

Lisle-Woodridge Fire District
Confined Space Entry And Rescue
STANDARD OPERATING GUIDELINES

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PURPOSE:

To provide guidelines during entry and rescue operations in a confined space.

SCOPE:

These guidelines are designed to provide guidance for the Combined Agency Response Team (CART) and other Fire Department personnel during all phases of confined space entry and rescue operations.

DEFINITION:

OSHA Regulation 29 CFR 1910.146 defines a confined space as a space that:

1. "Is large enough and so configured that an employee can bodily enter and perform assigned work; and"
2. "Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits that may have limited means of entry); and"
3. "Is not designed for continuous employee occupancy."

All three (3) parameters, of the above definition, must be met for a space to be classified as a Confined Space.

STANDARD OPERATING PROCEDURES:

The following seven (7) aspects of a confined space operation are standard operating procedures (SOPS) and are not to be deviated from.

- A. The stricken agency shall assume command and control of any incident involving confined space entry, rescue or recovery within the Department's boundaries.
- B. Any incident in which a person is trapped, injured, experiencing a medical emergency, or is deceased in a confined space shall require the response of the Department's Technical Rescue Team (TRT) or nearest trained Team.
- C. No civilian or Fire Department personnel, who is unauthorized, untrained, or lacks the proper specialized rescue equipment needed to perform the rescue, shall be allowed to enter a confined space.
- D. Entry into a confined space requires a back-up rescuer for each entrant.

All rescuers entering the confined space must have a form of breathing apparatus and a lifeline attached to a Class III Harness. The level of protection for the back-up team(s) must be equal to or exceed that of the primary rescuer(s).

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E. Confined spaces must be monitored prior to entry and continuously during all phases of the rescue. The following levels are immediately dangerous to life and health (IDLH):

1. Oxygen deficiency < 19.5 %
2. Oxygen enriched > 23.5 %
3. Flammability > 10 % of Lower Flammable Limit (LEL)
4. Toxicity shall be any limit whose numerical value exceeds the Permissible Exposure Limit (PEL).
 - a) carbon monoxide (CO) > 35 ppm
 - b) hydrogen sulfide (H₂S) > 10 ppm

F. If the readings for an Oxygen enriched or flammable atmosphere exist, all entry teams shall be immediately removed from the space, until ventilation reverses the condition.

G. Confined Space Rescue / Recovery Requires the Establishment of the Following Six (6) Sectors (**Appendix A**):

1. Rescue Sector (Team Leader) (1 trt)

Responsible for coordination of the actual rescue operation and the sectors associated with all activity in the "rescue area." Reports directly to Operations (Ops). In the absence of an Operations Sector he / she reports directly to Incident Command (IC).

2. Site Control Sector (3 fs)

Responsible for placement of apparatus, suppression control, isolation / lockout procedures, and lighting systems. Reports directly to Rescue Sector.

3. Equipment / Rigging Sector (1 fs / 1 trt)

Responsible for the establishment of an equipment sector site, and the assembly / placement of equipment necessary to perform the rescue. Reports directly to Rescue Sector.

4. Air Quality Sector (2 fs / 1 trt or hzmt)

Responsible for continuous atmospheric monitoring / ventilation of the confined space, and the monitoring of the rescuer's air supply. Reports directly to Operations.

5. Entry Sector (all trt)

Responsible for being properly equipped to enter the confined space. Including the equipment needed to affect the rescue / recovery. Reports directly to Rescue Sector.

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6. Technical Safety (1 trt)

Responsible for observing and checking all technical aspects of the rescue. Works directly with the Fire Department's Safety Officer. Reports to IC, Safety and Rescue Sectors.

Limited TRT manpower may require combining one or more sectors. The use of Fire Suppression Personnel is an integral part of successfully mitigating a confined space incident.

INCIDENT COMMAND

Incident Command remains responsible for all aspects of the rescue scene. The following guidelines are designed to aid in the initial stages of a confined space rescue / recovery (utilize tactical worksheet **Appendix B**):

1. Ensure activation and appropriate dispatching of a Technical Rescue Team.
2. Ensure the response of appropriate apparatus. Call Mutual Aid if Department lacks a technical rescue team trained in confined space rescue.
3. Establish a visible Incident Command Post (ICP).
4. Ensure First In Unit is performing adequate size-up using TRT tactical worksheet.
5. If not already established -- Establish Site Control Sector (second in unit)
6. Assign Rescue Sector as soon as possible (the stricken agency's most qualified TEAM MEMBER). If none available, it will be up to IC to determine the Rescue Sector.
7. Incoming apparatus equipped with only manpower should be at Level One (1) Staging. TRT members report directly to the IC.
8. Ensure adequate site access for placement of the TRT equipment near confined space opening.
9. Ensure direct access, to the scene, for TRT personnel and two (2) ALS Ambulances. Anticipate increasing the number of ambulances based on the information gathered by the First-in Unit.
10. Ensure Medical Sector (one of the two ALS Ambulances) has established a rehab area near the hot zone. Use the buildings' facilities if applicable.
11. Anticipate having to request additional Mutual Aid to assist with the rescue (**Appendix C**).

