Burlington Fire Department

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Section: 04 - Special Operations	
SOG Number: 04.16	**Effective Date: 10.21.2008**
Subject: Confined Space Rescue	
By Order of Fire Chief Steven A. Locke	

I. Purpose:

This document provides the basic operational guidelines for response to a confined space rescue incident.

II. Scope:

This procedure is intended to give a general guideline for conducting a safe and effective operation at an incident involving a confined space. It is not intended to put in place a specific structure or evolution to use. It is recognized that no two incidents are the same and each situation may require a different approach for a successful outcome. Included in this guideline are some command checklists and incident management resource guides for use by the Incident Commander or other units operating on scene.

As with any emergency, the authority to deviate from this guideline rests with the Incident Commander (IC) or Chief Engineer.

III. Definitions:

Confined Space: A space large enough and configured so that personnel can physically enter, has limited means of entry and/or egress, and is not designated for continuous occupancy. OSHA further distinguishes two specific types of confined space, *Non-permit* and *Permit Required*. Any confined space in an industrial setting is considered permit-required until an employer reveals the nature and extent of any hazards within the space.

Non-Permit: A space that does not contain, or have the potential to contain any hazard that is capable of causing death or serious injury.

Permit Required: A space that contains, or has the potential to contain one or more of the following characteristics:

Hazardous atmosphere,

Engulfment potential,

Internal configuration that could trap or asphyxiate,

Presents any other serious recognized hazard.

IV. Guidelines:

A). Size Up:

1. First arriving unit should establish command and secure a witness or caller. Securing the witness as soon as possible will help to identify nature of problem and location of the victim.
2. Try to determine the location, number, and condition of possible victims. The Incident Commander should consider a Recon Group to gather needed information. The Recon Group should attempt to make contact with the victim without entering the space.
3. Request Safety Data Sheets (SDS) and Confined Entry Permit; including diagram, map, or blueprint of the space involved. Identify any hazards to rescuers and determine the nature of the incident.
4. Determine Rescue Mode or Recovery Mode. Remember, "*We should never risk our lives for that of which is already lost.*" The Incident Commander may wish to leave the victim and scene in place for investigation by the proper authority.
5. Assess the need for additional personnel and/or resources. Request the BFD Technical Rescue Trailer and MSU if needed. Is this a potential hazardous materials incident? Will you need other specialized equipment?
6. Incident Command and rescuers should consider all other possible means of victim removal prior to sending rescuers into the confined space.

B). Pre-Rescue Operations

1. Secure the scene, remove all non-essential personnel or civilians, request the Police if needed for traffic control or crowd control
2. Designate a Safety Officer, also consider utilizing an Operations Section or Rescue Group Supervisor. Whenever possible the IC should ensure that properly trained personnel staff these critical positions. Additionally, the IC should

consider keeping a trained member at the Command Post if personnel numbers on scene allow.

3. Fill out and initiate the Department's Confined Space Rescue Permit (attached).
4. Develop an Incident Action Plan. Action plans should include a back-up plan.
5. Assemble appropriate personnel and equipment on scene. Include a facilities engineer or maintenance person where available.
   a. Place BFD Technical Rescue Trailer close to incident.
   b. MSU.
6. Make the rescue area safe.
   a. Perform atmospheric monitoring.
   b. Ventilate space.
   c. Secure hazards; Lock-out/Tag-out (See SOG 04.02 Lockout Tagout Procedures).
7. Perform a pre-rescue briefing with all involved personnel on scene. Entry teams should review blueprints or diagram of space prior to entry if available.

C). Rescue Operations

1. After completion of the Size-Up and Pre-Rescue Operations, the Incident Commander should assign a Rescue Group made up of the appropriate personnel to carry out the action plan developed. If available resources allow, a separate Operations Section Chief should be considered.
2. Rescue operations should be carried out with as little risk to personnel as possible, always consider *low risk before high-risk* options. If a rescue can only be accomplished with high-risk to personnel, then a risk assessment should be considered before proceeding. Again remember, "*We should never risk our lives for that of which is already lost.*" If this is to be a recovery and not a rescue attempt, in which time is no longer is a factor, the scene can be made low risk.

