



CONFINED SPACE ENTRY PROCEDURES

CONFINED SPACE NAME:
Fountain Recirculation Pump

ID #
N/A

LOCATION:
Lonsdale Quay

EP # 13

DATE: November 2012

HAZARDOUS ATMOSPHERIC RATING:

Moderate

SCOPE OF WORK (From Hazard Assessment)

This Hazard Assessment (HA) refers to entry for the purpose of inspection and minor manual repairs with manual tools including removing and replacing damaged equipment. Pump screens are replaced and/or cleaned with a low pressure water hose and periodically the sand filters are cleaned out with manual tools (shovels) and replaced with new sand.

Hot work and other atmospheric contaminant generating activities are not included in this Hazard Assessment.

SUMMARY OF POTENTIAL HAZARDS

	Hazards	Undisturbed Space	Work Tasks	Additional Comments
ATMOSPHERE	Oxygen (O ₂) Deficiency	Yes	No	See Hazard Assessment for additional details.
	O ₂ Enrichment	No	No	
	Chemical	No	No	
	Biological Hazards	Yes	No	
	Fire/Explosion	No	No	
SAFETY HAZARDS	Structural	No	No	
	Engulfment	No	No	
	Entrapment	No	No	
	Electrical	Yes	No	
	Access/egress	No	No	
	Fall	Yes	No	
	Slip/Trip	Yes	Yes	
	Visibility/Light Level	Yes	No	
	Baffles/internal arrangement	No	No	
	Floor openings in space	No	No	
PHYSICAL AGENTS	Noise/Vibration	No	No	
	Temperature	Yes	No	
	Non/Ionizing Radiation	No	No	
	Laser	No	No	
OTHERS	Ingestion/Skin Contact	No	No	
	Mechanical	Yes	No	
	Traffic Hazard	Yes	No	
	Hydraulic/ Pneumatic	No	No	

COMPLETED BY:

Prepared by: Peter Bergholz, BSc, CIH, AMEC, November 2012

SOURCE: Paul Elsoff & Richard Howard

Reviewed by: Victor Leung, MSc, CIH, ROH, CRSP, AMEC, November 2012

This Entry Procedure pertains to the activity and confined space listed above. This entry procedure is required to be reviewed within 3 years of preparation. Any change in activity requires a review of the related HA and a review of the entry procedures (especially when contaminants will be generated by an activity such as welding, radiation or chemical usage).



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Topics	No.	Tasks/ Equipment Required
Prior to Entry		
Equipment Required	1.	<p>Ensure the following is available:</p> <ul style="list-style-type: none"> Pick up gas detector (with pump). Gas detector must be bump tested and/or calibrated prior to use and have the following sensors: <ul style="list-style-type: none"> oxygen (O₂), flammable/combustibles (LEL), carbon monoxide (CO), and hydrogen sulphide (H₂S) <p>(City standard)</p> <ul style="list-style-type: none"> Blower with a minimum of 1200 CFM Two-way radio and/or cellular telephone (for Standby Person and Entry Supervisor) Sucker truck/vacuum truck (if required) Portable lighting (flashlight or portable lighting with GFCI) Fall protection (harness and lifeline) Portable ladder (if fixed ladder condition is poor) Primary barriers/pylons
	2.	<p>General PPE:</p> <ul style="list-style-type: none"> Coveralls Safety boots Work gloves Hard hat Safety glasses with side shields
	3.	<p>Rescue equipment:</p> <ul style="list-style-type: none"> Harness (worn) Lifeline (attached at all times) Tripod Winch
Entry Permit/Gas Testing Log	4.	Complete and post the Confined Space Entry Permit at the entrance. (NOTE: Update the Permit accordingly.)
	5.	Entry Supervisor to sign Confined Space Entry Permit once all equipment is ready to be installed and observe initial entry.
Space Preparation	6.	Erect primary barriers/pylons around opening to the space to isolate space from pedestrian traffic.
	7.	If required, rinse space prior to entry if space contains large amounts of bacteria/fungi/sludge. Remove objects (needles, sharps) from outside the space at all times with sucker truck, if feasible.

