**Safe Work Requirement**

CONFINED SPACE ENTRY PROCEDURE

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| PURPOSE The purpose of this policy is to provide guidance in confined space entry requirements necessary to ensure a safe working environment for all personnel. SCOPE The scope of this policy is applicable to ECDC Drilling, Work over and other related operations and all subsidiary companies. DEFINATIONS **Confined Space**  A space that has limited or restricted means of entry and/or exit, is large enough and so configured that an employee can bodily enter to perform assigned task, but is not designed for continuous employee occupancy (e.g. storage tanks, mud tank, bins, process vessels, diesel tank, cellar, pits, ventilation ducts, tubs, manholes, pipelines, and sewers).  **Confined Space Entry**  Entry into a permit required confined space occurs when any part of the entrant’s body breaks the plane of an opening into the space.  **Entrant (s)**  An employee who bodily enters the confined space to perform the assigned work.  **Attendant-*Permit Holder***  A qualified individual “hole watch” stationed outside a confined space as required by confined space entry procedure.  **Entry Supervisor-*Permit Applicant***  Employee who applies and/or approves the confined entry space work. ROLES AND RESPONSIBILITIES It is the responsibility of the***RIG MANAGER*** to ensure compliance with this policy. Responsibilities of the Entry Supervisor  1. Evaluate conditions in and around the space to determine if entry can be completed safely 2. Verify the written permit, including all provisions, has been completed prior to entry. 3. Supervise entry operations to determine if conditions remain acceptable for entry. 4. Prohibit continued entry and cancel the permit when conditions are not suitable for entry. 5. Complete and sign the confined space entry permit. 6. Demonstrate full understanding of rescue procedures, tools and equipment to be used, and 7. Knowledge of identified confined spaces. 8. Serve as attendant, when necessary. 9. Serve as authorized entrant, when necessary.  Responsibilities Of The Attendant  1. Maintain an accurate roster of personnel who enter and exit the confined space. 2. Remain outside the confined space. 3. Maintain a means of communicating with the rescue team. 4. Know the hazards that may be encountered during entry and the effects of exposure to the hazards 5. Have **NO OTHER RESPONSIBILITIES** that would interfere with his reliably fulfilling hole watch duties. 6. Monitor the atmospheric testing equipment used for continuous monitoring and respond appropriately. 7. Order an evacuation of the confined space, performing no entry rescue if conditions warrant, or summon rescue or emergency services. 8. Control unauthorized access to the surrounding area and the confined space. 9. Communicate with entrants and monitor status of a change in conditions that would create a need to evacuate the confined space.   **(The Attendant Will Not Attempt Entry Rescue!)** Responsibilities Of The Entrant  1. Assure that the space has been adequately ventilated, isolated, emptied, or otherwise made safe for entry. 2. Immediately exit a space, without question, upon word of the attendant, no matter what the reason. 3. Follow all safety rules and procedures that apply to the job. 4. Be familiar with the work to be performed and the procedures that apply to the job. 5. Use the appropriate PPE whenever necessary. 6. Know how to properly wear and use supplied air, self contained breathing apparatus and other types of respirators. 7. Must fully understand the evacuation procedures.  Responsibilities Of The Authorized Gas Tester  1. Conduct atmospheric monitoring 2. Trained to properly select, calibrate, use and maintain all required instruments 3. May be any of the key personnel: Entrant, Attendant, Entry Supervisor or HSE Supervisor 4. Ability to interpret results 5. Familiarity with regulations, standards and/or appropriate guidelines. 6. Knowledge of confined spaces and typical hazards 7. Ability to perform tests and record results  PERMIT REQUIRED CONFINED SPACE A confined space that contains or has a potential to contain a hazardous atmosphere, material that has potential for engulfing an entrant, has an internal configuration that would trap or asphyxiate entrant ( i.e. converging walls or slopes to a smaller cross section), or contains other recognized health or safety hazards).Classify confined space as permit required, if any of the following conditions exist or have the potential to exist:   1. Oxygen deficiency (< 20.0 % O2) 2. Oxygen enrichment (> 22.0 % O2) 3. Flammable atmosphere (> 10% LEL) 4. Combustible dust suspended in air 5. Toxic atmosphere (> PEL) 6. Engulfment hazard 7. Entrapment hazard by shape of space  PROCEDURE  1. This policy shall control all activities involving entry in confined spaces. 2. The provisions shall be considered minimum mandatory requirements. 3. The Competent Person performing gas testing prior to entry or hot work into a confined space may exceed these at his discretion. 4. An Entry Certificate shall be obtained under the Permit to Work System prior to entry into any confined space. 5. An Entry Certificate is required for each confined space, even if several separate spaces are to be entered during a single work project. 6. The only exception to the requirement above that each confined space must have a separate scope inspections, to remove blind flanges prior to preloading and multiple mud pit tank cleaning operations. 7. Initial tank testing and recording of subsequent tests at 2hours intervals or more frequently if judged necessary. 8. It is permissible, for these activities only, that multiple tanks may be listed on both the entry certificate and the Cold Work Permit. 