# NAVY

# OCCUPATIONAL SAFETY AND HEALTH

# (NAVOSH)

# PROGRAM MANUAL

# FOR FORCES AFLOAT

OPNAV INSTRUCTION 5100.19C
VOLUME I
NAVOSH AND MAJOR HAZARD-SPECIFIC PROGRAMS

DEPARTMENT OF THE NAVY

OFFICE OF THE CHIEF OF NAVAL OPERATIONS

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, D.C. 20350-2000

IN REPLY REFER TO

OPNAVINST 5100.19C VOL I CH-2
N45
30 July 1999

OPNAV INSTRUCTION 5100.19C, VOLUME I CHANGE TRANSMITTAL 2

From: Chief of Naval Operations

Subj: NAVY OCCUPATIONAL SAFETY AND HEALTH (NAVOSH) PROGRAM MANUAL FOR FORCES AFLOAT, VOLUME I

Encl: (1) Revised pages 1,3, iii through xx, A1-1 through A1-4, A3-1 through A3-8, A3-A-1, A3-A-2, A3-B-1, A6-D-3-1 through A6-D-3-3, B1-1 through B1-14, B1-A-1, B1-A-2, B1-B-1, B1-B-2, B1-C-1 through B1-C-3, B1-D-1 through B1-D-5, B1-E-1, B1-F-1, B1-G-1, B1-H-1, B1-H-2, B1-I-1, B1-J-1, B1-K-1, B1-L-1, B1-M-1, B1-M-2, B2-1 through B2-16, B2-A-1 through B2-A-6, B2-B-1 through B2-B-5, B2-C-1 through B2-C-5, B2-D-1, B2-D-2, B2-E-1, B2-E-2, B2-F-1, B2-G-1, B3-1 through B3-13, B3-A-1 through B3-A-6, B3-B-1, B3-B-2, B4-1 through B4-8, B4-A-1 through B4-A-4, B4-B-1, B4-C-1, B4-C-2, B4-D-1, B4-D-2, B6-1 through B6-20, B6-A-1, B6-A-2, B6-B-1, B6-C-1 through B6-C-3, B6-D-1, B6-E-1, B6-E-2, B7-1 through B7-4, and B10-1 through B10-9; and new pages A3-9, A3-10, A6-D-3-4 through A6-D-3-6, B1-15, B1-B-3 through B1-B-9, B1-D-6, B1-J-2 through B1-J-4, B2-17, B2-B-6, B2-B-7, B2-E-3 through B2-E-4, B4-A-5 through B4-A-8, B6-C-4 through B6-C-8, B6-D-2 through B6-D-9, and B7-5

1. Purpose

a. To provide a change to Volume I that incorporates the guidance from the Fleet Review Board to reduce unnecessary workload during the inter-deployment training cycle (IDTC). This change incorporates new guidance on baseline industrial hygiene surveys, safety surveys, and assist visits. It provides a revised asbestos control chapter that is more comprehensive than the previous version. This change includes a revised chapter on heat-stress that clarifies the requirements for heat-stress surveys and considerably reduces the resulting workload. This change provides a revised chapter on hazardous material control and management (HMC&M). This chapter eliminates the requirement for individual units to develop HMC&M instructions, eliminates the requirement for HM removal in conjunction with the strip ship bill, and eliminates periodicity-based HM inventories (e.g., quarterly and annual).

The hearing conservation chapter was modified to reduce workload by ensuring only at-risk personnel are enrolled and conducting annual training in conjunction with annual audiograms. The respiratory protection chapter has been changed to ensure that it is current and eliminates internal evaluations. The electrical safety chapter has been revised to reduce administrative and manpower requirements. The lead control chapter has been modified to clarify practices including when and for whom training is required. The chapters on mercury control and poly-chlorinated biphenyls have been deleted and the material incorporated into chapter B3 on HMC&M. The chapter on man-made vitreous fibers has been cancelled and the practices have been incorporated into the chapter on asbestos control.

b. Due to the extensive modifications to these chapters, paragraphs have not been annotated to indicate revisions. Users are encouraged to read the entire chapter to understand current policy.

2. Action. Remove Volume I pages 1 through 4, iii through xx, A1-1 through A1-4, A3-1 through A3-8, A3-A-1, A3-A-2, A3-B-1, A6-D-3-1 through A6-D-3-3, B1-1 through B1-14, B1-A-1 through B1-A-5, B1-B-1, B1-B-2, B1-C-1 through B1-C-14, B1-D-1 through B1-D-5, B1-E-1, B1-F-1, B1-F-2, B1-G-1 through B1-G-3, B1-H-1 through B1-H-4, B1-I-1, B1-I-2, B1-J-1, B1-K-1, B1-K-2, B1-L-1, B1-M-1, B1-M-2, B1-N-1, B1-N-2, B1-O-1 through B1-O-3, B2-1 through B2-16, B2-A-1 through B2-A-6, B2-B-1 through B2-B-5, B2-C-1 through B2-C-7, B2-D-1 through B2-D-6, B2-E-1, B2-E-2, B2-F-1 through B2-F-6, B2-G-1, B3-1 through B3-26, B3-A-1 through B3-A-6, B3-B-1 through B3-B-28, B3-C-1 through B3-C-6, B3-D-1 through B3-D-10, B3-E-1 through B3-E-7, B3-F-1, B4-1 through B4-8, B4-A-1 through B4-A-4, B4-B-1 through B4-B-10, B4-C-1, B4-C-2, B4-D-1 through B4-D-4, B6-1 through B6-21, B6-A-1 through B6-A-6, B6-B-1, B6-B-2, B6-C-1 through B6-C-3, B6-D-1, B6-E-1 through B6-E-5, B6-F-1 through B6-F-5, B6-G-1, B6-G-2, B6-H-1, B6-H-2, B7-1 through B7-4, B7-A-1 through B7-A-6, B7-B-1, B7-B-2, B10-1 through B10-9, B10-A-1 through B10-A-4 and B10-B-1 through B10-B-11 and replace with enclosure (1) of this change transmittal.

A. A. GRANUZZO
By direction

Distribution:
(Same as basic)

DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
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WASHINGTON, D.C. 20350-2000

CH-2 of 30 Jul 1999

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OPNAVINST 5100.19C
N45
19 Jan 1994

OPNAV INSTRUCTION 5100.19C, VOLUME I

From: Chief of Naval Operations

Subj: NAVY OCCUPATIONAL SAFETY AND HEALTH (NAVOSH) PROGRAM MANUAL FOR FORCES AFLOAT

Ref: (a) OPNAVINST 5100.23E (NOTAL) (R
(b) SECNAVINST 5212.5D (NOTAL) (R

Encl: (1) Navy Occupational Safety and Health Program Manual for Forces Afloat, Volume I

1. Purpose. To implement the NAVOSH Program and the requirements of reference (a) for afloat commands.

2. Cancellation. OPNAVINST 5100.19B and OPNAVINST 5100.20C.

3. Discussion

a. Reference (a) was developed as a basic NAVOSH implementation document. It applies to both shore and afloat commands; however, many of the unique and specific situations associated with forces afloat are not fully addressed or taken into account in reference (a). The NAVOSH Manual for Forces Afloat provides afloat commands and supporting staffs with the guidance and direction, and is the primary resource manual, for implementing the NAVOSH Program for afloat commands.

b. This instruction updates the safety guidance and precautions contained in OPNAVINST 5100.19B. It reflects modifications to regulatory requirements, embodies lessons learned from mishaps, and incorporates changes recommended by subordinate activities which enhance the NAVOSH Program. As an aid in determining changes made from OPNAVINST 5100.19B, paragraphs which have been modified, added, or deleted are appropriately marked.

c. Significant changes have been made to Heat Stress Program (Chapter B2) and Hazardous Material Control and Management (Chapter B3) guidance. In addition, a new chapter has been added on Carbon Dioxide Fixed Flooding System Safety Precautions and Procedures (Chapter C24). (R

4. Action. All levels of command which comprise the naval afloat establishment shall implement and manage the NAVOSH

(Afloat) Program per the policy, procedures, actions, and guidance set forth in this instruction. The policy, procedures, and actions prescribed here are published without the necessity for implementing instructions from the various commands in the chain of command, except as specifically directed. Organizations having significant NAVOSH responsibilities may find it necessary to provide additional supplemental guidance.

5. Reports and Forms

a. The following reports are required in this instruction and are approved for 3 years from the date of this change:

(1) Safety Hazard Report (no report symbol), Chapter A3

(2) Mishap Investigation Report, Report Symbol OPNAV 5102-7, Chapter A6

(3) Mishap Report, Report Symbol OPNAV 5102-6, Chapter A6

(4) Motor Vehicle Mishap Report, Report Symbol OPNAV 5102-4 (MV), Chapter A6

(5) Diving Mishap/Hyperbaric Treatment/Death Report, Report Symbol OPNAV 5102-5, Chapter A6

(6) Off-duty, Recreation, Athletics, and Home Safety Report, Report Symbol OPNAV 5102-10, Chapter A6

(7) Radio-frequency Radiation (RFR) Incident Report (no report symbol), Chapter A6

(8) Report of Heat/Cold Injury (no report symbol), Chapter A6

(9) Laser Radiation Incident Report (no report symbol), Chapter A6

A) (10) Explosive Mishap or Conventional Ordnance Deficiency, Report Symbol DD-A&T(AR)1020(5102), Chapter A6.

b. The Safety Hazard Report, the Radio-frequency Radiation (RFR) Incident Report, the Report of Heat/Cold Injury, and the Laser Radiation Incident Report are exempted from reports control by SECNAVINST 5214.2B.

c. The following forms are available from the Navy Supply System and may be requisitioned per NAVSUP P-2002:

| FORM | TITLE | STOCK NUMBER | |
|---|---|---|---|
| DD 771 (9/68) | Eyewear Prescription | 0102-LF-007-6202 | |
| DD 1222 (2/62) | Request for and Results of Tests | 0102-LF-012-0600 | |
| DD 2005 (2/76) | Privacy Act Statement - Health Care Records | 0102-LF-002-0051 | |
| DD 2214 (9/79) | Noise Survey | 0102-LF-002-2140 | |
| DD 2215 (5/96) | Reference Audiogram | 0102-LF-105-2000 | (R |
| DD 2216 (9/79) | Hearing Conservation Data | 0102-LF-005-8900 | |
| DD 2493-1 (3/87) | Asbestos Exposure, Part I, Initial Medical Questionnaire | 0102-LF-002-4935 | |
| DD 2493-2 (3/87) | Asbestos Exposure, Part II, Periodic Medical Questionnaire | 0102-LF-002-4940 | |
| DD 2521 (12/88) | Hazardous Chemical Warning Label | 0102-LF-012-0800 | |
| DD 2522 (12/88) | Hazardous Chemical Warning Label | 0102-LF-012-1100 | |
| NAVMED 6260/2 (10/88) | Hazardous Noise Warning Decal | 0105-LF-004-7200 | |
| NAVMED 6260/2A (10/88) | Hazardous Noise Label | 0105-LF-004-7800 | |
| NAVMED 6260/5 (5/90) | Periodic Health Evaluation Navy Asbestos Medical Surveillance Program | 0105-LF-009-9800 | |
| *NAVMED 6500/1 (5-99) | Heat/Cold Case | 0105-LF-015-0800 | (R |
| *OPNAV 3120/5 (Rev. 5-93) | Safety Hazard Report | 0107-LF-016-9300 | (R |
| OPNAV 4790/2K (6/75) | Ship's Maintenance Action Form - 2 KILO | 0107-LF-047-9011 | |
| *OPNAV 5100/17 (5-99) | Heat Stress Survey Sheet | 0107-LF-016-9500 | (R |

