

Operations Challenge Safety Event 2020

Situation: Multi- Victim Rescue

While a facility crew is working, two of the workers collapses inside a manhole. The two coworkers are found at the bottom of a (confined space) lift station unconscious, ladder already set-up in the manhole. It is suspected that one victim has been electrocuted and the second has collapsed for some unknown reason. The in-plant rescue team is immediately called to the scene. Two members of the team will enter the confined space, rescue the downed workers. After the first victim is removed from the confined space, CPR will be performed while recovery of the second victim is being performed. LOTO of electrical will need to be performed for entry.

Directions: (Cover will be over the manhole and ladder not in place during the Four-minute equipment check)

Four-minute equipment check: The team will be allowed onto the platform to check all competition equipment and supplies for four minutes prior to the actual start of the event. Part of the four-minute check will include pre-adjusting harnesses including the victim's harnesses. All harnesses will be fitted so that not more than a judge's fist can fit between the strap and the victim/entrant. The victim's harnesses, the clipboard and the gas detector can be stacked during set-up. The head judge will inform the team captain when the four minutes are completed. At this time all team members must immediately move to the starting area. If all equipment problems have not been resolved by this time, they will be addressed with the team in starting position. A delay at this point is cause for a penalty. Judges will not answer team questions during the four-minute inspection time or during the event. All questions will be answered on Monday during the pre-competition meeting. This is done to assure all teams receive the same instructions.

One team member will verbalize being the **“SAFETY SUPERVISOR”**. (This individual must make the 911 call.)

One team member will verbalize being the **“QUALIFIED ENTRANT”** (This individual must perform the gas monitoring during the event.) and then demonstrate the powering on and initial testing of the Dräger gas meter during this time, by verbalizing the following steps:

- a. Remove Dräger X-am 2500 Meter from docking station.
- b. You must VERBILIZE and HOLD the right button until **the unit beeps and the firmware version** appears on screen.
- c. Verbalize **“GAS METER ON”**.
- d. Attach **Meter** to the **Pump**.
- e. Attach hose to top of Pump.
- f. Allow unit to finish power on self-test.
- g. When screen shows a hose with arrows, use your thumb to block the end of hose and verbalize **“BLOCKING PUMP”**.
- h. When the arrows disappear from the hose image, release the hose and verbalize **“PUMP CLEAR”**.
- i. Remove hose from gas meter and neatly coil hose.

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Prior to starting the competition, the team will have the pump already attached to the gas detector. No other equipment can be pre-assembled or disassembled prior to the start. If anything has been pre-assembled or disassembled, the head judge will instruct the team to disassemble / reassemble the equipment prior to starting. If there is still pre-time left, then no penalty will be assessed; however, if the four-minutes have been used up, a penalty for excessive pre-check will be assessed. All equipment must be placed back behind the line in the equipment storage area at the end of the four-minute equipment check.

All printed and signed names of the entrants and attendants may be made on the permit at this time; names must be legible. Fill out the lockout tags. To avoid subjectivity, the judges will verify legible handwriting at this time. The power for the gas detector and blower will be left in the off position at this time.

At the end of the four-minute time all team members must immediately move to the starting area:

At the end of Four-minute equipment check the manhole cover will be removed by the judges and placed in the designated area and the ladder placed into the manhole.

- 1) Team members will start behind the designated starting line at the bottom of the stairs.
- 2) The team captain will start the event by yelling, "Start"
- 3) One team member, "**safety supervisor**", will immediately proceed to call 911. ***This team member cannot assist in any other part of the event until 911 has been called. Minimum verbalization is "two confined space victims unconscious, suspect electrocution, qualified confined space rescue team on-site"***
- 4) The entrants will put on full body harnesses.
- 5) One team member, "**qualified entrant**", will simulate turning on the gas detector and will then test the manhole atmosphere for 30 seconds using a gas detector and provided stopwatch.
 - a. Attach hose to the top of the pump.
 - b. **Verbalize "GAS METER ON"**
 - c. Use your thumb to block the end of hose and **verbalize "BLOCKING PUMP"**.
 - d. Release the hose and **verbalize "PUMP CLEAR"**
 - e. Insert the hose into the confined space, making sure that the hose is inserted to a point between the two black marks.
 - f. Begin monitoring the space for 30 seconds.
 - g. At the end of 30 seconds, record gas readings on your form and **verbalize "GAS READINGS GOOD"**
 - h. Remove the hose from the unit.
 - i. Remove the Meter from the Pump.
 - j. Attach gas monitor to entrant. Unit must be attached to either the entrant's harness or another area outside the entrant's uniform (a clip of some form will be provided to facilitate this). **THE MONITOR CANNOT BE PLACED IN A POCKET OR INSIDE THE SHIRT.**

