

Manual Section 7	Issue Date 09/14/10	Revision Date 06/15/21	Policy Number LLCP-061
	Confined Space		

Purpose

This Policy establishes requirements for Confined Space Entry in accordance with 29 CFR Part 1910.146, (Permit-required confined spaces), and 29 CFR 1926 (Construction). It should be used to ensure that all confined space work is done according to OSHA recommendations and to ensure the safety and well-being of all employees.

Scope

All LLC Companies including, Blanchard Industrial, LLC, Grand Isle Shipyard, Inc., Global Inspections, LLC, GIS Engineering, LLC, hereafter identified as “Company”.

Introduction

The Company is firmly committed to providing all of its employees a safe and healthy environment. The Occupational Safety and Health Administrations Confined Space Entry Standard (herein referred to as the Standard) [29 CFR Part 1910.146 & 29 CFR 1926] requires that all employers develop and implement a written Confined Space Program. Additionally, some of our clients require that we provide them with proof of our compliance with the law. This program is designed to describe how OSHA Confined Space Standard Requirements are met in this organization. Information and training will be provided to reduce the possibility of confined space entry accidents and to comply with the OSHA Permit Required Confined Space Standard.

Definitions

"Acceptable entry conditions" means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

"Attendant" means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program.

"Authorized entrant" means an employee who is authorized by the employer to enter a permit space.

"Blanking or blinding" means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

"Confined space" means a space that:

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

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"Double block and bleed" Two non-leaking valves in a series that are closed, locked, and tagged with the pressure between the valves bled through a locked open and tagged vent line directed to a safe location or with the utilization of pressure gauge.

"Emergency" means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

"Employer" Company hiring the Company to perform work at a predetermined rate.

"Engulfment" means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

"Entry" means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

"Entry permit (permit)" means the written or printed document that is provided by the employer to allow and control entry into a permit space

"Entry supervisor" means the person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

"Hazardous atmosphere" means an atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

- Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
- Airborne combustible dust at a concentration that meets or exceeds its LFL; (This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less)
- Atmospheric oxygen concentration below 19.5 percent or above 22 percent (Company Requirement);
- Atmospheric concentration of any substance for which could result in employee exposure in excess of its dose or permissible exposure limit;
- Any other atmospheric condition that is immediately dangerous to life or health.

"Hot work permit" means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

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"Immediately dangerous to life or health (IDLH)" means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

"Inerting" means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. (This procedure produces an IDLH oxygen-deficient atmosphere)

"Isolation" means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; or blocking or disconnecting all mechanical linkages. Follow the Corporate Isolation of Hazardous Energy (IHE) Policy for specifics on isolation.

"Line breaking" means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

"Non-permit confined space" means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

"Oxygen deficient atmosphere" means an atmosphere containing less than 19.5 percent oxygen by volume.

"Oxygen enriched atmosphere" means an atmosphere containing more than 22 percent oxygen by volume (Company Requirement).

"Permit-required confined space (permit space)" means a confined space that has one or more of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing an entrant;
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- Contains any other recognized serious safety or health hazard.

"Permit-required confined space program (permit space program)" means the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

"Permit system" means the employer's written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

"Prohibited condition" means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

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"Rescue service" means the personnel designated to rescue employees from permit spaces.

"Retrieval system" means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

"Testing" means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

Workplace Evaluation – This policy requires that the Company will initially evaluate our workplace and determine if there are any confined spaces. If so, they will be identified by using signs, proper training or other equally effective means to prevent unauthorized employee entry.

Training – Initial and refresher training is required to provide employees with the necessary understanding, skills and knowledge to perform the job safely. Refresher training will be conducted whenever an employee's duties change, when hazards in the confined space change, or whenever the evaluation of the confined space program identifies inadequacies in the employee's knowledge. Employer training certification must include the employee's name, the signature or initials of the trainer and the dates of training. All employees trained in rescue, shall practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit spaces or from representative permit spaces.

Authorized Entrants – The standard provides that the authorized entrants of a confined space must know the hazards they may face and be able to recognize signs or symptoms of exposure as well as understand the consequences of exposure to hazards. They must know how to use any needed equipment that they may need in the confined space and the hazards that they will present. Entrants must inform attendants of the warning signs or existence of a hazardous condition and exit as quickly as possible whenever ordered or alerted to do so by alarm, warning sign or any prohibiting condition.

