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| JAGUAR ENERGY SERVICES, LLC 310 N Parkerson Ave Crowley, LA 70526 | Confined Space Entry |
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Section 43.0 CONFINED SPACE ENTRY

A. Purpose

The purpose of this procedure is to provide training for **JAGUAR ENERGY SERVICES, LLC** personnel on confined spaces and associated hazards.

1. This procedure has been developed to protect the health and well being of **JAGUAR ENERGY SERVICES, LLC** personnel, in the event that they are required to enter confined spaces to clean, inspect, repair, perform testing activities, or rescue personnel. This procedure is mandated by OSHA CFR 29 1910.146.

B. Scope

This procedure applies to all **JAGUAR ENERGY SERVICES, LLC** jobs and activities involving work in, or around, confined spaces.

- (a) All confined spaces are covered by this procedure.
2. This procedure includes guidelines for recognizing confined spaces, and preventing employee exposure to hazardous conditions associated with confined spaces.

A. Responsibilities

1. The Safety Coordinator or his/her designee has authority to, and will be responsible for:
 - (a) Making decisions to ensure the success of this program.
 - (b) Will review this policy every 6 months to ensure the effectiveness and efficiency. The Safety Coordinator will revise the areas of the program that is necessary.
 - (c) Ensuring that only qualified entrants enter the confined space.
 - (d) Ensuring that employees have completed the training required by this procedure.
 - (e) Documentation of this training.
 - (f) Implementing the Corporate Confined Space Entry Procedure.

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2. The Safety Director is responsible for providing assistance in the implementation of this policy.
3. The Supervisor is responsible for providing assistance in the implementation of this policy.
 - (a) Additional responsibilities include:
 - (i) Determining which work areas would be considered a confined space under this procedure.
 - (ii) Monitoring all confined entry projects for compliance.
4. **JAGUAR ENERGY SERVICES, LLC** personnel are responsible for recognizing and avoiding confined spaces and the associated hazards.
 - (a) **JAGUAR ENERGY SERVICES, LLC** personnel are also responsible for adhering to the requirements of this procedure, by not entering into hazardous confined spaces unless they have been trained and designated as a qualified entrant, and **JAGUAR ENERGY SERVICES, LLC's** Confined Space Entry Procedure is followed.

B. Procedure

1. To implement this program **JAGUAR ENERGY SERVICES, LLC** will:
 - (a) Make the written program available for inspection by employees and their authorized representatives, by contacting the Safety Director.
 - (b) Conduct a hazard assessment on each job site before starting work to determine if any spaces are permit-required confined spaces.
 - (c) Inform potentially exposed employees of the permit-required confined spaces.
 - (d) Determine if employees will not enter permit spaces, and what effective measures will be taken to prevent employees from entering permit spaces.
2. The Written Confined Space Program will be reviewed and updated under these circumstances:
 - (a) If after the review of a confined space operation it is determined that the program does not provide sufficient

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- protection for the employees, the program will be updated as necessary to be in compliance.
- (b) The occurrence of an injury or near miss review indicates a change is necessary.
 - (c) If an unauthorized entry of a confined space occurs.
 - (d) Hazards not covered in the permit.
 - (e) Any employee complaint regarding confined entry operation.
 - (f) These updates will be done before subsequent entries are authorized.
 - (g) A review of the confined space program will be conducted annually, using canceled permits. (Only an entry has been made within the year being reviewed.)
 - (i) The program will be revised as necessary to bring it in compliance.
 - (ii) Canceled entry permits must retained for one (1) year after each entry.
 - (h) If there is a change in OSHA CFR 29 1910.146 regulations.
 - (i) The person monitoring the space and/or Entry Supervisor must inform the entrants of potential hazards and the results of tests.
 - (j) Entrants or their representatives will be given an opportunity to participate and review calibrated air monitoring data before entry.
 - (k) The entrants must participate in the permit review and signing.
 - (l) Ventilation must be used and testing must be conducted before entry and during work if the air quality makes it necessary.
 - (m) Air quality is continuously monitored while entrants are entered in the confined space. (Additional air monitoring can be requested at anytime by employees of confined spaces)
 - (n) Employees will be given opportunities to reevaluate the space if there is any reason to believe changes have occurred.
 - (i) The plan will be updated if anyone identifies changing conditions which cause the current plan to lose its maximum protection.
 - (o) Employees or their representatives are entitled to request additional monitoring at any time.

3. **Confined Space Identification**

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JAGUAR ENERGY SERVICES, LLC personnel must be able to recognize and avoid entering a confined space.

- (a) A **confined space** refers to any work environment, above or below the ground, which is totally or partially enclosed and large enough and so configured that an employee can bodily enter and perform assigned work.
 - (i) These spaces will have limited or restricted means for entry or exit.
 - (ii) These spaces may contain an accumulation of toxic or explosive gases or vapors which could be life threatening to personnel, therefore are not designed for continuous employee occupancy.
- (b) Examples of hazardous confined spaces that **JAGUAR ENERGY SERVICES, LLC** personnel may encounter include:
 - (i) Oil tanks
 - (ii) Engine air inlet and exhaust ducts
 - (iii) Boilers
 - (iv) Storage bins
 - (v) Silos
 - (vi) Hoppers
 - (vii) Storage Vessels
 - (viii) Process tanks
 - (ix) Vessels
 - (x) Vaults
 - (xi) Ventilation Ducts
 - (xii) Boilers
 - (xiii) Pits
 - (xiv) Trenches
 - (xv) Pipelines
 - (xvi) Manholes
 - (xvii) Tunnels
 - (xviii) Wells
 - (xix) Furnaces
 - (xx) Enclosed conveyors
 - (xxi) Sumps
 - (xxii) Degreasers
 - (xxiii) Compartments
 - (xxiv) Excavations

4. **Hazard Identification**

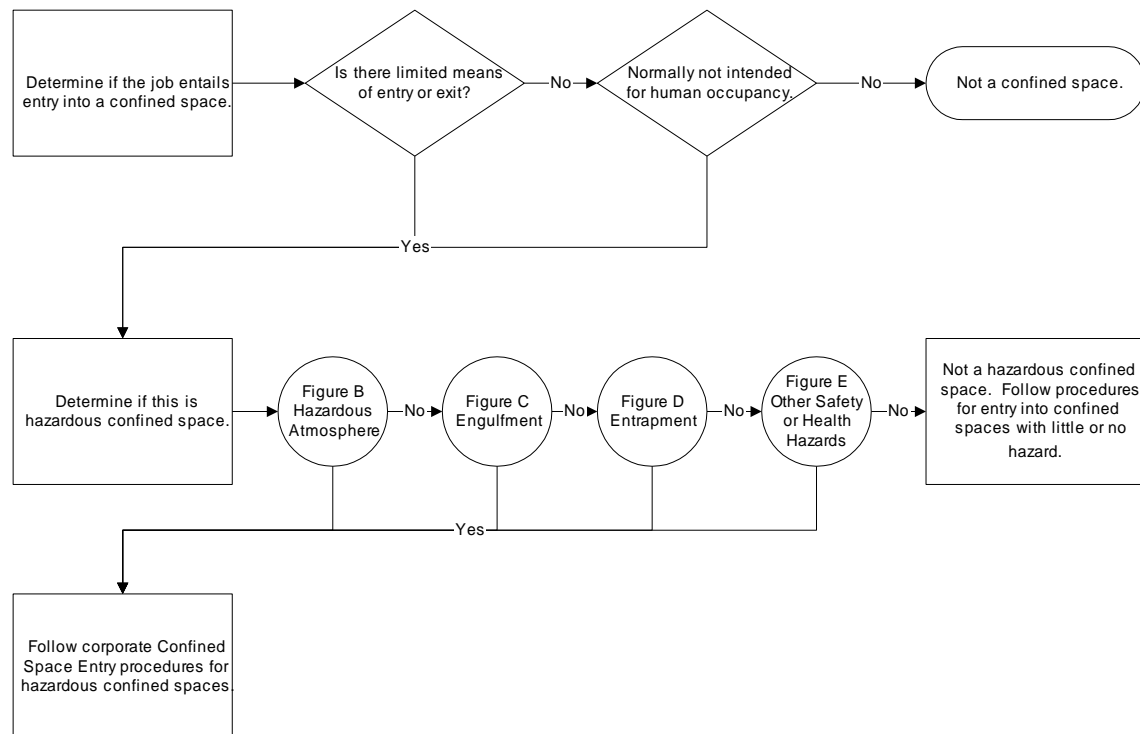
Prior to beginning work, **JAGUAR ENERGY SERVICES, LLC** personnel must evaluate their work areas to determine the

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presence of a confined space. Figure A depicts the decision logic to evaluate a confined space.