9. All checks, precautions and controls required on the entry certificate and the cold work permit are required for each and every tank entered. 10. The job safety analysis for the specific task to be undertaken will also identify the hazard exposure and the controls required to be put in place. 11. This exception strictly applies to entry for the purposes listed above only; confined space entry for any other reason whatsoever requires a separate confined space entry certificate and Cold Work Permit for each confined space. 12. First copies of the permits are to be posted at the entry into the space and shall remain in place for the stated time of the permits.   Removal of Entrance Cover  1. Any conditions making it unsafe to remove a cover will be eliminated to the extent practical before the cover is removed. 2. The Permit Applicant will assure the following actions are taken to make a space "safe": 3. Blinding and/or disconnecting all line entering the space 4. Cleaning the space thoroughly by draining, water washing, steaming, or other suitable means. 5. Locking out/ tagging out/disconnecting devices such as mixers, agitators, etc. 6. When entrance covers are removed, the opening shall be promptly guarded by a railing or barrier to prevent accidental entry or falls, etc., until the space is permitted and made ready for entry.  Atmospheric Testing  1. Must be performed prior to ANY entry. 2. Confined Space work described in the permit must begin within 2 hours of gas testing; if it does not, a new gas test will be required prior to beginning work. 3. Will be performed by HSE Supervisor or a trained representative with advice as required. 4. Will be performed in the order of oxygen, flammable, and then toxic gases unless the analyzer monitors for all simultaneously. 5. Will be performed with an instrument that has been calibrated. 6. Will be done initially with air movers off; subsequent retesting can be done with the air movers remaining on.   **NOTE**:Gas testing instrumentation must be regularly calibrated in accordance with the manufacturer's Recommendations. (Records of these formal calibrations must be maintained.) However, a field check of the operability of the instrument is required at least before each day's use. Lighting/Electrical Power Artificial lighting or power used within a confined space will meet the following requirements:   1. Meet the requirement for class1, Division 2, Group C & D rating where possible explosive or flammable atmosphere cannot be eliminated. 2. Use a 12-volt power supply or a 120-volt system with ground fault circuit interrupters (GFCI’s).  Ventilation  1. Ventilation systems meeting the requirements detailed below must be implemented, or supplied air respirators must be worn by welders and other personnel inside the space when welding in the following confined spaces: 2. Work space is less than 16 feet high; 3. Volume of the space is less than 10,000 ft3 per welder; 4. Work areas where there are partitions, structural barriers, or other barriers that significantly obstruct airflow (such as baffles, trays, or limited access openings) 5. If the space meets one of the criteria above, one of the following ventilation options must be implemented or supplied air utilized by all persons in the space: 6. Provide at least 2000 ft3 / min of airflow for each active welders; or 7. Provide each welder with a local exhaust device capable of maintaining a velocity of 100 f/m toward the air intake.  Welding  1. When arc welding inside of a confined space is suspended for lunch, breaks or shift change, the electrodes shall be removed from the holders and the holders located so that accidental contact cannot occur. Also, the welding machine must be disconnected from the power source or turned off in the case of a diesel-powered machine. 2. When gas welding or cutting inside of a confined space the torch valves must be closed and the fuel-gas and oxygen supply to the torch must be positively shut off at a point outside the confined space whenever the space is evacuated for extended work stoppage (i.e. breaks or lunch). Where practicable, the torch and hose must also be removed.  Respiratory Protection If cleaning and/or forced air ventilation do not adequately remove air contaminants from the confined space or the work is such that it will introduce additional contaminants into the atmosphere within the space, **RESPIRATORY PROTECTION WILL BE USED**.   1. The HSE Supervisor will specify required respiratory protection. 2. Entry into an IDLH atmosphere will only be made after alternatives are explored and found impractical and agreement is reached between the Rig Manager, Client Representative and the HSE Supervisor. 3. Entry into an IDLH atmosphere will require that all entrants be equipped with a positive pressure air line respirator with an emergency egress pack and a safety harness and lifeline  Acceptable Atmospheric Test Results  1. **Oxygen Content:**   The only acceptable test result for confined space entry shall be a result between and including 20.0% to 22.0% Oxygen by volume. A space that has less than 20.0% Oxygen by volume shall be considered oxygen deficient. A space that has more that 22.0% Oxygen by volume shall be considered oxygen enriched.   1. **Flammable Gas Content:**   The only acceptable test result of flammable gas content for confined space entry and hot work shall be a result between and including 0% to 1% *Lower Explosive Limit (LEL).* A space that contains more than 10% LEL shall be considered highly flammable.  *Note: All spaces adjacent to spaces approved for hot work shall be tested and must be less than 10% LEL to allow hot work within the approved space to proceed.