

DEPARTMENT OF THE ARMY  
HEADQUARTERS, 101ST AIRBORNE DIVISION (AIR ASSAULT) AND FORT CAMPBELL  
2700 Indiana Avenue  
Fort Campbell, Kentucky 42223-5656  
1 May 2010

Safety  
**Permit Required Confined Space Entry Program**

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**Glossary**

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**1. Purpose**

This regulation establishes policies and procedures to protect personnel who work in permit-required confined spaces from the possibility of accidental injury or death and assigns responsibilities for this program. It applies to all units/directorates at Fort Campbell and supported activities that have a requirement for personnel to enter/work in a permit-required confined space.

**2. References**

Required and related publications are listed in appendix A.

**3. Explanation of abbreviations and terms**

Abbreviations and terms used in this regulation are explained in the glossary.

**4. Responsibilities**

*a.* The Installation Safety Director will:

- (1) Exercise staff supervision over the permit-required confined space entry program.
- (2) Keep a listing of permit-required confined spaces and their locations as provided by commanders or activity directors.
- (3) Assist commanders and supervisors in the selection, use, and care of personal protective clothing and equipment.

*b.* The Preventive Medicine Service will:

- (1) Assist commanders and supervisors in the select, use, and care of personal protective clothing and equipment.
- (2) Advise commanders/activity directors on the type of atmospheric testing and monitoring equipment and the

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\*This regulation supersedes CAM Regulation 385-8 dated 1 April 2007

personal protective equipment/clothing required for use by personnel in permit-required confined spaces.

(3) Provide training on the use of atmospheric testing and monitoring equipment.

*c.* Brigade commanders/activity directors will--

(1) Identify permit-required confined spaces for their organization using the confined space decision flow chart shown in Appendix B and provide a complete listing and location of the permit spaces to the Installation Safety Office.

(2) Reclassify if there are changes in the use or configuration of permit or no permit confined spaces that might change their status and give the list of changes to the Installation Safety Office.

(3) Schedule confined space training for personnel who will be entry supervisors, entrants, or attendants and ensure personnel attend the training. All training must be documented. This training shall be provided to each affected employee:

*(a)* Before the employee is initially assigned duties under this section;

*(b)* Before there is a change in assigned duties;

*(c)* Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.

(4) Develop a unit/activity confined space program tailored to their individual job sites and work situations.

(5) Establish and implement a permit system for proper preparation, issue, and implementation of entry permits.

(6) Provide equipment, as necessary, for safe entry to include atmospheric testing, communication, and personal protective equipment to comply with the requirements of this regulation and the federal safety standard.

(7) Designate qualified individuals to serve as entry supervisors and perform duties as identified in this regulation.

(8) Ensure contractors planning to send employees into permit-required confined spaces are provided with all available information on permit-required confined space hazards IAW 29 CFR 1910.146 (c) (8).

(9) Ensure permit-required confined space warning signs are installed at known permanent Permit Required Confined Space locations. Signs should read as follows (or similar words):

**DANGER  
CONFINED SPACE  
ENTER BY PERMIT ONLY**

## **5. General**

This regulation was established to ensure personnel who enter/work in a permit-required confined space know the hazards and regulatory requirements of work in permit-required confined spaces. This regulation applies to the Active Army, Army National Guard (ARNG), U.S. Army Reserve (USAR), Army civilian employees (appropriated and non-appropriated), and all DOD contract personnel working on Fort Campbell.

## **6. Training**

*a.* The employer shall provide training so that all employees whose work is regulated by this regulation acquire the understanding, knowledge, and skills necessary for the safe performance of their assigned duties assigned.

*b.* Training shall be provided to each affected employee:

(1) Before the employee is first assigned duties under this regulation.

(2) Before there is a change in assigned duties.

(3) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained.

(4) Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures or that there are inadequacies in the employee's knowledge or use of these procedures.

*c.* The training shall establish employee proficiency in the duties required by this regulation and shall introduce new revised procedures, as necessary, for compliance with this regulation and the applicable OSHA standards.