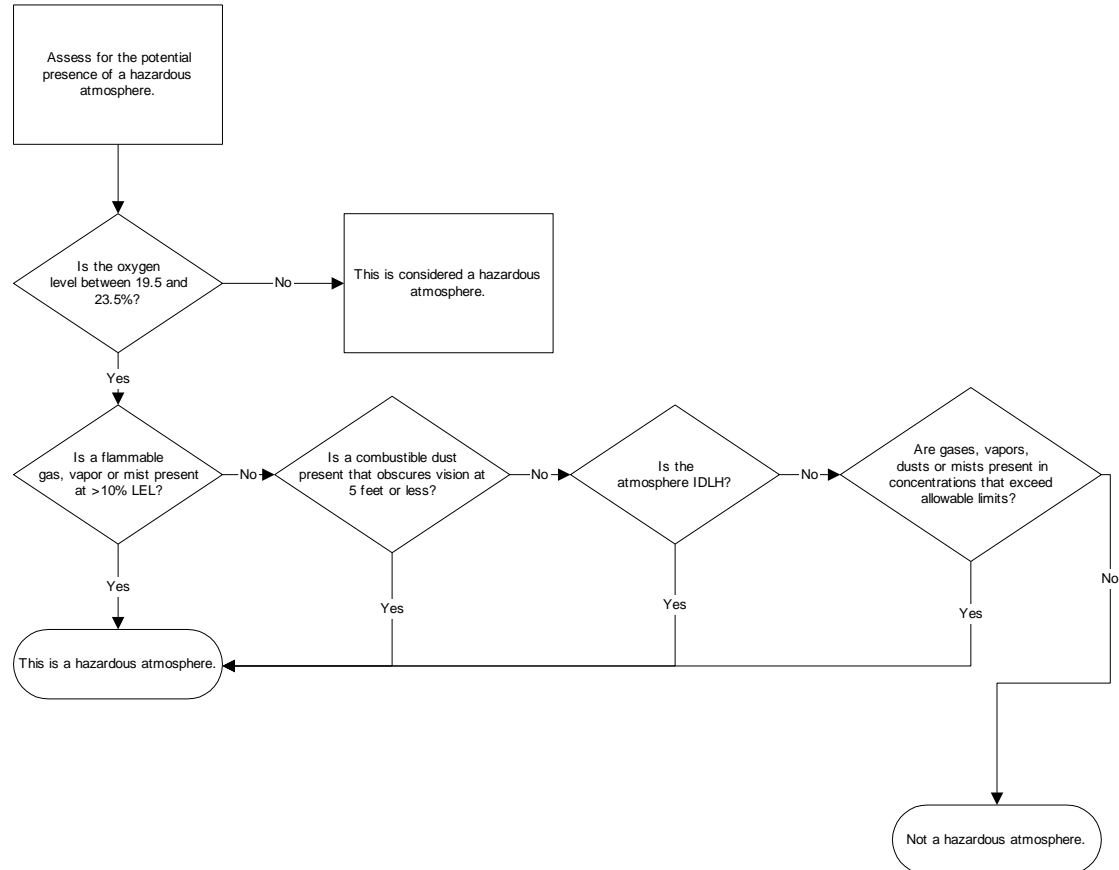
- (a) Determine if work area is a confined space. Identify the types of hazardous conditions that may be encountered inside the space.
- (b) Refer to Flow Charts Figures A, B, C, D, and E on the next pages.
- (c) This determination is to be conducted outside of the space with individuals who are knowledgeable about the materials, internal configuration, and equipment that may be encountered inside the space. Examination of external hazards will also be addressed. These include but are not limited to pedestrians, vehicles, heavy equipment, etc.

Figure A
Confined Space Identification



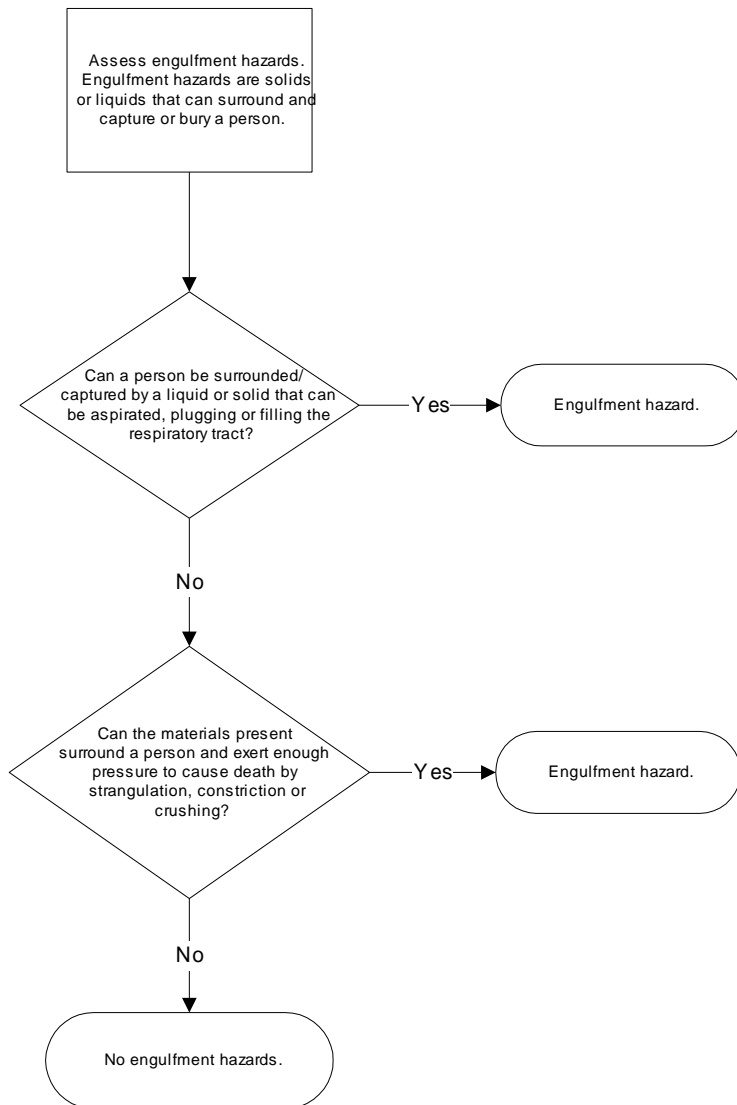
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Figure B
Hazardous Atmospheres