Attendants – An Attendant must be present and on duty prior to entry of any confined space. They must remain at the space for the duration of entry. An attendant of a confined space must know the hazards of confined spaces and be aware of behavioral effects of potential exposures. They must keep continuous count and identification of authorized entrants and remain outside the space until relieved. Continuous communication must be kept with entrants to monitor their status.

Conditions and activities inside and outside the permit space must be monitored and entrants must be ordered to exit if the attendant detected a prohibited condition, a behavioral effect of a hazard exposure to an entrant or if the attendant could not safely perform all of his duties required. Attendants shall summon rescuers if necessary and attendants must prevent unauthorized entry into confined spaces and perform non-entry rescues if required. Attendants shall not perform other duties that interfere with their primary duty to monitor and protect the safety of authorized entrants in one space.

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If an attendant is approached by an unauthorized person(s), the attendant should:

- Warn the unauthorized persons that they must stay away from the permit space.
- Advise the unauthorized persons that they must exit immediately if they have entered the permit space.
- Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

While performing attendant duties, the attendant may also be responsible for performing a Non-Entry Rescue when an entrant is placed on a life-line. The instant that an entrant would show signs of exposure, the attendant may be responsible for extracting the entrant. The attendant shall not perform any duty that might interfere with his primary duty of monitoring and protecting the entrants.

If an Attendant is required to observe/monitor activities in more than one space at the same, special procedures shall be written and approved by Management prior to entry to assure that primary responsibilities are carried out without distraction in the event of an emergency.

Entry Supervisor – Entry supervisors with the responsibility of issuing confined space permits must know the hazards of the confined spaces and verify that all tests have been conducted or ongoing and all procedures and equipment are in place and acceptable entry conditions exist before endorsing a permit. At the completion of the work or if an unknown hazard arises the permit must be terminated and the order of evacuation of the permit must be delivered. The Entry Supervisor must verify that a rescue service is available, the means for summoning them are operable and the host employer has performed a satisfactory evaluation of said rescue service (equipment, PPE, valid First Aid and CPR training, etc.). At any time an “IDLH” atmosphere is prevalent in the confined space, a rescue team must be present and prepared prior to and during entry. They must ensure the removal of unauthorized individuals who enter the confined space or barricaded area. Shifts of all personnel shall be determined by the Entry Supervisor and modifications shall be made if conditions change.

Rescue Services – Rescue services may be provided by on-site employees or an off-site service. On-site teams must be properly equipped and must receive the same training as authorized entrants. “IDLH” rescue teams must be trained in the use of personal protective and rescue equipment and in first aid, including CPR.

Alternate Protection Services – OSHA has specified alternative protection procedures that may be used for confined spaces where atmospheric and ventilation can control the hazard. The entry supervisor must decide this. (Employees must follow requirements of Customer’s policies when they are deemed necessary and **ONLY** if they meet or exceed Our Company Policies & Procedures)

Permit System – Our permit system for confined space entry is mandated by the OSHA standard and Company Policy. An entry supervisor must authorize entry, prepare and sign written permits, order corrective measures if necessary and cancel permits when work is completed. Permits must be available to all permit space entrants at the time of entry and should extend only for the duration of the task attempted. Entrants can request to be present when testing of the space occurs. Permits shall be canceled upon completion of the task by the Entry Supervisor. The permits are retained for ONE year to facilitate review of the confined space program.

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Permits – An entry permit **MUST** include the following information:

- Identification of the space
- Purpose of the entry
- Date and duration of the permit
- A list of authorized entrants
- Names of current attendants and the entry supervisor
- A list of hazards in the permit space
- A list of measures to isolate the permit space and eliminate or control the hazard
- The acceptable entry condition
- The results of test initiated by the person(s) performing the tests
- The rescue and emergency services available and the means to summon them
- Communication procedure for attendants/entrants
- Any required equipment (such as respirators, alarms, communication, etc.)
- Any and all other necessary information & any additional permits (hot work, etc.)