*d.* The employer shall certify that the training required by this regulation has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

## **7. Assigned Duties**

*a.* Supervisory personnel will:

(1) Evaluate the workplace to determine if any spaces are permit-required confined spaces.

(2) Ensure units/sections involved in permit-required confined space operations utilize the operating procedures contained in this regulation and the unit/activity confined space program. This regulation and the unit/activity confined space program will be read, understood, and available for personnel to review at any time.

(3) Ensure appropriate signs are posted at all permit-required confined space job sites.

(4) Ensure that all personal protective equipment, atmospheric testing instrumentation, emergency rescue equipment, and communication equipment are available, used, and properly maintained.

(5) Identify and ensure that personnel who work in permit-required confined spaces or act as entry supervisors or attendants receive documented training and that only those personnel participate in permit-required confined space operations.

(6) Send one copy of the entry permit to the Installation Safety Office and maintain one copy of entry permits on file for one year.

*b. Entry supervisors will:*

(1) Post a "Danger - Confined Space - Enter by Permit Only" warning signs, if necessary, at all non-permanent permit-required confined spaces until work in the space is completed.

(2) Protect the entrance once covers are removed, the opening shall be promptly guarded by a railing, temporary cover, or other temporary barrier 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.

(3) Ensure the internal atmosphere is tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order, prior to employees entering the space. Any employee, who enters the space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing.

(4) Know hazards that may be faced during entry; mode, signs, or symptoms of exposure; and consequences of exposure.

(5) Have Material Safety Data Sheets (MSDSs) available at the work site if personnel could be exposed to substances requiring MSDS knowledge.

(6) Ensure entry permit is complete before authorizing entry.

(7) Verify by checking entries made on the permits that all tests have been conducted and all tests specified by the permit are in place before endorsing the permit.

(8) Determine that necessary entry procedures are in effect, that barriers are posted (if necessary), and proper equipment for safe entry is available before allowing entry.

(9) Perform atmospheric testing to determine that acceptable entry conditions are present and maintained.

(10) Isolate the permit space by purging, inerting, flushing, or ventilating the permit space as necessary to eliminate or control atmospheric hazards.

(11) Verify rescue services are available and emergency communication means are operable.

(12) Cancel entry authorization and terminate entry when unacceptable conditions are present.

(13) Conclude entry operations (close off permit space and cancel permit) after work is completed.

(14) Take appropriate measures to prevent and/or remove unauthorized persons in or near permit-required confined spaces.

(15) Be familiar with the contents of this regulation and the unit/activity confined space program.

(16) Determine that operations within the confined space remain consistent with the terms of the entry permit at reasonable intervals and whenever responsibilities are transferred to another supervisor.

*c. Authorized entrants will:*

(1) Know hazards that may be faced during entry; including information on the mode, signs or symptoms, and consequences of the exposure.

(2) Properly use all required equipment.

(3) Communicate with the attendant as necessary to enable the attendant to monitor entrant status and alert the entrant of the need to evacuate the space.

(4) Alert the attendant whenever:

(a) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or

(b) The entrant detects a prohibited condition.

(5) Exit from the permit space as quickly as possible whenever:

(a) An order to evacuate is given by the attendant or the entry supervisor,

(b) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,

(c) The entrant detects a prohibited condition, or

(d) An evacuation alarm is activated.

*d. Attendants will:*

- (1) Know hazards that may be faced during entry; mode, signs, or symptoms of exposure; and consequences of exposure.
- (2) Be aware of possible behavioral effects of hazard exposure in authorized entrant.
- (3) Maintain effective and continuous contact with authorized entrant during permit space entry and occupancy.
- (4) Maintain an accurate count of authorized entrants.
- (5) Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and order the authorized entrants to evacuate the permit space immediately under any of the following conditions;
  - (a) If the attendant detects a prohibited condition;
  - (b) If the attendant detects the behavioral effects of hazard exposure in the authorized entrants;
  - (c) If the attendant detects a situation outside the space that could endanger the authorized entrants; or
  - (d) If the attendant cannot effectively and safely perform all duties required under this section.
- (6) Remain outside the permit space in the immediate area during entry operations until work is finished or until relieved by another attendant.
- (7) Notify the Fort Campbell Fire Department Emergency Communications Center (EOC) by dialing 911 when entrant rescue is necessary. **UNDER NO CIRCUMSTANCES WILL ATTENDANT ENTER THE CONFINED SPACE TO ATTEMPT RESCUE.**
- (7) Prevent unauthorized persons from permit space entry.
- (8) Perform no other duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

## **8. Atmospheric testing**

(Reference: Appendix B to 29 CFR 1910.146 - Procedures for Atmospheric Testing).