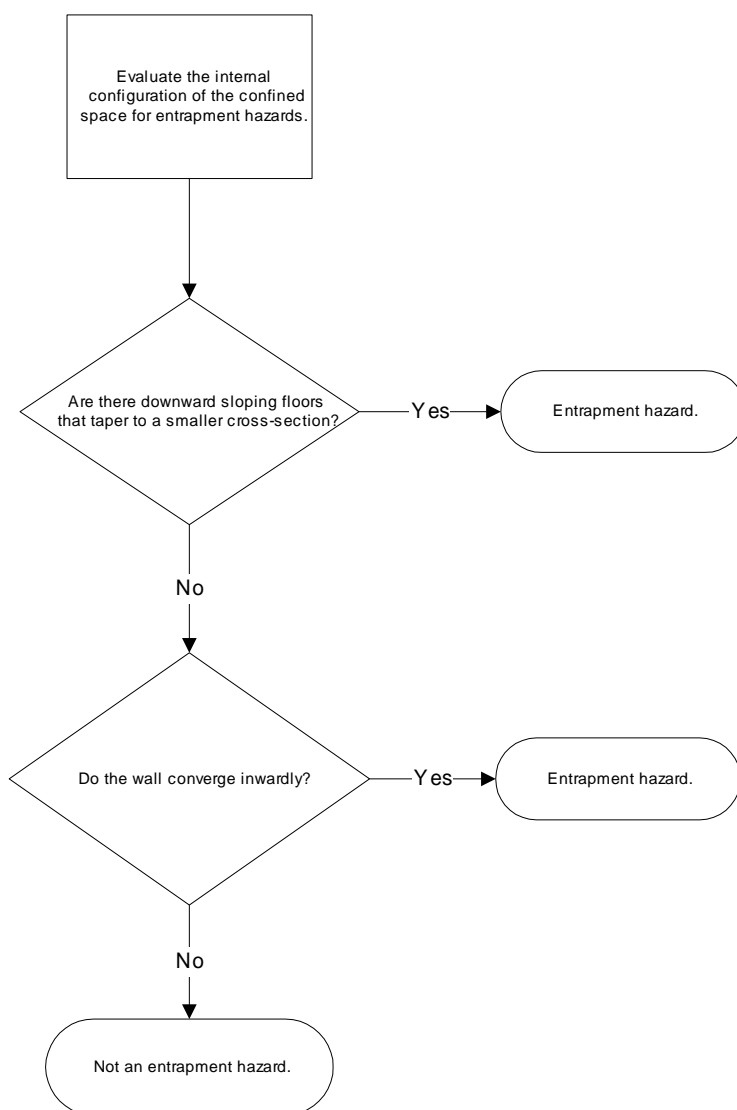
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Figure C
Engulfment



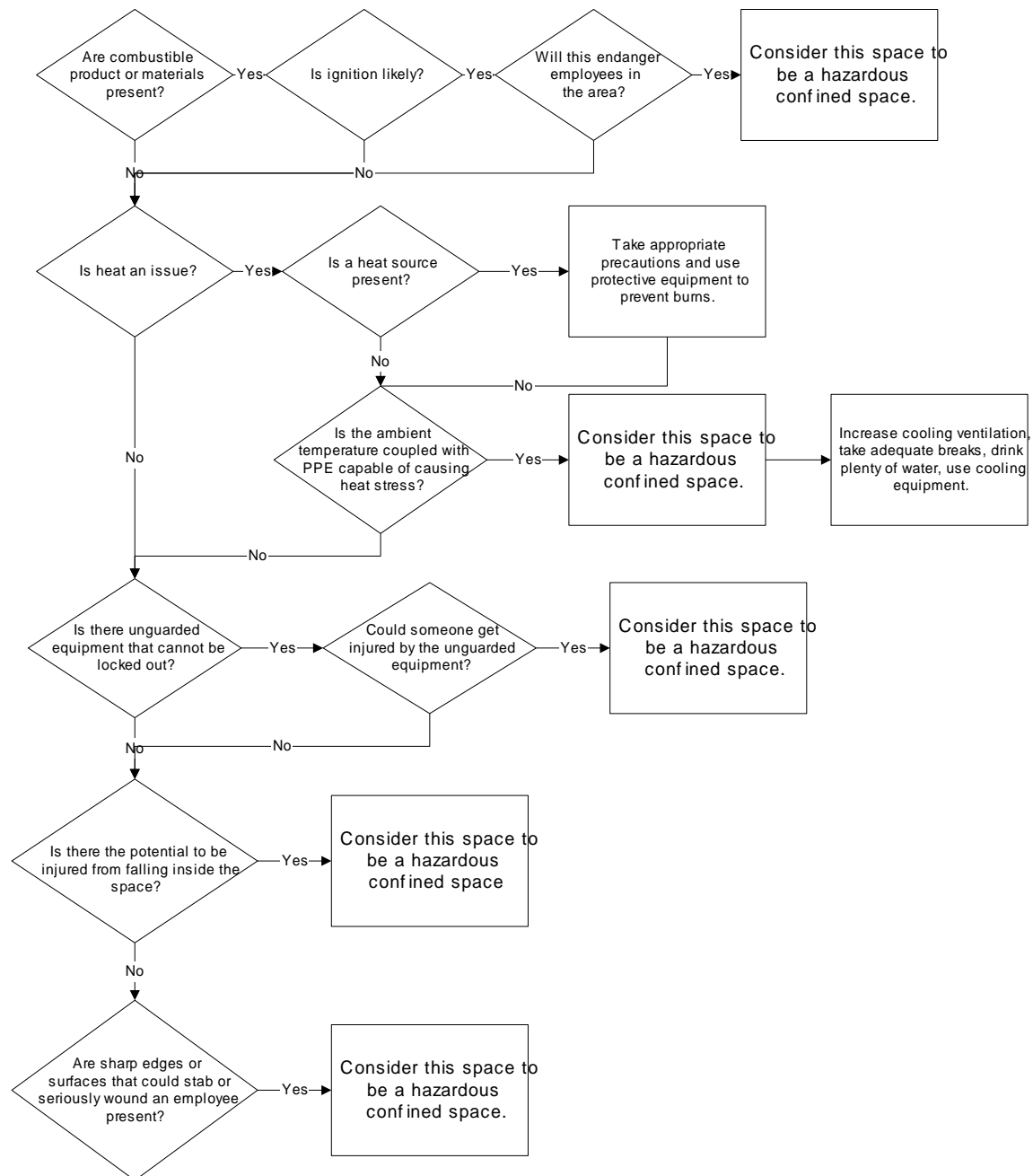
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Figure D
Entrapment



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Figure E
Determining Other Hazards



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1. Hazards commonly encountered in confined spaces include:
 - (a) Inhalation of toxic vapors or gases.
 - (i) This may occur when the confined space is improperly cleaned or ventilated.
 - (i) Even if the space is declared safe, release of toxic substance (from sludge or scale) may still occur within the work space.
 - (ii) Suffocation resulting from a lack of oxygen within the confined space.
 - (iii) Oxygen enrichment must be maintained between 19.5 and 23.5 percent.
 - (b) Skin contact with irritating or corrosive agents.
 - (c) Exposure to excessive noise, vibration, extreme temperatures, and sudden changes in pressure, etc.
 - (d) Fire and/or explosion.
 - (e) Injury resulting from slips or falls, improper use of equipment, falling objects, electrical shock, etc.

2. It is important to consider all potential hazards and to assess whether there is a potential for conditions to change within the space.
 - (a) For example, if a hazardous chemical is present in a closed system, determine if there are any leaks or potential for failures in the system that would allow hazardous atmospheres to develop within the space.

3. Considerations when conducting a hazard assessment of confined spaces include:
 - (a) Likelihood of hazard occurrence.
 - (b) Consequences of hazard occurrence.
 - (c) Magnitude of hazard.
 - (d) Potential for changing conditions.
 - (e) Strategies for controlling hazards.
 - (f) Plan for emergency rescue.

