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United States Coast Guard

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COMDTNOTE 5100
20 DEC 2006

COMMANDANT NOTICE 5100

CANCELLED:
19 DEC 2007

Subj: CH-11 TO SAFETY AND ENVIRONMENTAL HEALTH MANUAL, COMDTINST M5100.47

1. PURPOSE. This Notice publishes CH-11 to the Safety and Environmental Health Manual, COMDTINST M5100.47. Intended users are all units which maintain the Manual.

2. ACTION. Area and district commanders, commanders of maintenance and logistics commands, commanding officers of integrated support commands, commanding officers of headquarters units, assistant commandants for directorates, Judge Advocate General and special staff offices at Headquarters shall ensure compliance with the provisions of this Notice. No paper distribution will be made of this Notice. Internet release is authorized.

3. DIRECTIVES AFFECTED. Shore Confined Space Entry, COMDTINST 5100.48A, is cancelled. The Safety and Environmental Health Manual, COMDTINST M5100.47, Chapter 6, "Confined Space Safety Requirements," is added to Manual.

4. SUMMARY. Chapter 6, Confined Space Entry Requirements, was promulgated to create a centralized location for confined space doctrine within the Coast Guard. Chapter 6, Confined Space Entry Requirements, incorporates confined space policy from the following Coast Guard operational communities: Aircraft Fuel Cell and Tank Entry/Repair, Defender Class Boat Repair, Maritime Law Enforcement Inspections, Shore Based Confined Space Entry, Vessel Repair Dockside and Buoy Repair, Vessel Afloat Entry/Repair, and Marine Safety Merchant Vessel Inspections. Additionally, Chapter 6, Confined Space Entry Requirements, provides detailed guidance on Atmospheric Testing Requirements, Requirements for Contracts and Contractors, and Confined Space Training Requirements.

DISTRIBUTION – SDL No. 146

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NON-STANDARD DISTRIBUTION:

5. PROCEDURES. No paper distribution will be made of this Manual. Official distribution will be via the Coast Guard Directives System CD-ROM. An electronic version will be located on the Information and Technology, Commandant (CG-612), CGWEB and WWW website at: http://CGCENTRAL.USCG.MIL/ (Once in CG Central, click on the "RESOURCES" Tab and then "DIRECTIVES".) http://www.uscg.mil/ccs/cit/cim/directives/welcome.htm. Single chapters of this Manual will also be made available via the Commandant (CG-112) Publications and Directives website at: http://www.uscg.mil/hq/g-w/g-wk/wkh/pubs/index.htm. For personnel who keep a paper copy of the Manual, remove and insert the following pages:

   a. Remove and insert the following pages:

| Remove: | Insert: |
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| Table of Contents, p. i thru iv, CH-10 | Table of Contents, p. i thru v, CH -11<br>Chapter 6, CH-11 |

6. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS. Environmental considerations were examined in developing this Manual and are incorporated herein.

7. PUBLICATIONS AVAILABILITY. The Publications cited in this chapter are available at: http://www.uscg.mil/ccs/cit/cim/directives/welcome.htm, or on the OSHA website at: http://www.osha.gov/.

8. FORMS/REPORTS. None.

PAUL J. HIGGINS/s/
Director of Health and Safety

Encl: (1) CH-11 to Safety and Environmental Health Manual, COMDTINST M5100.47

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**ENCLOSURES**

## CHAPTER 6 CONFINED SPACE SAFETY REQUIREMENTS

A. Purpose. The purpose of this chapter is to provide policy and guidance for implementing a comprehensive Coast Guard Confined Space Safety Program. Included in this chapter are general instructions for all Coast Guard confined space working environments and specific instructions for Vessel Afloat Entry/Repair confined space evolutions. This chapter does not create new confined space doctrine, rather, it assists the user in locating correct confined space policy for operational environments. The following operational missions and requirements are addressed in paragraph 6.G. (General Requirements) of this chapter:

1. Section 6.G.1 - Requirements for Contracts and Contractors
2. Section 6.G.2 - Atmospheric Testing Requirements
3. Section 6.G.3 - Aircraft Fuel Cell and Tank Entry/Repair
4. Section 6.G.4 – Defender Class Boat Repair
5. Section 6.G.5 - Maritime Law Enforcement Inspections
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7. Section 6.G.7 - Vessel Repair Dockside and Buoy Repair
8. Section 6.G.8 - Vessel Afloat Entry/Repair
9. Section 6.G.9 - Marine Safety Merchant Vessel Inspections

B. Scope. This instruction describes policy, procedures for administration, and direction of the Coast Guard Confined Space Safety Program. Intended users are all Coast Guard military and civilian personnel and contractors, working within confined space work environments.

C. Authority. The principal law addressing confined space entry is the OSH Act of 1970, Public Law 91-596, as amended.
(Public Law 91-596 84 STAT. 1590 91st Congress, S.2193, December 29, 1970, as amended)

D. Definitions.

1. Atmosphere. The immediate gaseous surrounding of a particular location or confined space, including normal air plus any air contaminants and oxygen deficiency or excess.

2. Aircraft Confined Space Program. The Aircraft Confined Space Program (ACSP) describes the processes, means, and methods used for recognizing, evaluating, and controlling potential confined space hazards associated with fuel cell and fuel tank maintenance and for communicating those hazards to employees. The ACSP was formerly known as the Aviation Gas Free Engineering Program (AVGFE).

