FORT MYERS SHORES FIRE DEPARTMENT

STRATEGIC OPERATING GUIDELINES

**SUBJECT: Confined Space Operations Guideline**

**Applies to: All Operations Personnel**

## S.O.G. # 30

 **Approval Date: 3-30-2020**

 **Effective Date: Immediately**

**Page 1 of 5**

 **\_\_\_\_\_\_\_\_\_\_**\_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Fire Chief**

**Scope**

This guideline applies to all Fort Myers Shores Fire Department employees responsible for emergency response to a confined space incident.

This guideline will provide an order of events for first arriving units and/or the confined space team present at a confined space incident. Rescue personnel must use judgement, experience, and training to adapt to the specific situation.

**Purpose**

**Definitions:**

**Confined Space:** A confined space is defined as a space large enough for an employee to bodily enter and work, has limited or restricted means of entry and exit, and is not designed for continuous occupancy.

**Permit Required Confined Space:**

Permit required confined space may have one or more of the following:

* Contains or has a potential to contain a hazardous atmosphere
* Contains a material with potential for engulfment
* Is structured so that an entrant could become trapped or asphyxiated
* Contains any other recognized serious safety or health hazard

**TACTICAL CONSIDERATIONS**

1. **PHASE I- ARRIVE ON SCENE, TAKE COMMAND, SIZE UP SCENE.**

 **THE PRIMARY ASSESSMENT**

1. Command should attempt to secure a facility supervisor or witness to the accident to determine exactly what happened and to acquire the confined space permit if applicable.
2. An immediate assessment of the hazards present to rescuers should be done. Establish a perimeter. The size of the perimeter should be dictated by the atmospheric conditions, wind direction, structural stability, ERG guidelines etc.
3. The structural stability of the confined space should be evaluated. If there is a potential for collapse, appropriate measures must be taken to assure the structural stability of the space.
4. Establish communications with victim if possible. Identify any language barriers that may be present between witness(es) and rescuers. If there are language barriers present, Command should call for a bilingual individual to assist with communications with witness(es) and/or victims.
5. At this time an assessment can be made of the victim, information can be gathered, such as: how many victims, condition of victims, length of time victims have been trapped.
6. **An early decision must be made as to whether the operation will be run in the rescue or recovery mode.**

**2.) PHASE II- PRE-ENTRY OPERATIONS**

1. Make the general area safe
2. Begin assigning qualified personnel to operational roles, to include:
* Safety Officer
* Operations Manager
* Entry Team
* Stand by Team
* Communications
* Cart Attendant
* Entry Point Attendant
* Ventilation Person(s)
* Assign a medic unit to rehab position
1. Make the rescue area safe.
2. Monitor air quality at all times in the rescue area.
3. Calibrate monitor to 10% of the LEL of the calibrant gas.
4. Have the audio-alarm set at:
* O2 19.5%, low ad O2 enriched 23.5
* Flammability 10% alarm set
* Toxicity carbon monoxide 35 ppm
* Hydrogen sulfide 10 ppm
1. Any O2 readings below 12%, Command should recognize that the LEL reading will not be accurate.
2. Get initial air monitoring sample and record reading to document the baseline atmospheric conditions prior to ventilation.
3. **Ventilation person** will consult with **Safety Officer** and **Operations** to determine the proper type of ventilation for the space.
4. **Ventilation person** must consider the effects on the atmosphere that positive or negative pressure ventilation will have (i.e., increase or decrease flammability of atmosphere). It could require both positive and negative ventilation (pushing and pulling). This will be based on the vapor density or molecular weight of the product
5. **Ventilation person** must also consider the effects the exhaust is having on the operation
6. Begin ventilation of confined space. Record time ventilation was begun to properly assess number of air exchanges performed.
7. **Safety Officer** shall give Command atmosphere readings at least every 5 minutes and with an announcement of offensive or defensive mode (i.e., rescue or recovery).
8. Utilities, including electrical, gas and water should be secured and locked out. If it is not possible to lockout/tagout/blockout, The **Safety Officer shall** post a guard to assure the utilities are not turned on during the operation.
9. Any product that is in or flowing in the confined space must be secured and blocked off if possible. It may be determined that the space must be drained of any product prior to entry.
10. Any manufacturing or processing equipment must be shut down prior to entry. If possible, all equipment should be locked/tagged out and brought to a zero energy state

(NOTE:) The **Ventilation** Person is an extremely important part of a confined space operation. They should be staffed by personnel with thorough knowledge of atmospheric monitoring and ventilation technique.

**3.)** **PHASE III- ENTRY OPERATIONS, VICTIM REMOVAL**

 **SELECTION OF PERSONNEL**

* 1. The proper personnel shall be selected to make entry into the confined space. A minimum of two persons should be assigned to make entry. All personnel on the entry team shall have vital signs taken and recorded prior to entry, if time permits. If space allows for only one person, this will be allowed.
	2. Command shall assign a Rescue team or Standby team. This shall include a standby rescue team with a 1:1 ratio to provide immediate assistance to personnel in the confined space.
	3. All entry and back-up personnel should be properly trained in confined space rescue procedures and capable of carrying out the rescue/recovery.
	4. **Rescue Team** should be assigned to conduct the actual entry into the confined space.
	5. **Rescue Team** should consider the size of entry and back-up personnel needed to make entry.