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- k. At the conclusion of the event, the gas monitor will be placed back into the Docking Station.
- 6) Understanding that there are two entrants, the “**qualified entrant**” will fill out the confined space entry permit.
- 7) The Tripod (3M DBI/ Sala 3-way combo unit) unit will be assembled and placed over the manhole. The chains must be pulled tight to assure the Tripod is open properly and the entry person must be attached to the fall protection device (SRL) before entry can be made. Any entrant that is connected to an SRL that doesn’t allow the attendant to crank you back to the manhole opening, must be connected via a lifeline. Lifeline must be tied off to the railing. Entrants must remain connected to their SRL while in the manhole entry. **Careful consideration of open manhole should be made at all times. This is to represent a true-life situation.**
- 8) All 4 team members will LOTO electrical disconnect before entry into the manhole can be made. Proper LOTO procedures must be followed.
- 9) Install the blower saddle vent into the manhole; attach the 90-degree fitting to the saddle. Place the blower 5-ft from the manhole and attach the blower hose to the 90-degree fitting. Turn the blower on. Verbalize – “**BLOWER ON**”
- 10) Entrants will enter and exit the manhole via the portable manhole ladder.
- 11) The entry person/s will put a full body harness on the victim(s). After the full body harness is on the victim(s) and properly adjusted, the entry person will attach the winch hook to the center “D” ring on the back of the victim’s harness. The entry team will have to team carry at least one victim to the hole for rescue. The arm and leg straps of the harness must be on the victim prior to lifting him with the winch. The chest strap must be attached prior to the victim’s head breaking the manhole plane.
One entrant must maintain control of the victim(s) until the victim’s head breaks the plane of the manhole. The victim(s) is the primary concern. The first entrant must begin victim aid/rescue. The rescue of the victim(s) cannot be ignored!!
Mishandling of the victim(s) will be a penalty (i.e. bending victim backwards, dragging, improper carrying).
- 12) Each victim will be winched gently out of the manhole while one entrant will assist in guiding the victim from below. The entry person **CANNOT** lift the victim.
- 13) Another team member will lift the victim from the space using the winch.
- 14) Two team members will carry each victim to the designated recovery area. Do not drag a victim; all body parts must be off the ground (floor of the platform) while moving a victim to the recovery area. The body harness will remain on the victim(s).
- 15) After the 1st victim has been recovered, one team member will begin CPR on the victim, from this CPR must continue until the event is complete, but team members may switch out performing CPR, if desired.
- 16) The team member acting as the attendant must attend the manhole at all times except for assisting in carrying the victim(s).
- 17) As soon as the last team member has exited the manhole, the ladder must be removed and the manhole cover placed over the manhole opening.

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- 18) Team members will disassemble and store all equipment behind the line in the equipment storage area. The Tripod unit must be fully disassembled to its original condition, all pins in their respective holes and all parts placed back in their original storage areas. The retrieval ropes and ladder must be put back on their respective hangers. Ropes should be rolled up in such fashion as to not touch the floor. No items may be stacked at the end of the event. The winch cable must be within the length of the weight and hook. The blower hose must be back in the blower and strapped in. The full body harnesses will remain on the entry persons. Time will end when all team members except the team member performing CPR, cross the finish line and the team captain raises his/her hands above their heads and shouts "Stop." All team members will stay in the finish area until released by the judges. Judges will collect the entry permit, stop watch, harnesses and lockout keys. Once the team has been released, they will leave the competition area. The captain will be escorted to a waiting area for review of the event with the head judge.

Safety

The manhole opening will be **OPEN** with a safety cover removed before the start of the event. Teams must take extra caution while assembling the Tripod and in placing it over the manhole. The entrant must be completely and properly in the harness and attached to the SRL that is fully attached to the Tripod unit before entering the manhole. The cover must be reinstalled on the manhole opening as soon as the last entrant exited the manhole and equipment is removed from the manhole opening. Ladder safety during usage will be required.

Three points of contact will be required. Ladder rungs must be used, no sliding down the sides. Ladder rungs may not be skipped.

All stairs must be used by all competitors and at least one hand on a handrail while ascending the stairs.

No one team member may lift/hold a victim off the ground by themselves.

Team members may not run!!! No member should have both feet off the ground at the same time.