3. Cold Work. Any work which does not involve riveting, welding, burning or other fire or spark producing operations.

4. Competent Person.

   a. The term "competent person" for purposes of this chapter means a person who is capable of recognizing and evaluating employee exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to be taken to ensure the safety of employees as necessary. The Competent Person has the authority to take prompt measures to eliminate hazards at the work site and has the experience to be capable of identifying these hazards.

   b. For Coast Guard Facilities including vessels and boats. A Coast Guard military or civilian member designated by their Commanding Officer who has successfully completed the Coast Guard three-day Shipyard Competent Person, Class C training course or its commercial equivalent. These persons will be designated, in writing, as a Shipyard Competent Person.

   c. For Commercial Vessels and Shipyards. A person designated in writing by their employer who has the documented training and knowledge required by 29 CFR 1915.7, Occupational Safety and Health Standards for Shipyard Employment. These persons will be designated, in writing, as a Shipyard Competent Person.

5. Confined Space. A space that must possess all of the following three distinct characteristics:

   a. Is large enough and so configured that an employee can bodily enter and perform assigned work;

   b. Has limited or restricted means for entry or exit (for example: tanks, fuel tanks, vessel silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and

   c. Is not designed for continuous employee occupancy. Examples include, but are not limited to: cargo tanks or holds; pump rooms; storage lockers; tanks containing flammable or combustible liquids, aircraft fuel tanks, gases, or solids; double bottoms/sides; voids; forepeak/rake ends; crawl spaces; or accessways. Confined spaces may also include machinery or other structures that may not normally be thought of as a space, such as: large piping systems, engine crankcases, large heat exchangers, scavenging spaces, boiler mud or steam drums, cofferdams, deck storage lockers, chain lockers, etc. The atmosphere within a confined space is the entire area within its bounds.

6. Confined Space Program Manager. The Confined Space Program Manager (CSPM) is responsible for the overall management of the Confined Space Entry

Program. The CSPM is trained in confined space hazard identification, evaluation of confined spaces, instrumentation, and atmosphere monitoring equipment, ventilation procedures, and emergency procedures.

7. Enclosed Space. Any space, other than a confined space, which is enclosed by bulkheads and possibly overheads. It includes cargo holds, tanks, quarters, and machinery and boiler spaces.

8. Entry. The action by which a person passes through an opening into a 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.

9. Entry Authority. In previous editions of this instruction, the Entry Authority (EA) was the Aviation Gas Free Engineer (AVGFE). The EA is anyone who is specifically trained and authorized to test and certify the entry permit to an aircraft confined space. In the context of this chapter, the EA responsibilities may also be performed by the Aircraft Confined Space Manager, a local Confined Space Program Manager (CSPM) or Assistant CSPM. The EA must be designated in writing by the CO or the CO's designee. Additionally, a Naval Gas Free Engineer or a Certified Marine Chemist can perform duties as an Entry Authority

10. Entry Permit. The written or printed document that is provided by the employer to allow and control entry into a permit space.

11. Entry Supervisor. A Coast Guard military or civilian member designated by their Commanding Officer who has successfully completed the Coast Guard Class C Shore Facility Confined Space Course or its commercial equivalent. The Entry supervisor is 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.

12. Flammable and Combustible Materials. All liquids, solids and gases having a flashpoint below 93.3°C (200°F). Also includes materials such as coolants, hydraulic fluids, lubricants and aerosols which require protection from ignition sources regardless of flashpoint. In this instruction, "Flammable" and "Combustible" are used interchangeably. The use of one includes the other.

13. Gas Free Engineer (GFE). A Coast Guard military officer or Engineering Petty Officer, E-6 or above, who successfully meets the Navy educational requirements for a Gas Free Engineer. An individual qualified in accordance with NSTM Chapter 074, Volume 3, Section 18 or 19, certified by the Commanding Officer and responsible for the administrative and technical aspects of the activity gas free engineering program. Gas Free Engineer and Gas Free Engineering Petty Officer are used interchangeably. The use of one includes the other.

14. Hazardous Material. Any material that, because of its quantity, concentration or physical, chemical or infectious characteristics, may pose a substantial hazard to human health or the environment when released or spilled into the environment.

15. Hot Work. Any activity involving riveting, welding, burning or the use of powder-actuated tools or similar fire-producing operations. Grinding, drilling, abrasive blasting, or similar spark-producing operations are also considered hot work except when such operations are isolated physically from any atmosphere containing more than 10 percent of the lower explosive limit of a flammable or combustible substance.

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16. Immediately Dangerous to Health and Life (IDLH). An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere as found in 29 CFR 1910.120.

17. Marine Chemist. An individual who possesses a current and valid Marine Chemist Certificate issued by the National Fire Protection Association.

18. Officer In Charge, Marine Inspection (OCMI). The OCMI administers the Coast Guard's "field" activities within a marine inspection zone delineated by Federal regulation 33 CFR.

19. Permit-Required Confined Space. A shore facility (or aircraft fuel tank) confined space that has one or more of the following characteristics:

    a. Contains or has the potential to contain a hazardous atmosphere;

    b. Contains a material that has the potential for engulfing an entrant;

    c. 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

    d. Contains any other recognized serious safety or health hazard.

20. Safe for Hot Work. A space that meets all of the following criteria: the oxygen content of the atmosphere does not exceed 22.0 percent by volume; the concentration of flammable vapors in the atmosphere is less than 10 percent of the lower explosive limit (LEL); and the residues or materials in the space are not capable of producing a higher concentration than permitted in the above, under existing atmospheric conditions in the presence of hot work and while maintained as directed by a Marine Chemist or Competent Person.