3. Entry Team will consist of a minimum of 2 personnel dressed in the appropriate protective clothing.

   a. USAR helmet with headlamp.
   b. Gloves, elbow, and knee pads and proper footwear.
   c. Class III harness.
   d. SABA escape pack hooked to umbilical with air and communication line.
   e. Coveralls or long sleeve shirt with pants.
   f. Hood, if flash protection needed.
   g. 4-Gas Meter.

4. Personnel on Entry Team should have vital signs taken and recorded on

Department Confined Space Entry Permit prior to entry if time allows.

5. Back-Up Team will consist of personnel equipped, outfitted and at a 1:1 ratio with the Entry Team. Team will be attached to a separate umbilical system and ready to assist with Entry Team prior to anyone entering space.

6. Personnel on Back-Up Team should have vital signs taken and recorded on Department Confined Space Entry Permit.

7. All personnel on Entry and Back-Up Teams shall be trained in confined space entry.

8. Separate personnel will be assigned to communication system and air system. Personnel assigned these tasks will maintain constant supervision of each. Extra personnel should be assigned to air supply to maintain a continuous supply.

9. Consider need for rope/hauling system for victim removal.

10. Prior to entry, the Safety Officer should conduct a system safety check on entire entry system.

11. Entry team should monitor atmosphere prior to entry, upon entering, and every few minutes thereafter. Report readings to IC along with any pertinent information.

12. Upon locating victim determine injuries and or condition. Decide on proper packaging and victim removal, report findings to IC.

D). Termination

1. A Personnel Accountability Report (PAR) check should occur.

2. Equipment accountability, all equipment used in the rescue should be checked, cleaned, and dried before placing back in service. The Incident Commander should consider leaving equipment in place for investigation purposes if fatality involved.

3. Debrief if situation dictates. Consider an After Action Review (AAR).

4. Secure scene and transfer to proper agency or contact.

V. Responsibility:

It is the responsibility of all members to read, understand and follow this Standard Operating Guideline

Revision History			
Revision Date	Section	Summary	Principal Author
10.21.2008		Initial release of document.	DC B. Bourgeois
11.15.2018	All	Reformatted to reflect current SOG format.	DC A. Collette

Burlington Fire Department
TECHNICAL RESCUE

Command Checklist

Confined Space Rescue

- ☐ **Initial Size-Up:**
  - ☐ Secure witness or caller.
  - ☐ Determine number, condition and location of victims. Consider Recon Group if needed.
  - ☐ Identify any hazards to rescuers.
  - ☐ Identify space. Request Entry Permit, MSDS, Blueprints/Diagrams of space.
  - ☐ Choose Rescue Mode or Recovery.
  - ☐ Assess need for additional personnel and/or resources.
    - ☐ Technical Rescue Trailer
    - ☐ Air Van

- ☐ **Pre-Rescue Operations:**
  - ☐ Secure scene, remove all non-essential personnel or civilians.
  - ☐ Make general area and rescue area safe, if unable to secure all hazards, rescuers and IC should be made aware of.
    - ☐ Perform Lock-Out / Tag-Out.
    - ☐ Atmospheric monitoring.
  - ☐ Designate Safety Officer and if situation dictates an Operations Officer. Whenever possible utilizing appropriately trained personnel for critical positions.
  - ☐ Develop Incident Action Plan.
    - ☐ Develop Back-Up Plan.
    - ☐ Fill out Confined Space Rescue Entry Permit and associated documents.
  - ☐ Assemble appropriate personnel and equipment on scene. Including Technical Rescue Trailer and Air Van.
    - ☐ Proper PPE.
  - ☐ Ventilate area/space if required.
  - ☐ Pre Rescue briefing for all personnel on scene.

- ☐ **Rescue Operation:**
  - ☐ Perform atmospheric monitoring.
  - ☐ Entry Team in place. Appropriate PPE, hooked to umbilical.
    - ☐ Perform medical check prior to entry.
  - ☐ Back-Up Team in place, 1:1 ratio with entry team. Back-Up ready prior to anyone making entry. Appropriate PPE, hooked to separate umbilical.
    - ☐ Perform medical check.
  - ☐ Rigging Team in place.
    - ☐ Rope recovery system.
    - ☐ Patient Packaging devices.
  - ☐ Entry system safety check.
  - ☐ Make entry.
    - ☐ Continual atmospheric monitoring.
    - ☐ Constant communication between Entry Team and Communication Control.
    - ☐ Continuous monitoring of Air Supply System.
    - ☐ Assist entry team with line management.
  - ☐ Locate victim.
    - ☐ Patient packaging and extrication.