Requirements for confined spaces:

- It shall be the responsibility of the Company’s managers or supervisors to evaluate the workplace and determine if any spaces are confined spaces.
- The Company’s managers or supervisors shall inform exposed employees of the existence, location and hazards posed by the permit spaces by posting danger signs or by any other equally effective means.
- If the Company’s management decides that its employee will not enter permit spaces, shall take effective measure to prevent their employees from entering the permit spaces and shall comply with the standard.
- If the Company’s management decides their employees will enter permit spaces, managers and employees shall develop and implement a written Work Plan/Safety Environmental Analysis (JSEA) as well as the Confined Space Entry Permit. The written JSEA and the Confined Space Entry Permit shall be available for inspection by employees and their authorized representatives.
- When there are changes in the use or configuration of a confined space that might increase the hazards to entrants the employer shall terminate the permit and JSEA and re-evaluate that space.
- In the event of unauthorized entry of a confined space, employee complaints, hazards not covered by the permit or incident of any kind, the program shall be reevaluated to assure that procedures provide enough protection for employees, prior to allowing subsequent entries.

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Company Confined Space Entry Requirements

- Prior to any Confined Space Entry, an engineered Job Scope of the task is to be developed.
 - Any condition making it unsafe to remove an entrance cover shall be eliminated before the cover is removed (i.e. sources of ignition).
 - When entrance covers are removed, the opening shall be promptly guarded by railing, temporary cover or other temporary barriers that will prevent an accidental fall through the opening and that will protect each employee working in the space from foreign objects entering the space (See the Corporate Walking and Working Surfaces Policy for further guidance).
 - Before an employee enters the space, the internal atmosphere shall be tested by a Marine Chemist or an individual designated by the company as a Competent Person. This test shall be performed with a calibrated direct-reading instrument, for the following conditions IN THE ORDER GIVEN:
 - Oxygen content 19.5-22%
 - Flammable gas and vapors 0% of LEL
 - Potential toxic air contaminants
 - Potential toxics must be listed on the permit
 - If forced ventilation is utilized to de-gas a space, inspections must be performed that there are no ignition sources in the area. Additionally, wind observance must be documented and confirmed to assure that fumes from the space will be dispersed away from personnel.
 - Employees entering a confined space shall wear a positive-pressure breathing apparatus while inside, (i.e. Supplied Air Respirator with Escape Pack or SCBA).
 - **The Company does not allow the use of recycled wash water for any reason.** Employees shall use other means available to conduct wash-down tasks. If for any reason, a Company employee feels pressure from **anyone** to use this type of practice, the employee shall report this to his Supervisor and/or immediately call the Corporate Hotline (1-855-543-5163).
 - Air monitoring is to be performed every 5-10 minutes to assure no further precautions are necessary; however entrants shall participate in monitoring and may request additional testing at any time.
- Note: If the above requirements are not met, a MOC is to be initiated and sent in to their Manager or Corporate HSE.**
- If there may a possibility of an oxygen deficiency in the space, engineering methods should be utilized to gain acceptable conditions. If acceptable conditions cannot be met, special precautions shall be taken such as breathing air being supplied to employees by the means of SAR or SCBA.
 - If continuous forced air ventilation must be used, it shall be used as follows:
 - An employee **MAY NOT** enter the space until the forced air ventilation has eliminated any hazardous atmosphere and atmosphere is verified by testing.

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- The forced air ventilation shall be directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
- The air supply for forced air ventilation shall be from a clean source and may not increase the hazards in the space.
- The atmosphere within the space shall be periodically tested as necessary to ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. All testing shall be documented on the CSE Permit Log.
- Purging, flushing or ventilating the permit space may be necessary to eliminate or control atmospheric hazards. If this is performed, it shall be listed on the permit with its time increments as well as the method and/or product used.
- If blinding or disconnecting of pipe shall be performed due to the possible engulfment of entrants proper lockout/tagout procedures shall be followed. (See Corporate IHE Policy)
- If electrical appliances will be used inside a confined space (welding, lighting, grinding, etc.) the use of GFCI's shall be utilized to prevent the possibility of electrocution. (See Corporate Electrical Policy)
- When there are hazards of falls, entrants shall utilize fall protection while performing duties inside a confined space. (See Corporate Fall Hazard Management Policy)
- Pedestrian, vehicle or other barriers may need to be provided to protect entrants from external hazards.
- Conditions of the Confined Space shall be continuously verified throughout the duration of the entry.
- If a hazardous atmosphere is detected during entry:
 - The Attendant must notify the Entry Personnel (Bullhorn, Radio, etc.)
 - Each employee must leave the space immediately.
 - The space shall be evaluated to determine how the hazardous atmosphere developed.
 - Measures shall be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
- The company or its supervisors shall verify the space is safe for entry and that the measures required by the OSHA standards have been taken. This is done through a written certification that contains the date and location of the space and the certification shall be made before entry and shall be made available to each employee entering the space.
- In cases where Company employees are asked to enter confined spaces with employees from another Contractor, no entry shall be allowed without a detailed procedure created, signed by Company Management.