- a.* Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized.
- b.* Test or monitor the permit space with a calibrated direct-reading instrument as necessary to determine if acceptable entry conditions are being maintained during the course of entry operations.
- c.* When testing for atmospheric hazards, test first for oxygen, then for flammable gases and vapors, and finally for toxic gases and vapors.
- d.* If the entrant has to exit the permit space before the work is completed, the atmosphere will be retested before the next entry to the permit space.
- e.* A written record of the test results will be entered on the Permit-Required Confined Space Entry Permit.

## **9. Personal protective clothing/equipment**

The following personal protective clothing and equipment are examples that may be required at most permit-required confined space job sites. Depending on the work required and the specific job site, other clothing or equipment may be required.

*a.* Respirators. (A National Institute for Occupational Safety and Health (NIOSH) certified respirator per 29 CFR 1910.134 - Respiratory Protection).

(1) No individual shall perform duties where respiratory protection is required prior to completing a medical evaluation or examination. Personnel shall not use a voluntary respirator until medically qualifies to use such equipment.

(2) Respirator fit testing for DA civilians and active duty military personnel will be conducted only by the Fort Campbell Respiratory Protection Section.

(3) A medical evaluation will be completed for individuals who use a voluntary respirator, initially and annually thereafter.

(4) Respirator training will be conducted IAW paragraph 2-5 of CAM Regulation 40 -2.

(5) The maintenance, inspection and care of respirators will be IAW paragraph 2-7 of CAM Regulation 40-2.

*b.* Supplied Air Respirator

*c.* Hand protection.

*d.* Eye Protection.

*e.* Hearing protection.

*f.* Safety belt/harness.

*g.* Retrieval system.

*h.* Hard hats.

*i.* Hoisting device. (A hoisting device should always be available at all permit-required confined space job sites such as pits or inside tanks.)

- j.* Safety footwear (slip-resistant).
- k.* Coveralls (cooling suits/vests).
- l.* Communications equipment.

## 10. General requirements

- a.* All workplaces must be evaluated to determine if any spaces are permit-required confined spaces.
- b.* If the workplace contains permit spaces, danger signs must be posted in order to inform employees of the existence, location, and danger of the spaces.
- c.* All Activities/Directorates which will have employees entering permit confined spaces will develop and maintain a specific confined space program which details how they will meet the requirements of this standard. The written program shall be available for inspection by employees and their authorized representatives.
- d.* Before an employee enters the space, the internal atmosphere will be tested for oxygen content, flammable gases and vapors, and potential toxic air contaminants.
- e.* There may be no hazardous atmosphere within the permit space when any employee is inside the space.
- f.* The atmosphere within the space will be continually tested to prevent the accumulation of a hazardous atmosphere.
- g.* If a hazardous atmosphere is detected during entry, the entrant will leave the space immediately; the space will be evaluated to determine how the hazardous atmosphere developed; and measures implemented to protect employee from the hazardous atmosphere before further entry.
- h.* An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere.
- i.* The forced air ventilation shall be so 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.
- j.* The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.
- k.* 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. Any employee, who enters the space, or that employee's authorized representative, shall be provided with an opportunity to observe the periodic testing.
- l.* **If required, the entrant and attendant will be on separate supplied air compressors in different locations.**
- m.* The permit space will be verified safe for entry by use of the entry permit and the procedures put forth by this regulation and the federal standard. [Link to 29 CFR 1910.146 Permit-Required Confined Space.](#)