4. If the confined space is determined to be a hazardous confined space as defined by this procedure, then employees must not enter into the space unless they are trained to the qualified entrant level.
 - (a) **JAGUAR ENERGY SERVICES, LLC** Personnel must follow the Corporate Confined Space Entry Procedure for entry into a hazardous confined space.

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5. **Entry Requirements for Non-hazardous Confined Spaces**
JAGUAR ENERGY SERVICES, LLC personnel who enter confined spaces with no potential hazard associated with the entry, and where entry does not require any special modifications of work procedures, must ensure that the following requirements are implemented:

- (a) Entrant is trained to the awareness level.
- (b) Adequate ventilation is maintained throughout the entry.
- (c) A hazardous atmosphere will not develop during the entry.
- (d) Personal protective equipment required for the job is worn.
- (e) Necessary safety procedures are followed.
- (f) Notification is made to the client or site personnel that a **JAGUAR ENERGY SERVICES, LLC** employee will be working inside of a confined space.
- (g) An attendant is standing outside the confined space at all times.
- (h) A communication system exists for alerting the attendant regarding emergencies or hazardous situations.

6. **Personnel Responsibilities**

Only designated personnel will be utilized as "entry supervisors," "attendants," "authorized entrants" and "testers."

- (a) An Entry Supervisor is the person in charge of the entry operation.
- (b) The Safety Coordinator or his/her designee will insure that each Entry Supervisor is properly trained and knows his/her responsibilities.
- (c) The responsibilities of the Entry Supervisor will be, but not limited to:
 - (i) Coordinate entry operations with the host company or any other company involved with the project.
 - (ii) When employees of more than one employer (contractor) work in the same permit space the Entry Supervisor shall:
 - (i) Inform the contractor that the workplace contains permit spaces, and that entry into permit spaces is allowed only by complying with a permit space program.
 - (ii) Apprise the contractor of the elements, including any identified

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the employer's permit space program. An Attendant will only monitor one (1) entry at a particular time. **Under no circumstance will the attendant monitor multiple entries.**

- (e) The Safety Coordinator or his/her designee will ensure that each attendant is properly trained, and knows and understands his/her responsibilities.
- (f) The responsibilities of an Attendant are, but not limited to:
 - (i) Know, be able to recognize, and understand the hazards that may occur during an entry.
 - (ii) Be aware of possible behavioral effects of hazard exposures.
 - (iii) If more than one confined space is being monitored by a single attendant, a handheld portable radio will be used to summon help in case of an emergency.
 - (i) This will not allow the attendant to be distracted from any other responsibilities.
 - (iv) As long as entrants remain inside the permit required confined space, an attendant must be stationed outside.
 - (v) Continuously maintain an accurate count of entrants.
 - (vi) Remain outside the permit space during entry until relieved by another attendant.
 - (vii) Communicate with the entrants as necessary to monitor their status, and to alert them of the need to evacuate if needed.
 - (viii) Monitor activities inside and outside the space to determine if it is safe, and orders evacuation immediately under any of the following conditions:
 - (i) If the attendant detects any prohibited condition.
 - (ii) If the attendant detects the behavioral effects of hazard exposure in an entrant.
 - (iii) If the attendant cannot attend effectively and safely perform all duties required.
 - (iv) Summon the rescue and other emergency services as soon as it is determined that entrants may need assistance to escape.

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- (ix) Take action when unauthorized persons approach or enter a permit space while entry is under way.
 - (x) Perform non-entry rescues as specified by the employer's rescue plan.
 - (xi) Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.
- (g) The Authorized Entrant is an employee who is authorized by the employer to enter a permit space and perform work activities in the work space.
- (h) The Safety Coordinator or his/her designee will ensure that all Authorized Entrants are properly trained, know, and understand their responsibilities.
- (i) The responsibilities of Authorized Entrants are but not limited to:
 - (i) Should external conditions cause hazardous conditions to develop inside the space, all entrants shall be required to evacuate the space.
 - (ii) Know the hazards that may be faced during entry.
 - (iii) Make proper use of the equipment required.
 - (iv) Communicate with attendant as necessary to enable the attendant to monitor the entrants and to enable the attendant to alert entrants of the need to evacuate as required.
 - (v) Alert the attendant whenever:
 - (i) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - (ii) The entrant detects a prohibited condition.
 - (vi) Exit from the permit space as quickly as possible whenever:
 - (i) An order to evacuate is given by the attendant or supervisor.
 - (ii) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
 - (iii) The entrant detects a prohibited condition.
 - (iv) An evacuation alarm is activated.
- (j) The Entry Supervisor will ensure that the person testing the confined space conditions will be trained and knows his/her responsibilities.

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- (i) Testing will be done by the client or third party person.

7. **General Rules For Hazardous Confined Space Entry**

- (a) In the event of pedestrian or vehicle traffic in the area of the entry project, barriers will be placed as necessary to protect entrants from these external hazards, and to inform employees and other personnel of the existence of permit-required confined space operations.
- (b) Before any employee is allowed to enter a confined space classified as hazardous, a Confined Entry Work Permit must be completed and signed by **JAGUAR ENERGY SERVICES, LLC's** supervisor or lead Service Representative.
- (c) The purpose of the permit is to ensure that all the necessary precautions have been taken, and that all proper procedures are followed.
- (d) Rescue services will be provided by the host facility. Rescue services must be present any time employees are working in IDLH environments.
- (e) In most cases the client's permit procedure will be used, however if the client has none or doesn't require one, **JAGUAR ENERGY SERVICES, LLC's** permit system will be used.

8. **Hazardous Confined Space Entry Permit System**

- (a) The following procedure for implementing the Confined Space Entry will assure that conditions in the permit space are acceptable for entry and during the duration of the entry.
- (b) Issuing of the permit:
 - (i) There must be two copies of the Work Permit made.
 - (ii) The information contained on both copies must be completed and identical.
 - (iii) In most cases, the client's representative will issue the permit.
 - (iv) The supervisor or person in charge will inspect the work area after it has been prepared for entry and before the permit is issued.
- (c) Multi-Employer Entry
 - (i) Other employers working in the same confined space must also be listed on the permit and must adhere to the contents of this policy.

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9. The Confined Entry Permit consists of the following information:
- (a) Purpose of The Permit:
 - (i) Space to be entered
 - (ii) This section identifies what the permit is being issued for.
 - (iii) The permit is valid only for the items checked by the supervisor.
 - (b) Hot Work Permit:
 - (i) Refers to any work involving flame, arc, spark, or other source of ignition.
 - (c) Cold Work Permit:
 - (i) Refers to any work not involving sources of ignition, such as cleaning a vessel or tank.
 - (d) Permit to Open:
 - (i) Grants permission to open a vessel or tank, but not to enter.
 - (e) Permit to Enter:
 - (i) Grants permission to enter.
 - (ii) If this box is checked, the Permit To Open must also be checked.
 - (f) Nature and Location of work:
 - (i) This section describes what kind of work is to be done, and the location the work is to be done in.
 - (ii) This description will also include the particular piece of equipment or object to be entered or worked on.
 - (g) Acceptable entry Conditions
 - (i) This section identifies acceptable entry conditions.
 - (h) Date:
 - (i) This identifies the day for which the permit is issued.
 - (ii) Each permit is valid for one day only.
 - (iii) If the work cannot be completed in one day, a new permit must be issued for each additional day.
 - (i) Time Permit Issued:
 - (i) This identifies the time the permit is issued.
 - (ii) If the work is interrupted for more than two hours during the day, a new permit must be issued by the supervisor
 - (j) Time permit expires:

