



DEPARTMENT OF THE NAVY  
OFFICE OF THE SECRETARY  
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WASHINGTON DC 20350-1000

SECNAVINST 5100.16B  
ASN (I&E)  
11 April 2008

SECNAV INSTRUCTION 5100.16B

From: Secretary of the Navy

Subj: NAVY GAS FREE ENGINEER CERTIFICATION/RECERTIFICATION  
PROCESS

Ref: (a) Asst Sec Labor (OSHA) ltr of 25 Jan 94 (NOTAL)  
(b) NAVSEA S6470-AA-SAF-010 Rev.03, Naval Maritime  
Confined Space Program (NOTAL)  
(c) DASN(Safety) ltr Subject: "Navy Gas Free Engineer  
Certification Board Oversight Process" of  
November 17, 2005

Encl: (1) Qualifications for Navy Gas Free Engineers  
(2) Examples of Acceptable On-the-Job Training Record for  
Gas Free Engineers, Acceptable Full Time Experience  
Record, and Acceptable Summary of Professional  
Activities Record

1. Purpose. To set policy for the certification and recertification of Navy Gas Free Engineers (GFEs) who perform GFE certifications for Naval maritime facilities and to restate the functions and authority of the Navy GFE Certification Board to ensure compliance with the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) Alternate Standard requirements, per reference (a). The instruction has been revised to include new recordkeeping requirements for the Navy GFE Certification Board and to clarify the qualifications for certification and recertification of Navy GFEs.

2. Cancellation. SECNAVINST 5100.16A.

3. Definitions

a. Navy Gas Free Engineer (GFE). The holder of a valid certificate issued by the Navy GFE Certification Board establishing the holder as a person qualified to ensure that confined space operations incident to construction, overhaul, repair, lay-up, or shipbreaking of Naval vessels are undertaken safely. The qualifications are described in enclosure (1).

b. Candidate. A Navy employee applying for certification or recertification as a GFE.

c. Navy GFE Certification Board. A panel of personnel organized for the purpose of certification and/or recertification of Navy GFEs.

d. Application Forms. Office of the Chief of Naval Operations Form 5100/28 (OPNAV 5100/28), Application For Certification As a Navy Gas Free Engineer, must be completed by the candidate and forwarded to the Navy GFE Certification Board when applying for initial certification as a Navy GFE. OPNAV 5100/29, Application for Recertification as a Navy Gas Free Engineer, shall be completed and forwarded to the Board by GFEs seeking recertification. Enclosure (2) provides examples of: (1) Acceptable On-the-Job Training Record for Gas Free Engineers, (2) Acceptable Full Time Experience Record, and (3) Acceptable Summary of Professional Activities Record.

e. Naval Maritime Facilities. Naval facilities where maritime operations are performed on or in Naval vessels or vessel sections. Vessels include all Naval ships, port operations and port services watercraft, barges, floating cranes, derricks, and floating drydocks. Specific definitions of terms are included in 29 Code of Federal Regulations (CFR) 1915.4 and OPNAV Instruction (INST) 5100.23G. Maritime operations include shipbuilding, ship repair, shipbreaking, and related employment. Naval maritime facilities include shipyards, ship repair facilities, intermediate maintenance facilities, regional maintenance centers, and Trident refit facilities.

#### 4. Background

a. The OSHA regulations at 29 CFR 1915.14(a) (1) require testing and certification "Safe for Hot Work" by a Marine chemist or a U.S. Coast Guard authorized person when hot work is performed in or on any of the following confined and enclosed spaces and other dangerous atmospheres, boundaries of spaces, or pipelines:

(1) Within, on, or immediately adjacent to spaces that contain or have contained combustible or flammable liquids or gases.

(2) Within, on, or immediately adjacent to fuel tanks that contain or have last contained fuel.

(3) On pipelines, heating coils, pump fittings or other accessories connected to spaces that contain or have last contained fuel.

b. Likewise, OSHA regulation 29 CFR 1915.12(c)(3) requires confined spaces that cannot be ventilated to within Permissible Exposure Limits (PELs) or are immediately dangerous to life or health to be tested and certified "Enter with Restrictions" or "Safe for Workers" by a Marine chemist or certified industrial hygienist.

c. Under provisions of 29 CFR 1960.17, OSHA, by reference (a), authorizes the Navy to use a Navy-certified GFE in lieu of a certified Marine chemist. The authorization was granted by OSHA with a stipulation that a Navy GFE certification board be established to review candidate applications and certify and recertify Navy GFEs.

5. Requirements. The requirements of the Naval Maritime Confined Space Entry Program for entry into and work in or on confined or poorly ventilated enclosed spaces are set forth in reference (b).