☐ **Termination:**

- ☐ PAR – Personnel accountability.
- ☐ Equipment accountability – checked, cleaned, dried and placed back in service.
- ☐ Debrief.
- ☐ Contact OSHA.

Training Levels

→ ***Awareness Level:*** Expected to recognize the hazard, determine resources required, and keep themselves safe. Can perform non-entry tasks which they have been trained in as determined by the IC or Operations.

The awareness level responder should not enter the space. A rescue can be performed if the victim can be seen from the entrance and rescued utilizing a tool or a retrieval system already attached to the victim.

→ ***Operations Level:*** Entry is permitted at this level with the following criteria;

- Internal configuration of space is clear and unobstructed, without obvious chance of entanglement.
- Victim can be easily seen through opening.
- Rescuer can easily pass through opening with room to spare.
- Hazards within the space have been identified and controlled.

→ ***Technician Level:*** When above conditions cannot be met.

Burlington Fire Department
TECHNICAL RESCUE

Confined Space Entry Permit

Location of Incident/Entry:	Date:
	Incident #:
Purpose of Entry:	Time/Call:
	In Service:

Type of Confined Space: (Circle One)

Tank Manhole
Pipe Vault
Other:

Hazards: (Circle All Known)

Electrical Mechanical
Vapors/Gases Engulfment
Airborne/Visibility Flooding
Atmospheric
Other:

Ventilation: (None____ Natural____ Forced____)

Lockout: List all with Time completed

Other Hazard Elimination: e.g. pipe blanks, coupling disconnected, etc...

Other:

Atmosphere Monitoring Log

	Results	Time _____hrs	_____hrs	_____hrs	_____hrs	_____hrs	_____hrs
Oxygen	19.5% to 23.5%	%	%	%	%	%	%
Flammability LEL	< 10% of the LEL	%	%	%	%	%	%
Carbon Monoxide	< 35 ppm	%	%	%	%	%	%
Hydrogen Sulfide	< 10 ppm	%	%	%	%	%	%
		Use separate sheet for additional					

Number of Victims: ____ **Time of Entrapment:** ____

Victim Status:

Victim #	Location	Rescue / Recovery	Time
1			
2			
3			
4			

Entry Team Information:

Team #	Name	Organization	Time	
			Entry	Exit
1				
2				
3				
4				

If time allows, enter member vital signs below prior to entry and upon exiting:

Entry			Exit			
B/P	Pulse	Resp	B/P	Pulse	Resp	Name

Notes:

Attach any supporting documents

Burlington Fire Department
TECHNICAL RESCUE

Confined Space Rescue Preplan

Date:

Location / Address:		
Owner / Responsible Party:		
Contact Person:	Phone:	Cell:

Space Designation: ID#, Floor/Level, Vessel Name etc...	Space Type: Circle all that apply
	Manhole Pipe Vault
	Tank/Vessel
	Other:

Space / Rescue Category: Circle all that apply		Space Hazards: Circle all that apply		
Operations Level	Technician Level	Electrical	Mechanical	Flooding
		Engulfment	Atmospheric	
Horizontal Entry	Vertical Entry	Vapors/Gases	Airborne / Visibility	
Congested	Elevated	Entanglement	Constricted	
Single Access Point	Multiple Access Points	Other:		

Hazard Locations - Control Points:

Electrical Room / Shut-down: Side: A B C D Room #: _____ Level/Floor: _____

Mechanical Room / Shut-down: Side: A B C D Room #: _____ Level/Floor: _____

Other: List all applicable

_____ Side: A B C D Room #: _____ Level/Floor: _____

_____ Side: A B C D Room #: _____ Level/Floor: _____

_____ Side: A B C D Room #: _____ Level/Floor: _____

Type of On-Site Work/Entry Expected

List all that apply, detailed if required: Example - maintenance, cleaning, painting etc...

Space Description: Attach Diagram if available or practical

Rescue and Equipment Requirements

_____ Ventilation ____ Natural ____ Forced

_____ Umbilical System

_____ Tripods ____ Number of

_____ Hauling System

_____ Lowering System

_____ Multiple Lines/Systems

_____ Special Metering - explain

_____ Lockout - Tagout

_____ Pre-Rigging Required

_____ Hazmat Response

Other: List all applicable

Notes / Other