*   1. **Toxic Gas Content:**   The only acceptable test result for confined spaces that contain toxic gases (H2S, CO, etc.) is 1/2 or less of the accepted Threshold Limit Value (TLV) or Permissible Exposure Limit (PEL) (whichever is lower) for the specific toxic contaminant. One half of the PEL for H2S is 5 ppm and one half of the PEL for CO is 13 ppm. A space that contains toxic contaminants that exceed the TLV/PEL shall be considered highly toxic Frequency Of Testing  1. Follow-up atmospheric testing during entry for hot work must be performed to ensure initial safe conditions are maintained. 2. Mandatory re-testing of all confined space atmospheres shall be conducted every 2 hours, more frequently if judged necessary. Several factors may make it necessary to re-test on a frequent basis: 3. Temperature change (21ºC in morning: 35ºC by noon). 4. Scope of Work (painting, coating, and use of solvents): These operations cause confined spaces to be tested continuously. 5. Unattended Tanks of Spaces: If spaces or tanks were left unattended for several hours it would be appropriate to re-test prior to re-entry. 6. Air Testing Tanks: Any liquid trapped in seams, laps, or piping systems could enter the space when pressure is released. 7. Hydro blasting of Tanks or Spaces: The operation often changes conditions in spaces. 8. Sandblasting of Tanks or Spaces: Continuous testing could become necessary during this operation. 9. Failure of Ventilation: Should power to ventilation equipment be lost retesting of space shall be required. 10. Closure of Spaces: Should the hatch covers be replaced, the spaces shall be re-tested prior to entry or work. 11. Anytime workers complain of symptoms such as: Burning eyes, strange smells, headaches, or similar symptoms re-testing of the space(s) shall occur. 12. Constant monitoring can be conducted with test instruments if required.  MANDATORY CONTROL MEASURES The following control measures are mandatory during confined space entry or confined space hot work.   1. Constant fresh air ventilation must be provided (provided that air inside the confined space not meeting the OSHA requirement). 2. All lighting provided to illuminate a confined space should be explosion proof. 3. All forced air fans provided to ventilate a confined space will be fitted with an explosion proof motor and the air hose / vent horn adequately grounded. 4. Prior to tank entry all electrical equipment within or affecting the space e.g. agitators, mud transfer pumps will be isolated. 5. Prior to tank entry all valves or lines that discharge into the space will be mechanically isolated. 6. Personnel in confined spaces should wear harnesses when circumstances make it advisable to do so to expedite and facilitate rescue/retrieval. 7. Ladders, scaffolds, etc. shall be used as necessary. 8. All rules governing conduct of safe work shall apply to all work performed in confined spaces. 9. All tools and equipment used in confined spaces shall be in good, safe condition and be suitable for the work. 10. An inertia reel with retrieval capabilities, or safety line depending on tank configuration. 11. Emergency observer (Attendant) at entrance at all times. 12. Sufficient BA sets available at the entrance. 13. Before anyone enters the confined space, a rescue plan has to be in place and reviewed by all crewmembers involved in the job.  Optional Control Measures  1. Respirators with appropriately selected filters shall be used as necessary. 2. Fire watchman with fire extinguishing appliances appropriate for the purpose as determined by the JSA process shall be available at the commencement of the task. 3. Hearing Protection 4. Personal Protective Equipment 5. Communication Devices  Calibration And Function Tests Of Instruments  1. Calibration log to be checked to ensure that atmospheric testing instruments used have calibration checks carried out on them as per manufacturers and Planned Maintenance requirements. 2. Results of all calibration tests must be logged in a calibration log. 3. Each time the instrument is used to test the atmosphere of a confined space, a function check for oxygen and flammable gas must be performed, and the response time of the instrument must be determined.  RESCUE  1. Non-entry rescue retrieval systems will be worn by authorized entrants unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. 2. Authorized entrants will wear rescue retrieval systems including: 3. An approved harness, 4. Retrieval line where it aids in rescue 5. The other end of the retrieval line will be attached to a fix point outside the permit space for spaces less than 5 feet deep. 6. For spaces more than 5 feet deep, a mechanical retrieval device outside the permit space will be available to allow prompt rescue. 7. Rescue Team personnel will be available prior to issuing any Confined Space Entry Permit.  RECORD KEEPING  1. The Entry Certificates and other Permit to Work forms are to be administered and retained in conformance with the Permit to Work System. 2. The log of calibration checks shall be kept up to date and shall be the oversight responsibility of the Rig Manager.   **Note: All employees shall be instructed about the significance of these records.** TRAINING All employees must be made aware of:   1. The strict requirement for an Entry Certificate and other Permits to Work prior to any entry or hot work. 2. The hazards of a confined space: Oxygen Deficiency, Flammable Gas, and Toxic Gas etc. 3. The strict requirement for an emergency observer (Attendant). 4. The necessity to wear a full body harness. 5. The importance in following the instruction of the Competent Person, emergency observer (Attendant) and the Entry supervisor. |