



CHARLOTTESVILLE - ALBEMARLE RESCUE SQUAD



STANDARD OPERATING GUIDELINE

TOPIC: Confined Space Rescues	S.O.P. # 4.2b
Approved by: Lair D. Haugh, Chief	Revised: 2/9/2003 Approved:

I. PURPOSE

- a. To provide guidelines during entry and rescue operations in a confined space.
- b. These guidelines are designed to provide guidance for the TRT and other personnel during all phases of confined space entry and rescue operations.

II. DEFINITIONS

- a. Confined Space - "any space not intended for continual occupancy, has limited means of egress," and has the potential for physical, chemical or atmospheric engulfment.

III. ACTIVATION

- a. A. Upon notification of a confined space rescue situation, EOC will immediately dispatch the following:
 - i. A trauma level ambulance.
 - ii. Squad 135.
 - iii. The Technical Rescue Team.
 - iv. The Duty Officer.
 - v. The Fire Department.
 - vi. The Police Department.

IV. RESPONSE

- a. Assessment.
 - i. Upon arriving on the scene, the first-due ambulance will assess the following and advise the Duty Officer:
 1. What type of space is this?
 2. Are there product storage hazards?
 3. Locate and secure the job site foreman or a reliable witness.
 4. Determine location and number of victims.
 5. Obtain blue prints, maps or have site personnel draw a sketch of the site.
 6. Determine the mechanisms of entrapment or nature of illness.
 7. Make a conscious decision as to this is a "rescue or recovery".
 8. Determine number of entry points and locations.
 9. Determine electrical/mechanical/chemical hazards.
 - ii. After assessment, the first-in units will do the following:
 1. Assure TRT response and ask Fire Department for their air cascade vehicle (Air Utility).
 2. Set up visible command.
 3. Assign and start technical rescue documentation sheet.
 4. Establish a perimeter with tape.
 5. Ventilate the general area if needed.
 6. Ventilate the space with positive pressure.

7. Start assessing the effectiveness of ventilation with atmospheric monitoring.
 8. If possible, open all additional openings into the space to assist with the ventilation process. i.e.:
 - a. Manholes.
 - b. Hatches.
 - c. Natural Openings.
 9. Assure fire control measures if needed.
 10. Do not allow sources of ignition on site.
- b. Entry Preparation.
- i. Assure lock-out, tag-out, blank-out procedures are complete.
 - ii. All fixed mechanical devices and equipment capable of causing injury shall be placed in a zero mechanical state. (ZMS)
 - iii. All electrical equipment (excluding lighting) shall be locked-out in the open (off) position with a key type padlock.
 - iv. The key shall remain with the person who places his/her lock on the padlock.
 - v. In all cases where lock-out is not possible, equipment shall be properly tagged and physical security provided.
 - vi. All locked-out utilities shall be tagged with an approved Confined Space Tag system.
 - vii. Post non-essential personnel at those areas tagged and blanked or blinded.
 - viii. Assure that all personnel who will enter the site are equipped with SABA. If you must remove your standard SCBA to fit in the opening or move in the space DO NOT ENTER!!! If you enter with standard SCBA go no more than 25 feet from the entrance.
 - ix. Entrance with standard SCBA should be limited to reconnaissance only, unless the victim is easily accessible.
 - x. Assure one backup team for every entry team.
 - xi. No one shall enter a confined space alone; work teams shall consist of a minimum of two (2).
 - xii. No team shall enter a space with pagers or other non-“intrinsically safe devices” unless approved prior to entry, based on atmospheric monitoring.
 - xiii. Each entry team shall be equipped with the following items:
 1. One member shall have communications, sound powered system in place, worn with the SABA.
 2. Hardwired package for communications.
 3. Explosion proof lighting, cylume or explosion proof light.
 4. Atmospheric monitor.
 5. Proper protective gear as deemed necessary by Command. At the very least each member shall wear coveralls (flame retardant), nomex hood, boots and gloves. Helmets worn whenever possible.
 6. An entry/egress line shall accompany the first entry team and be anchored at their furthest point of penetration. If this line is equipped with a hard wire communications line (internal) it may function as section (2) as well.
 7. Some form of rapid extrication/retrieval harness for a victim.
 8. If the entry team must enter a vertical shaft greater than 8 feet, each member shall wear a personal harness and be attached to a fall arresting system upon entering.
 9. A victim SABA and supply line if applicable.