**SELECTION OF PERSONAL PROTECTIVE EQUIPMENT**

* 1. The proper level of personal protective equipment should be worn by all entry and back-up personnel. This shall include helmet, gloves, proper footwear, goggles, turnouts, or long sleeve shirts, long pants and Class III harness is required.
	2. All entry and back-up personnel **shall** wear SABA or SCBA when making entry into the confined space. SABA (supplied air breathing apparatus) is recommended.
	3. SCBA may only be worn if the rescuer is not required to remove the SCBA in order to enter or exit the confined space location.
	4. If entry personnel use a SCBA, they **shall** enter no farther than one half the amount of supplied air minus 500 lbs. EXAMPLE: 4500 PSI tank gauge pressure--1/2 = 2250 PSI minus 500 PSI = 1750 PSI usage.
	5. Entry personnel shall use personal air monitoring devices that monitor flammability and O2 as a minimum.
	6. Entry personnel shall have a class III harness on prior to entry. Class III harness shall be used if inversion of the rescuer is possible.

**COMMUNICATION AND LIGHTING**

* 1. If the confined space has a flammable atmosphere, entry personnel should have intrinsically safe or explosion proof communication equipment.
	2. If the entry team is entering a dark confined space, The **Rescue team** must ensure that the proper type of lighting is used. If explosion proof lighting is not available, then cyalume type lights (glow sticks) must be used by the entry team.

 **ORIENTATION OF CONFINED SPACE**

* 1. Prior to entry into the confined space, the **Rescue team**, with the help of the facility supervisor, should obtain a blueprint or diagram of the space. All entry and backup personnel should be made aware of the layout of the space to be entered.
	2. All entry and back-up personnel, Command, Operations and Safety shall be made aware of the action plan and the back-up plan prior to entry.
	3. Rescuer tag lines may or may not be appropriate in the confined space, depending on the specific layout. Recognize when tag lines could be an entanglement hazard.
	4. If taglines are not utilized there needs to be constant communication or visualization of any entrants to the confined space.

**VICTIM REMOVAL EQUIPMENT**

* 1. If possible, the entry team should bring a supply of breathable air for the victim.
	2. Pure oxygen shall not be used in a confined space that has a potentially flammable atmosphere. Rescuer should not remove their breathing apparatus and give it to the victim.
	3. Entry team should consider the necessary victim retrieval equipment prior to entry. This includes respiratory protection for the victim.

**ASSESSING CONDITION OF VICTIM**

* 1. Upon reaching the victim, entry personnel should do an immediate primary survey of the victim. If appropriate, treatment should be started immediately.
	2. A quick but thorough secondary assessment of the victim should be done. If time permits, entry personnel should attempt to treat serious injuries prior to removal.
	3. If indicated, complete C-spine precautions should be administered. NOTE: Because of the difficulty removing the victim from the space, optimum C-spine precautions may not be possible.
	4. If the victim is conscious, he/she should be encouraged to wear the appropriate breathing apparatus.

**PATIENT PACKAGING**

* 1. After treatment of immediate life-threatening injuries, the victim(s) should be packaged for removal from the space. This may include using a backboard, stokes basket, or sked board.
	2. Prior to removal from the space, the entry team should secure any loose webbing, buckles, straps, or any other device that may hinder the extrication process.

**VICTIM REMOVAL SYSTEM**

* 1. Prior to removal of victim, the entry team should have determined the appropriate method of extrication. This may include a vertical or horizontal haul system constructed of ropes, pulleys, and other hardware, with a minimum of a 2:1 mechanical advantage.
	2. As a rule, entry personnel should never allow the victim between the rescuer and the point of egress.
	3. At times, the situation may preclude the use of that procedure due to the fact that one rescuer may have to pull the victim while the other rescuer pushes the victim.

**TRANSFER TO TREATMENT SECTOR**

* 1. Immediately after reaching the point of egress, entry personnel shall transfer the victim to treatment personnel.
	2. If the victim is contaminated from product inside the space, a **Haz-Mat** team on scene will handle decontamination
	3. ALS level examination should be conducted on the victim.

**4.) PHASE IV- TERMINATION**

**PREPARATION FOR TERMINATION**

1. Final Personnel Accountability Report.
2. Remove tools and equipment used for rescue/recovery. If there has been a fatality, **Rescue Team** may consider leaving tools and equipment in place for investigative purposes.
3. If entry personnel and/or equipment have been contaminated during the rescue/recovery, proper decontamination procedures shall be followed prior to putting the equipment back in service.
4. Secure the scene. Prior to turning the property back over to the responsible party, one final reading of atmospheres shall be taken and recorded.
5. Consider debriefing.
6. Command may consider activating the CISM/Peer Support if the situation dictates it.
7. Return to service.

**CONSIDER AMBIENT CONDITIONS**

1. Heat. Consider rotation of crews.
2. Cold. Consider effects of hypothermia on victim and rescuers.
3. Rain. Consider the effects of rain on the hazard profile.
4. Time of Day. Is there enough lighting for operations extending into the night?
5. Consider news media; assign a P.I.O.
6. Command should call for an OSHA representative if there has been a serious injury or death.