21. Safe for Workers. A space that meets the following criteria: the oxygen content of the atmosphere is at least 19.5 percent and below 22.0 percent by volume; the concentration of flammable vapors is below 10 percent of the lower explosive limit (LEL); any toxic materials in the atmosphere associated with cargo, fuel, tank coatings, or inerting media are within permissible concentrations at the time of the inspection; and any residues or materials associated with the work authorized by a Marine Chemist, Certified Industrial Hygienist (CIH), or Competent Person that will not produce uncontrolled release of toxic materials under existing atmospheric conditions while maintained as directed.

22. Shipyard and Shipyard Employment. A facility engaged in the construction or repair of ships, boats and buoys. This includes ship, boat and buoy repairing; shipbuilding; shipbreaking; and related employments.

E. Background.

1. Confined space entry is one of the most dangerous work evolutions that Coast Guard members and contractors are asked to perform. Working in confined spaces has many hazards and conditions not found in a typical work environment.

2. Usually in a confined space fatality, the entrant is overcome by a change in the atmosphere and they are unable to get out of the space before being overcome. Case history also shows that in multiple fatalities, the attendant who is supposed to remain at the entry point goes in to assist their co-worker and is also overcome. Secondary to deaths related to atmosphere issues, are failure to properly isolate the confined space and control all hazardous energy (steam, electrical, hydraulic and mechanical).

3. Personnel entering or working in confined spaces may encounter a number of potentially serious hazards. These may include atmospheric hazards such as lack of sufficient oxygen to support life, excessive oxygen levels that increase the danger of fire or explosion, presence of flammable or explosive atmospheres and materials, or the presence of toxic gases or materials. In addition, the confined work space may include electrical or mechanical hazards that must be locked out, or engulfment or entrapment hazards. Many of these hazards are not readily apparent, detectable by odor, or visible, which may result in workers entering confined spaces without consideration of the potential dangers. Workers must consider that all confined spaces contain the most unfavorable and unsafe conditions and will NOT enter or work in these spaces until tests, evaluations, and prescribed requirements of this standard and locally developed procedures are preformed to ensure safe conditions exist prior to entry and are maintained during the entire work period.

F. Roles and Responsibilities.

1. U. S. Coast Guard. The Coast Guard is responsible for and committed to providing an effective confined space safety program for its personnel. The Coast Guard policy is to reduce the likelihood of injuries, and protect the health of all active duty, reserve, civilian and contract Coast Guard personnel.

2. Commandant (CG-113). Office of Safety and Environmental Health (CG-113) shall develop policy and guidance to assist commands in implementing confined space safety programs. The Shore Safety Division (CG-1132) will promulgate, publish and revise confined space safety policy.

3. Maintenance and Logistic Commands (MLC). The safety and environmental health staffs at the MLCs [MLC (kse)] shall assist commands in the development, evaluation and training of confined space safety programs. The MLCs shall review each command's written confined space safety policy during command visits. The MLCs shall assist on mishap investigations when requested by commands and participate on Mishap Analysis Boards (MAB) in accordance with Chapter 3 of this manual as directed by Commandant (CG-113).

4. Unit Safety Coordinator (USC). The USC shall assist their command in the development and implementation of the command's confined space safety programs.

5. Sector Commanders, Commanding Officers and Officers-In-Charge. Sector Commanders, Commanding Officers and Officers-in-Charge shall appoint in writing a named individual responsible for the management and execution of that unit's confined space safety program. Sector Commanders, Commanding Officers and Officers-in-Charge shall fully support the unit confined space safety program, to include providing both human and financial resources.

6. Individuals. Individuals shall comply with the all the requirements of this chapter. Individuals should consult the advice of the Sector Commanders, Commanding Officers, Officers in Charge, Safety and Environmental Health Officers, or Unit Safety Coordinators if there are concerns or questions regarding confined space safety.

G. General Requirements.

1. Contracts and Contractors.

a. Contracts that may involve confined space construction or repair work at Coast Guard facilities shall include, and civilian contract personnel shall adhere to, the following requirements:

(1) Contractors working on Coast Guard facilities shall comply with 29 CFR 1910.146 for shore based confined space entries.

Contractors doing power transmission and distribution work at facilities shall comply with 29 CFR 1926.956. Telecommunications contractors shall comply with 29 CFR 1910.268. These requirements shall be included in the contract.

(2) The contractor shall provide confined space entry personnel, that meet all the requirements of the relevant OSHA regulations such as 29 CFR 1910.146, 1915, or 1926, prior to entry into any confined space on all Cost Guard facilities.

(3) Coast Guard confined space entry services; such as atmospheric testing, shall not be provided for contractor personnel. Contractor confined space Entry Supervisors, Attendants, and Entrants shall meet the requirements set forth in the OSHA Standard, Permit Required Confined Space Entry 29 CFR 1910.146, prior to entry into any confined spaces on all Coast Guard facilities.

(4) Contract confined space entry services shall not be provided for Coast Guard military or civilian personnel, unless the contractor is an NFPA Marine Chemist or a pre-approved Shipyard Competent Person.