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Pre-Work Coordination	8.	Inspect fixed ladder condition. Use portable ladder if condition of fixed ladder is unknown or suspect. Maintain three points of contact on the ladder at all times.
	9.	Inspect all equipment for damage before use. Remove damaged equipment from service.
	10.	Standby and Entry Supervisor must have a two-way radio and/or cellular telephone.
	11.	Standby must have training in monitoring duties, initiating emergency response, operation of retrieval equipment and removal of injured victims using this equipment.
	12.	Rescue personnel must have training in first aid and CPR.
	13.	Rescue equipment must be available.
	14.	Harness must be worn and lifeline attached at all times.
Isolation and Lockout	15.	Space must be isolated and locked-out <ul style="list-style-type: none"> Follow space specific isolation and lockout document. Document must be available on-site prior to work.
Gas Testing	16.	Persons calibrating/bump testing and operating the instrument must have appropriate training.
	17.	Test the atmosphere no more than 20 minutes prior to entry; continuously during entry and if the space is left vacant for more than 20 minutes. Record the results on the Confined Space Entry Permit every 20 minutes.
	18.	Measure gas concentrations at the top, middle and bottom of the space (using pump and tubing). <i>Remember there is a delay in response as air is pumped into the instrument (approx. 1 sec per foot) and there is additional sensor response time.</i>
	19.	Allowable gas concentrations (before and during entry): Entry and work in the space can occur only if the following conditions are met: <ul style="list-style-type: none"> O₂: 19.5 – 23 % LEL: ≤ 10 % CO: ≤ 25 ppm H₂S: ≤ 10 ppm If these criteria cannot be met then the space must be evacuated. NOTE: The space cannot be re-entered until levels are brought within the acceptable concentrations listed above (adjust ventilation, re-calibrate gas tester etc.). <i>If the problem persists contact Entry Supervisor for further instructions, see Entry Permit.</i>
	20.	The entrant must wear the atmospheric testing instrument.

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Topics	No.	Tasks/ Equipment Required
Ventilation	21.	Set up blower (minimum 1,200 cfm) with duct through the entrance hole discharging at approximately 2 feet from bottom of the space. Minimum ventilation requirements are based on achieving 20 air changes per hour. Ducting may be temporarily removed to allow entrant access – replace ducting immediately after entry.
	22.	Ventilation must be operating for a minimum of 20 minutes prior to entry to allow 'clean respirable air' to circulate throughout the space.
During Entry		
Gas Testing	23.	Continuous monitoring required – as above.
	24.	Record the gas testing results on the Confined Space Entry Permit at least every 20 minutes.
Ventilation	25.	Ventilation must be running during the entire entry. Ducting may be temporarily removed to allow entrant from exiting/entering– replace ducting immediately after entry/exit.
Standby Person	26.	Standby person must remain at or near the entrance to the space during the entry.
	27.	Standby person must monitor pedestrian traffic in the area.
	28.	Standby must order the evacuation of the confined space if an alarm sounds.
Personal Protective Equipment (PPE)	29.	All entrants must wear General PPE (see equipment required list above).
	30.	Harness must be worn and lifeline attached at all times during entry.
Task/Additional Requirements	31.	Portable lighting (flashlight or portable light with GFCI) required.
Rescue Plan	32.	To activate the emergency response, Standby Person contacts 911 if first aid is required.
	33.	Standby Person contacts the Entry Supervisor using radio/cell phone and advises them of the situation and Entry Supervisor will respond to the scene.
	34.	Ventilation can be removed temporarily to allow extraction from space since there is only one entry point.
	35.	Self-rescue if possible
	36.	If self-rescue is not possible: Lifeline attached: <ul style="list-style-type: none"> Standby Person removes person from space using lifeline and winch.


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Topics	No.	Tasks/ Equipment Required
After Entry Has Been Completed		
Gas Testing	37.	After the entry, record the peak, TWA, STEL, occurrence of alarms on the Confined Space Entry Permit.
	38.	Entry Supervisor to return the completed Confined Space Entry Permit to the Confined Space Program Administrator for filing (must be kept for 1 year).
Work Coordination	39.	Ensure all entrants and tools have been removed from the space and secure the opening.
Equipment	40.	Return all equipment to its proper location.
	41.	Return gas detector to the storage location.

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