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- (i) This section identifies the time that the permit expires.
 - (i) If more time is needed to complete the work during the day, the expiration time must be extended and initialed by the supervisor or person in charge.
- (k) Employees Assigned:
 - (i) This section identifies all of the employees who will be involved in the work and the responsibility of each.
- (l) Hazards:
 - (i) This section describes the safety hazards associated with the work, such as oxygen deficiency, combustible gases or vapors, toxic gases or vapors, slippery bottom inside the tank, etc.
- (m) PPE, precautions and measures to control or eliminate permit space hazards.
 - (i) This section identifies the pre-entry steps taken to prepare the space for entry.
 - (ii) A check must appear to the right of each item before the permit will be issued.
- (n) Tests conducted:
 - (i) Any person involved in the confined entry procedure has the right to witness the testing, and/or be furnished the results if requested.
 - (ii) This section documents the testing of the atmosphere within the confined space.
 - (iii) Each test that was conducted is identified by recording the time that each test was performed, and the results of each test.
 - (iv) Additional spaces are provided for retesting of the atmosphere during the work period.
- (o) Testing Equipment Used:
 - (i) This section identifies the type of equipment that was used to test the atmosphere inside the confined space, or atmosphere of the work area.
 - (ii) The serial number and date of calibration of each testing device must also be recorded.
 - (iii) If the testing device does not require calibration, NA will appear in the calibration column.
- (p) Signature of Tester(s):

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- (i) The person(s) who performed the testing procedure must sign their name(s) in this space.
- (ii) Signatures must appear on both cards.
- (iii) The Entry Supervisor in charge has been assigned the responsibility of performing these tests.
- (iv) In the event he is not qualified, or does not have the required equipment to conduct these tests, a contract Safety Company may be used.
- (v) In most cases the client will perform this function.
- (q) **Rescue Services**
 - (i) This section identifies the Rescue Service and lists their phone number.
 - (ii) The means of summoning the Rescue and Emergency Services is to be listed.
 - (iii) The type of rescue equipment is to be listed.
- (r) **Communication Equipment**
 - (i) This section identifies the type of communication equipment that will be used by the authorized entrants and attendants to maintain contact during entry.
- (s) **Alarm Systems**
 - (i) This section identifies the types of alarms to be used.
- (t) **Fire Precautions:**
 - (i) This section describes the precautions that have been taken to protect against fire or explosion.
- (u) **Signature of Attendant:**
 - (i) The person(s) who is the designated hole watch must sign his/her name(s) in this space.
 - (ii) The hole watch person(s) can also be the fire watch person(s).
 - (iii) Signatures must appear on both copies of the permit.
- (v) **Signatures of Authorized Entrant(s):**
 - (i) The person(s) responsible for doing the work within the confined space must sign in this space.
 - (ii) This signature acknowledges that the person(s) is aware of, and understands the information contained on this permit.

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- (iii) Signatures must appear on both copies of the permit.
- (w) Signature of the Entry Supervisor:
 - (i) Once the supervisor is confident that all the necessary pre-entry steps have been taken, he/she signs the permit.
 - (ii) This permit will not be valid unless the supervisor's signature is on both copies of the permit.
- (x) Remarks:
 - (i) Additional space is provided for any instructions or additional information that the supervisor feels is necessary to ensure a Safe Entry into, and work within, the confined space.
 - (ii) The **JAGUAR ENERGY SERVICES, LLC** person in charge will make sure all employees understand any and all information contained in this section.
 - (iii) If additional space is needed for signatures and positions assigned, a roster may be attached or the back of the permit to be used.

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PERMIT REQUIRED CONFINED SPACE ENTRY PERMIT

PERMIT VALID FOR 8 HOURS ONLY. ALL PERMIT COPIES REMAIN AT SITE UNTIL JOB COMPLETED

DATE: _____ SITE LOCATION/DESCRIPTION: _____

PURPOSE OF ENTRY: _____

OTHER WORK PERMITS REQUIRED: _____

HAZARDS _____

ACCEPTABLE CONDITIONS _____

PRECAUTIONS AND PPE

* BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED AND REVIEWED PRIOR TO ENTRY *

| REQUIREMENTS | DATE | TIME | REQUIREMENTS | DATE | TIME |
|------------------------------------|-------|-------|--------------------------------|-------|-------|
| Lock Out/De-energize/Try- | _____ | _____ | Full body Harness w/"D" | _____ | _____ |
| Line(s) broken-Capped- | _____ | _____ | Emergency Escape | _____ | _____ |
| Purge-Flush and Vent | _____ | _____ | Lifelines | _____ | _____ |
| Ventilation | _____ | _____ | Fire Extinguishers | _____ | _____ |
| Secure Area (post and Flag) | _____ | _____ | Lighting (Explosive Proof) | _____ | _____ |
| Breathing Apparatus | _____ | _____ | Protective Clothing | _____ | _____ |
| Resuscitator - Inhalator | _____ | _____ | Respirator(s) (Air Purifying) | _____ | _____ |
| Standby Safety Personnel | _____ | _____ | Burning and Welding Permit | _____ | _____ |

Note: Items that do not apply enter N/A in the blank

**** RECORD CONTINUOUS MONITORING RESULT EVERY 2 HOURS ****

| Continuous Monitoring | Permissible | | | | | | | | |
|----------------------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Test(s) to be taken | Entry Level | | | | | | | | |
| Percent of Oxygen | 19.5% to 22.5% | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Lower Flammable Limit | Under 10% | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Carbon Monoxide | +35 PPM | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Aromatic Hydrocarbon | +1 PPM * 5 | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Hydrogen Cyanide | (Skin) * 4 | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Hydrogen Sulfide | +10 PPM * | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Sulfur Dioxide | +2 PPM * 5 | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Ammonia | +35 PPM | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

*Short term exposure Limit: Employee can work in the area up to 15 minutes

+8 hr. Time Weight Avg.: Employee can work in area 8 hrs. (longer with appropriate respiratory protection)

REMARKS

| | | | |
|------------------------------------|---------------------------|----------------------------|-------------------------------|
| Gas Tester Name & Check | Instrument(s) Used | Model &/Or Type | Serial &/Or Unit # |
|------------------------------------|---------------------------|----------------------------|-------------------------------|

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Testers Name _____

Communications _____ Alarm Types _____

TYPE OF EQUIPMENT _____

RESCUE AND EMERGENCY SERVICE _____ PHONE _____

HOSPITAL _____ PHONE _____ AMBULANCE _____ PHONE _____

ATTENDANT **SSN #** **CONFINE SPACE** **SSN #**
ENTRANT(S)

ENTRY SUPERVISOR _____ SSN _____

SUPERVISOR AUTHORIZING ENTRY - ALL ABOVE CONDITIONS SATISFIED _____

1. Handling of the Permit:
 - (a) Both copies must be completed, reviewed, and signed.
 - (b) The one copy is to be left at the work site in an accessible location on, or near, the entrance or man-way which will be the main means of access or egress of the project.
 - (c) After the work has been completed, this copy shall be removed and destroyed.
 - (d) The other copy is to be given to the client's representative, or kept at the home office as a record of the work performed.
 - (e) The other copy is to be kept in the office for one year, as a record to show that the work was completed properly.

2. Confined Space Entry, Pre-Entry

Before anyone is allowed to enter a confined space, steps must be taken to ensure that the work area is safe for entry.