(5) Contracts shall clearly require the contractor to provide or arrange for confined space rescue of contract personnel. `

b. Coast Guard regulations make no provision for government confined space entry personnel to perform confined space entry for contractor operations. Performance of such functions may involve assumption of liability by the Coast Guard in the event of a mishap. Therefore, government confined space entry personnel shall not certify spaces for contractor operations or personnel except where failure to do so would create an extreme emergency and would endanger personnel and property, and may therefore, create even greater liability. Such cases must normally be authorized by the Commanding Officer and shall normally be personally conducted and supervised by the unit confined space entry manager, except where the nature of the emergency is so extreme that delays created by seeking the Commanding Officer's approval or the personal services of the confined space entry manager would create a greater danger.

c. Where Coast Guard personnel and contractor personnel on a Coast Guard facility are to occupy the same confined space for a given task or operation, the space in question shall be tested and certified by the Coast Guard facility confined space Gas Free Engineer, Entry Supervisor or Shipyard Competent Person in accordance with the requirements of this chapter. However, such testing, certification, and subsequent notification

shall in no way relieve the contractor of any pertinent statutory obligations for the safety and health of contractor personnel, or the requirement to conduct their own testing and certification, and the contractor shall be so informed.

d. Exceptions. When the contract language specifically allows for the Coast Guard to provide equipment to a contractor, the contractor must test and certify the suitability of that equipment and assume the risk of use thereof. The assumption of risk must be in writing. However, under no circumstances shall the Coast Guard provide gas detection or gas monitoring equipment for contractor use.

2. Atmospheric Testing Requirements.

a. Before an employee enters **any** confined space, the internal atmosphere shall be tested with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee, who enters the confined space, or that employee's authorized representative, shall be provided an opportunity to observe the pre-entry testing required by this paragraph. All atmospheric tests shall be conducted utilizing an intrinsically safe, Underwrites Laboratories (UL) approved, properly calibrated atmospheric testing equipment; such as a four, five or six gas meter.

b. Testing and Examination. The following provisions shall be incorporated, in the sequence presented below, into test and examination procedures:

(1) Initial testing shall be performed from outside the space. Testing into the interior of the space may be performed by drop tests or insertion of sample probes and hoses into the space. Testing of all areas within the space to be entered is required. In some cases, this will require entry into areas that have been tested and found satisfactory to permit testing otherwise inaccessible areas.

(2) First, test the atmosphere for percentage of oxygen. Oxygen level shall be between 19.5% to 22%. Oxygen levels less than 19.5% or greater than 22% represent potentially dangerous situations. (29 CFR 1910.146, Permit Required Confined Spaces, allows for the oxygen limits to be 19.5% - 23.5%).

**NOTE 1: For best practice in confined space, consider the following: the space should have an oxygen level of 20.8% +/- 0.2% indicated on the four gas meter. Whenever oxygen readings are outside of this range, this should be an indication to the tester that either the oxygen has been consumed or**

**displaced by other gases in the space. Keeping in mind that for displacement, 1% volume = 10,000 ppm of "something". Two significant causes of oxygen deficiency are the oxidation process (rusting of metal) and decay of organic materials.**

(3) Second, test the atmosphere for percentage of lower explosive limit (LEL). OSHA safety standards require that combustible atmospheres be maintained below 10% of the lower explosive/flammable limit. However, due to the many variables involved with testing instruments and the frequent inability to obtain finite readings, any reading observed on the combustible gas test instrument should be considered as evidence of potentially unsafe conditions.

(4) Third, test the atmosphere for the presence of any potentially toxic materials. Specific toxic hazards are dependent upon the nature of the space and its contents or previous contents.

(5) When initial tests indicate the presence of hazardous concentrations of oxygen, flammables/combustible gases, or toxic substances, as defined above, personnel shall not enter the space. The space shall be ventilated and/or cleaned to remove flammable and toxic atmospheres and provide proper oxygen levels. Following ventilation and/or cleaning, the confined space must again be fully tested for the presence of hazardous concentrations of oxygen levels, flammables/combustible gases, and as appropriate, toxic substances.

(6) The following matrix displays acceptable limits for confined space entry. The matrix displays the minimum four gases that should be tested. Additional testing could be required based upon the nature and previous contents of the space. Please note, that if the gas readings change significantly from the initial readings, investigation should be conducted to find the source of the change.

| | **GAS** | **PERMISSIBLE ENTRY LEVEL** |
|---|---|---|
| Test 1 | Oxygen | 19.5% to 22% (Ideal is 20.8%) |
| Test 2 | Combustible Gas | Less than 10% of LEL |
| Test 3 | Carbon Monoxide | Less than 25 ppm |
| Test 4 | Hydrogen Sulfide | Less than 10 ppm |

3. Aircraft Fuel Cell and Tank Entry/Repair.

a. Scope. This section applies to all Coast Guard air stations or facilities where personnel work on or enter into aircraft fuel tanks.

b. References.

(1) 29 CFR 1910.146, Permit Required Confined Spaces, available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9797&p_table=STANDARDS

(2) NAVAIR 01-1A-35, Maintenance Instructions, Aircraft fuel Cells and Tanks, available on the Aircraft Repair and Supply Center (ARSC) intranet web site.

(3) ACMS Maintenance Procedure Cards (for maintenance and repair of aircraft fuel tanks) are available on the Aircraft Repair and Supply Center (ARSC) intranet web site. The following are available: General, Fuel System Standard Practices, C-130, HH-60, HH-65 and HU-25.

c. Requirements.

(1) Commanding Officers of Coast Guard air stations shall certify and recertify on an annual basis, in writing, their unit's Entry Authority (EA).

(2) Work on or entry into aircraft fuel tanks shall be controlled in accordance with the references 3.b.(1) through 3.b.(3) above, in this section. Work on or entry into fuel tanks is prohibited until the tanks are tested and certified.