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Rescue and Emergency Requirements

The following requirements apply to Company personnel who enter permit spaces to perform rescue services.

- The Company shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces.
- Each member of the rescue service shall be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required of authorized entrants under the "duties of authorized entrants" section of this instruction.
- Each member of the rescue service shall practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which we anticipate rescue is to be performed.
- Each member of the rescue service shall be trained in basic first-aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and in CPR shall be available.
- Non-company rescue personnel. When non-company rescue personnel are designated to perform permit space rescue, the Company shall:
 - Inform the rescue service of the hazards they may confront when called on to perform rescue.
 - Provide the rescue service with access to all permit spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.
- To facilitate non-entry rescue, retrieval systems or methods shall be used whenever an entrant enters a permit space, unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems used by the Company shall meet the following requirements.
 - Each authorized entrant shall use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head.
 - The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the permit space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet deep.
- If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information shall be made available to the medical facility treating the exposed entrant.
- All rescue equipment for the purpose of Rescue shall be inspected prior to a confined space entry, rescue training and as deemed necessary by governmental regulation, company policies & procedures.

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Confined Spaces Entry Requirements – “Inert Gases”

This section of Confined Space Entry involves the use of a displacement process by utilizing Inert Gases. This section of the policy does not exclude the ordinary entry policy & procedures but is an addition to this Confined Space Entry Program. The entire Confined Space Entry Policy is enforced and shall be followed.

Training

Special training shall be provided for all employees whose duties include working in or around an Inert Space. Employees must certify that the required training has been accomplished and personnel must possess this certification on their person. The certification shall include employee name, trainer signature/initials and dates of training. Certifications must be made available to authorized representative upon request.

Entrants

Technicians entering the inert space must wear a helmet which is sufficiently secured to prevent inadvertent removal. ('Clam type' helmet with integral breathing air, which cannot be accidentally removed or dislodged are acceptable). They must also have a breathing air source by the means of SAR or SCBA and must also wear an auxiliary escape air bottle, in the event that the technician must escape due to an emergency.

Air supply must be Certified Grade D quality breathing air and must be checked and tagged by Safety before use at the site. Only bottled air is permitted.

Attendants

Stand-by personnel cannot leave their post until relieved and shall provide continuous observation and/or communications with Entrants.

Rescue

Trained personnel to provide emergency first aid and cardiopulmonary resuscitation shall be available to respond in a timely manner. Rescue personnel appointed for task shall not leave their post for the purpose of a swift rescue.

Requirements for Entry of Confined spaces with the use of Inert Gases:

- Prior to performing an Inert Gas Entry, employees shall perform a written JSEA, specific to the vessel being entered and the work being undertaken. The JSEA needs to address all the risks associated with the work such as:
 - Setting up the inert entry and catalyst handling equipment at the work site
 - Access and egress to the equipment, provisions for adequate lighting
 - Control of employee access
 - Lifting and rigging activities
 - Removal of vessel internals
 - Installation of warning signs

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- All specialized equipment must be inspected and in good working order prior to the entry.
- Personnel must maintain a communications system used by the employees working inside the inert atmosphere and those monitoring the work from the outside. *This system must be capable of simultaneous communications with all personnel.* If for any reason the primary communication link fails, the persons working inside the space must be evacuated.
- The Supervisor will communicate the JSEA to other involved contractor personnel and have a documented heat stress plan, including a work/rest regimen, based on the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values. A separate written emergency action plan shall also be developed and include but not limited to the following information:
 - Loss of Nitrogen supply
 - High Nitrogen pressure
 - High vessel oxygen
 - High/increasing vessel temperature
 - Loss of breathing air supply
 - Emergency inside the vessel
 - Plant emergency outside the vessel
- A periodic log or checklist of continuous air monitoring results shall be maintained. Log entries should not exceed 15 minutes.
- The area around the Inert Entry Operation must be barricaded to limit personnel in the area. The perimeter of this regulated area will be a minimum of 4-feet from the vessel opening or manway.