 - (a) The supervisor, or person in charge, will hold a safety meeting before each confined space operation and the procedures covered, to make sure everyone is totally aware of what is expected of him/her.
 - (b) The following pre-entry steps are to be performed each and every time a confined space is entered:
 - (i) Place signs and barricades to inform employees and other personnel that the workplace has a confined entry project in process.
 - (ii) Isolation:

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- (i) Close all inlet and outlet valves on the vessel or tank.
 - (ii) Tag and lock out all equipment supplying power to the work space. (Note - Maintain power for proper lighting only.)
- (iii) Bleed all pressure from the inlet and outlet lines.
- (iv) Empty the contents of the work space by pumping or draining the products from the space through existing lines, or temporary lines, if necessary.
- (v) Attach blind flanges to the inlet and outlet tank or vessel nozzles next to the vessel.
- (vi) If the arrangement of the piping system prevents the attachment of blind flanges, the piping or flowline leading into the confined space must be broken down so that blind flanges can be attached.
- (vii) "Pancake" blinds may be used between the tank nozzle and the first set of flanges outside the vessel.
- (viii) Deactivate any automatic fire suppression systems.
- (c) Cleaning:
 - (i) Make sure that the work space has been properly cleaned through the use of one or more of the following: (Note: all water or steam hoses will be grounded.)
 - (ii) Hot or cold water flush.
 - (iii) Steam cleaning.
 - (iv) Chemical neutralization.
 - (v) Water soluble soap.
 - (vi) Air or Nitrogen (N2) flush.
- (d) Ventilation - Make sure that the work space has been thoroughly ventilated by performing the following:
 - (i) Open all cleanout openings, hatches, doors, and manhole covers, etc.
 - (ii) Circulate the air within the space using fans or blowers.
 - (i) The ventilating devices must be explosion proof, grounded, and properly positioned, to assure that corners or isolated spaces are safely ventilated.
 - (iii) Eliminate all sources of ignition.

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- (iv) Maintain a continuous source of ventilation in the work space for the duration of the work period.
 - (i) This will provide a margin of safety in the event of accidental entry of toxic gases or vapors, and to remove any contaminants that may be generated by the work in the confined space.
 - (v) Protective clothing and respirator equipment cannot be used as a substitute for fresh air ventilation.
- (e) This operation shall not be done during rain or thunder storms.
 - (i) If bad weather should occur, the tank or vessel must be closed and the procedure started again when the weather is clear.
 - (ii) If working in trenches or other types of confined spaces, all work should stop and the procedure started again when the weather is clear.
- (f) Testing
 - (i) The Entry Supervisor will ensure that the person testing the confined space conditions will be trained and knows his/her responsibilities.
 - (ii) Make sure that the atmosphere inside the work space has been tested with calibrated, direct-reading instruments before, and periodically, during the confined entry to ensure safe work conditions.
 - (iii) To ensure that acceptable entry conditions are present, four types of tests are required in the following sequence:
 - (iv) Tests for oxygen deficiency.
 - (i) The atmosphere within the confined space must be tested with approved oxygen indicating equipment.
 - (ii) If the results of the test indicate oxygen deficiency, respiratory protection must be used by all personnel who enter the confined space.
 - (iii) An atmosphere with an oxygen level below 19.5% is deficient.

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- (iv) Oxygen deficiency may exist in any confined space, even after the space has been cleaned.
- (v) Therefore, cleaning cannot be used as a substitute for testing.
- (v) Test for flammable or explosive material.
 - (i) The atmosphere within the confined space must be tested using an approved gas detector.
 - (ii) If the test indicates the presence of combustible gases, entry will not be allowed until the source of the flammable mixture has been isolated and removed.
 - (iii) If the work to be done within the confined space involves the use of flame, arc, spark, or other source of ignition, tests must be conducted during the work period to ensure that the confined space remains gas free.
- (vi) Tests for toxic gases and vapors:
 - (i) The atmosphere within the confined space must be tested with approved equipment for the determination of toxic substances.
 - (ii) If the results of the test indicate the presence of a toxic atmosphere, respiratory protection must be used by all personnel who enter the confined space.
 - (iii) The contents of the confined space must be tested with approved equipment for the detection of Naturally Occurring Radioactive Materials by a certified technician.
 - (iv) If the results of the test show the level to be above accepted standards, a higher level of personal protective equipment and hazardous waste handling procedures must be applied.
 - (v) This will require a certified NORM removal and disposal process.
- (vii) Test the contents of the space for Naturally Occurring Radioactive Materials.

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- (g) Obtain the required safety equipment.
 - (i) The following safety equipment must be available and in good working condition:
 - (i) Protective clothing.
 - (ii) Respirators.
 - (iii) Safety harnesses and attached life lines.
 - (iv) Hoisting device. (For top entry.)
 - (v) Fire extinguishers.
 - (vi) First-Aid Kit.
- (h) Obtain the necessary personnel.
 - (i) Enough people should be available to provide sufficient backup for person(s) entering the confined space.
 - (ii) These people should be familiar with the work that is to be performed, as well as their responsibilities during the operation.
- (i) Establish reliable communications.
 - (i) A reliable system of communication must be established such as handheld radios or hand signals.
 - (ii) All personnel involved in confined entry operations must understand, and be able to use, the communication system that was selected.
- (j) Safe entry into, and work within, a confined space depends on how well the pre-entry procedures are completed.
 - (i) To assist in following all the procedures outlined, a check list is provided.
 - (ii) This checklist shall be used each and every time that a confined space is prepared for entry, to ensure that all the necessary steps have been taken.

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CONFINED SPACE ENTRY PRE-ENTRY CHECK LIST

- ☐ 1. Isolate the confined space.
 - a. Close all inlet and outlet valves.
 - b. Tag and lock out all equipment.
 - c. Bleed all pressure from inlet and outlet lines.
 - d. Empty the contents of the work space.
 - e. Attach blind flanges to the inlet and outlet lines.
 - f. Deactivate all automatic fire suppression systems.
 - g. Remove any remaining sludge or sediment.
- ☐ 2. Clean the work space through the use of one or more of the following methods:
 - a. Hot or cold water flush.
 - b. Steaming.
 - c. Chemical neutralization.
 - d. Air or nitrogen flush.
- ☐ 3. Ventilate the confined space.
 - a. Open all cleanout openings, hatches, doors, manhole covers, etc.
 - b. Circulate the air within the space using fans or blowers.
 - c. Eliminate all sources of ignition.
 - d. Maintain a continuous source of ventilation.
- ☐ 4. Test the atmosphere inside the space for the following:
 - a. Flammable or explosive material.
 - b. Oxygen deficiency.
 - c. Toxic gases or vapors.
 - d. Test the confined space for NORMS level.
- ☐ 5. Obtain the following safety equipment:
 - a. Protective clothing.
 - b. Respirators.
 - c. Safety harnesses and life lines.
 - d. Hoisting device. (Top entry only)
 - e. Fire extinguisher.
- ☐ 6. Obtain the necessary personnel.
- ☐ 7. Establish reliable communications.
- ☐ 8. Obtain an entry permit.