* OPNAV 3120/5 (Rev 9-95) is provided as appendix A3-A. Local reproduction is authorized. OPNAV 3120/5 (Rev 12-93) may also be used.

| FORM | TITLE | STOCK NUMBER |
|---|---|---|
| OPNAV 5100/18 (12-93) | Navy Used Hazardous Material Identification Label | 0107-LF-016-9100 |
| OPNAV 5102/4 (10/92) | SAFETYGRAM | 0107-LF-015-8400 |
| OPNAV 6260/2 (10/78) | Caution - Asbestos Dust Hazard Sign | 0107-LF-062-6010 |

e. The following form is available from the General Services Administration (GSA):

| FORM | TITLE | STOCK NUMBER |
|---|---|---|
| SF 600 (5/84) Medical Care | Chronological Record of | 7540-00-634-4176 |

6. Records Disposition. Apply appropriate records disposition standards of reference (b) to all records generated. To the extent that any disposition standard in this instruction is inconsistent with reference (b), the requirements of reference (b) shall take precedence.

C. G. GEIGER
Assistant Deputy Chief of
Naval Operations (Logistics)

Distribution: (2 copies unless otherwise indicated)
SNDL 21A (Fleet Commanders in Chief)
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23 (Force Commanders)
24 (Type Commanders)
A) 25A (Mine Warfare Command)
26A (Amphibious Group)
R) 26B (Surface Reserve Force Representatives and Detachment)
A) 26C (Beach Group)
A) 26D (Seal Team, Seal Delivery Vehicle and Detachment and Fleet Introduction Team)
26E (Amphibious Unit)
26F (Operational Test and Evaluation Force)
R) 26H (Fleet Training Groups and Detachments)
26J (Afloat Training Group and Detachment)
A) 26Q (Weapons Training Group and Detachment)
D)

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|---|---|---|---|
| SNDL | 26U | (Surface Force Readiness Support Group) (1) | |
| | | | (D |
| | 26W | (Cargo Handling and Port Group and Reserve Cargo Handling Training Battalion) (1) | |
| | 26Z | (Shore Intermediate Maintenance Activity/Naval reserve Maintenance Facility) | (A |
| | 26DD | (Mobile Diving & Salvage Unit and Consolidated Divers Unit) | (A |
| | 26FF | (Mine Warfare Inspection Group) | (A |
| | 26GG | (Explosive Ordnance Disposal Mobile Unit and Group) (1) | (R |
| | | | (D |
| | 26QQ | (Special Warfare Group/Unit/Detachment) | (A |
| | 26RR | (Fleet Imaging Command/Center/Facility/Detachment) | (A |
| | 26VV | (Submarine Force Shipyard Representative) | (A |
| | 26WW | (Deep Submergence Unit) | (A |
| | | | (D |
| | 28 | (Squadron, Division, and Group Commanders - Ships) | |
| | 29 | (Warships) (less 29B, 29N, 29P2, 29Q, and 29S) (5) | |
| | 29B | (Aircraft Carrier) (8) | |
| | 29N | (Submarine (SSN)) | |
| | 29P2 | (Auxiliary Research Submarine (AGSS)(PAC)) | (R |
| | 29Q | (Fleet Ballistic Missile Submarine) (SSBN) (3) | |
| | 29S | (Research Submarine (Nuclear) (NR)) | |
| | 30 | (Mine Warfare Ships) | |
| | 31 | (Amphibious Warfare Ships) (5) | |
| | 32 | (Auxiliary Ships) (5) | |
| | 36 | (Service Craft) (5) | |
| | 39B | (Construction Brigade) | (A |
| | 39G | (Underwater Construction Team) | (A |
| | 41A | (Commander MSC) (50) | |
| | 42D | (Fleet Aviation Specialized Operational Training Group) | (A |
| | 50C | (Subordinate Unified Commands) | (A |

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| SNDL | 45B | (Marine Division FMF) | (A |
| | 45C | (Assault Amphibian/Armored Assault Battalions and Companies) | (A |
| | 45L1 | (Infantry and Reconnaissance Battalion) | (A |
| | A2A | (Department of the Navy Staff Offices) (CHINFO, JAG only) | |
| | A5 | (Chief of Naval Personnel) | |
| | A6 | (Headquarters U.S. Marine Corps) (MPH-70, only) | |
| | B5 | (U.S. Coast Guard) (COMDT COGARD, only) (5) | |
| | C1A | (Naval Personnel at Army Activities) | (R |
| | C3 | Naval Personnel at DOD or Other Government Agencies | (A |
| | | | (D |
| | C25A | (OPNAV Support Activity Detachment) (Ft. Ritchie, only) | (A |
| | C28H | (Naval Branch Medical Clinics) | (A |
| | C31G | (Ship Repair Facility Detachment) | (A |

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| A) | | C34F | (Branch Medical Clinics - Europe) |
| A) | | C52D | (School of Health Sciences Detachment) |
| | | C58M | (School Explosive Ordnance Disposal Detachment) |
| A) | | C58R | (Branch Medical Clinics - CNET) |
| A) | | C84A | (Surface Warfare Center Division Detachments) |
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| | | FA6 | (Air Station LANT) |
| A) | | FA24 | (Base Atlantic) |
| D) | | | |
| A) | | FA7 | (Station Atlantic) |
| A) | | FA10 | (Submarine Base Atlantic) |
| A) | | FA13 | (Submarine Support Facility) |
| D) | | | |
| A) | | FA46 | (Public Works Center Atlantic) |
| | | FA47 | (Hospital/Medical Center) |
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| | FG1 | (COMNAVTELCOM) | (A |
| | FH1 | (Bureau, Medicine and Surgery) | (D |
| | FH5 | (Medical Laboratory) | (A |
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| | FKA1 | (Systems Commands) | |
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| | FKP1H | (Ordnance Center Division and Stations) | (A |
| | FKP4 | (Surface Warfare Center) | (A |
| | FKP6D | (Experimental Diving Unit) | (A |
| | FKP7 | (Shipyard) | |
| | FKP8 | (Shipbuilding, Conversion, and Repair, USN) | (R |
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| | FT1 | (Chief Naval Education and Training) (100) | |
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| | V5 | (Air Station USMC) | (A |
| OPNAV | (N09, N45 (100), N143D (12), N86, N87, N873 and N88) | | (R |

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| CH-2 | 30 Jul 1999 | | SECNAV/OPNAV Directives Control |
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## SECTION A
## NAVOSH PROGRAM

This section outlines the overall administrative, organizational, and training aspects of the NAVOSH Program including a statement of policy and a listing of responsibilities.

# CHAPTER A1

## INTRODUCTION

### A0101. BACKGROUND

a. The Navy has conducted occupational safety and health programs for many years. These programs gained special prominence after passage of the Occupational Safety and Health Act (OSHACT) in 1970. The primary thrust of the OSHACT was directed at the private sector employer; however, Section 19 of the OSHACT and several subsequent Presidential Executive Orders directed Federal agencies to establish and maintain occupational safety and health programs. Requirements for such programs are contained in Title 29, Code of Federal Regulations (CFR), Part 1960 (29 CFR 1960).

b. References A1-1 and A1-2 issued policy statements and outlined responsibilities for the implementation of the total safety and occupational health program for the Navy. The total safety and occupational health program includes all safety disciplines, such as systems safety, aviation safety, weapons/explosives safety and off-duty safety (recreation, public and motor vehicle), as well as occupational safety and health. Thus, the Navy Occupational Safety and Health (NAVOSH) Program is a major component of the total program.

c. Reference A1-3 was developed as a basic NAVOSH implementation document. It applies to both shore and afloat commands; however, many of the unique and specific situations associated with forces afloat were not fully addressed or taken into account. Consequently, this manual is intended as the primary NAVOSH resource document for implementing the NAVOSH Program for afloat commands.

d. Reference A1-4 established and implements a Mishap Investigation and Reporting Program and provides revised policy and procedures for aggressive mishap prevention, investigation, and reporting. This manual complements and supports the principles established in this reference.

### A0102. PURPOSE AND ORGANIZATION OF THIS MANUAL

a. The purpose of this manual is to provide commanding officers, safety officers, managers, supervisors, and workers for afloat commands with a document that gives the guidance and direction necessary to implement the NAVOSH Program.

b. This manual addresses all aspects of afloat NAVOSH Program management. In some instances, small ships (less than 300 personnel) may have to modify program management to suit their command. To ensure uniformity, group and squadron commanders may specify how small ships under their command are to implement the program management aspects of this manual (see paragraphs A0202e and A0202f).

c. This manual is organized into four sections.

(1) **Section A:** NAVOSH Program. This section outlines the overall administration, organizational, and training aspects of the NAVOSH Program including a statement of policy and a listing of responsibilities.

(2) **Section B:** Major Hazard Specific Chapters. This section outlines NAVOSH chapters which address specific hazards such as, asbestos control, heat stress, hazardous material control and management, radiation protection, electrical safety, and gas free engineering as well as tag-out and personal protective equipment. The objective of this section is to reduce to a manageable degree NAVOSH management requirements that are applicable to shipboard personnel. This section is addressed to personnel who would assist the commanding officer in NAVOSH management, e.g., safety officer, electrical safety officer, gas free engineer, hazardous material coordinator, and the medical department representative.

(3) **Section C:** Surface Ship Safety Standards. This section contains basic safety requirements that are applicable to surface ship activities and/or equipment. These precautions comprise the NAVOSH safety standards for surface ships required by reference A1-1. It may be necessary, when conducting operations and maintenance on specific systems or equipment, to consult other Navy publications such as the Naval Ships Technical Manual (NSTM), Naval Warfare Publications (NWPs), technical/operating manuals, and equipment Planned Maintenance System (PMS) cards for additional safety precautions. This section is addressed to the individual deckplate sailor and his/her supervisor.

