

GUAM POWER AUTHORITY Standard Operating Procedures	No.: SOP-105	Issued: May 4, 2007
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Title: CONFINED SPACE ENTRY PROCEDURES	Approved by: <i>JCF</i> Joaquin C. Flores, P.E. General Manager	
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I. PURPOSE

To ensure the protection of Guam Power Authority employees from the hazards of entry into permit-required confined spaces and to ensure that regulatory requirements regarding entry into confined spaces are met. This Standard Operating Procedure outlines procedures for preventing unauthorized entry, identifying and evaluating hazards, testing and monitoring conditions, and ensuring safe entry.

II. SCOPE

This procedure applies to all Guam Power Authority employees subject to conducting work, observing work, and conducting atmospheric testing in confined spaces.

III. REFERENCE

"Permit Entry Confined Space," OSHA General Industry Standard, 29CFR 1910.146.

IV. DEFINITIONS

- A. **"Confined Space"** is defined as those spaces that are difficult to enter and exit and are not intended for employee occupancy except for repair or maintenance.

Confined Spaces consist of, but are not limited to the following:

1. Storage tanks, tank cars, process vessels, boilers, furnaces and other tank-like compartments with only one manhole for entry.
2. Open-top spaces of more than four feet (4') in depth such as: Underground conductor manholes, lube oil reservoirs, sludge tanks, pits, vaults, etc.
3. Underground utility tunnels, pipelines and similar structures.
4. Any compartments/space that is not designed or intended for continuous personal occupancy.

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- B. **"Acceptable Entry Conditions"** means the limiting conditions that are required for employee entry into a confined space which will assure the safety and health of authorized occupants.
- C. **"Attendant"** means a trained individual outside the confined space who acts as an observer keeping in continuous though not constant, communication, so the attendant can immediately summon rescue services in the event of an emergency.
- D. **"Authorized Entrant"** means a trained employee who is authorized by his supervisor to enter a confined space.
- E. **"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.
- F. **"Entry Permit"** means the employer's written authorization for entry under Defined conditions into a permit entry confined space or a stated purpose during a specific time.
- G. **"Entry Supervisor"** means the person 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.

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/she fills. Also the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

- H. **"Hazardous Atmosphere"** means an atmosphere that may expose employees to risk of death, incapacitation, or 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:
1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL).
 2. Airborne combustible dust at a concentration that meets or exceeds its LFL.

NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.

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3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.
 4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, and which could result in employee exposure in excess of its dose or permissible exposure limit.
 5. Any other atmospheric condition that is immediately dangerous to life or health.
 6. Confined space temperature in excess of 105 –degrees Fahrenheit.
- I. **“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.

V. **GENERAL**

The following detailed procedures are to be followed when preparing to enter a **“Permit Required”** confined space.

- A. Superintendent/Supervisor – Upon identifying the need to enter a confined space shall:
1. Determine the scope of work to be performed and advise employees that no entry into the confined space shall be made until an “Entry Permit” is obtained from the Safety Division.
 2. Contact the Safety Office at least 24 hours in advance to schedule a permit entry confined space testing. Note: Allow an 18 hour cool down stage for steam drums, boilers, and furnaces.
 3. Ensure that the confined space doors/hatches and entry points etc., are opened prior to the arrival of the Certifying Safety Inspector.
 4. Ensure that if a hazardous atmosphere is detected, continuous forced air ventilation is used to eliminate the hazardous atmosphere. The forced air ventilation shall be so directed as to ventilate the immediate areas where an employee is or will be present within the confined space.
- B. Entry Permit

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1. The confined space entry permit shall prescribe the conditions to be met before entry and before work can begin in a confined space.
2. A signed copy of the entry permit must be posted by the opening of the confined space. Upon completion of the work performed, the entry permit must be removed and shall be retained for at least one (1) year.

NOTE: Any problems encountered during an entry operation shall be noted on the permit so that appropriate revisions to the permit entry confined space program can be made.

3. The confined space entry permit shall be removed upon the closing of doors/hatches of the confined space. Under no circumstances should an entry permit remain by the opening upon the closure of doors/hatches.

VI. RESPONSIBILITIES

A. Superintendent or Supervisor shall:

1. Ensure that all employees who may be exposed to confined space entry during the course of their employment be adequately trained and instructed on the procedures and controls for confined space.
2. Ensure that all authorized entrants (employees) know the emergency action plan and have received training covering the following:
 - a. Hazard Recognition. Assure that every employee, before entering a confined space, understands the nature of the hazard and the requirement for testing and monitoring to determine if it is safe to enter.
 - b. Use of Personal Protective Equipment. Employees shall be taught the proper selection, use and limitations of all personal protective equipment, protective shields and barriers, safety belts, lifelines and lanyards, descent and retrieval winches, including respirators required for entry and escape from confined spaces.
 - c. Self-Rescue. Employees must be trained to exit from the confined space as quickly as possible when ordered to evacuate, or whenever he/she recognize exposure hazards while in the confined space.
 - d. Toxic Effects or Symptoms of Hazardous Exposure. Employees shall be trained to recognize and be aware of the toxic effects or symptoms of exposure to hazardous substances that may be absorbed

through the skin, or which may be carried through their skin by solvents they are using. They shall also be trained to relay signals to their attendants and to attempt self-rescue immediately on becoming aware of these hazards.