- 3. **Confined Space Entry**
 After all the pre-entry steps have been declared safe for entry, personnel may enter the space to begin the work. The following procedure must be followed to ensure a safe entry:
 - (a) The Entry Supervisor will conduct a safety meeting, and these items reviewed each time an entry is to be made.
 - (b) Put on the required protective clothing.
 - (i) This may include items such as:
 - (i) Protective suits

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- (ii) Goggles or face shields
 - (iii) Hard hats
 - (iv) Gloves
 - (v) Safety shoes
 - (vi) Hearing protection
 - (vii) Depending on the type of work being performed.
- (c) Put on the required respiratory protection.
 - (i) If testing of the atmosphere within the space indicates an oxygen deficiency, approved respirators must be worn by all personnel who enter the space.
- (d) Obtain the proper fire protection.
 - (i) The possibility of fire requires that fire extinguishers be placed at the openings of the confined space.
- (e) Use Attendant
 - (i) At least one attendant must stand by on the outside of the confined space, ready to give assistance in case of an emergency.
 - (ii) The attendant(s) must have proper personal protection equipment and respiratory protection available for immediate use, and be trained in the proper use of the equipment.
 - (iii) The standby person(s) may pass tools to the worker(s) in the work space.
- (f) Use additional personnel.
 - (i) At least one additional employee must be within sight or calling distance of the stand by person.
- (g) Enter the confined space:
 - (i) Depending upon the design of the space being entered, personnel may have to make a side or top entry.
- (h) Side entry:
 - (i) Tanks, vessels, or other confined spaces with side and top openings, are to be entered from the side if possible.
 - (ii) Side openings are those within 3.5 feet of a firm footing or landing.
 - (iii) Approved safety harness and lifeline harness with attached life line must be worn by all persons entering the confined space.
 - (iv) The free end of the line must be attached to a mechanical extraction device located outside

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- the enclosure, or secured to a fixed object outside the entry opening.
- (i) When entry must be made from the top of the tank, vessel, or other confined space, the precautions identified for side entry must be taken along with the following:
 - (i) Use a hoisting device.
 - (i) A hoisting device must be used for lowering and lifting personnel, especially the injured, out of the space.
 - (ii) Use a ladder.
 - (i) When available, a ladder should be used for entry into, and exit from, the space.
- (j) When performing the work within the confined space, there are specific precautions that must be taken to avoid injury.
 - (i) Work involving the use of flame, arc, spark, or other source of ignition, is to be performed only in a gas-free atmosphere.
 - (ii) If nitrogen or other inert gases are used to provide protection against ignition or as a welding blanket gas, a breathing device must be worn at all times when inside the confined space.
 - (iii) All electrical tools must be grounded.
 - (iv) All lighting equipment must be operated at a maximum of 12 volts and must be explosion proof.
 - (v) All connections will be made outside of the confined space, and will remain outside the confined space.

4. Confined Space Post Entry

After work within the confined space has been completed, the proper steps to restore the work space to its original condition must be performed:

- (a) Inspect the interior for any tools, nuts, bolts, etc., before cleaning up the inside space.
- (b) Remove and store all ventilating devices. (i.e. fans or blowers.)
- (c) Before closing, clean out openings, hatches, doors, manhole covers, etc., and make sure all personnel are out of the confined space.

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- (d) Close all cleanout openings, hatches, doors, and manhole covers, etc.
- (e) Remove any blind flanges or "Pancakes."
- (f) Connect any flowline piping that was disconnected to isolate the confined space.
- (g) Close all drain line valves and open all inlet and outlet valves on the vessel according to the requirements of the operation mode.
- (h) Activate any automatic fire suppression systems.
- (i) Remove all tag and lockout devices from electrical equipment, and restore power to the equipment.
- (j) Inform client that the work is complete.
- (k) Remove the entry permit and destroy it.
- (l) Properly store all tools and safety equipment.
- (m) Clean area around confined entry space.
- (n) The work within the confined space area is not complete, until the work area has been restored to its original condition.

5. The following check list will help you insure that all the necessary steps have been taken.

PERMIT CONFINED SPACE ENTRY POST ENTRY CHECKLIST

- ☐ 1. Remove and store all ventilating devices (i.e. fans and blowers).
- ☐ 2. Close all cleanout openings, hatches, doors, manhole covers, etc.
- ☐ 3. Remove any blind flanges.
- ☐ 4. Connect any flow lines or pipes that were disconnected to restore the operational configuration.
- ☐ 5. Close all drain valves, and reset all valves to the operating mode.
- ☐ 6. Activate any automatic fire suppression systems.
- ☐ 7. Remove all tags and lockout devices from electrical equipment and restore power to the equipment.
- ☐ 8. Properly store all safety equipment.
- ☐ 9. Clean area around the confined area.

6. Confined Space Entry Rescue.
If all the pre-entry precautions have been taken, the possibility of accidents occurring should be minimized.
- (a) Unauthorized personnel shall not attempt a rescue at any time.
 - (b) The rescue team will prevent unauthorized personnel from attempting to rescue entrants.

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- (c) The most important thing to remember when attempting any rescue, is to protect yourself first.
 - (d) Failure to do so could result in your becoming a victim also.
 - (e) When performing a Confined Space Entry Rescue in both Work Procedures and Emergency Response situations, be sure to use proper personal protective equipment and procedures.
 - (f) If an injured entrant is exposed to a substance for which an MSDS sheet or other similar written information is required, that sheet or written information will be made available to the medical facility treating the exposed entrant.

- 7. To facilitate non-entry rescue, retrieval systems or methods will be used whenever an authorized entrant enters a permit space, unless this would increase risk or would not assist the rescue.
 - (a) Retrieval systems will meet the following:
 - (i) Each authorized entrant will use a chest, or full body harness, with a retrieval line.
 - (ii) Wristlets may be used in lieu of a harness in special cases, because **JAGUAR ENERGY SERVICES, LLC** has found that in some situations they are a safer, more effective alternative.
 - (iii) The other end of the retrieval line will be attached to a mechanical device or fixed point outside the permit space, so that rescue can begin as soon as it becomes necessary.

- 8. Vertical rescue procedures will be utilized during top entries and personnel entry, and rescue procedures will be utilized during side entries.

- 9. In the event that personnel are injured during the confined space operation, the following steps should be taken to ensure a successful rescue.
 - (a) The Attendant(s) should call for help immediately, and wait for help to arrive before attempting the rescue.
 - (b) While waiting for help to arrive, the attendant (s) should attempt to remove the victim(s) by the use of the lifeline(s).

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- (c) If the victim(s) cannot be pulled out of the confined space using the life line(s), the emergency rescuer(s) must enter the work space.
- (d) Before entering is attempted, the following precautions must be taken:
 - (i) The emergency rescuer(s) must put on a harness and attached life line before entering the work space.
 - (ii) Attach the free end of the life line to some permanent object outside of the confined space.
 - (iii) The emergency rescuer(s) must put on the proper protective clothing and/or a respirator, before entering the work space.
 - (iv) Additional personnel must be posted on the lifeline(s) outside the work space.
 - (v) The emergency rescuer(s) should enter the confined space and remove the victim(s).
 - (vi) After the victim(s) has been removed, first aid should be administered immediately, and the victim(s) transported to a medical facility as soon as possible.
- (e) Emergency Rescue Services Personnel
 - (i) In most cases the client will provide the Rescue and Emergency Services for permit entry operations.
 - (ii) The Entry Supervisor will ensure that all rescue personnel are provided with, and are trained to use, personal protective equipment necessary for making rescues.
 - (iii) Any personnel who are assigned the responsibility of entering permit spaces to conduct rescue and emergency services, must meet the following requirements.
 - (i) Each member of the rescue service will be trained to perform assigned rescue duties.
 - (ii) They will also receive the training required of authorized entrants under this plan.
 - (iii) They will be trained in First Aid/CPR.
 - (iv) Each member of the rescue service will practice making rescues at least once every 12 months.

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- (v) Each member of the rescue service will be trained in basic first aid and CPR.

10. **JAGUAR ENERGY SERVICES, LLC** will always arrange to have persons other than its own employees on site to perform rescues for IDLD entries and they will:
 - (a) Inform the rescue service of the hazards they may confront when called on to perform a rescue.
 - (i) The rescue service must will be given an opportunity to examine the site review, practice rescue, and decline as appropriate.
 - (ii) They must accept responsibility to perform these services.
 - (iii) If there is reliance on the client Host rescue service for use, this must be stated and agreed to in contract language.
 - (iv) Provide the rescue service with access to all permit spaces from which rescue may be necessary, to allow them to develop rescue plans and practice rescues.
 - (v) Employees must have PPE at no cost, training, and practice rescues at least every 12 months.