6. Navy GFE Certification Board. A Navy GFE certification board (hereinafter called "the Board") is established.

a. The Board membership shall be composed of personnel who are qualified in one or more of the following areas: Federal and Navy regulations/standards pertaining to ship construction, overhaul and/or repair; industrial hygiene; shipyard safety, loss control and accident prevention; fire prevention; and confined space testing/marine chemistry. It shall consist of seven voting members with representation as follows: the Office of the Assistant Secretary of the Navy for Installations and Environment (ASN(I&E)), Naval Safety Center, Commander, Naval Sea Systems Command, two Naval maritime facility representatives (at least one GFE), a Fleet Forces Command or Commander, U.S. Pacific Fleet representative, and OSHA. The Naval maritime facility representatives shall be nominated by the respective major claimant, with the approval of the respective Naval maritime facility commander. The OSHA representative shall be nominated by that agency. In addition, the Navy Office of General Counsel will provide legal advice to the Board, as appropriate.

b. The term of each Naval maritime facility representative to the Board shall be limited to no more than 6 years. The other

members of the Board shall serve at the discretion of the offices they represent.

c. The Board shall meet at least annually. It shall also meet whenever requested by a Board member and to act on the applications for GFE certification and recertification within 90 days of their receipt. The Board may approve or deny certification or recertification to a candidate by a majority vote. Any candidate denied certification/recertification and their major claimant will be provided written rationale within 30 days of the Board's decision for denial and informed of further actions required to meet certification/recertification requirements. Candidates that are refused certification or recertification have 30 days to file a written appeal with the secretary of the Board; the Board will respond to the appeal within 60 days of receipt.

d. The Board shall provide oversight of the Navy Board-certified GFE's performance, including process review and the quality of GFE certificate writing. It shall review the performance of all Navy Board-certified GFEs: (1) annually, as stated in Deputy Assistant Secretary of the Navy (Safety) (DASN(Safety)) letter of November 17, 2005 of reference (c), to determine if Navy GFEs are actively engaged in Maritime Confined Space Program work (submission of 10 Gas Free Engineer Hot Work Certificates); (2) at least every 5 years and, appropriately, recertify or decertify the GFE; and (3) after any reportable mishap in accordance with OPNAVINST 5100.23G occurring in any GFE process covered by the requirements of reference (b). This includes any fatality, injury, or material (property) damage related to a GFE certification. The Board may participate, as desired, in incident investigations to assess GFE actions. Periodic reviews of the performance of Navy GFEs, including on-site visits, may be made as deemed necessary by the Board.

e. The representative of the ASN(I&E) shall serve as the Board's chair, who shall appoint a secretary to the Board.

f. The secretary of the Board shall receive, screen, and track the status of applications for certification and recertification; compile information associated with an application; provide each application to the Board members for review; schedule and set up Board meetings; produce and archive meeting minutes; notify candidates of the Board's decision by phone and follow-up letter; issue GFE certificates; and perform such other duties as may be requested by the Board.

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7. Certificate. The Board shall issue a certificate to each successful candidate as evidence that the holder has the qualifications [as detailed in enclosure (1)] required for certification or recertification as a Navy GFE.

8. Applicability. The requirements for Board certification of Navy GFEs under this policy apply to Department of the Navy employees who perform GFE certifications for Naval maritime facilities.

9. Forms. OPNAV 5100/28 (11/07), Application For Certification as a Navy Gas Free Engineer, and OPNAV 5100/29 (11/07), Application for Recertification as a Navy Gas Free Engineer, may be downloaded from Naval Forms OnLine:  
<https://navalforms.daps.dla.mil/web/public/home>.



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**QUALIFICATIONS FOR NAVY GAS FREE ENGINEERS**

The following general, professional, and practical qualifications are considered to be minimal for favorable consideration of any application by the Board.

a. General

(1) Candidates shall be physically able to perform the duties of a GFE.

(2) Candidates shall be employees of the Department of the Navy.

(3) Candidates shall furnish the Board with such evidence of their education, training, knowledge, and experience and any other information as the Board considers necessary or advisable.

b. Professional

(1) The candidate GFE shall have earned a Bachelor degree in Science or Engineering; or, as acceptable to the Board, have the equivalent in experience and education per the Office of Personnel Management guidelines (which includes college-level courses in general inorganic, organic, qualitative, and quantitative chemistry with labs) and have 3 years of progressively responsible experience related to work with the Navy's Confined Space Program, safety, industrial hygiene, fire protection or a similar area, at least one of which shall have been full-time employment in a Naval maritime facility.

(2) The education, training, knowledge, and experience of the GFE candidate shall include, but not be limited to, the following subjects:

(a) Basic ship repair safety;

(b) Fire prevention and emergency rescue;

(c) Combustion and explosion technology;

(d) Entry into shipboard confined spaces;

(e) Principles of confined space and shipboard testing;

- (f) Tank cleaning and inerting procedures;
- (g) Fundamentals of industrial hygiene;
- (h) Properties of flammable and combustible materials;
- (i) Properties of toxic gases, vapors and fumes;
- (j) Properties of hazardous cargoes and materials;
- (k) Properties of tank coatings and preservatives;
- (l) Testing for toxic gases, vapors, fumes, and residues; and
- (m) Test instruments and their calibration.