- e. Persons Authorizing or In Charge of Confined Space Entry. Every employee who is vested the authority over or in charge of confined space entry.
3. Identify each confined space and inform employees by sign, placard, training program, or other effective means to prevent inadvertent or unauthorized entry into any confined space.
4. Provide employees specific training necessary before they are authorized to enter into a confined space.
5. Ensure the availability and use of all protective clothing and other personal protective equipment necessary for safe entry.
6. Verify if any in-plant rescue team or other emergency assistance is ready and operable and that the means for summoning the in-plant rescue team or other emergency assistance are ready and operable.
7. Provide an attendant for each entry permit.
8. Establish an entry permit program meeting the specific requirements prescribed by this procedure.
9. Provide and require the use of retrieval lines for Immediately Dangerous to Life and Health (IDLH) atmosphere entries, or where there is a risk of engulfment, to make non-entry possible. There must be adequate attachments points outside the confined space for tying-off or otherwise securing retrieval lines for all authorized entrants. Where retrieval lines themselves could constitute an entanglement hazard or otherwise cannot be used, the work area supervisor shall provide an equivalent method for rescue. The supervisor shall also make appropriate provisions in case the severity of this hazard could increase while the employees are in the confined space.
10. Assure pre-entry permit is completed before any employee enters a confined space.
11. Verify that the necessary pre-entry condition exists and that all confined space environmental tests and monitoring (oxygen deficiency,

combustible/toxic bases and vapors, etc.) have been made and safe entry into the confined space has been determined.

12. Notify the Safety Division immediately when the scope of work changes (i.e., hot work welding is to be conducted or when chemicals are to be used)
13. Terminate immediately any confined space entry upon becoming aware of any hazardous condition which may adversely affect employees (entrants).

B. Duties of Attendant

1. Maintain continuous communication with the worker(s) inside the confined space by: Voice, radio, telephone, visual observation, or other equally effective means.
2. Assure continuous awareness of the location and condition of any worker inside the confined space who is out of direct range because of work station.
3. Recognize that he/she has the authority to order each and everyone in a confined space to evacuate and exit the space at first indication of a toxic reaction (unusual irritation, choking, nausea, dizziness, etc.) or if situation occurs outside the confined space that could pose a hazard to the workers inside the confined space.
4. Remain at his post outside the confined space, and not leave for any reason except for self-preservation and unless replaced or relieved by an equally trained and qualified attendant while employees are inside the confined space.

NOTE: If the attendant must vacate or leave his/her station without being relieved by another qualified attendant, he/she shall order the workers to exit the confined space.

5. Warn any unauthorized persons not to enter or to exit immediately if they have entered, and advise authorized employees in the space of entry by unauthorized persons.

C. Duties of Authorized Entrant:

1. Must understand hazards(s), including information on the mode of exposure i.e., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure.

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2. Must know how to use the appropriate PPE properly (such as face and eye protection, and other forms of barrier protection such as aprons and coveralls).
3. As necessary, maintain communication with attendant to enable the attendant to monitor the entrant's status as well as to alert other entrants to evacuate the space if there is a hazard noted.
4. Alert the Attendant if a prohibited condition exists or when warning signs or symptoms of exposure appear.
5. Exit from space as soon as possible when ordered by the attendant, when the entrant recognizes the warning signs or symptoms of exposure, when a prohibited condition exists, or when an automatic alarm is activated.

D. Safety Division

Upon receiving a 24 hour notification of the request for a permit entry confined space clearance, shall ensure that the assigned gas meter is fully charged and calibrated prior to testing. Conduct confined space testing in the presence of the requesting supervisor. Upon completion of the confined space test, the Safety Inspector shall ensure that the confined space entry permit contains the specific information below:

1. Name and job title of the person authorizing the entry and names of attendants or employees who will enter the confined space.
2. Provisions for assuring that the in-plant rescue team or the means specified by the employer to summon the designated outside assistance is available.
3. All hazards known to be associated with or reasonably expected to be present in the confined space.
4. Specify all means of isolation, cleaning, purging, or inerting to be done prior to entry and to certify that these procedures have been accomplished.
5. The specific Personal Protective Equipment, including respiratory protection, clothing, etc., that is necessary for entry or rescue.
6. Energy sources have been locked out/tagged out.
7. Mechanical equipment has been isolated.
8. All vents are fully opened.

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9. Equipment is available to provide continuous forced air if required.
10. Additional local exhaust system is available if required.
11. Type of communication required.
12. Area is isolated with signs and barriers.
13. The type of atmospheric testing that was done, the type of test instruments used, the date of calibration, duration and specific test locations including the name and job title of the person conducting the test.
14. Atmospheric Testing Results
15. The minimum acceptable environmental conditions (i.e. oxygen, combustible/toxic gas and vapor-free environment) for entry and work in confined spaces.
16. Specify that Hot Work is included in the entry permit or a separate hot work permit attached to the entry permit.

NOTE: Guam Power Authority does not provide confined space testing/gas free services to contractors. Contractors requiring such services shall provide Permit Space Entry Permits and Hot Work Permits in accordance with CFR 1910.146, ©, (9) thru (d)(4)(i).