(4) **Section D:** Submarine Safety Standards. This section contains basic safety requirements that are applicable to submarine activities and/or equipment. These precautions provide similar guidance to submarines as Section C does for surface ships. These standards do not duplicate the safety precautions found in either the Standard Submarine Organization and Regulations Manual (SSORM), the Ships Systems Manuals (SSMs), or the Standard Operating Procedures (SOPs) applicable to submarines. These other standards augment Section D precautions.

**A0103. APPLICABILITY**

a. The provisions of this Manual apply to all Navy ship operations Afloat including United States Naval Ships (USNS) of the Military Sealift Command (MSC) manned by federal civil service mariners and military personnel. Due to the manning complexities for MSC ships, there may be some administrative procedures in this manual that will need to be tailored for MSC ship applications. These procedures shall, at a minimum, provide protection equal to or better than that provided by this manual. Aviation squadrons and other embarked units that are required to comply with reference A1-3 ashore shall coordinate safety program requirements with the ship. The provisions also apply to Marine Corps personnel embarked in the aforementioned vessels. Information contained within Volume I of this manual that specifically applies to submarines or that which exempts submarines is annotated as such. Shore activity service craft shall comply with the requirements of reference A1-3.

b. Under the statutory authority of the Atomic Energy Act of 1954, as amended, and Executive Order 12344, codified in Public Law 98-525, the Director, Naval Nuclear Propulsion is responsible for the safety of reactors and associated naval nuclear propulsion plants, and the control of radiation and radioactivity associated with naval nuclear propulsion plant activities, including prescribing and enforcing standards and regulations for these areas as they affect the environment and the safety and health of workers, operators, and the general public. Nothing in this manual shall affect the standards and requirements established by the Director, Naval Nuclear Propulsion for areas under his cognizance. However, for areas other than those described above, such as asbestos control, heat-stress, electrical safety, and gas free engineering, the requirements of this manual apply to activities involved with naval nuclear propulsion.

c. This manual specifically addresses the identification and maintenance of safe and healthful conditions in afloat work places or occupational environments. Off-duty safety is not addressed. Some, but not all, of aviation safety (Chapters C7 and C12) and explosives safety (Chapter C14) are addressed.

**A0104. REFERENCES AND DEFINITION OF TERMS**

For matters of convenience and organization, references for a specific chapter appear at the end of each chapter. Special terms and their definitions appear in the Glossary at the end of Volume I of the manual.

**A0105. NAVOSH MANUAL CHANGES**

a. Users who identify a requirement for a modification to this manual shall initiate a change recommendation as follows:

(1) A proposed alteration to manual policy requirements shall be submitted by the identifying command to Chief of Naval Operations (CNO) (N45) via the chain of command.

(2) A proposed alteration to a safety standard should be submitted by an individual or command to the Naval Safety Center (NAVSAFECEN). The Naval Safety Center shall submit the proposed modification to CNO (N45) with a recommendation regarding incorporation of the modification into the manual.

(3) A proposed alteration to a health standard/criteria may be submitted by an individual or command to the Navy Environmental Health Center (NAVENVIRHLTHCEN) via the chain of command. NAVENVIRHLTHCEN shall submit the proposed modification to the Bureau of Medicine and Surgery (BUMED) with a recommendation regarding incorporation of the modification into the manual.

b. Modifications to the manual shall be issued in the following manner:

(1) Alterations which are necessary for immediate incorporation into the manual and which cannot wait for the development of the next manual change shall be issued as advanced changes (A/Cs) by CNO (N45). These changes may be

issued by message or letter depending upon the requirement for manual entry timeliness.

(2) Periodically when a large number of modifications to the manual are necessary, a change to the manual shall be issued by CNO (N45). These changes shall incorporate previously issued advanced changes.

(3) Changes to this manual shall be accomplished by page replacement.

**A0106. TERMINOLOGY**

The words shall, will, must, should, may, and can are used throughout this manual. Shall, will, and must are directive in nature and require mandatory compliance. Should is a strong recommendation, but compliance is not required. May or can, when used, are optional in nature and compliance is not required.

**A0107. PRECEDENCE**

In cases of conflicting safety standards among various directives and technical manuals, precedence shall be given to the directive promulgated by the highest authority and of the most recent issue date.

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## CHAPTER A1

## REFERENCES

A1-1. SECNAV Instruction 5100.10H, "Department of the Navy Policy for Safety, Mishap Prevention, Occupational Health, and Fire Protection Programs" (NOTAL)

A1-2. OPNAVINST 5100.8G, "Navy Safety and Occupational Safety and Health Program" (NOTAL)

A1-3. OPNAVINST 5100.23E, "Navy Occupational Safety and Health (NAVOSH) Program Manual" (NOTAL)

A1-4. OPNAVINST 5102.1C, " Mishap and Investigation Reporting" (NOTAL)

## CHAPTER A2

## NAVOSH PROGRAM ORGANIZATION AND RESPONSIBILITIES

### A0201. POLICY

It is Navy policy to enhance operational readiness and mission accomplishments by establishing an aggressive occupational safety and health program which will reduce occupational injuries, illnesses or deaths, and material loss or damage and to maintain safe and healthy working conditions for personnel. The occupational safety aspects of the program address the elimination or control of hazards that can result in immediate injury or death. The occupational health aspects are primarily concerned with the identification and elimination, where possible, of adverse health effects of hazardous and long term sub-acute exposures to chemical, physical, and biological agents. This includes effective exposure control where hazard elimination is impossible or impractical and also, the diagnosis and treatment of work related illnesses and injuries.

A successful NAVOSH Program, one which truly reduces work-related injuries and illnesses, results when the program is emphasized at every level of the organization. The Navy is in accord with this principle, and the overall responsibility for the NAVOSH Program is vested in the Secretary of the Navy and implemented through the chain of command. The maintenance of safe and healthful working conditions is a responsibility of the chain of command.

### A0202. OVERALL NAVY PROGRAM

a. The Assistant Secretary of the Navy (Installations and Environment). The Assistant Secretary of the Navy (Installations and Environment) is the designated occupational safety and health (OSH) official for the Department of the Navy (DON) and establishes, maintains, and updates the occupational safety and health program which implements the requirements of the Department of Defense (DoD) OSH policy issuances to provide protection for both civilian employees and military personnel.

b. Chief of Naval Operations (CNO). The CNO is responsible for implementation and management of the NAVOSH Program and, in coordination with the Commandant of the Marine Corps, for mutual concern:

(1) Provides appropriate NAVOSH policy and standards for all commanders.

(2) Establishes appropriate planning, programming, qualified staffing, and budgeting for the NAVOSH Program.

(3) Issues the requirements for records maintenance (Chapter A3).

(4) Conducts research and development to preclude occupational hazards or exposures from causing physical injury or degrading health status or work performance.

(5) Develops a program of periodic formal inspections of workplaces (Chapter A5).

(6) Provides for job-related medical support (Chapter A3).

(7) Develops procedures for prompt investigation of reports of unsafe or unhealthful working conditions and ensures corrective action is taken within appropriate time periods (Chapter A6).

(8) Ensures personnel receive thorough and continuing training on NAVOSH matters (Chapter A7).

(9) Adopts, develops, and reviews proposed alternate standards and promulgates NAVOSH standards (Sections C and D).

c. Fleet Commanders in Chief. Because safety is an inherent responsibility of command, all aspects of the Navy Occupational Safety and Health Program shall be implemented through the chain of command. Fleet Commanders are responsible for ensuring that their commanders, commanding officers, and officers in charge:

R) (1) Conduct and maintain an aggressive and comprehensive NAVOSH Program.

(2) Assign safety responsibilities to qualified personnel as a primary duty billet where feasible, otherwise as a collateral duty billet with appropriate training provided. Where possible, assigned safety officers should remain in these positions for at least 1 year.

A) (3) Develop a NAVOSH management evaluation mechanism for afloat commands that is to the extent feasible integrated with the command inspection program and conducted by the chain of command.

d. Type Commanders. Oversight of subordinate commands' NAVOSH Programs and coordination of matters of mutual concern are the primary responsibilities of Type Commanders. Accordingly, Type Commanders shall:

(1) Ensure that subordinate afloat commands implement the NAVOSH Afloat Program.

R) (2) Conduct periodic NAVOSH inspections of group commands and conduct or assist in NAVOSH inspections of squadrons and afloat commands. Inspectors at a minimum, should complete the Afloat Safety Officer Course (A-4J-0020) at the Surface Warfare Officers School (SWOS) or the Submarine Safety Officer

Course (F-4J-0020), as appropriate. Appropriately trained civilian safety specialists may assist in these inspections.

(3) Coordinate and promote those aspects of the NAVOSH Program of mutual concern to forces afloat.

(4) Coordinate industrial hygiene support.

e. **Group Commanders** shall:

(1) Conduct or assist in the conduct of periodic NAVOSH inspections of subordinate commands. Afloat units with industrial hygiene officers (IHOs) assigned should be inspected by the next higher echelon command having a professional NAVOSH representative.

(2) Assist afloat commands and squadrons to ensure that afloat work-place NAVOSH discrepancies beyond shipboard capability are identified in the Workload Availability Package.

(3) Establish uniform guidance for small ships to implement NAVOSH Program management requirements, as appropriate.

(4) Ensure that the group safety officer attends the Afloat Safety Officer Course or Submarine Safety Officer Course, as appropriate, prior to or within 6 months of assignment. (R

f. **Squadron Commanders** shall:

(1) Conduct or assist in the conduct of periodic NAVOSH inspections of afloat commands. Afloat units with IHOs assigned should be inspected by the next higher echelon command having a professional NAVOSH representative.

(2) Provide or coordinate NAVOSH assistance for subordinate afloat commands (Afloat commands with IHOs are available to assist other afloat commands in their NAVOSH Program).

(3) Appoint a collateral duty safety officer.

(4) Establish uniform guidance for small ships to implement NAVOSH Program management requirements, as appropriate.

(5) Ensure that the squadron safety officer attends the Afloat Safety Officer Course or Submarine Safety Officer Course, as appropriate, prior to or within 6 months of assignment. (R

g. **Primary Program and Specified Support Areas**. The higher echelon administration and management of the Occupational Safety and Health Program is divided into primary program areas and specified support areas.

(1) Primary Program Areas

(a) The NAVOSH Program for a specific type of naval force is implemented, directed, and supervised, within the Office of the CNO (OPNAV), by the respective OPNAV Principal Official. The Special Assistant for Safety Matters (N09F) assures compatibility and continuity, and provides interface for the primary program areas.

(b) The Deputy Chief of Naval Operations (DCNO) (Logistics) (N4) is responsible for developing NAVOSH Program policy and guidance and issuing NAVOSH standards. When NAVOSH policy or standards are applicable to operational forces under the cognizance of another OPNAV Principal Official, N4 will coordinate with other elements of the OPNAV staff.