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**ENVIRONMENTAL SERVICE GROUP
LIQUID MUD BARGE/ BOAT CONVENTIONAL CLEANING WITH H2S
2016**

OVERVIEW: Liquid Mud Boat / Barge Cleaned for Release containing H2S. This procedure will cover the steps that will be taken to complete these operations in a safe and efficient manner.

Standard operating procedure:

- Upon arrival at the work location, a pre-job safety meeting will be conducted to familiarize the relevant Customer Rep, Company and other contract personnel with the scope of work, division of responsibilities, and facility safety procedures. During this meeting specific JSEAs will be developed and covered with all personnel involved with the operation.
- After this meeting, the environmental supervisor will inspect the job location to ensure it is safe to begin the operation.
- Equipment will be set up and the hydrocarbon carrying hoses will be wrapped with oil pads and duct tape to prevent leaks and environmental hazards. Air lines will contain a safety pin and whip check.
- Atmospheric Testing of tanks will be conducted before all other operations begin, if H2S is present SWA will be conducted by the entry supervisor.
- Operations manager will be contacted by supervisor in order to insure all steps will be followed to eliminate the H2S. Operation manager will contact all other parties
 - Supervisor will address the H2S being present with all boat personal and crew members. All personal working on the back deck and working on the discharge side of the hose will use breathing air.
 - Boat crew will inject water into each tank. Once completed Company crew will inject a caustic chemical in each tank starting with 100 gallons and add as needed.
 - Boat crew will circulate each tank after chemical has been injected so the entry supervisor can do atmosphere check
 - Once chemical begins to break down the H2S, CO will start to increase, this is how the Company will know that the correct amount of chemical was used.
 - Once all H2S has been eliminated crew will pump out all fluids.
 - Once all tanks have been pumped down crews will ventilate until all CO has been reduced to safe levels.
- These steps will be repeated for every tank that contains H2S.
- Once equipment is checked and verified complete by SUPERVISOR pumping of the product inside the liquid mud tank will begin. Product will be pumped into USCG approved containment unit provided by the dockside facility.
- Once all product has been removed from the liquid mud tank we will begin to install blowers with grounds on openings of liquid mud tank at the supervisor's discretion to ensure adequate flow of ventilation to provide a safe atmosphere to work in.
- After the tanks have been ventilated the blowers will be stopped and the tanks will be tested to verify that the interior is at 0% LEL, 0 p.p.m. of H2S, and 21.0% OXYGEN.
- Customer and Company confined space entry permits will be completed before entry will be made into the tanks.

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- For the product removal and cleaning phase of the project, liquid mud tank entrants will be wearing supplied air respirator with a 5 min. escape pack.
- Explosion proof, class 1 div 2 lighting with a GFI receptacle plug will be used for the cleaning portion of this project.
- Once the atmosphere is acceptable, we will enter liquid mud tanks and begin washing product using a 1 ½ inch fire hose and nozzle and diaphragm pumps. Squeegees also may be used if the product is pump able and water is not necessary for the removal process.
- The Company will repeat this process in all four liquid mud tanks until all coarse removal is complete.
- Once the coarse removal of product is complete the supervisor will then have approximately 75-125bbls of fresh water pumped into one of the four liquid mud tanks.
- A degreaser (which will be determined by the product contained in the liquid mud barge) will be added to the fresh water and circulated through all suction and discharge lines as well as any hoses on the liquid mud barge.
- The supervisor will use the barges pumping system/ or boat engineer to circulate the degreaser and water threw the lines.
- After fresh water and degreaser have been circulated through all lines and pump on the barge an airline will then be attached directly from the air compressor to one of the discharge lines.
- The supervisor will then ensure that all connections are secure and all valves are in the closed position.
- Once all has been verified as safely secured and in the correct position the supervisor will then blow air threw all lines on the barge one at a time. This will ensure the removal of all fresh water and degreaser from the lines.
- Once liquid mud tank is ready for final cleaning, ventilation will resume and atmosphere checked for safe levels. Entry will be made to wash down with clean water to remove any residuals. If necessary the crew will soap and scrub all walls of the tank.
- Once the liquid mud barge has passed inspection from the customer representative, the cleaning equipment will then be removed from the barge.
- Once operations have been completed, the Company crew and equipment will return to our operations base.

THE COMPANY WILL ONLY USE FRESH (NOT RECYCLED) WATER DURING THE PHASES OF THE JOB THAT REQUIRE ENTRY PERSONNEL.