B. Training Requirements

1. The Safety Coordinator or his/her designee will certify that all required training has been completed by issuing cards and certificates.
 - (a) The certification must be made available to employees and their authorized representative.
 - (b) A copy of all training certification will be retained at **JAGUAR ENERGY SERVICES, LLC's** office and made available to:
 - (i) Clients.
 - (ii) **JAGUAR ENERGY SERVICES, LLC's** insurance carrier.
 - (iii) OSHA.
 - (iv) Employees and their authorized representative.
 - (v) Any other government agencies requesting the information.
 - (c) The training may be done in-house or contracted to an approved Safety Training Company.

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- (d) The personnel being trained will be required to pass a written test with a grade of not less than 75 %.
- (e) These tests will be maintained in **JAGUAR ENERGY SERVICES, LLC**'s files for proof of completion and comprehension.
- (f) The certification shall include:
 - (i) The employee's name
 - (ii) The signature/initials of the trainer
 - (iii) Date(s) of the training

2. Non-hazardous Confined Space Entrants (Awareness Level)
JAGUAR ENERGY SERVICES, LLC personnel who enter confined spaces with no potential hazards associated with the entry, and where entry does not require any special modifications of work procedures, must complete confined space awareness training.

- (a) Awareness level training includes instruction on the following topics:
 - (i) Identifying confined spaces and the hazardous conditions that can occur within a confined space.
 - (ii) Identifying hazardous confined spaces.
 - (iii) Precautions and protective equipment required for entry into a confined space.
 - (iv) Requirements for becoming a qualified entrant.
 - (v) Contents of this procedure.

3. Qualified Entrants for Hazardous Confined Spaces

Individuals who enter a hazardous confined space must complete the qualified entrant training, which includes instruction on the following topics:

- (a) Hazard identification.
- (b) Testing of hazardous atmospheres for Oxygen, Flammable gases or vapors, and toxic chemicals.
- (c) Testing for NORM.
- (d) Isolation procedures and verification steps.
- (e) Lockout/Tagout of energy sources.
- (f) Cleaning and safety procedures including ventilation.
- (g) Controlling physical hazards.
- (h) Proper selection and use of protective equipment including respirators.
- (i) Communication and attendant requirements.
- (j) Emergency procedures define that authorized entrants must exit from the permit confined space as quickly as possible whenever:

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- (i) An order to evacuate is given by the attendant or the entry supervisor.
- (ii) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
- (iii) The entrant detects a prohibited condition.
- (iv) An evacuation alarm is received.

4. **Qualified Attendants for Hazardous Confined Spaces**

Attendants of hazardous confined space must complete the qualified entrant training, which includes instruction on the following topics:

- (a) The hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- (b) Awareness of possible behavioral affects of hazard exposure in authorized entrants.
- (c) Continuously maintaining an accurate count of authorized entrants in the permit space.
- (d) Remaining outside the permit space during entry operations until relieved by another attendant.
- (e) Communicating with authorized entrants as necessary to monitor entrants status and to alert entrants of the need to evacuate the space.
- (f) Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately: if the attendant detects a prohibited condition, if the attendant detects the behavioral affects of hazard exposure in an authorized entrant, if the attendant detects a situation outside the space that could endanger the authorized entrants, or if the attendant cannot effectively and safely perform all the duties.
- (g) Summoning rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.
- (h) Taking the following actions when unauthorized persons approach or enter a permit space while entry is underway; 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, and inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

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- (i) Performing non-entry rescues as specified by **JAGUAR ENERGY SERVICES, LLC's** rescue procedure.
- (j) Performing no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

5. **Entry Supervisors for Hazardous Confined Spaces**

Entry Supervisors of hazardous confined space must complete the qualified entrant training, which includes instruction on the following topics:

- (a) Does the training provided to entry supervisor in their duties include:
- (b) Hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure
- (c) Verifying that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- (d) Verifying that rescue services are available and that the means for summoning them are operable.
- (e) Removing unauthorized individuals who enter or who attempt to enter the permit space during operations.
- (f) Determining, whenever responsibility for a permit space entry operation is transferred, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

C. Training Frequency

- 1. Each affected employee will be trained:
 - (a) Prior to initial assignment.
 - (b) Prior to change to assigned duties.
- 2. Retraining will be provided:
 - (a) If there is a change in permit space operations procedure.
 - (b) If inadequacies in the employee's knowledge or use of these procedures is identified.
 - (c) If a new hazard is created or special deviations have occurred.
 - (d) Prior to a change in assigned duties.

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D. Definitions

1. **Confined Space** is any space that is not intended for continuous human occupancy, but is large enough and so configured that an employee can bodily enter and perform assigned work.
 - (a) Confined spaces can have limited access and/or egress. The location and/or size of openings inhibit the removal of an unconscious or injured employee.
2. **Engulfment** is the immersing or burying of a person by a liquid, or a solid, such as sand or grain.
3. **Entrapment** is the trapping and possible asphyxiation of a person due to the internal configuration of a space.
4. **Entry** is when any part of a person's body crosses the plane of an opening to a confined space.
 - (a) For example, placing an arm or the head into the manway of a chemical storage tank constitutes entry.
5. **Hazardous atmosphere** is an atmosphere that can be injurious to entrants.
 - (a) Examples of hazardous atmospheres include:
 - (i) Oxygen deficient atmospheres; below 19.5% can be fatal.
 - (ii) Atmospheres containing a flammable gas, vapor, or mist in a concentration that is greater than 1% of its Lower Flammable Limit.
 - (iii) Atmospheres that contain a combustible dust in excess of its Lower Flammable Limit, or a dust that obscures the vision at a distance of five feet or less.
 - (iv) Atmospheres containing air contaminant concentrations above governmentally regulated, or generally accepted work place exposure limits.
 - (v) Atmospheres containing air contaminant concentrations that are immediately dangerous to life or health (IDLH).
 - (i) For example, the IDLH for carbon monoxide is 1200 ppm and for hydrogen sulfide is 100ppm.

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6. **Hazardous confined space** is a confined space that has one or more of the following characteristics:
 - (a) Contains, or has a potential to contain, a hazardous atmosphere.
 - (b) Contains a material that has the potential for engulfment.
 - (c) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or by a floor that slopes downward and tapers to a small cross-section.
 - (d) Contains any other recognized serious safety or health hazards.
 - (e) Examples of hazardous confined spaces can include Lube Oil Tank Engine Exhaust Ducts.

7. **Immediately Dangerous to Life or Health (IDLH)** is 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.
 - (a) For example, substances such as:
 - (i) Cadmium
 - (ii) Nickel
 - (iii) Carbonyl and hydrogen fluoride
 - (i) They can produce immediate temporary effects that may or may not require medical treatment, but can be followed by sudden and possible fatal collapse 12 -72 hours later.

8. **Lower Explosive Limit** is the minimum concentration at which a substance can ignite.

9. **Oxygen deficient atmosphere** is an atmosphere that contains less than 19.5% oxygen by volume.
 - (a) Examples of situations that can indicate an oxygen deficient atmosphere include:
 - (i) Use of a nitrogen pad to inert a flammable atmosphere.
 - (ii) Atmosphere containing high levels of natural gases such as propane, ethane, and methane.
 - (iii) Completely enclosed spaces containing a combustion engine.
 - (iv) Extensive rust on the surfaces inside a confined space.

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10. **Oxygen enriched atmosphere** is an atmosphere that contains more than 23.5% oxygen by volume.
 - (a) Oxygen enriched atmospheres can change the flammable properties of materials, causing them to burn more readily.

11. **Qualified Entrant** is a person who by reason of training, education and experience is knowledgeable in confined space entry operations, and is competent to judge and complete tests for the hazards involved. An individual who has completed confined space entry training and has been authorized by corporate safety as a qualified entrant.