(3) Entry Authority (EA) Duties and Responsibilities. The EA has primary responsibility for determining if a fuel cell has safe levels of oxygen, explosive and toxic vapor. The EA shall:

(a) Conduct tests of fuel cells as required by this manual.

(b) Issue, maintain, post, and update Permits.

(c) Stop work and evacuate personnel from a fuel cell when an unsafe condition is detected or suspected. Immediately notify the Entry Supervisor and the Confined Space Program Manager of the problem. Ensure all test equipment is calibrated, as required.

(d) Ensure the Rescue Plan is posted and emergency personnel and equipment are in place. Ensure that all personnel are familiar with applicable procedures for summoning aid prior to authorizing entry or work.

(e) Report up the chain of command any conditions detrimental to continued safe conduct of fuel cell related maintenance.

(f) Certify Hot Work if trained by the local command/station CSPM and be designated in writing by the Commanding Officer.

(g) Perform the duties of the Aircraft Confined Space Program Manager (when assigned).

(4) Entry Authority's shall meet the training requirements of Section 6.H.(4) of this chapter.

4. Defender Class Boat Repair.

a. Scope. This section applies to the repair of all Defender A-Class (RB-HS) and Defender B-Class (RB-S) Boats where hot work is anticipated or required. The configuration of these boats requires all hot work to be treated as if confined spaces are involved. This is an important point, as the size and configuration of the enclosed and confined spaces aboard these boats do not meet the large-enough-for-bodily-entry criterion. As such, the provisions of this chapter would not normally apply.

b. References.

(1) Joint Naval Engineering Directive (MLCA/MLCP NED) – USCG Fleet Wide Defender Class Response Boat Gas-Free Procedures, TECH PUB number 4622

(2) 29 CFR 1915, Part B, Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment, available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12927

c. Requirements.

(1) Hot work and repair of fuel tanks on Defender Class Response Boats is unique compared to other types of Coast Guard vessels and requires strict adherence to reference 4.b.(1) in this section.

(2) Before attempting to perform any work on a Defender Class Response Boat, a physical inspection shall be performed with caution, as fuel vapor and other hazards may be present. These inspections shall be made by a Gas Free Engineer (GFE), the accomplishing activity's Shipyard Competent Person, or by a Marine Chemist.

(3) Contracts for repair of Defender Class Response Boats at Coast Guard facilities shall include the requirements of references 4.b.(1) and 4.b.(2) in this section. In accordance with the requirements of Section 6.G.1.a.(3) of this chapter, confined space or hot work services shall not be provided by Coast Guard members for contractor personnel.

(4) Sector Commanders, Commanding Officers and Officers-in-Charge of Coast Guard units that have Defender Class Response Boats will ensure that:

(a) One or more persons at the unit are trained and designated as the unit Shipyard Competent Person or Gas Free Engineer.

(b) For hot work, all necessary precautions in references 4.b.(1) and 4.b.(2) in this section are followed.

(c) Prior to hot work in "core hull, red zone spaces" as defined in reference 4.b.(1) in this section, the work area has been tested and certified by a Marine Chemist as "Safe for Hot Work."

(d) Prior to hot work in all other spaces, that the spaces are certified "Safe for Workers" and "Safe for Hot Work" by the unit's designated Shipyard Competent Person or Gas Free Engineer.

(5) Unit Shipyard Competent Persons or Gas Free Engineers are responsible for:

(a) Ensuring that all spaces requiring testing are tested for oxygen content, flammable atmospheres and toxic atmospheres and residues.

(b) Conducting and documenting tests to maintain the conditions of a Marine Chemist's Certificate, if one has been issued.

(c) Prior to any hot work or confined space entry, completing and posting at the entrance to the confined or enclosed space a Log of Inspections and Tests. A sample log may be found at: http://www.osha.gov/SLTC/etools/shipyard/shiprepair/hotwork/competentpersonlog.html

(6) Coast Guard Gas Free Engineers and Shipyard Competent Persons, shall meet the training requirements of Section 6.H(6) or 6.H(7) of this chapter, respectively.

5. Maritime Law Enforcement Inspections.

a. Scope. This section applies to Coast Guard Maritime Law Enforcement boarding operations.

b. References.

(1) Maritime Law Enforcement Manual, COMDTINST M16247.1 (Series), is available at the Coast Guard Directives intranet web site. Appendix H, paragraph H10 (page H 6), and Paragraphs H22, 22a, 22b, and 22c (page H 14) give specific guidance for confined space entry requirements.

(2) Naval Engineering Manual, COMDTINST 9000 6E, Chapter 077, Section B, Gas Free Engineering/Confined Space Entry, is available at the Coast Guard Directives intranet web site.

(3) Naval Ships Technical Manual, Chapter 074, Volume 3, Gas Free Engineering, is available at the MLC Atlantic intranet web site.

c. Requirements.

(1) In accordance with reference 5.b.(1) in this section, boarding personnel shall not enter any confined spaces that are suspected of hazardous material contamination or oxygen depletion until a Designated Competent Person (Marine Chemist, Gas Free Engineer, Gas Free Engineering Petty Officer or Shipyard Competent Person) has tested the space and certified it safe to enter.

(2) Sector Commanders, Commanding Officers and Officers-in-Charge of Coast Guard cutters shall ensure that a Designated Competent Person is available to accompany the boarding team. The Designated Competent Person will be qualified to test and certify confined spaces safe for personnel entry. Note: The

Designated Competent Person is not required to be a qualified member of the boarding team.