DUTIES AND RESPONSIBILITIES

FIRST-IN UNIT

After giving an initial size-up report, via radio, to Incident Command, the first in unit shall attempt to accomplish the following (utilize tactical worksheet - **Appendix D**):

1. Do Not Allow unauthorized and / or untrained personnel (including Fire Department Personnel) into or remain in the confined space.
2. Locate and secure the job site foreman, attendant, reliable witness, and / or ENTRY PERMIT.
3. Determine the last seen point and number of victims.
4. Attempt to establish contact with the victim while remaining outside the confined space. Contact established by FD Personnel must be maintained throughout call.
5. Attempt to determine the mechanism of entrapment or nature of illness or possible trauma to victim.
6. Attempt to ventilate the confined space, if an energy source is available, using positive pressure techniques. Use of electrical powered ventilation units is required for all CS incidents.
7. Determine if victim(s) are wearing protective clothing and / or respiratory equipment.
8. Determine the air source for the victim's respiratory protection.
9. Obtain the workers atmospheric test results.
10. Determine what atmospheric conditions might exist given the configuration of the space.
11. Determine electrical, mechanical and chemical hazards in the space.
12. Determine if the workers performed any hazard control precautions.
13. Determine the number and location of access points into the space.
14. Determine the type of work being done in the space.
15. Determine what is normally stored in the space.

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SITE CONTROL SECTOR

(SECOND-IN UNIT or AS ASSIGNED BY IC)

The unit assigned to this sector shall attempt to accomplish the following (utilize tactical worksheet - **Appendix E**):

1. Establish and secure a perimeter (hot zone) with safety tape a minimum of 15' x 15' around confined space.
2. Ensure that all unnecessary personnel remain outside the perimeter.
3. Request Police to assist with control of perimeter and rerouting or stopping of traffic, including air traffic (if that is necessary).
4. Ensure site access for Technical Rescue vehicles.
5. Ensure that ambulances have direct access to the site.
6. Keep / relocate spectators, unnecessary personnel, and apparatus, a minimum of 100 feet away from the hot zone.
7. Determine wind direction and consider its effect on vehicle exhaust travel.
8. Shut down all devices capable of causing adverse changes in the atmospheric conditions near the confined space.
9. Ensure fire extinguisher and / or hose line protection when potentially flammable atmospheric conditions exist.
10. Ensure elimination of potential ignition sources.
11. Perform lock out / tag out procedures to ensure the zero-mechanical state of all systems (electrical, pneumatic, hydraulic, gravity, stored, etc.)
12. If positive lock out control is not possible, a guard shall be posted at the controls to ensure a zero mechanical state.
13. If possible, utilize plant personnel or on scene workers to assist with lock out procedures.
14. Ensure adequate exterior lighting.
15. Non-intrinsically safe exterior lighting must be out of the vapor area and / or path of by-product being expelled from the confined space.

Complete the Site Control Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

END.

APPENDIX A

Rescue Sector

Tactical Worksheet

Site Control	Equipment / Rigging	Air Quality	Entry Team

NOTES

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report

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- Ensure the response of appropriate apparatus. Call Mutual Aid if Department lacks a technical rescue team trained in confined space rescue.
- Establish a visible Incident Command Post (ICP).
- Ensure First In Unit is performing adequate size-up using TRT tactical worksheet.
- If not already established -- Establish Site Control Sector (second in unit)
- Assign Rescue Sector as soon as possible (the stricken agency's most qualified TEAM MEMBER). If none available, it will be up to IC to determine the Rescue Sector.
- Incoming apparatus equipped with only manpower should be at Level One (1) Staging.
- Ensure adequate site access for placement of the TRT equipment near confined space opening.
- Ensure direct access, to the scene, for TRT personnel and two (2) ALS Ambulances. Anticipate increasing the number of ambulances based on the information gathered by the First-in Unit.
- Ensure Medical Sector (one of the two ALS Ambulances) has established a rehab area near the hot zone. Use the buildings' facilities if applicable.
- Anticipate having to request additional Mutual Aid to assist with the rescue. (Appendix C).

NOTES / DIAGRAM

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

**Insert
Your
Department's
Technical Rescue
Box Card
Here**

Complete this Tactical Worksheet as soon as possible. Then report directly to IC and/or Rescue Sector (Team Leader) to give a face to face report.

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- Locate and secure the job site Foreman, Attendant, Reliable Witness and/or Entry Permit.
- Determine the last seen point and number of victims.
- Attempt to establish contact with the victim while remaining outside the confined space. Contact established by FD Personnel must be maintained throughout call.
- Attempt to determine the mechanism of entrapment, possible trauma and/or nature of illness of victim.
- *Attempt to ventilate the confined space*. If an energy source is available.
- Determine if victim(s) are wearing protective clothing and / or respiratory equipment.
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- Obtain the workers atmospheric test results.
- Determine what atmospheric conditions might exist given the configuration of the space.
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SITE CONTROL

Tactical Worksheet

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- Ensure site access for Technical Rescue Vehicles.
- Ensure that ambulances have direct access to the site.
- Keep / relocate spectators, unnecessary personnel, and apparatus, *a minimum of 100 feet away from the hot zone.*
- Determine wind direction and consider its effect on vehicle exhaust travel.
- Shut down all devices capable of causing adverse changes in the atmospheric conditions near the confined space.
- Ensure fire extinguisher and / or hose line protection when potentially flammable atmospheric conditions exist.
- Ensure elimination of potential ignition sources.
- Perform lock out / tag out procedures to ensure the zero-mechanical state of energy systems (electrical, pneumatic, hydraulic, gravity, stored, etc.)
- If possible, utilize plant personnel or on scene workers to assist with lock-out procedures.
- If positive lock out control is not possible, a guard shall be posted at the controls to ensure a zero-mechanical state.
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- Non-intrinsically safe exterior lighting must be out of the vapor area and / or path of by-product being expelled from the confined space.

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