V. ATMOSPHERIC MONITORING

- a. Atmospheric monitoring shall occur prior to and during all entries into a confined space. It should be stressed that the lack of positive or alarm level readings does not eliminate the requirement for proper respiratory protection!
- b. Atmospheric monitoring should be accomplished at high and low areas of the space.
- c. All atmospheres shall be tested for:
 - i. Oxygen deficiency.
 - ii. Oxygen excess.
 - iii. Toxicity.
 - iv. Flammability.
- d. The following levels shall be considered as immediately dangerous to life and health (IDLH) environments:
 - i. Oxygen deficient < 19.5%
 - ii. Oxygen enriched > 23.0%
 - iii. Flammability at 10% of Lower Flammability Limit (LEL).
 - iv. Toxicity shall be any limit whose numerical value exceeds the Permissible Exposure Limit (PEL) in accordance with the table.
- e. Atmospheric monitoring shall occur during occupancy at intervals dependant on the possibility of changing conditions, but in no case less than every 15 minutes.
- f. All atmospheric reading shall be recorded on a technical rescue work sheet or entry permit.
- g. In the event that, in the opinion of the incident commander or his/her designee, the atmospheric readings become what he/she considers unsafe to continue operations in, all entry teams shall be removed from the space immediately until such time as the atmospheric conditions are corrected.

VI. ENTRY

- a. Once the best method and location for entry has been determined teams shall begin entry and reconnaissance/ rescue/ recovery operations in the space.
- b. Entry decisions shall be made based on the known locations of victim(s), safety of the opening, atmospheric readings and ease of the recovery points.
- c. If possible, a two prong attack shall be attempted to reach the victim(s) if their location is known or suspect.
- d. Prior to entry, each team member shall be logged on to a technical rescue work sheet with their time of entry. This function shall be assigned to one person who shall keep the operations officer apprised of the status of each team.
- e. Teams shall be limited to thirty (30) minutes in any space.
- f. Each team shall be assigned rehab upon removal from the space until re-hydrated and vital signs are within normal limits.

VII. INSIDE THE SPACE

- a. Assure adequate interior team communications.
- b. Assure adequate communications with the operations exterior.
- c. Mark if necessary with chalk, cylumes or other method entry and movement patterns to assure egress.
- d. Move towards the suspected victim location as a team.
- e. Beware of elevation differences and unstable footing.
- f. Once the victim(s) has been located, decide:
 - i. Is this a rescue or recovery?
 - ii. If rescue, can a SABA unit be placed on the victim?

- iii. Can the victim be easily moved towards the opening with current equipment carried by the team?
 - iv. Is an additional team needed to make the move?
 - g. Communicate your decision to the outside command.
 - h. Once the victim has been attached to a removal device and is in the process of being rescued/recovered insure that if the victim is to be moved through an opening either vertical or horizontal which presents team members the only way out that the following guidelines are followed:
 - i. Whenever possible assure that all team members are stationed to the egress side of the hole/opening in the event the victim becomes lodged.
 - ii. Always try to avoid being blocked in by a victim.
 - iii. When the move is made, assure it is made quickly and smoothly, leaving the time the space is blocked for egress as minimal as possible.
 - iv. Assure that the exterior personnel as well as interior teams are aware of the move and a plan is agreed upon to blocking the space.
 - v. Assure that all air lines and connections are clear of the victim and his movement path to assure that no air line problems develop as a result of the victim becoming entangled or pinching off the lines.

VIII. VICTIM REMOVAL

- IX. Once the victim is set for removal assure the following:
 - a. As much c-spine control as is possible, based on the space and the victim's condition.
 - b. Use removal systems on the exterior which are applicable to the size and weight of the victim.
 - c. Mechanical advantage systems are much preferred over manual hauling.
 - d. Do not use electric winches, etc., to remove victims; these allow little control and could result in dismemberment or additional injury.
 - e. Decide if the victim is to be removed head first or feet first.
 - f. Avoid the use of wristlets on patients with burns to extremities.
 - g. Once the victim is clear from the space remove all entry team personnel and equipment.

X. SAFETY CONSIDERATIONS

- a. If rigging, hauling or use of rope hardware is needed in the space assure only aluminum or stainless steel carabineers and hardware is used to avoid sparks.
- b. In the event of an air line failure on a SABA, the entire team shall IMMEDIATELY leave the space, and that the rescuer with the problem is assisted.
- c. Notify the exterior immediately of the problem and identify the line and the specific problem.
- d. Never leave a partner in trouble unless you must clear the way for his/her exit.
- e. In the event that the 5 minute bypass bottle runs out before you have exited and the air line problem has not been corrected:
 - i. Buddy breathing by passing the mainline (which is still functional) back and forth to each others is acceptable.
 - ii. Do not leave the non-operational line behind.
 - iii. Exit the space and correct the problem.

XI. TERMINATION

- a. Double check personnel list and assure all personnel are accounted for.
- b. Inventory and replace all equipment.

- c. Place any equipment damaged or potentially unfit for further confined space use out of service until repaired.
- d. Have contractor or responsible party seal entry points to assure no additional entry.