(2) Specified Support Areas. Specified support areas are concerned with those aspects of the NAVOSH Program requiring special attention or technical expertise. The Commander, Naval Sea Systems Command; Commander, Naval Air Systems Command; Chief, Bureau of Medicine and Surgery; Commander, Naval Safety Center; and the Chief, Naval Education and Training, in coordination with or at the direction of respective primary program sponsors, develop procedures, NAVOSH standards, and instructions for the specified support areas. These responsibilities will be carried out by the designated officials as follows:

(a) Commander, Naval Sea Systems Command (COMNAVSEASYSCOM)/ Commander, Naval Air Systems Command (COMNAVAIRSYSCOM). COMNAVSEASYSCOM and COMNAVAIRSYSCOM ensure that occupational safety and health aspects are considered in the design and engineering of all ships and aircraft, weapons or weapon systems, equipment, materials, supplies, and facilities which are acquired, constructed, or provided through COMNAVSEASYSCOM/COMNAVAIRSYSCOM. Engineering control of significant occupational health problems, such as noise, asbestos, and hazardous materials, are emphasized.

R) (b) Chief, Bureau of Medicine and Surgery (CHBUMED). CHBUMED provides support in all aspects of occupational health, including occupational medicine, industrial hygiene, and environmental health. CHBUMED through the Navy Environmental Health Center (NAVENVIRHLTHCEN) shall ensure appropriate audit control and overall centralized management of the Consolidated Industrial Hygiene Laboratories (CIHLs). CIHLs have been established and located at the following activities: Navy Environmental Preventive Medicine Unit Two, Norfolk, VA; Navy Environmental Preventive Medicine Unit Five, San Diego, CA (with laboratories located in San Diego and at Mare Island Naval Shipyard, Vallejo, CA); and Navy Environmental Preventive Medicine Unit Six, Pearl Harbor, HI. Navy Environmental and Preventive Medicine Units, Naval Medical Centers, Naval Hospitals, and Naval Medical Clinics provide assistance to afloat commands in the occupational health aspects of the NAVOSH Program.

(c) Commander, Naval Safety Center (COMNAVSAFECEN). COMNAVSAFECEN monitors safety and occupational health statistics and provides direct support and assistance to fleet units in safety matters upon request.

(d) Chief, Naval Education and Training (CNET). Training and education are essential elements in the successful execution of the NAVOSH Program. Accordingly, CNET ensures that all elements of the approved Navy Training Plan for NAVOSH afloat are properly executed.

(e) INSURV Inspections. The President, Board of Inspection and Survey (PRESINSURV) conducts NAVOSH oversight inspections for forces afloat as part of the regular INSURV inspection process.

A0203. COMMAND PROGRAM

a. The NAVOSH Afloat Program involves all personnel assigned to a ship or other afloat unit. The organizational chart in Appendix A2-A illustrates the command relationships within the afloat NAVOSH Program. The actual implementation structure is the ship's normal chain of command.

b. Commanding Officer. The commanding officer shall:

(1) Conduct an aggressive and continuing program.

(2) Designate a command primary duty or collateral duty safety officer. Ensure that the command safety officer is provided with NAVOSH management training. Ensure, for specific programs (Section B) that knowledgeable points of contact are maintained within the command to assist department heads, division officers, and work center supervisors. These programs are:

(a) Asbestos Control

(b) Heat Stress Control

(c) Hearing Conservation

(d) Sight Conservation

(e) Lead Control

(f) Respiratory Protection

(g) Electrical Safety

(h) Gas Free Engineering

(i) Radiation Protection

(j) Tag-out

R) (k) Hazardous Material Control and Management

A) (l) Mercury Control

A) (m) Polychlorinated Biphenyls

A) (n) Man-Made Vitreous Fibers

(3) Establish a Safety Council and an Enlisted Safety Committee. On small ships (less than 300 personnel), the Enlisted Safety Committee may be incorporated into the Safety Council.

(4) Ensure compliance with current mishap reporting procedures (Chapter A6 and OPNAVINST 5100.21B).

(5) Ensure that formal workplace safety inspections are conducted annually and that industrial hygiene surveys of the workplace occur at least once each operational cycle (approximately every 18 months) per Chapter A3.

(6) Establish a hazard control and deficiency abatement effort under Chapter A4.

(7) Establish positive procedures to protect Navy personnel from coercion, discrimination, or reprisals for participation in the NAVOSH hazard reporting program (Chapter A3).

(8) Coordinate occupational health support requirements with the cognizant BUMED activity (Chapters A3 and A4).

(9) Incorporate NAVOSH training into the command's training program per Chapter A7.

(10) Ensure that superior or deficient NAVOSH performance is considered in rating individual performance (Chapter A5).

R) c. Safety Officer/Collateral Duty Safety Officer. The safety officer is responsible for managing the NAVOSH Program based on objectives established by the commanding officer. The safety officer reports directly to the commanding officer on occupational safety and health matters and to the executive officer for the administration of the NAVOSH Program. Primary duty safety officers shall be assigned to CV, CVN, LPH, LHA, LHD, AS, AD, AOE type ships, and ship squadrons and groups. On ships without a primary duty safety officer, a commissioned officer of department head status and seniority shall be appointed as collateral duty safety officer (hereafter referred to as the safety officer). Waivers may be granted by Type Commanders for small ships with limited officer manning to appoint a chief petty officer as the safety officer. The safety officer shall:

(1) Act as the principal advisor to the commanding officer on shipboard occupational safety and health matters.

(2) Oversee ship-wide planning to implement all elements of the NAVOSH Program.

(3) Prepare and submit, through the chain of command, requests for outside professional OSH support such as industrial hygiene or radiological health surveys and comprehensive safety inspections.

(4) Participate in mishap investigations, as appropriate.

(5) Ensure timely and accurate submission of required mishap reports.

(6) Maintain and analyze NAVOSH records (inspection/survey reports, injury reports, and mishap statistics) and determine trends. (R

(7) Participate in or appoint a trained NAVOSH representative to participate in zone inspections to ensure all work spaces are inspected annually for safety. (R

(8) Ensure wide dissemination of NAVOSH information.

(9) Schedule/coordinate NAVOSH training with the training officer/ Planning Board for Training. Conduct training as appropriate.

(10) Serve as advisor-recorder of the Safety Council. Prepare agenda for issuance by the commanding officer/executive officer.

(11) Serve as Chairperson of the Enlisted Safety Committee.

(12) Evaluate, in conjunction with the Safety Council, the unit's NAVOSH Program for effectiveness and compliance. See paragraph A0502 for details of this evaluation.

(13) Ensure, with the assistance of the 3M Coordinator, that NAVOSH discrepancies beyond ship's force capability are properly identified in the Current Ships Maintenance Project (CSMP), prioritized, and entered into the Availability Workload Package.

(14) On ships where the assigned safety officer is an industrial hygiene officer (IHO):

(a) Maintain and ensure calibration of all laboratory equipment.

(b) Participate in and demonstrate proficiency in asbestos laboratory quality assurance programs.

(c) Conduct workplace monitoring for the command and provide technical assistance on request to tended and other afloat units.

A) (15) Complete the Afloat Safety Officer Course (A-4J-0020) at SWOS or the Submarine Safety Officer Course (F-4J-0020), as appropriate, prior to or within 6 months of assignment.

d. Ship's Medical Officer (SMO)/Medical Department Representative (MDR). In support of the NAVOSH Program, the medical officer/representative shall:

(1) Have direct access to the commanding officer regarding the medical aspects of the NAVOSH Program, keeping the safety officer and other department heads/division officers, as appropriate, informed.

(2) Schedule/conduct medical surveillance exams and maintain records thereof.

(3) Provide appropriate treatment of occupational injuries and illnesses.

(4) Participate in the occupational health programs, i.e., assist division officers/work center supervisors by providing health information for hearing conservation, asbestos control, heat stress, and hazardous materials programs.

(5) Coordinate with the safety officer to arrange for outside professional industrial hygiene, radiological health, or occupational medicine support as necessary.

R) (6) Provide injury reports (Appendix A6-B) on personnel treated by the medical department to the commanding officer via the chain of command with a copy to the safety officer for investigation (and a copy to the officer of the deck for entry into the deck log).

(7) Establish and maintain a quality assurance program for occupational medicine under existing Navy medical quality assurance practices.

e. Department Heads, Division Officers, and Work Center Supervisors. In keeping with the concept that the maintenance of safe and healthful working conditions is a chain of command responsibility, these personnel shall:

(1) Ensure that all assigned work spaces are inspected and maintained free of hazards and are in compliance with applicable NAVOSH standards.

(2) Ensure that all assigned personnel are properly trained for their billet, advised of any associated hazards and are equipped/provided with appropriate protective clothing/equipment.

(3) Take prompt action to abate/correct any identified deficiency under their control.

(4) Emphasize safety as a top priority in all activities (work, driving, recreational, and off-duty), consistent with mission requirements.

(5) Ensure that mishaps and near-mishaps are investigated and results are reported to the safety officer.

(6) Division officers shall appoint a senior petty officer (E-5 or above) as the division safety petty officer to assist in the responsibilities outlined above and provide appropriate on board indoctrination to ensure satisfactory performance in the safety field. For submarines. Division safety petty officers are not required aboard submarines.

(7) The division officer shall be the safety officer of the division.

(8) The department head shall be the safety officer of the department.

f. Master-at-Arms (MAA)/Safety Force (not applicable to submarines). MAA/safety force personnel shall:

(1) During routine inspections, identify and report physical hazards which could result in injury to personnel or damage to equipment.

(2) Assist the safety officer in keeping the NAVOSH Program visible to all personnel.

(3) Carry out a system of internal reporting designed to focus attention on material deficiencies and operating practices that jeopardize personnel and equipment as required by paragraph A0302d.

g. Division Safety Petty Officers/Aviation Safety Petty Officers (not applicable to submarines). The division safety petty officer or aviation safety petty officer (when embarked on board ship) shall: (R

(1) Inspect division spaces and submit Hazard Reports, OPNAV 3120/5 per Chapter A3.

(2) Advise the division officer on the status of the NAVOSH Program within the division including any safety related items revealed through maintenance such as non-compliance with or deficiency in the Planned Maintenance System (PMS).

(3) Keep the division officer informed of safety training needs within the division.

(4) Be the divisional point-of-contact in coordinating and evaluating the unit's NAVOSH Program.

(5) Be thoroughly familiar with all NAVOSH directives and precautions concerning the division.

R) (6) Conduct division NAVOSH training and assist divisional training petty officer in maintaining records following Chapter A7.

(7) Assist in mishap or near mishap investigation and provide recommendations to division officers for correction.

R) (8) Serve on the Enlisted Safety Committee or Enlisted Aviation Safety Committee.

(9) Ensure that prescribed personal protective equipment is provided and properly used by trained division personnel.