## 11. Contractor requirements

- a.* When a Directorate (host employer) arranges to have employees of another employer (contractor) perform work that involves permit space entry, the host employer shall:
  - (1) Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this section.
  - (2) Apprise the contractor of the elements, including the hazards identified and the host employer's experience with the space, that make the space in question a permit space.
  - (3) Apprise the contractor of any precautions or procedures that the host employer has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
  - (4) Coordinate entry operations with the contractor, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by paragraph b of this section.
  - (5) Debrief the contractor at the conclusion of the entry operations regarding the permit space program followed and regarding any hazards confronted or created in permit spaces during entry operations.
  - (6) In addition to complying with the permit space requirements that apply to all employers, each contractor who is retained to perform permit/non-permit space entry operations shall:
    - (a)* Obtain any available information regarding permit space hazards and entry operations from the host employer.
    - (b)* Coordinate entry operations with the host employer, when both host employer personnel and contractor personnel will be working in or near permit spaces, as required by paragraph b of this section.
    - (c)* Inform the host employer of the permit space program that the contractor will follow and of any hazards confronted or created in permit spaces, either through a debriefing or during the entry operation.
    - (d)* Ensure all contractor and sub-contractor employees are provided with the required Personal Protective Equipment (PPE) and that they are properly trained to use their PPE.

b. Develop and implement procedures to coordinate entry operations when employees of more than one employer are working simultaneously as authorized entrants in a permit space, so that employees of one employer do not endanger the employees of any other employer.

## 12. Aviation Related Confined Space Operations

a. Aircraft Tailbooms. UH-60 and AH-64 helicopter tailbooms meet the criteria of a confined space, as defined by OSHA Standard 29 CFR, 1910.146. The standard which requires that:

- (1) The employer must identify and evaluate each hazard to which the entering employees will be exposed.
- (2) Air monitoring, to determine if the space contains potential atmospheric hazards. Readings must be documented.
- (3) Using a FC Form 4096 (Confined Space Permit) if atmospheric hazards persist and/or products containing Hexavalent Chromium (Cr (VI)), or similar hazardous materials are to be used within the space.
- (4) Entry Supervisors, Attendants and Entrants receive all required training to include respirator fit testing, Aviation Confined Space Safety Awareness training, Hazard Communication training and a documented medical clearance.
- (5) The proper Personal Protective Equipment (PPE) is to be worn as prescribed by the applicable Material Safety Data Sheet (MSDS) based the hazards present.

b. It is recommended that a FC Form 4096 be initiated and used as a confined space entry checklist, regardless of whether the confined space is a permit or non-permit required entry.

c. Procedures. Aircraft maintenance procedures pertaining to working in aircraft tailbooms and fuel cells will be IAW the applicable aircraft maintenance manuals and the unit's Maintenance Standard Operating Procedures (SOP).

d. Aircraft Fuel Cells. If it is possible for the employee to fit his or her entire body within the aircraft fuel cell, then the fuel cell would be considered a confined space under 29 CFR, 1910.146.

(1) If an employee cannot enter the tanks with his or her entire body due to the size of the fuel cell's diameter then the fuel cell would not be considered a confined space. However; an employee may still be injured or killed as a result of some atmospheric hazard within such a fuel cell. The appropriate level of atmospheric testing, Personal Protective Equipment (PPE), and supervision will be implemented for all fuel cell entries, regardless whether an employee can physically enter with his/her entire body of not.

(2) All aircraft confined space operations regardless of whether the entry is permit of non-permit required, will be conducted IAW 29 CFR, 1910.146.

## 13. Proponent

The proponent of this regulation is the Installation Safety Office (IMSE-CAM-SO).