(3) Designated Competent Persons are responsible for:

(a) Certifying confined spaces safe for entry by ship forces personnel during law enforcement boarding operations. The Certified Marine Chemist, Gas Free Engineer or Shipyard Competent Person shall perform necessary atmospheric testing/monitoring with appropriate, calibrated and maintained equipment. All spaces requiring testing shall be tested for oxygen content, flammable atmospheres and toxic atmospheres and residues.

(4) Designated Competent Persons shall meet the Gas Free Engineer or Gas Free Engineering Petty Officer or Shipyard Competent Person training requirements as set forth in Section 6.H.3 or 6.H.7. of this chapter, respectively.

6. Shore-Based Confined Space.

a. Scope. This section applies to all Coast Guard shore facilities except those engaged in the construction or repair of cutters and boats, or where confined space entry would fall under specialized standards, e.g., power transmission or telecommunications. In the case of cutter and boat construction and repair, see paragraph 6.G.7. (Vessel Repair Dockside).

b. References. 29 CFR 1910.146, Permit Required Confined Spaces, available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9797

c. Requirements.

(1) Entry and work in confined spaces at Coast Guard shore facilities shall be controlled in accordance with reference 6.b. in this section. Entry into permit-required confined spaces is prohibited until the spaces are tested and certified safe for entry.

(2) Sector Commanders, Commanding Officers and Officers-in-Charge of Coast Guard shore facilities shall determine whether the unit has “permit-required” confined spaces. The MLC (kse) staff can assist in determining whether a unit has permit-required confined spaces.

(3) Sector Commanders, Commanding Officers and Officers-in-Charge of Coast Guard shore facilities having permit-required confined spaces shall designate one or more Entry Supervisors who:

(a) Shall evaluate confined spaces, identify permit - required confined spaces, post warnings and prevent access to permit - required confined spaces, advise contractors of confined spaces and anticipate hazards, and require the contractor to brief the unit on findings after entry.

(b) Shall ensure that, prior to entry, all permit-required confined spaces are tested and certified safe for entry.

(c) Shall ensure that all spaces requiring testing are tested for oxygen content, flammable atmospheres and toxic atmospheres and residues.

(d) Shall ensure that prior to any entry, completing, signing and posting at the entrance to the confined space the Confined Space Entry Permit. Sample permits are available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?_table=STANDARDS&p_id=9801

(e) Shall ensure compliance with the other requirements of reference 6.b. in this section, including the requirements for personnel retrieval and emergency response.

(f) Shall ensure that the unit has a written confined space safety program addressing the key elements of reference 6.b. in this section. Generic sample written programs are available from the cognizant MLC (kse) staff.

(4) If the unit does not have permit-required confined spaces, the requirements of this section do not apply and no further action is required.

(5) For units that will not permit their personnel to enter confined spaces and will contract all such work, responsibilities are limited to: evaluating confined spaces, identifying permit - required confined spaces, posting warnings and preventing access to permit - required confined spaces, advising contractors of confined spaces and anticipated hazards, and requiring the contractor to brief the unit on findings after entry.

(6) Confined Space Entry Supervisors shall meet the training requirements of paragraph 6.H.5. of this chapter.

(5) Contracts for confined space construction or repair work at Coast Guard shore facilities shall include the requirements of reference 6.b. in this section, unless the work falls under specialized confined space entry standards; e.g., power transmission or telecommunications.

7. Vessel Repair Dockside and Buoy Repair.

a. Scope. This section applies to cutters, boats and buoys under construction or repair at a Coast Guard repair facility (shipyard as defined above in the definitions section) as well as to the entire facility (Shipyard) where the work is done. This section does not apply to Coast Guard cutters either underway or pier-side if the repair work is accomplished solely by ship forces personnel. In this case, see paragraph 6.G.8. of this chapter (Vessel Afloat Entry/Repair).

b. References.

(1) 29 CFR 1915, Subparts A and B, Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment, available at: http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1915

(2) Aids to Navigation Manual – Technical, COMDTINST 16500.3A http://www.uscg.mil/ccs/cit/cim/directives/welcome.htm

c. Requirements.

(1) Entry and work in confined or enclosed spaces on cutters or boats at Coast Guard repair facilities (Shipyards) shall be controlled in accordance with reference 7.b.(1) in this section.

(2) Sector Commanders, Commanding Officers and Officers-in-Charge of Coast Guard repair facilities (Shipyards) shall ensure that hot work on cutters and boats is not performed in any confined or enclosed space that contains or has contained flammable liquids, as well as in any immediately adjacent space, until the work area has been tested and certified by a Marine Chemist as “Safe for Hot Work.”

(3) Gas-Free Testing of Steel Buoys.

(a) Be aware that combustible gases could be present in the buoy interior hull. Before beginning any work on the buoy, the interior hull shall be tested for combustible gases using a combustible gas monitor or explosive meter. Insert the probe from the meter into the buoy body air test fitting.

(b) If no combustible gases are detected, then work can be performed on the buoy exterior.

(c) If combustible gases are detected, the buoy hull shall be purged with compressed air to displace the combustible atmosphere. If the hull is equipped with two air test fittings (see reference 7.b.(2), paragraph 2.E.4.m), ensure that both fittings are open to improve the air flow.

(d) If entry must be made into the buoy for repairs, the buoy will be considered a confined space and all requirements of this section shall be met.