R) (10) Complete the appropriate watchstation qualification from Programs Afloat PQS (NAVEDTRA 43460-4A) or Aviation Safety Petty Officer/NCO PQS (NAVEDTRA 43218) within 6 months of their assignment.

(11) Perform or supervise the performance of required Safety Petty Officer Maintenance Index Page (MIP) planned maintenance.

R) h. Safety Council. The Safety Council consists of the commanding officer or executive officer (chairperson), safety officer (recorder), training officer, all department heads (including the air wing safety officer when embarked), medical officer/representative, and the ship's command master or senior chief petty officer. The Safety Council meets quarterly or sooner if directed by the commanding officer to develop specific NAVOSH policies and to analyze the progress of the overall program. Safety Council meetings may be held in conjunction with other meetings of similar attendance. Minutes of each meeting shall be maintained. Specifically the Council:

(1) Reviews statistics compiled by the safety officer from mishap/near mishap reports, inspection reports (including zone inspections), safety or health related messages, and related reports from the medical representative.

(2) Directs action to be taken to correct identified unsafe or unhealthful conditions.

(3) Evaluates the ship's NAVOSH Program. See Article A0502 concerning the details of this evaluation.

(4) Reviews issues and recommendations submitted by the Enlisted Safety Committee.

R) i. Enlisted Safety Committee (not applicable to submarines). The Enlisted Safety Committee consists of the safety officer (senior member), division safety petty officers, and the chief master-at-arms. The committee

meets at least quarterly and minutes of each meeting are maintained. A recorder shall be appointed by the safety officer. The purpose of the committee is to identify and discuss NAVOSH problems, enhance interdepartmental communication in mishap prevention, and submit issues and recommendations in writing to the Safety Council and the commanding officer, generally by copy of the Safety Committee minutes. On small ships (less than 300 persons), the Enlisted Safety Committee may be incorporated into the Safety Council. Embarked air wings may hold Enlisted Aviation Safety Committee meetings as applicable while on board ship or may participate in the ship's Enlisted Safety Committee.

j. Individual Crew Members. All hands shall:

(1) Accomplish assigned tasks following applicable directives.

(2) Know and comply with all safety precautions/standards and use of personal protective equipment applicable to their respective assignment.

(3) Promptly report suspected unsafe or unhealthful work procedures or conditions to their immediate supervisor, the division safety petty officer, or the safety officer.

(4) Report immediately to his or her supervisor injuries, occupational illnesses, or property damage resulting from a mishap.

A0204. COMMAND NAVOSH PROGRAM ELEMENTS

The NAVOSH Program will consist of the following elements:

a. Inspections, Surveys and Medical Surveillance. Hazards can be identified as a result of outside inspections, industrial hygiene surveys, zone inspections, and reports by individual crew members. Medical surveillance is conducted to ensure that personnel are medically qualified to perform assigned duties and to monitor the effectiveness of various hazard-specific control programs. These topics are discussed in Chapter A3.

b. Hazard Control and Deficiency Abatement. Hazards should be prevented by safe system/ship design, proper preventive maintenance, safe operating procedures, and proper purchasing procedures. Hazard control can be accomplished through substitution, engineering controls, administrative controls, and personal protective equipment. After identification, deficiencies should be prioritized and corrected. These topics are discussed in Chapter A4.

c. Program Evaluation. The NAVOSH and major hazard-specific programs require self-evaluation for effectiveness and compliance. Evaluations are discussed in Chapter A5.

d. Mishap Investigation and Reporting. Afloat mishap investigation procedures should aid in identifying hazards and deficiencies, determining the

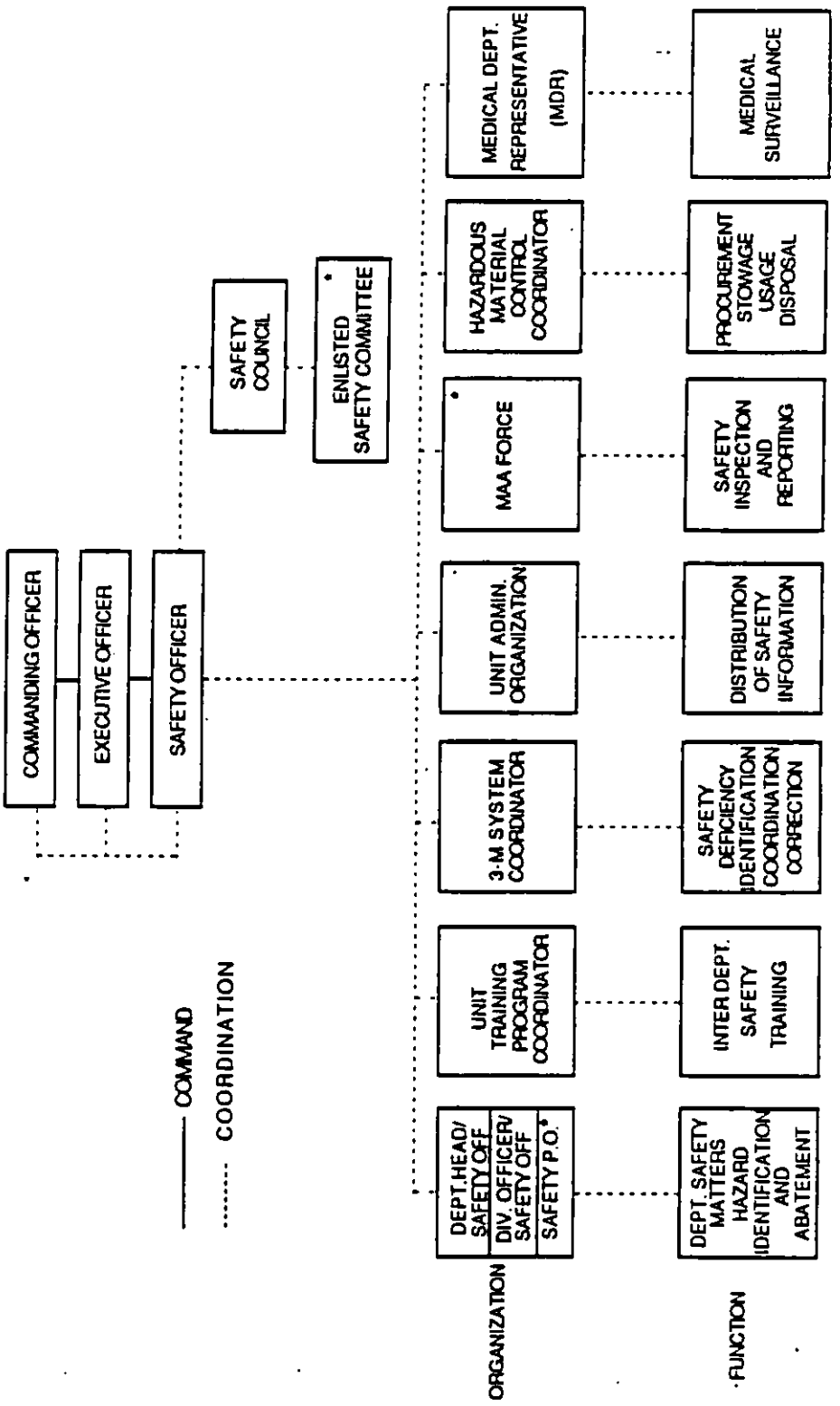
mishap causes, and provide for reporting and dissemination of information to prevent recurrence. This subject is discussed in Chapter A6.

e. Training. Afloat command training programs should promote mishap prevention through hazard awareness. Such training can be on-the-job, classroom, or formal Navy school instruction. NAVOSH training is described in Chapter A7.

f. Safety Standards and Regulations. These standards are based on established procedures for minimizing risk. Compliance with NAVOSH Standards is mandatory. Thorough monitoring is necessary to determine the adequacy of the command's standards and to recommend new standards to correct hazardous conditions. Safety standards are provided in Sections C or D of this manual.

Appendix A2-A

OCCUPATIONAL SAFETY AND HEALTH ORGANIZATION




* Not applicable to submarines.

## CHAPTER A3

## INSPECTIONS, SURVEYS, ASSISTS, HAZARD REPORTING AND MEDICAL SURVEILLANCE

### A0301. DISCUSSION

The core of the Navy Occupational Safety and Health (NAVOSH) Program is training and the identification, risk assessment and elimination or control of safety and health hazards. Hazard control is covered in Chapter A4, training in Chapter A7. This chapter addresses the methods used to identify hazards and the means of detecting adverse health effects. The principle way to discover hazards is through workplace inspections. Workplace inspections involve chain of command observation of operations at the job site on a routine basis to detect and correct hazards resulting from non-compliance with the safety standards of Sections C and D of this manual. Workplace inspections also involve evaluations of ship's spaces and equipment by appropriate occupational safety and health personnel. Industrial hygiene surveys are another essential risk management tool for identifying workplace hazards, characterizing their risk and eliminating them or developing appropriate controls. Medical surveillance primarily involves hazard-specific medical examinations of crewmembers to detect adverse health effects resulting from exposure to health hazards associated with their duties.

### A0302. WORKPLACE INSPECTIONS

a. Routine inspection of all workspaces to identify hazardous conditions and/or unsafe work practices is a basic requirement of the NAVOSH Program. Such jobsite work observation is intended to detect and correct hazards resulting from worker non-compliance with the safety standards of Sections C or D of this manual, with posted warning or equipment placards, with Planned Maintenance System (PMS) procedures, or with issued operating procedures "on-the-spot". Frequent examples of non-compliance may warrant a safety stand-down (described in Chapter A7) to raise the command's safety awareness.

b. Safety Inspections. The safety officer shall ensure that all workspaces are inspected at least annually, for safety. An experienced officer or chief petty officer, accompanied by a division safety petty officer (for submarines: a submarine qualified senior petty officer from the division), shall be assigned to accomplish the safety inspection of a workplace. It is not necessary to conduct safety inspections of all work spaces/equipment at one time. "Safety" shall be reviewed at all regularly scheduled zone inspections required by reference A3-1. These zone inspections will comprise the safety inspection. A copy of the completed deficiency list such as a Zone Inspection Deficiency List (ZIDL) shall be returned to the safety officer upon completion of the inspection. The safety officer shall review and track corrective action on safety deficiencies as specified in paragraph A0404.

c. Master-at-Arms Force Inspections (not applicable to submarines). The master-at-arms (MAA) force shall act as roving safety inspectors during their normal tours of the command. They shall be alert to any deficiencies or

hazards which could result in injury to personnel or damage to equipment. The MAA force shall assist the safety officer in keeping the NAVOSH Program visible to all hands. The MAA force shall attempt to have any observed deficiency or hazard corrected "on the spot". If this is not possible, the MAA Force will report the deficiency on a Safety Hazard Report (OPNAV 3120/5) (see Appendix A3-A).

d. Oversight Inspections. NAVOSH and Environmental Protection (EP) oversight compliance inspections are conducted by the Board of Inspection and Survey (INSURV) during Final Contract Trials (FCTs), surveys, and regularly scheduled (4-5 years) Underway Material Inspections (UMIs). A combined NAVOSH/EP assessment will be conducted during non-UMI interdeployment training cycles (IDTCs), not to exceed 36 months. Since regular INSURV inspections occur every 5 years and NAVOSH oversight evaluation is required at least every 3 years, ships' immediate superiors in command (ISICs) will schedule the intervening NAVOSH/EP assessment. These NAVOSH/EP assessments will be conducted inport during the IDTC by a small group of INSURV industrial hygiene officers and oil pollution abatement, marine sanitation device, plastic waste processor, etc. equipment experts. The assessment (including training in program requirements) will take approximately 2 days with a letter report being provided to the commanding officer only. Data collected in the intervening NAVOSH/EP assessments will be combined with that from FCTs/UMIs in the INSURV database for use by type commanders, CNO (N45), NAVSAFECEN, and NAVOSH/EP organizations. For ships not in a normal IDTC cycle, a NAVOSH/EP assessment either as part of a UMI or an intervening NAVOSH/EP assessment will be conducted at least every 36 months. Copies of all NAVOSH-related discrepancy sheets from these inspections and intervening assessments shall be routed to the safety officer to ensure that identified safety hazards are entered into the Navy Occupational Safety and Health Deficiency Abatement Plan (NAVOSHDAP) (see Chapter A4 for a description of the NAVOSHDAP).