FOR THE COMMANDER:



JOHN P. JOHNSON  
Colonel, GS  
Chief of Staff

DISTRIBUTION:  
Intranet

**Appendix A**  
**References**

**AR 11-34**  
The Army Respiratory Protection Program

**CAM Reg 40-2**  
Respiratory Protection Program

**AR 385-10**  
The Army Safety Program

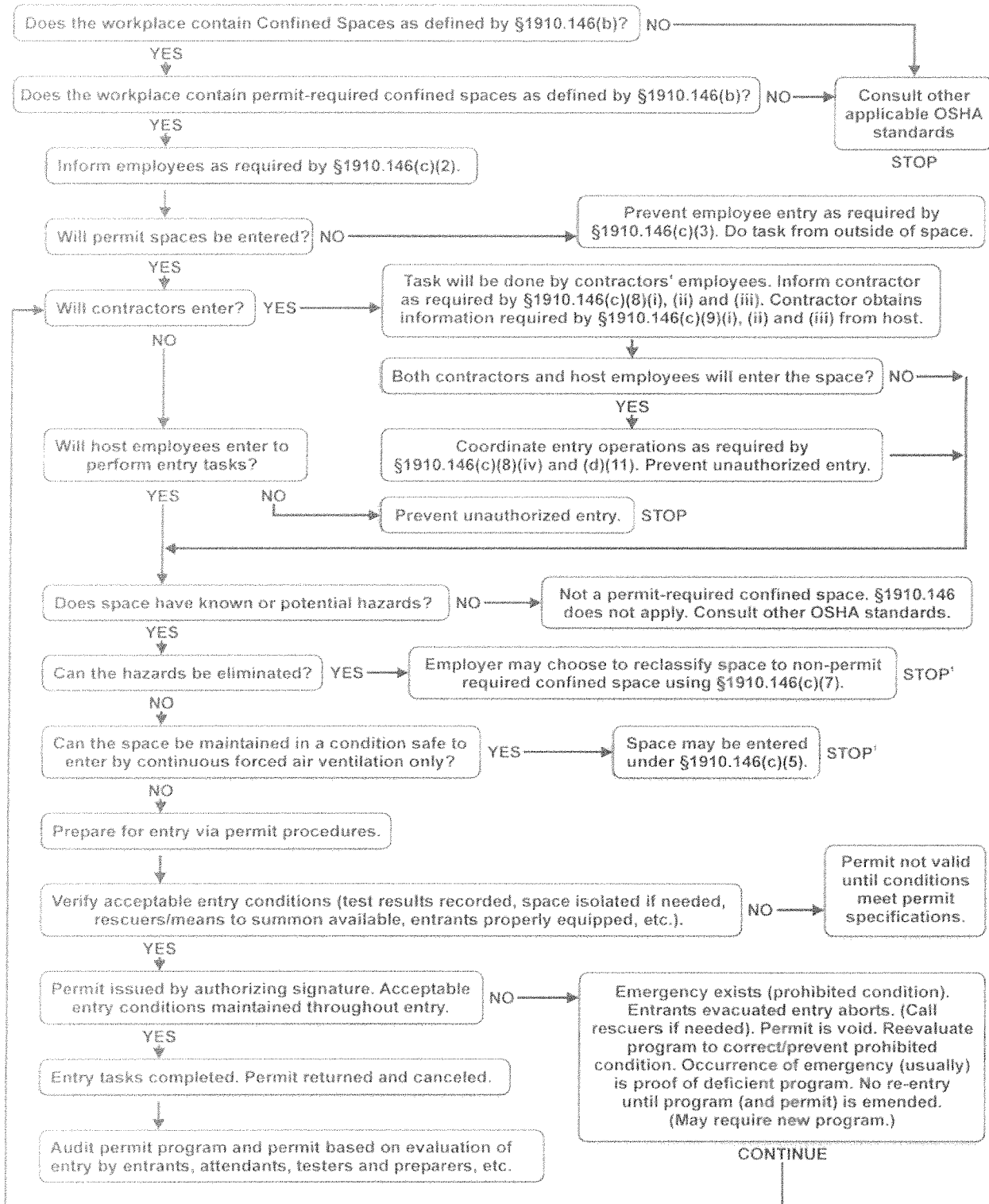
**CFR 29/1960.8 and 29/1960.9**  
Occupational Safety and Health Administration

**CFR 29/1910.146**  
Permit – Required Confined Space

**CFR 29/1910.134**  
Respiratory Protection

**Appendix B  
Permit-Required Confined Space Decision Flow Chart**

**APPENDIX A TO §1910.146 - PERMIT-REQUIRED CONFINED SPACE DECISION FLOW CHART**



<sup>1</sup>Spaces may have to be evacuated and re-evaluated if hazards arise during entry.