(4) Sector Commanders, Commanding Officers and Officers-in-Charge of Coast Guard repair facilities (Shipyards) shall designate one or more Shipyard Competent Persons who shall be responsible for:

(a) Certifying all confined and enclosed spaces on cutters, boats and buoys as “Safe for Workers” and “Safe for Hot Work”, except for those spaces requiring a Marine Chemist Certificate.

(b) Ensuring that all spaces requiring testing are tested for oxygen content, flammable atmospheres and toxic atmospheres and residues.

(c) Conducting tests to maintain the conditions of a Marine Chemist’s Certificate.

(d) Prior to any cutter or boat confined space entry, completing and posting at the entrance to the confined or enclosed space a Log of Inspections and Tests. A sample log may be found at:
http://www.osha.gov/SLTC/etools/shipyard/shiprepair/hotwork/competentpersonlog.html
Or, if the confined space was cleared by a Gas Free Engineer, the Navy Gas Free Certificate and Test Log can be used (The Navy Gas Free Certification and test log are available through the National Stock System, stock number

0107-LF-011-7400; directions for filling out the log are provided in reference 7.b.(2) in this section).

(5) Competent Persons shall meet the training requirements in paragraph 6.H.7. of this chapter.

(6) Contracts for the construction or repair of Coast Guard cutters and boats shall include the requirements of references in this section and those described in 6.G.1.

8. Vessel Afloat Entry/Repair.

a. Scope. This section applies to cutters underway or dockside if the confined space entry, repair or damage control work is accomplished solely by ship forces personnel. This section does not apply to dockside or shipyard hot work performed by Coast Guard civilian personnel or dockside or shipyard hot or cold work performed by contractor personnel. In the case of hot work preformed by Coast Guard civilian personnel, section 6.G.7. of this chapter applies. For contracts and contractor personnel, section 6.G.1. of this chapter applies.

b. References.

(1) Naval Engineering Manual, COMDTINST 9000 6E, Chapter 077, Section B, Gas Free Engineering/Confined Space Entry, available at the Coast Guard Directives intranet web site.

(2) Naval Ships Technical Manual, Chapter 074, Volume 3, Gas Free Engineering, available at the MLC Atlantic intranet web site.

(3) 29 CFR 1915, Subparts A and B, Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment, available at: http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1915

c. Requirements.

(1) Commanding Officers and Officers-in-Charge of Coast Guard cutters shall certify and recertify, on an annual basis in writing, their unit's Gas Free Engineer or Gas Free Engineering Petty Officer.

(2) Hot work, entry and work in confined spaces on Coast Guard cutters and boats underway shall be controlled in accordance with the references above in this section. Hot work, entry or work in confined spaces is prohibited until such spaces have been

inspected, tested and issued a Navy Gas Free Certificate and Test Log by a certified Gas Free Engineer (The Navy Gas Free Certification and test log are available through the National Stock System, stock number 0107-LF-011-7400; directions for filling out the log are provided in reference 8.b.(2) in this section).

(3) Certified Gas Free Engineers or Gas Free Engineering Petty Officers are responsible for:

(a) Certifying cutter confined spaces safe for entry by ship forces personnel and for hot/cold work.

(b) Ensuring that all spaces requiring testing are tested for oxygen content, flammable atmospheres and toxic atmospheres and residues.

(c) Prior to any entry, completing and posting at the entrance to the cutter confined space, the Navy Gas Free Certificate and Test Log.

(4) Reference 8.b.(2) in this section, provides detailed guidance on the testing, inspection, evaluation, and certification of entry into or work in a confined or enclosed space. All Coast Guard cutters and boats shall comply with the information and procedures outlined in this reference.

(5) All confined spaces shall be considered hazardous. Entry or work in confined spaces is prohibited until such spaces have been inspected, tested, and issued a Navy Gas Free Certificate and Test Log by a certified Gas Free Engineer or Gas Free Engineer Petty Officer.

(6) For commercial contract work that requires entry into and/or work in a confined or enclosed space, contractors shall provide a National Fire Protection Association (NFPA) Certified Marine Chemist, Industrial Hygienist, or other Qualified Person or Competent Person, as specified under the provisions of reference 8.b.(3) in this section.

(a) NOTE 1: Coast Guard Gas Free Engineers or Gas Free Engineering Petty Officers are not authorized to certify spaces as gas free (hot work or cold work) for commercial contract work.

(b) NOTE 2: Coast Guard Gas Free Engineers or Gas Free Engineering Petty Officers are authorized to certify spaces

for cold work only for Coast Guard civilian/DOD civilian personnel and active duty military.

(c) NOTE 3: Entry into any space suspected of or determined to be Immediately Dangerous to Life and Health (IDLH) is **STRICTLY PROHIBITED, EXCEPT** when authorized by the Commanding Officer or the Officer In Charge during **EXTREME EMERGENCY** (e.g., rescue efforts, emergency repairs, damage control, and firefighting). Prior to entry, personnel shall be outfitted with the proper respiratory protection as defined by reference 8.b.(2) in this section, and other such safety equipment as necessary to protect personnel entering the confined space.

(7) Requirements for the education and certification of Coast Guard Gas Free Engineers or Gas Free Engineering Petty Officers are listed in paragraph 6.H.3. of this chapter. Commanding Officers and Officers-in-Charge are responsible for written certification and re-certification of their unit's Gas Free Engineer or Gas Free Engineering Petty Officer. The following waivers are only applicable to afloat Engineer Petty Officers (EPO) (E-6 thru E-9):

(a) E-6 EPOs assigned to a cutter and meeting the educational requirements set forth in reference 8.b.(2) in this section are authorized to be certified as Gas Free Engineers.