## A0303. INDUSTRIAL HYGIENE SURVEYS

a. As part of their operational risk management responsibilities (reference A3-2), commanding officers are required to identify potential hazards, assess the risks presented by hazards, and provide controls to prevent exposures to personnel. An essential risk management tool is the industrial hygiene survey. The survey provides:

(1) Identification of hazards

(2) Characterization of risk for each hazard

(3) Recommended controls to prevent adverse health effects

(4) Medical surveillance recommendations

(5) Consultative services, including assistance in establishing the NAVOSH program.

b. **Baseline Industrial Hygiene Surveys**. Each ship and submarine shall arrange for a baseline industrial hygiene survey. This survey may be scheduled and obtained through the supporting Navy Environmental and Preventive Medicine Unit (NAVENPVNTMEDU) or Bureau of Medicine and Surgery (BUMED) medical treatment facility (MTF). The survey format, content, and exposure assessment strategy shall comply with reference A3-3 requirements and shall, as a minimum, consist of the following elements:

(1) A detailed hazard evaluation of all operations which present a potential for exposure to toxic chemicals and/or harmful physical (e.g. noise) or biological agents. Reproductive hazards and their controls are found in reference A3-4.

(2) Sampling results to quantitatively characterize potentially hazardous exposures shall be obtained as described in reference A3-3. Occupational Exposure Limits (OELs) are determined using Chapter 16 of reference A3-4.

(3) A summary of controls, which at a minimum, will include:

(a) An assessment of the effectiveness of general and local exhaust ventilation systems used for the control of contaminants and for flammable storerooms

(b) A list of each area/process requiring respiratory protection and the recommended type(s)

(c) A list of all personal protective equipment required for each area/process and the recommended type(s).

(4) A list of exposures and ventilation systems that require routine monitoring (exposure monitoring plan)

(5) A list of noise hazardous areas/equipment

(6) A list of eye hazardous areas/processes

(7) Medical surveillance requirements.

c. An update of the baseline industrial hygiene survey is necessary when system, equipment, or loadout changes significantly affect the onboard hazard and/or risk. Deterioration of existing controls, modifications and additions to shipboard processes and equipment will occur over time. An update of the industrial hygiene survey to address all changes which may have occurred, or a more limited survey to address specific concerns are available at the discretion of the commanding officer. Examples of changes that could significantly affect the onboard hazard and/or risk are as follows:

(1) New or modified equipment or processes

(2) Introduction of new toxic chemicals and/or harmful physical or biological agents

(3) Deterioration of existing controls (e.g. ventilation) which degrade over time.

Some of these changes would be the expected result of a shipyard availability period (i.e. COH, SLEP, SRA) completion and commanding officers may consider requesting assistance from their supporting NAVENPVNMEDU or MTF following a major availability.

d. New construction. On new construction ships, industrial hygiene services are necessary prior to the end of final contract trials. This will assist the ship in correcting any deficient material conditions that may arise due to potential deviation by the builder from contract specifications. At a minimum, the supporting NAVENPVNTMEDU or MTF will perform the following services prior to the end of final contract trials, and provide the ship a list of safety and health related material discrepancies and recommended corrective actions:

(1) An evaluation of ventilation systems used for the control of contaminants and for Hazardous Material (HM) stowage

(2) An evaluation of noise hazard areas/installed equipment

(3) An evaluation of plumbed and portable eye wash stations and deluge showers.

The baseline industrial hygiene survey for new construction ships shall be initiated as soon as possible after commissioning, and ships shall be in receipt of the completed survey report no later than 6 months after post shakedown availability.

e. Ship Class Database: A copy of all industrial hygiene reports shall be forwarded by the supporting NAVENPVNTMEDU or MTF to the Navy Environmental Health Center for the purpose of updating the ship class profile. BUMED shall provide ship class profiles to new construction ships prior to FCTs. This is a generic database that characterizes shipboard hazards and control measures common to that class.

**A0304. SHIPBOARD SAFETY SURVEY**

The Shipboard Safety Survey is conducted by the Naval Safety Center and is of 1 or 2 day's duration. It includes training and a survey of a representative sample of the entire ship, identifying safety hazards, training safety officers and safety petty officers, and providing the commanding officer with an evaluation of the safety status of the command. The survey is intended to promote hazard awareness. Shipboard Safety Surveys are optional, at the discretion of the commanding officer. The survey report is made only to the ship. No grade or relative standing is assigned and follow-up reports are not

required. This survey, which is available by request to NAVSAFECEN, is recommended once every 3 years (2 years for submarines).

A0305. HAZARDOUS MATERIAL CONTROL AND MANAGEMENT ASSIST

Ships needing assistance for implementation, day-to-day operations, or equipment problems with their Hazardous Materials Minimization Centers (HAZMINCENs) may request an assist from Consolidated Hazardous Materials Re-Use Inventory Management/Hazardous Materials Inventory Control System (CHRIMP/HICS) Assist Teams. These teams may be contacted through Naval Inventory Control Point (NAVICP).

A0306. HAZARD REPORTING BY INDIVIDUAL CREWMEMBERS

Detection of unsafe or unhealthful working conditions at the earliest possible time and prompt control of hazards identified as a result is essential to a successful NAVOSH Program. The following procedure enables any member to submit a report of unsafe or unhealthful conditions:

a. All hands shall be encouraged to orally report unsafe or unhealthful working conditions to their immediate supervisor. That supervisor shall promptly evaluate the situation and take appropriate corrective actions. Supervisors will contact the division safety petty officer, the division officer, or the safety officer for assistance, if necessary. The reporting crewmember shall be informed of all actions taken.

b. All crewmembers shall also be advised that, if the notified supervisor has not taken action to investigate the situation or if they are unsatisfied with the result, they may submit a written report of an unsafe or unhealthful working condition on a Safety Hazard Report (OPNAV 3120/5, Appendix A3-A). The report may be handwritten and should simply state the nature of the condition and its location. If the originator desires that his or her name not be revealed, this should be so stated in the report.

c. Upon receipt of a report, the safety officer shall contact the originator to acknowledge receipt and discuss the seriousness of the reported condition. The safety officer shall advise the cognizant division officer that an unsafe/unhealthful working condition has been reported.

d. The safety officer will evaluate all submitted reports. Alleged critical danger situations will be evaluated immediately. If possible, potentially serious or moderate situations shall be evaluated within 3 days (see paragraph A0404 for descriptions of critical, serious, or moderate hazards or deficiencies). If necessary, the safety officer may request assistance from support activities for the evaluation.

e. An interim or final response in writing to the originator of the reported condition will be provided under the authority of the safety officer within 10 working days of report receipt. Interim responses will include the expected date for a final response. If the evaluation identifies a hazard and its causative deficiency, the final response shall include a summary of the

action taken for abatement of the deficiency. If no significant hazard is found to exist, the reply shall include the basis for that determination.

f. The final response shall encourage the originator to contact the safety officer if he or she desires additional information or is dissatisfied with the response. If the originator remains dissatisfied after discussing the matter, the safety officer shall advise him or her of the right to appeal to the commanding officer. The appeal (or report) shall be in writing and contain, at least, the following information:

(1) A description of the condition including its location, nature of the alleged hazard, and standards violated (if known) (a copy of the original hazard report will suffice).

(2) How, when, and to whom the original report was submitted.

(3) What actions (if known) were taken as a result of the original report.

g. The commanding officer, or his/her representative, shall respond to the originator of the appeal within 10 working days. An interim response will suffice if the evaluation is incomplete at that time. If further appeal is warranted, refer to reference A3-1.

**A0307. VARIANCES AND ALTERNATE STANDARDS**

a. **Variances**. In certain situations, it may be impossible to comply with an applicable NAVOSH standard. In this case, a request for a variance shall be initiated by the safety officer and submitted to the Fleet Commander in Chief via the chain of command. Variance requests shall explain why compliance is impossible and describe actions taken to achieve the maximum degree of protection possible.

b. **Alternate Standards**. In certain cases, it may be possible to achieve equal or better protection through the application of procedures/ criteria different than those specified by a NAVOSH standard. Proposed alternate standards shall be submitted to CNO (N45) through the chain of command for approval.

**A0308. FEDERAL AND STATE OCCUPATIONAL SAFETY AND HEALTH (OSH) INSPECTIONS OF NAVY, CIVILIAN, OR CONTRACTOR WORKPLACES ON BOARD NAVY SHIPS**

This section provides guidance and procedures regarding requests by Federal or state OSH officials to inspect or investigate Navy civilian or contractor workplaces on board Navy ships in port or located at associated facilities (e.g., industrial activities).

a. Subject to the conditions and exceptions stated below, Navy afloat activities are advised that permission is granted for Federal OSHA compliance officials to be taken aboard U.S. Navy ships in port to conduct safety and health inspections and investigations of Navy civilian and contractor

workplaces. State occupational safety and health officials shall not be granted access aboard naval ships and service craft or in areas of exclusive Federal jurisdiction. A summary of inspector access is provided in Appendix A3-B.