**APPENDIX C  
FC FORM 4096 CONFINED SPACE ENTRY PERMIT**

<b>CONFINED SPACE ENTRY PERMIT</b> <small>(For use of this form see CAM Regulation 385-8. The proponent of this form is the Fort Campbell Installation Safety Office)</small>		<input type="checkbox"/> CONFINED SPACE	<input type="checkbox"/> HAZARDOUS AREA	DATE/TIME ISSUED  / /	DATE/TIME EXPIRES  / /
Permit is valid for 8 hours only. All copies of permit will remain at job site until job is completed.		JOB SITE LOCATION AND DESCRIPTION			
PURPOSE OF ENTRY		SUPERVISOR(S) IN CHARGE OF CREW(S)		TYPE OF CREW	PHONE NUMBER
<b>BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED AND REVISED PRIOR TO ENTRY</b>					
REQUIREMENTS COMPLETED	DATE	TIME	REQUIREMENTS COMPLETED	DATE	TIME
Lock Out/De-energized/Try-out			Full Body Harness with 'D' Ring		
Line(s) Broken-Capped-Blanked			Emergency Escape Retrieval Equipment		
Purge Flush and Vent			Lifelines		
Ventilation			Fire Extinguishers		
Secure Area Post and Flag			Lighting (Explosive Proof)		
Breathing Apparatus			Protective Clothing		
Standby Safety Attendant			Respirator(s) (Air Purifying)		
Burning and Welding Permit			Enter N/A if items do not apply		
CONTINUOUS MONITORING** PERMISSIBLE					
TEST(S) TO BE TAKEN	Entry Level				
<b>PERCENT OF OXYGEN</b>	19.5% to 23.5%				
<b>LOWER FLAMMABLE LIMIT</b>	UNDER 10%				
<b>CARBON MONOXIDE</b>	+ 35 PPM				
Aromatic Hydrocarbon PPM	+ 1 PPM * 5 PPM				
Hydrogen Cyanide PPM	(Skin) * 4 PPM				
Hydrogen Sulfide PPM	+ 10 PPM *15 PPM				
Sulfur Dioxide PPM	+ 2 PPM * 5 PPM				
Ammonia PPM	* 35 PPM				
<b>LEGEND:</b>					
** RECORD CONTINUOUS MONITORING RESULTS EVERY 2 HOURS.					
* Short-term exposure limit: employees may work in area up to 15 minutes.					
+ 8 hours time weighted average: employees may work 8 hours (longer with respirator).					
<b>DIAL 911 FOR EMERGENCY ASSISTANCE</b>					
<b>RESCUE PROCEDURE: Attendant will attempt to pull entrant from space by harness or lifeline. If entrant cannot be pulled out, attendant will notify Fire Department, 911, (See Legend) of the emergency. UNDER NO CIRCUMSTANCES WILL ATTENDANT ENTER THE CONFINED SPACE TO ATTEMPT RESCUE OF ENTRANT.</b>					
PHONE NUMBERS:		FIRE DEPARTMENT 911	AMBULANCE 798-6111	SAFETY 956-2621/798-6789	DPW UTILITIES BRANCH 798-5082
GSA TESTER NAME AND CHECK NUMBER		INSTRUMENT(S) USED		MODEL AND/OR TYPE	SERIAL AND/OR UNIT NUMBER
SAFETY STAND BY PERSON (ATTENDANT) IS REQUIRED FOR ALL CONFINED SPACE WORK.	STAND BY SAFETY ATTENDANT(S)	CHECK NUMBER	STAND BY SAFETY ATTENDANT(S)	CHECK NUMBER	
<i>We have reviewed work authorized by this permit and information contained herein. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any spaces are marked in "No" column. Permit not valid unless all appropriate items are completed.</i>		SUPERVISOR AUTHORIZING ENTRY		ALL ABOVE CONDITIONS SATISFIED	
		REVIEWED BY ENTRANT		ATTENDANT	
Original copy to Unit Maintenance Chief/Activity Division Chief on completion of work. Copy to Entry Supervisor.					