Atmosphere Tester

Turn the meter on first; follow the procedures outlined in Step 5 (a-l). With one end of the hose attached to the meter place the other end of the hose into the manhole. **There will be two marks on the hose. One should be through the manhole (under the platform floor), with the other mark above the manhole rim (above the platform floor).** Once in this position the 30-second test will begin. The team member using the meter must remain with the meter and keep track of their time. Once the initial test is completed remove the hose from the manhole and from the meter. The gas meter must enter the manhole with the first entrant. It must remain in the confined space until the last entrant is removed from the manhole. **A stopwatch will be provided to each team; this is for the team to time the 30-second atmosphere test.**

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Blower Placement

The blower must be placed 5 ft from the rim of the manhole prior to entry. There will be a square drawn around the perimeter of the manhole to allow the teams to correctly locate the blower. The blower may be placed at any point, outside the square the team wishes. The blower power cord will not be plugged in, but the switch **must be turned on and left on**. The blower may not be removed from the manhole until the head of the last entrant has broken the plane of the manhole.

3M Tripod Unit

The 3M Tripod Unit must be set-up with the legs extended so that the pins are placed in the 5th hole up. All 3 Devices must be attached to the tripod before entry is made by any entrant. All pins must be reinstalled in their proper location at the end of the event and the legs of the tripod put back to the 1st hole location. The tripod feet must not leave the floor once placed over the manhole until the last entrant has exited the manhole.

Permit

All lines of permit must be filled out. The entries required on the permit during the timed event will be entries under section C, these must be made after the 30 second test and before anyone breaks the plane of the manhole. All other entries may be filled out during the 4 minute check. Do not wait for the readings on the gas meter. Any acceptable reading (considered safe for entry by OSHA) may be entered on the permit after the 30-second test. Readings will be written to the tenth. Example oxygen of 20 PPM will be written 20.0 PPM. **Both of the entrants must be listed on the permit to be allowed to enter the manhole. Gloves may be removed from the hands of the person completing the permit and only while he/she is entering information on the permit.** Confined space ID number will be Team number.

Victim's Harnesses

It will be up to each individual team to check or adjust the victims harness for proper fit by the team during the four minute check. The full body harness on the victim should be installed to insure proper care and retrieval of the victim.

Personal Hygiene

Do not place anything into your mouth, i.e., gas detector, pencils, pens, or straps. This will result in a penalty.

CPR

While doing CPR, we will only be doing chest compression CPR for this event. Team members will not use leather gloves for performing CPR, they will use a latex style glove for this task. First, the team member must undo the harness chest strap. We will not be removing the shirt, place the heel of one hand over the center of the victim's chest, between the nipples. Place your other hand on top of the first hand. Keep your elbows straight and position your shoulders directly above your hands. Use your upper body weight (not just your arms) as you push straight down on (compress) the chest at least 2 inches (approximately 5 centimeters) but not greater than 2.4 inches (approximately 6 centimeters). Push hard at a rate of 100 to 120 compressions a minute. Compressions must be counted out loud, 1 and 2 and 3 and..., at 10 you may start over at 1.

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LOTO

Each team member must Lock Out and Tag Out the **Electrical** Disconnect before entry can be made. Tags must have name of person and date in format of month/day/year, clearly filled out on them. Gang hasp is to be placed into the disconnect once shut off, locks then placed into the gang hasp. Each team member must maintain control of his/her own key.

Equipment Provided for Competition:

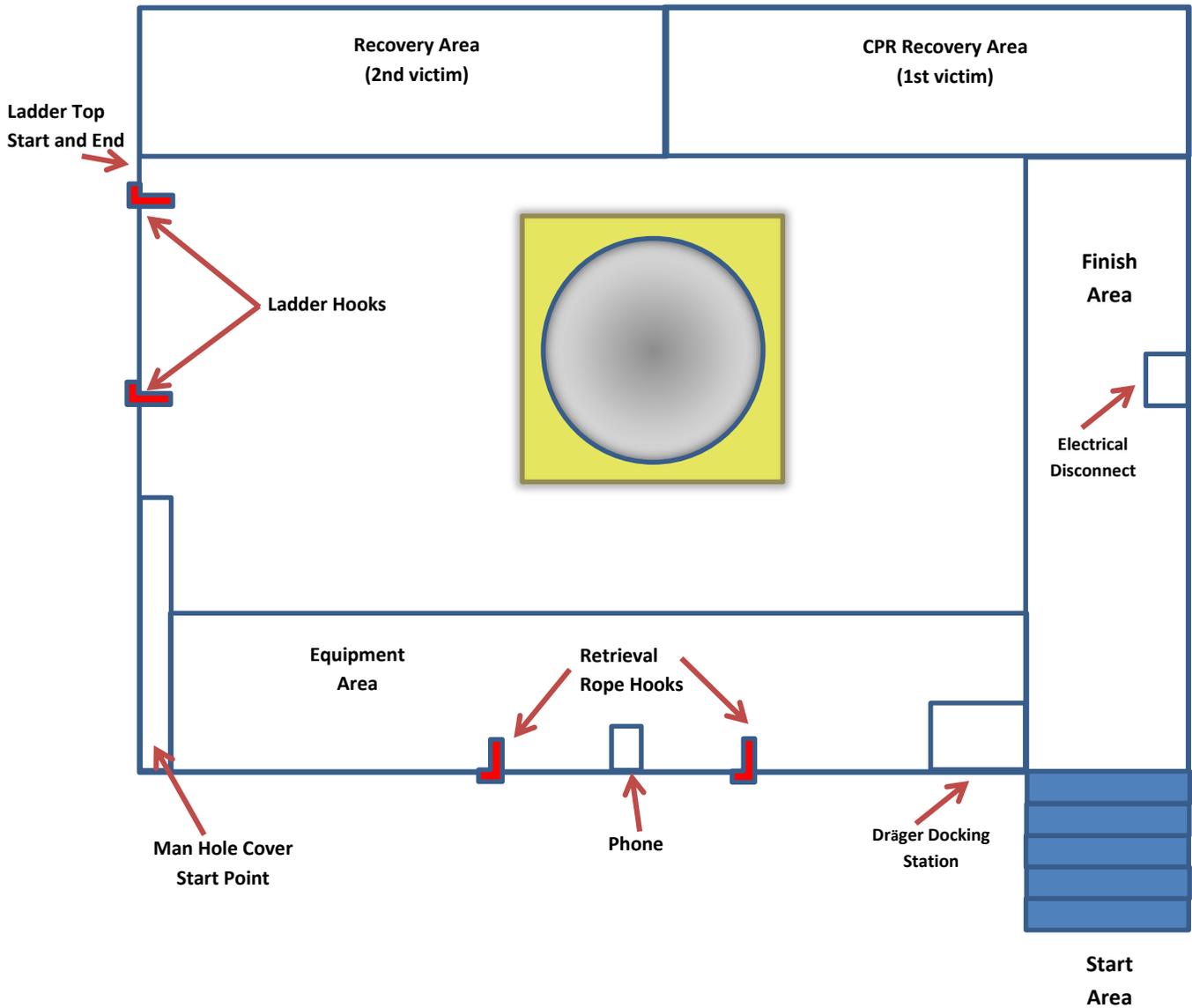
- 16ft X 16ft platform (6ft height) with a 36 inch circular opening in the center of the floor.
- Tripod(3M DBI/ Sala 3-way combo unit)
- Ropes for emergency retrieval of entrants (Condor 50' Lifeline Model #45J302)
- 8 foot manhole ladder (Werner Model M7108-1)
- Phone to call emergency services
- One clipboard
- One stopwatch
- One manhole safety cover (Safe Approach)
- Two Gang hasps and 4 locks (~~2 per entrant~~)
- Four Lockout/Tagout Tags
- One Gas Monitor With Pump (Drager X-am 2500)
- Blower and Vent Tube Assembly
- Electrical Disconnect to be locked out.
- Exofit 3 D-Ring, USABB part number for the small is 65113, medium, 65114, large is 65115
- Latex gloves
- CPR Full body manikin
- 105 lbs. Rescue Randy

Equipment Provided by Teams

Teams will be required to supply and wear, as appropriate, the following:

- Steel-toed shoes ANSI rating Z41-PT99
- Hardhats meeting ANSI standard ANSI Z89.1-2003 Type I or II (bump hats are not acceptable)
- Safety glasses/goggles ANSI rating Z87.1-2003
- Leather gloves and mechanics gloves allowed. **(Baseball gloves, Golf gloves. Neoprene gloves, Gloves with fingertips removed or holes in the glove are not acceptable.)**
- Pencil or pen to write on confined space permits

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WEFTEC 2020 Safety Event

Confined Space Entry Work Permit			
A. Site Information: PLEASE PRINT			
Confined Space Id. Number:			
Team name:			
Designated Entry Team Leader:			
Designated Team Attendant:			
Description of work to be performed:			
B. Protective And Emergency Equipment Needed			
	Yes	No	
Gloves			
Boots			
Harness/Davit Arm Hoist			
Atmospheric Tester			
Blower			
Hard Hat/Coveralls			
Ventilated/Purged			
C. Atmospheric Tests			
Explosive Gases		LEL	
Oxygen		%	
H ₂ S (Hydrogen Sulfide)		PPM	
CO (Carbon Monoxide)		PPM	
(Note: if alarm sounds vent space for 15 minutes with power ventilator and retest. If alarm sounds again continue to ventilate and retest until atmosphere meets allowable limits)			
Test accomplished by:			
D. Sign Off			
Entrant Signature:			
Entrant Signature:			
Attendant's Signature:			