(1) Except for the limitations imposed in paragraphs A0305a(2) and (3), OSHA compliance officials shall be provided, upon request, immediate access to Navy civilian or contractor workplaces where the Navy repair activity or contractor has equipment or other work-related material or paraphernalia in the workplace under government work or a government contract. Requests for access to inspect those workplaces where Navy civilian or contractor employees have worked or will work but where the work force is no longer deployed, or has yet to deploy any work-related material or paraphernalia shall be forwarded by message and by telephone to the CNO (N4), copy to Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) (copy to the Navy repair activity for Navy civilian workers), with information to the chain of command. All message requests shall identify the workplace involved and furnish all immediately available details. A reply to such requests will be forthcoming without delay.

(2) If the requested inspection/investigation involves handling or storage of ammunition or explosives, the request for access shall be denied. A report of any such request shall be made to the CNO (N4), information to the chain of command (and for Navy civilians, to the Navy repair activity), by message.

(3) With respect to nuclear propulsion plant spaces on nuclear-powered ships, to related nuclear shipyard facilities, ashore or afloat, shipboard nuclear support facilities, or to nuclear weapons areas, the request for access shall be forwarded by message and by telephone to CNO (N4) with copies to COMNAVSEASYSCOM (SEA-08) and the chain of command. All message requests shall identify the workplace involved and furnish all other immediately available details. Access shall be withheld pending receipt of the reply and, where granted, shall be subject to the requirements of this chapter and any conditions imposed in the CNO reply. Such a reply will be furnished expeditiously, and, if possible, within 3 working hours from receipt of the request by the CNO.

(4) In cases of non-nuclear ships or nuclear ships, with the exceptions in paragraphs A0305a(2) and (3), and under the procedures of paragraph A0305a(1), access to Navy civilian and contractor workplaces, as defined above, shall be granted upon request to Federal OSHA compliance officials to conduct inspections and investigations of such workplaces within reasonable limits and in a reasonable manner during regular working hours except when other times are mutually agreed upon by the concerned officials.

(5) No photographs shall be taken by OSHA officials. Any photographs requested by OSHA officials shall be taken by Navy personnel, shall be tentatively classified CONFIDENTIAL, and shall not be delivered to OSHA compliance officials until all film, negatives, and photographs have been sent to COMNAVSEASYSCOM (SEA 00D2) and fully screened and censored, as appropriate,

in the interest of national security. Also, any design or system performance data (e.g., recordings of noise sound level profiles and light level readings) shall be forwarded to COMNAVSEASYSCOM (SEA 00D2) for screening as described above prior to release. This process shall normally be completed within a period of 15 working days from receipt of material by NAVSEASYSCOM.

(6) OSHA officials shall not be given copies of any Federal records or reports. If access to Navy records or reports is requested by OSHA officials, the request shall be forwarded to the appropriate releasing official(s).

(7) In addition to presenting appropriate identification credentials, all OSHA compliance officials shall be required to possess appropriate security clearance for entry into areas where the workplace is located.

(8) Representatives of the ship's commanding officer, and, if appropriate, the activity contracting officer and the commanding officer or officer in charge of the shore activity at which the ship is located, and the commanding officer of the Navy repair activity (for Navy civilian employees) shall accompany the OSHA compliance official at all times during this physical inspection of Navy civilian or contractor workplaces. A representative of the contractor and a representative of the employees may accompany the OSHA compliance official during the inspection/investigation provided proper security clearances are verified. If there is no authorized employee representative, the OSHA compliance official is authorized to consult with a reasonable number of employees only (contractor or Navy civilian), concerning matters of health and safety in the pertinent workplace.

(9) OSHA compliance officials are authorized to question privately the contractor, contractor employee, Navy civilian employee, or their authorized representatives.

b. Unless specifically requested by the responsible OSHA official, installation commanders and ship commanding officers shall not provide contractors with advance notice of OSHA inspections except in cases of apparent imminent danger to Navy or contractor employees. Any person who violates the foregoing is subject to a fine of not more than $1,000 or to imprisonment of not more than 6 months, or both.

c. Full information regarding any OSHA inspection/investigation aboard ship shall be reported in writing to the CNO with a copy to COMNAVSEASYSCOM and the chain of command.

**A0309. MEDICAL SURVEILLANCE**

a. **Purpose**. The medical surveillance program is designed to monitor the continuance of the health of individuals in the fleet and serve the following purposes:

(1) Job certification/recertification to determine an individual's fitness to begin or continue to perform a job safely and effectively

(2) To monitor the effectiveness of major hazard-specific (e.g., noise, heat, asbestos) programs by following the health status of exposed personnel

(3) Secondary prevention to detect early indicators of excessive exposure caused by the work environment before actual illness, disease, or injury occurs and to allow for the timely implementation of corrective actions to prevent any long-term adverse effects

(4) To comply with the requirements of certain NAVOSH standards as noted in Section B of this manual.

b. Selection of personnel for medical surveillance examinations shall be based primarily on the results of industrial hygiene surveys. Selection for some medical surveillance programs may be based on a history of past exposure to certain hazardous materials such as asbestos and cadmium. The medical department representative (MDR), using the recommended medical surveillance requirements from the industrial hygiene survey and assisted by the safety officer, division officer, division safety petty officer and workplace supervisor, will identify personnel who require medical surveillance following the guidance of enclosure (1) to reference A3-5. Periodic occupational medical examinations should be scheduled on a birth-month basis or as operational requirements permit. When there is no Navy standard for medical surveillance for a specific agent, personnel shall be placed under medical surveillance when the action level (1/2 of the permissible exposure limit) of the agent is exceeded and the exposure exceeds 30 days per year or 10 days a quarter. Detailed requirements for these examinations shall be established by the Chief, Bureau of Medicine and Surgery (CHBUMED).

c. Medical Examinations. The ship's MDR shall make all arrangements for required medical examinations. These examinations include baseline (preplacement), periodic, termination, certification, and special examinations as required by Section B of this manual. The scope of these examinations will be determined by reference A3-5. The MDR will provide all available information regarding each individual's exposure to allow either the cognizant shore based medical treatment facility (MTF), squadron medical officer, or the ship's medical department, if resources permit, to perform the proper examination.

d. Evaluation of Results. The MDR shall monitor all medical surveillance results for any trends apparently due to hazard exposure.

e. Medical Records. Maintenance, retention, and disposition of personnel medical records shall be per existing directives. The MDR shall ensure that the results of all hazard exposure medical examinations and personal exposure records are entered into each individual's medical record. The MDR shall also inform each individual, verbally or in writing, as to the significance of all findings, and access to such records shall be provided upon request.

## CHAPTER A3

## REFERENCES

A3-1. OPNAVINST 3120.32C, "Standard Organization and Regulations of the U.S. Navy, Article 620.13, Zone Inspection Bill"

A3-2 OPNAVINST 3500.39, Operational Risk Management (NOTAL)

A3-3. NEHC Technical Manual, Industrial Hygiene Field Operations Manual, latest revision (NOTAL)

A3-4 OPNAVINST 5100.23E, Navy Occupational Safety and Health (NAVOSH) Program Manual.

A3-5. NEHC Technical Manual, Medical Surveillance Procedures Manual and Medical Matrix, latest revision.

**Appendix A3-A**

## SAFETY HAZARD REPORT

1. ID NUMBER

### A. REPORTING INDIVIDUAL/SAFETY OFFICER SECTION

2. ISSUED BY

3. ISSUED TO

4. HAZARD NOTED
   A. DATE
   B. TIME

5. RISK ASSESSMENT CODE (See explanation on back before completing)

6. LOCATION OF HAZARD

7. NATURE OF HAZARD

### B. DIVISION OFFICER SECTION

1. CORRECTIVE ACTION TAKEN

2. INTERIM CORRECTIVE MEASURES

3. NAME, RANK, AND TITLE

4. SIGNATURE

5. DATE FORWARDED

### C. DEPARTMENT HEAD SECTION

1. ACTION TAKEN

☐ CORRECTIVE ACTION TAKEN IN ITEM B1 ADEQUATE

☐ ADDITIONAL ACTION TAKEN/REQUIRED (GIVE EXPLANATION IN C2)

2. EXPLANATION OF ADDITIONAL ACTION TAKEN/REQUIRED

3. NAME, RANK, AND TITLE

4. SIGNATURE

5. DATE FORWARDED

### D. RECORD SECTION

1. REVIEW OF ACTION TAKEN IN SECTIONS A, B, AND C

| TITLE | INITIALS | DATE |
|---|---|---|
| SAFETY OFFICER | | |
| DEPARTMENT HEAD | | |
| COMMANDING OFFICER | | |

ACCOMPLISH REVIEW WITHIN 72 HOURS OF REPORT INITIATION

2. IS CSMP ENTRY REQUIRED?

☐ YES ☐ NO

JSN FOR 4790/2K _____

3. IF YES:

ACTION COMPLETE _____
DATE

SIGNATURE _____
SAFETY OFFICER

OPNAV 3120/5 (Rev. 5-99) (Previous editions can be used)

A. Risk Assessment. Each identified/validated hazard shall be assigned a Risk Assessment Code (RAC) by the activity safety office. The RAC represents the degree of risk associated with the deficiency and combines the elements of hazard severity and mishap probability. The RAC is derived as follows:

1. Hazard Severity. The hazard severity is an assessment of the worst possible consequence, defined by the degree of injury, occupational illness, or property damage which is likely to occur as a result of a deficiency. Hazard severity categories shall be assigned by Roman numeral according to the following criteria:

(a) Category I - **Catastrophic**: The hazard may cause death or loss of a facility.

(b) Category II - **Critical**: May cause severe injury, severe occupational illness, or major property damage.

(c) Category III - **Marginal**: May cause minor injury, minor occupational illness, or minor property damage.

(d) Category IV - **Negligible**: Probably would not affect personnel safety or health, but is nevertheless in violation of a NAVOSH standard.

2. Mishap Probability. The mishap probability is the probability that a hazard will result in a mishap based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and affected population. Mishap probability shall be assigned an Arabic letter according to the following criteria:

(a) **Subcategory A** - Likely to occur immediately or within a short period of time.

(b) **Subcategory B** - Probably will occur in time.

(c) **Subcategory C** - May occur in time.

(d) **Subcategory D** - Unlikely to occur.