## **Glossary**

### **Section I Abbreviations**

#### **ARNG**

Army National Guard

#### **DA**

Department of the Army

#### **CAM Regulation**

Campbell Regulation

#### **DoD**

Department of Defense

#### **IAW**

In accordance with

#### **MSDS**

Material Safety Data Sheets

#### **NIOSH**

National Institute for Occupational Safety and Health

#### **PPE**

Personal Protective Equipment

#### **USAR**

United States Army Reserves

### **Section II Terms**

#### **Acceptable Entry Conditions**

The conditions that must exist in a permit-required confined space to allow entry and to ensure that personnel involved with a permit-required confined space entry can safely enter into and work within the spaces.

#### **Attendant**

A properly trained person stationed outside a permit-required confined space that monitors authorized entrants and performs all attendant duties assigned.

#### **Authorized Entrant**

A properly trained person authorized by the supervisor to enter and work in a permit-required confined space.

#### **Blanking/Blinding**

The absolute closure of a pipe, line, or duct by the fastening of a solid plate that completely covers the bore and is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

#### **Confined Space**

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.

**Double Block and Bleed**

The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

**Emergency**

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

**Engulfment**

The surrounding and effective capture of a person by a liquid or finely divided (flow able) 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**

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**

The written or printed document given by the employer to allow and control entry into a permit-required confined space. FC Form 4096, Confined Space Entry Permit, is available in Figure 2 of this regulation.

**Entry Supervisor**

The person responsible for determining acceptable entry conditions are present at a permit-required confined space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry.

**Hazardous Atmosphere**

An atmosphere that may expose personnel 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 flammable limit (LFL). Airborne combustible dust as a concentration that meets or exceeds its LFL. Dust obscures vision at a distance of 5 feet (1.524 meters) or less. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent. Toxic air contaminants in excess of permissible exposure limits or threshold limit value. Any other atmospheric condition that is immediately dangerous to life or health (IDLH).

**Hexavalent Chromium (Cr (VI))**

A toxic form of the element chromium. Hexavalent chromium is widely used in pigments, metal finishing (electroplating), wood preservatives and fungicides, and in chemical synthesis as an ingredient and catalyst. Hexavalent chromium may also be present in fumes generated during the production or welding of chrome alloys. Chromium metal is often alloyed with other metals or plated on metal and plastic substrates to improve corrosion resistance and provide protective coatings.

**Hot Work Permit**

An employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

**Immediately Dangerous to Life or Health (IDLH)**

An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

(1) Selection of respirators. [1910.134(d)] This paragraph requires the employer to evaluate respiratory hazard(s) in the workplace, identify relevant workplace and user factors, and base respirator selection on these factors. The paragraph also specifies appropriately protective respirators for use in IDLH atmospheres, and limits the selection and use of air-purifying respirators.

(2) The employer shall provide the following respirators for employee use in IDLH atmospheres:

(a) A full face piece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or a combination full face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

(b) Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

(c) All oxygen-deficient atmospheres shall be considered IDLH.

### **Inerting**

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**

The process for removal of a permit-required confined space from service and protection from any release of energy or material into the space through means such as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; a lockout or tag out of all sources of energy; or blocking or disconnecting all mechanical linkages.

### **Line Breaking**

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 death or serious physical harm.

### **Oxygen Deficient Environment.**

An atmosphere that contains less than 19.5 percent oxygen by volume.

### **Oxygen Enriched Atmosphere**

An atmosphere that contains more than 23.5 percent oxygen by volume.

### **Permit-Required Confined Space (Permit Space)**

A confined space that has one or more of the following characteristics:

- (1) Contains or has the potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;
- (3) 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
- (4) Contains any other recognized serious safety or health hazard.

### **Permit-Required Confined Space Program**

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**

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**

Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

### **Rescue Service**

The personnel designated to rescue employees from permit spaces.

### **Retrieval System**

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**

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.