(b) All EPOs assigned to cutters are eligible for certification immediately upon satisfactory completion of Gas Free Engineer school. The 40-hour on-the-job training requirement is waived.

(c) EPOs assigned to cutters must issue at least one Gas Free Certificate per quarter to keep certifications current, vice 10 per year as stated in reference 8.b.(2) in this section.

(d) EPOs must be re-certified as Gas Free Engineer or Gas Free Engineering Petty Officers when assigned to a different cutter. For recertification purposes, one Gas Free Certificate must be issued in the presence of a Certified Gas Free Engineer or Gas Free Engineer Petty Officer.

9. Marine Safety Merchant Vessel Inspections.

a. Scope. This section applies to all Coast Guard marine inspection personnel conducting any type of inspection or investigation of a commercial vessel where inspection and entry into confined spaces aboard

commercial vessels may take place. This section applies while at a shipyard, anchorage, or afloat.

b. References.

(1) 29 CFR 1915, Part B, Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment, available at: http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1915

(2) Marine Safety Manual, COMDTINST M16000, Volume 1, Chapter 10, available at: http://www.uscg.mil/ccs/cit/cim/directives/welcome.htm

c. Requirements.

(1) Entry and work by Coast Guard personnel in confined or enclosed spaces on commercial vessels or at commercial shipyards shall be controlled in accordance with references 9.b.(1) and 9.b.(2) in this section. A certified Marine Chemist shall conduct the initial inspection and certify all confined spaces on merchant vessels "Safe for Workers" before entry by Coast Guard personnel.

(2) If a Marine Chemist is not available, such as for overseas inspections in remote areas or inspections on small passenger or fishing vessels, as defined in 46 CFR, the Officer in Charge of Marine Inspection (OCMI) may develop local policy for the designation of unit personnel to act as Competent Persons and provide initial certification of spaces for Coast Guard members. Competent Persons must meet the Coast Guard shipyard training requirements of Section 6.H.7. of this chapter.

(3) If a Coast Guard Marine Inspector is familiar with and has confidence in a commercial Shipyard's Competent Person program, then the Competent Person may maintain certificates issued by a Marine Chemist and Coast Guard personnel may enter the confined spaces covered by the certificates. If the Marine Inspector does not have confidence in the shipyard's program, then the matter shall be brought to the attention of the OCMI prior to entering spaces in question. If the Competent Person has not properly maintained the Marine Chemist Certificate, the Marine Chemist is required to reissue the certificate prior to reentry into the confined space. NFPA rules require a Competent Person to reexamine the confined space at least every 24 hours or if conditions under which the certificate was issued under change.

(4) A personal oxygen meter with an alarm set at 19.5% (low oxygen) and 22% (high oxygen) oxygen shall be worn by all Coast Guard personnel entering confined spaces.

(5) An emergency escape breathing device shall be carried by all Coast Guard personnel:

(a) Near compressed or liquefied gas cargos.

(b) In pump rooms on vessels carrying cargo.

(c) During entries into tanks that have carried Subchapter O cargoes.

(d) During testing of fixed fire extinguishing systems, such as halon or carbon dioxide.

(e) When entering other spaces that have the potential for suddenly changing atmospheres.

H. Training.

1. One of the key elements of successful and safe confined space entry is training. All Coast Guard personnel who are engaged in confined space entry work shall attend and successfully complete required training prior to entering confined spaces.

2. Shore Facility Confined Space Entry (PMIS #500096) and Shipyard Competent Person training (PMIS #500799) are offered at the Coast Guard resident training centers in Yorktown, Virginia and Petaluma, California. Training requests for this training and course information can be obtained at the Training Quota Management Center (TQC) website: http://www.uscg.mil/hq/tqc/Index.shtm Equivalent commercial courses are also acceptable.

3. Gas Free Engineering Officer and Gas Free Engineering Petty Officer for Surface (Afloat) Operations training is provided by the U.S. Navy.

a. A nine day U. S. Navy Gas Free Engineering Officer curriculum has been incorporated into the seven week Damage Control Assistant Course, TQC Course #240140, Damage Control Assistant SE.

b. A four day Gas Free Engineering Petty Officer course for Machinists Technician (MK) or Damage Control (DC) E-6 or above is also provided by the Navy, TQC Course #241665, Gas Free Engineer.

c. Training requests for these training courses and information can be obtained at the TQC website: http://www.uscg.mil/hq/tqc/Index.shtm

4. Entry Authorities shall successfully complete Shore Facility Confined Space Entry and Rescue, class #500096, available at the Training Quota Management Center (TQC) website: http://www.uscg.mil/hq/tqc/Index.shtm
Equivalent commercial courses are also acceptable.

5. Shore Facility Entry Supervisors shall successfully complete the Shore Facility Confined Space Entry and Rescue, class #500096, available at the Training Quota Management Center (TQC) website: http://www.uscg.mil/hq/tqc/Index.shtm
Equivalent commercial courses are also acceptable.

6. Vessel Afloat Gas Free Engineers and Gas Free Engineering Petty Officers shall successfully complete the U. S. Navy course referenced in Section 6.H.3. above.

7. Vessel Repair Dockside Competent Persons shall successfully complete the "Shipyard Competent Person" training, course #500799, available at the Training Quota Management Center (TQC) website:
http://www.uscg.mil/hq/tqc/Index.shtm
Equivalent commercial courses are also acceptable.