible, alternative measures acceptable to the Director of Occupational Health and Safety may be implemented.
- 8.5 All LOTO activities must be conducted in accordance with YEC LOTO Program and Yukon OH&S Regulations; Part 3 - Lockout.

9.0 Rescue Plans

- 9.1 A rescue plan for each confined space entry must be developed and documented in the CSE Permit and include the following:
 - a) The name of the qualified worker who will be directing the rescue operation;
 - b) Identification of who the rescue personnel are and how they are to be contacted;
 - c) SCC contact numbers (867 393 5355 and 867 393 5324) to dispatch Emergency Rescue Team (ERT) if required;
 - d) ERT procedure;

CONFINED SPACE ENTRY PROGRAM

- e) List of the equipment necessary to perform a rescue and its location if not at the entrance to the space; and
- f) The method(s) to be used to maintain communications with the rescue personal while affecting a rescue.

9.2 Where a worker is entering a space with a high hazard atmosphere, a moderate to high hazard atmosphere, a risk of engulfment, **or other health or safety hazard**, the worker must wear a full body harness and be connected to a retrieval device at all times while in the space in a manner that would allow the standby worker to retrieve the worker from the space if necessary.

9.3 Where the rescue operation cannot be effected by harness and lifting equipment, additional rescue personnel, equipped and capable of affecting a rescue must be stationed outside the space.

9.4 Rescue personnel must not enter a confined space unless a standby person is available at the entrance to the space.

9.5 ERT Procedure

9.5.1 Low Hazard Atmosphere; non-complicated rescue

In a low hazard atmosphere where rescue is 'non-complicated':

- a) Before a rescue is initiated, contact ERT;
- b) Worker(s) at the confined space will attempt rescue as required;
- c) Attend to extracted worker as required;
- d) Assist ERT as required.

Note - Should a confined space rescue become necessary; and there are 2 standby persons; the 1st standby person will begin a rescue attempt and the 2nd standby person will contact the ERT.

9.5.2 Low Hazard Atmosphere; complicated rescue

In a low hazard atmosphere where rescue is 'complicated':

- a) Prior to entry, contact the ERT daily and provide the following information:
 - Location of 'the space';
 - Scope of work;
 - Duration of work;
 - Number of entrants;
 - Name of standby person(s).
- b) If rescue required, contact ERT;
- c) Assist ERT as required.

9.5.3 High Hazard Atmosphere

In a high hazard atmosphere or where there is risk of engulfment or entrapment, or other recognized serious health or safety risk:

CONFINED SPACE ENTRY PROGRAM

- a) Prior to entry, contact the ERT daily and provide the following information:
 - Location of 'the space';
 - Scope of work;
 - Duration of work;
 - Number of entrants;
 - Name of standby person(s).
- b) If rescue required, contact ERT;
- c) Assist ERT as required.

10.0 Personal Protective Equipment (PPE)

10.1 All workers entering a confined space must wear a full body harness with the following minimum CSA classifications:

- a) Class A; fall arrest
- b) Class E; limited access (evacuation/rescue)
- c) Class L; ladder climbing; and
- d) Class P; work positioning.

See Appendix A – CSA Classification Pictograms

10.2 The other PPE required for entry into a confined space will be determined by an assessment of the hazards present in the space, with consideration given to any special equipment required to aid in/or simplify rescue efforts, and any hazards that may be created by the work undertaken within the space.

10.3 PPE requirements for the space must be documented on the confined space entry JSA/Tailboard.

10.4 All PPE required for entry into a confined space including air quality monitors, rescue equipment etc. must be inspected, maintained, tested and/or recertified as per industry standards and/or manufacturer recommendations.

10.5 Inspection, maintenance, and testing of confined space safety and rescue equipment must be documented, filed and retained as per **Appendix B – Record Retention Schedule**.

11.0 YEC Training

11.1 All YEC workers assigned confined space work, must have the following training:

- 11.1.1 Valid confined space training (provided by Northern Safety Network Yukon), renewed every 3 years; or, equivalent as accepted by the YEC H&S department.
- 11.1.2 Demonstrated competency in the operation of YEC air quality monitoring equipment (signed off by Supervisor, Leadhand, or H&S Department);
- 11.1.3 Demonstrated competency in the setup and operation YEC CSE rescue equipment (tripod, Davit arm, retrieval devices);

CONFINED SPACE ENTRY PROGRAM

11.1.4 Other CSE specific training (i.e., harness fit, radio usage, etc) as may be required to enter the particular confined space; and

11.2 Meeting the above criteria applies to confined spaces at Yukon Energy only.

11.3 A record of all training, practice drills; etc must be maintained as per **Appendix B – Record Retention Schedule.**

12.0 Contractor requirements

12.1 Contractors performing confined space work on behalf of Yukon Energy Corp. must comply with the requirements of the Yukon OH&S Regulations and this Program.

12.2 Upon request, contractors must provide proof of valid confined space training, for all of the workers that will perform confined space work, to the YEC Project Manager.

12.3 Contractors may use YEC air quality test equipment and rescue equipment with permission from the YEC Project Manager.

12.4 Project Managers allowing contractors to use YEC confined space equipment are required to provide training for the equipment prior to the contractor using it. The Project Manager is required to document the training.

12.5 Contractors may use their own confined space permitting documents provided the documents meet the requirements of this Program.

12.6 Contractors using their own permitting documents are required to submit copies to YEC H&S Department.

Appendix A - CSA Classification Pictograms
Source – CSA Z259.10-12; Full body harness
Class A; fall arrest



Figure 1
Pictogram illustrating application of a Class A
fall arrest full body harness

Class E; limited access (evacuation/rescue)



Figure 3
Pictogram illustrating application of a Class E
limited access full body harness

Class L; ladder climbing; and



Figure 4
Pictogram illustrating application of a Class L
ladder climbing access full body harness

Class P; work positioning.



Figure 5
Pictogram illustrating application of a Class P
work positioning full body harness

CONFINED SPACE ENTRY PROGRAM

Appendix B – Record Retention Schedule

Records Required	Record Location	Responsible Party	Record Retention
Completed CSE permits and supporting documents	YEC Records Management System	Dept. Leadhand, Supervisor, Manager, or Director.	10 years
YEC staff confined space Entry training and supporting documents	H&S and HR Files	Health & Safety	10 years
Contractor confined space entry training	H&S	H&S and PIC	10 years
YEC air quality monitor training	H&S	H&S and/or Dept. Leadhand/Supervisor	10 years
YEC confined Space rescue equipment training	H&S	H&S and/or Dept. Leadhand/Supervisor	
Rescue equipment inspections and certifications	YEC Records Management System	H&S	10 years
Rescue practice drills	H&S Files	H&S and Dept. Leadhand/Supervisor	10 years