(3) The candidate shall have satisfactorily completed the Naval Occupational Safety and Health and Environmental Training Center Course A-493-0030, Confined Space Safety, attaining a grade of 90 percent or higher for the course.

c. Practical. In addition to the professional qualifications set forth in the preceding subparagraph, each candidate shall have completed or obtained:

(1) 300 hours or more of on-the-job training (OJT) in maritime GFE operations on Naval vessels or vessel sections under the direct supervision of a Navy GFE or certified Marine chemist, or other experience as deemed acceptable to the Board (see Table 1 for a list of acceptable training experiences); the OJT must be accomplished in at least two Naval maritime facilities (a minimum of one week [40 hours] at a second activity) under the direction of different Board-certified Navy GFEs or National Fire Protection Association-certified Marine Chemists, during which time the candidate must demonstrate a practical ability to perform the full scope of GFE duties; and

(2) Enclosure (2) provides an example of: an acceptable OJT record, an acceptable full time experience record, and an acceptable summary of professional activities record.

(3) Working knowledge of the construction of Naval vessels including machinery spaces, hull and superstructure compartmentation systems, and piping systems.

d. Oral Interview. All GFE applicants will be required to meet with the Board and to pass an oral examination conducted by the Board.

**Table 1. OJT Training Requirements**

<b>Experience type</b>	<b>Hours required</b>
General (covering carriers, auxiliaries, submarines [fast attack and fleet ballistic missile], barges, and nonmaritime, and surface combatants)	150
High risk evolutions (fuel transfers, refrigerant/Freon evolutions, and freeze seals)	20 (5 hours minimum in any single area)
Inerting, purging, or pressing-up operations	20
Various types of hot work certifications on fuel tanks/systems	50
Potential chemical exposure (e.g., painting, hot wash, alcohol cleaning, fuel, etc.)	20
Evaluation of ventilation (e.g., flow calculations, location, general/dilution, ducting material, exhaust/supply, type [electric or pneumatic])	15
Evaluation of hot work evolutions	25

**Example of Acceptable On-the-Job Training Record  
for Gas Free Engineers**

<b>Navy GFE On-the-Job Training Record</b>							
<b>Name of trainee: John Doe</b>							
<b>Name of maritime facility where training occurred: NNSY</b>							
Training Date	Name of Ship/Vessel	ID of Tank/Space Inspected	Type of Work in progress	Test Performed/ Test Result/ Action Required	Instrument Used	Name of GFE/MC	Total Time Aboard (hrs)
1/1/07	USS Navy	8-46-2F	H/W-torch cut and remove drain line	O2-Exp-benzene/ 20.8% O2, 0% LEL, 0 ppm diesel Vapor/None	MSA Orion Plus and ToxiRae PID	NNSYD-Robin Yost	0.5
1/2/07	USS Navy	8-46-1F	HW-torch cut access opening on pt blkhd	O2-Exp-benzene/ 20.8% O2, 0% LEL, 0 ppm diesel Vapor/None	MSA Orion Plus and ToxiRae PID	NNSYD-Robin Yost	0.5
2/1/07	USS Navy	CHT 4-19-0W	Entry-remove TLI (PEL exceeded)	O2-Exp-H2S-CO2/ 20.8% O2, 0% LEL, 0 ppm H2S, 300 ppm CO2/None	MSA Orion Plus	NNSYD-Robin Yost	1
3/1/07	USS Navy	4-20-2G	HW-tack weld plate to outside blkhd-tank being inerted w/N2	O2/2% O2/continuous O2 monitoring	MSA Orion Plus	NNSYD-Robin Yost	8

**Example of Acceptable Full Time Experience Record**

<b>Full Time Experience Record</b>				
<b>Name of trainee: John Doe</b>				
Employer	Location	Period of Employment	Duties and Level of Involvement	Equipment and Instruments Used

**Example of Acceptable Summary of Professional Activities Record**

<b>Summary of Professional Activities Record</b>			
<b>Name: John Doe</b>			
<b>Name of maritime facility where activity occurred: NNSY</b>			
<b>Types of Vessels Inspected</b>	<b>Different Types of Certification Conducted</b>	<b>Approximate Number of Certificates Issued</b>	<b>Incident(s) where your Gas Free Engineering Certificate was a factor in said incident</b>
CVN	Entry and Hot Work	8	0
LHA	Entry and Hot Work	7	0
LHD	Entry and Hot Work	8	0
SSN	Entry and Hot Work	10	0
SSBN	Entry and Hot Work	9	0
AS	Entry and Hot Work	8	0