3. Risk Assessment Code (RAC). The RAC is an expression of risk which combines the elements of hazard severity and mishap probability. Using the matrix shown below, the RAC is expressed as a single Arabic number that can be used to help determine hazard abatement priorities.

| HAZARD SEVERITY | MISHAP PROBABILITY | | | |
|---|---|---|---|---|
| | A | B | C | D |
| Category I | 1 | 1 | 2 | 3 |
| Category II | 1 | 2 | 3 | 4 |
| Category III | 2 | 3 | 4 | 5 |
| Category IV | 3 | 4 | 5 | 5 |

| RAC |
|---|
| 1 - Critical |
| 2 - Serious |
| 3 - Moderate |
| 4 - Minor |
| 5 - Negligible |

OPNAV FORM 3120/5 (Rev. 5-99) BACK

**Appendix A3-B**

**Inspection of Department of the Navy Workplaces by Federal and State OSH Representatives**

| | AFLOAT | | |
|---|---|---|---|
| | Contractor Workplaces | Civilian Workplaces | Exclusively Military Workplaces |
| FEDERAL OSH REPRESENTATIVES | YES [1,2,3] | YES [1,2,3] | NO |
| STATE OSH REPRESENTATIVES | NO | NO | NO |

NOTES:
1. Ships or service craft must be in port; Navy Department will not transport Federal OSHA representatives to ships or service craft that are underway.
2. Federal and state OSH representatives have no jurisdiction over military unique operations or equipment. In addition, these officials are not authorized to inspect workplaces or operations for compliance with any standard implementing 10 U.S.C. 172 (explosive safety) or 42 U.S.C. Section, 2012, 2021, or 2022 (nuclear safety).
3. Inspections may be announced or unannounced.

## CHAPTER A4

## HAZARD CONTROL AND DEFICIENCY ABATEMENT

### A0401. DISCUSSION

There are three methods of controlling the impact of hazards. The first, and preferred, is to prevent the hazard at the design stage. The second, is to identify and eliminate existing hazards. The third is to reduce the likelihood and severity of mishaps from hazards that cannot be eliminated.

### A0402. HAZARD PREVENTION

Hazards may be prevented through appropriate actions during the design process, when operating procedures are developed and when equipment is purchased. Since many effective actions such as system safety reviews, design reviews, and the development of operating and purchasing procedures are the responsibility of the Systems Commands, only those actions which can be taken at the shipboard level to prevent hazards will be addressed.

a. Preventive Maintenance. Some hazards arise as the result of an inadequate preventive maintenance program. An effective shipboard preventive maintenance program can keep equipment and material from degrading to the point where it becomes an operational hazard.

b. Operating Procedures. Standard operating procedures (SOPs), instructions, or similar directives that are issued to identify the manner in which work is to be performed can prevent hazards from occurring. Obvious examples include tank cleaning, foul weather operations, and asbestos removal. Personnel must be familiar with the appropriate SOPs and current updates applicable to their duties.

c. Purchasing Procedures. Many hazards may be prevented by incorporating appropriate specifications into purchase orders for equipment/material. Normally, ship personnel have little control over specifications for equipment/material purchased through the Navy supply system. However, since a considerable amount of material/equipment is locally purchased, the ship can prevent hazards by purchasing the proper types of material and the proper amounts. Hazardous material is of special concern. All local purchases of potentially hazardous material shall be accomplished per paragraph B0305 of this manual.

### A0403. PRINCIPLES OF HAZARD CONTROL

Deficiency abatement will help control the frequency and severity of mishaps for those hazards which are impossible to eliminate in the operational environment. Short of complete elimination of the hazard, methods of hazard control, in order of preferred application, are substitution, engineering controls, administrative controls, and use of personal protective equipment. (R

a. Substitution. The risk of injury or illness may be reduced by replacement of an existing process, material, or equipment with a similar item having a lower hazard potential. Care must be exercised in any substitution to ensure that the substitute materials are technically acceptable and that a new hazard is not being introduced. COMNAVSEASYSCOM/COMNAVAIRSYSCOM should be contacted for substitution approval.

R) b. Engineering Controls. This means of hazard control is primarily accomplished through design and advanced planning. Whenever these methods are used for abatement aboard ship, they should be approved by the cognizant safety officer or industrial hygienist prior to implementation. Examples of engineering control methods include isolation and ventilation.

(1) Isolation. Isolation is the physical separation of a hazard from personnel to eliminate or minimize contact. This involves the use of a barrier or limiter and may be in the form of a physical barrier, time separation, or distance. Examples include machine guards, electrical insulation, sound barriers, and remote controlled equipment.

(2) Ventilation. This is the control of potentially hazardous airborne substances through the movement of air. Two methods are "general ventilation" or "dilution ventilation" and "local exhaust ventilation". General ventilation is the dilution of an airborne substance by mixing it with uncontaminated air. Local exhaust ventilation is the removal of an airborne substance at its source or point of generation. Local exhaust ventilation is the preferred and more economical method. The use of general ventilation should be limited to the control of heat/humidity or low toxicity solvent vapors if no other ventilation is possible.

c. Administrative Control. This method of abatement employs special operating procedures to reduce the exposure of individuals to hazards. Examples include limiting access to high hazard areas, or, adjusted work schedules and use of semi-automatic equipment that does not require constant attendance (time-separation). Adjusted work schedules are appropriate only when the hazard is recognized as having a limit below which all personnel may be repeatedly exposed without adverse effect.

The amount of time by which a limit may be exceeded for short periods without injury depends on several factors such as the nature of the hazard, whether or not the effects are cumulative, the frequency with which the hazard occurs, and the duration of the hazard. All factors must be taken into consideration in determining whether a hazardous condition exists and whether or not exposures above the limit are permitted. Exposures above established limits shall not be allowed without the commanding officer's approval.

d. Personal Protective Equipment. This method of hazard control is the least preferred because any equipment breakdown, failure, or misuse immediately exposes the wearer to the hazard. Nevertheless, there are instances where adequate risk reduction cannot be achieved through other methods and personal

protective devices must be used, either alone or in conjunction with other protective measures. Chapter B12 of this manual discusses personal protective equipment in general. Other chapters describe personal protective equipment requirements for specific programs.

A0404. ABATEMENT PROCEDURES

a. The results of workplace inspections and surveys and Hazard Reports (OPNAV 3120/5) shall be provided by the safety officer to the division officer in charge of the operation/space evaluated. Upon receipt of this report, the division officer shall take prompt action to ensure correction of each identified deficiency. (R

NOTE:

When cases of imminent danger are identified, the senior person on the scene must be notified and must stop all work immediately except in an operational emergency. The commanding officer shall be notified of the situation, and action taken as soon as possible. Imminent danger is defined as a shipboard condition which immediately threatens the loss of life, bodily injury, or illness to personnel.

b. Abatement Priorities. Once the results of workplace monitoring are evaluated, validated deficiencies shall be assigned a Risk Assessment Code (RAC) and recommendations made to eliminate the deficiency and therefore control the hazard. If a deficiency cannot be corrected within 30 days, a Ship's Maintenance Action Form (OPNAV 4790/2K, reference A4-1) shall be prepared with a Safety Hazard Code (the RAC shall be used to determine this code) entered into Block 15, Safety Hazard. The ship's 3M Coordinator shall forward all OPNAV 4790/2Ks with a Block 15 entry to the safety officer for review. The safety officer shall enter the RAC into the NAVOSH Deficiency Abatement Plan (NAVOSHDAP). (R

NOTE:

Only NAVOSH deficiencies shall be identified in block 15.

Hazards evaluated during an industrial hygiene survey will have the causative deficiencies identified and shall be assigned RACs by the evaluating industrial hygienist. (R

c. Risk Assessment. The RAC provides a measure of the degree of risk associated with a deficiency by assessing both the severity of the hazard produced by the deficiency and the probability of a mishap occurring and, therefore, provides a priority for the correction of deficiencies. The RAC is derived as follows: (R

(1) Hazard Severity. The hazard severity is an assessment of the worst potential consequence, defined by degree of injury, illness, or physical

damage which is likely to occur as a result of the deficiency. Hazard severity categories are assigned Roman numerals according to the following criteria:

| Description | Category | Results |
|---|---|---|
| CATASTROPHIC | I | Death or operational system loss. |
| CRITICAL | II | Severe injury, severe occupational illness, or major operational system damage. |
| MARGINAL | III | Minor injury, minor occupational illness, or minor system damage. |
| NEGLIGIBLE | IV | Probably would not effect personnel safety or health, but is nevertheless a violation of a NAVOSH standard. |

(2) Mishap Probability. The mishap probability is the likelihood that a deficiency will result in a mishap, based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and affected population. Mishap probability is assigned a letter according to the following criteria:

| Subcategory | Description |
|---|---|
| A | Likely to occur immediately or in a short period of time. |
| B | Probably will occur in time. |
| C | May occur in time. |
| D | Unlikely to occur. |

(3) Risk Assessment Code (RAC). To derive the RAC from the elements of hazard severity and mishap probability, use the matrix shown below. The RAC is expressed as a single Arabic number (1, 2, 3, 4, or 5) that can be used to help determine hazard abatement priorities.

| | | Mishap Probability | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| Hazard Severity | I | 1 | 1 | 2 | 3 |
| | II | 1 | 2 | 3 | 4 |
| | III | 2 | 3 | 4 | 5 |
| | IV | 3 | 4 | 5 | 5 |

| Code | Description |
|---|---|
| 1 | CRITICAL SAFETY OR HEALTH DEFICIENCY-CORRECT AS SOON AS POSSIBLE<br>This is a deficiency which presents a critical safety hazard to personnel or machinery or health hazard to personnel which must be corrected immediately. This code is to be used for items such as electric shock hazards, inoperative interlock or safety devices, missing or damaged lifelines, inoperable escape scuttles, a leaking refrigerant system (air conditioning or refrigeration) into a confined space, leaking component containing PCBs, and the like. All efforts must be exerted to correct these items prior to any other maintenance deficiencies. Suspension of use of equipment/system/space is mandatory. |
| 2 | SERIOUS SAFETY OR HEALTH DEFICIENCY-SUSPENSION OF EQUIPMENT/ SYSTEM/SPACE USE IS REQUIRED<br>These items deal with serious safety hazards to personnel or machinery or health hazards which must be corrected prior to resuming use of equipment/system/space. |
| 3 | MODERATE SAFETY OR HEALTH DEFICIENCY-WAIVER OF EQUIPMENT/ SYSTEM/SPACE USE IS GRANTED PENDING CORRECTION OF THE ITEM<br>This category is to be used in cases where the equipment/ system/space can be operated or utilized in a satisfactory manner without greatly risking personal injury, serious damage to the equipment/system/space, or greatly risking personal health. |
| 4 | MINOR SAFETY OR HEALTH DEFICIENCY<br>This is a category of safety or health deficiency which should be corrected when resources become available, but use of equipment/ system/space is unrestricted. |

5 NEGLIGIBLE SAFETY OR HEALTH DEFICIENCY
This category is used to identify those deficiencies which are noted for record purposes and may be corrected when other work is accomplished on the equipment/system/space.

d. Some deficiencies can be corrected "on the spot." When this is possible, the division officer will either notify the safety officer or complete the applicable portion of the Safety Hazard Report and return it to the safety officer via the appropriate department head.

R) e. Shipboard hazards that cannot be corrected "on the spot" shall be documented in the Work Center Work List (WCWL)/Job Sequence Number (JSN) Log per reference A4-1. Any item that is not corrected within 30 days is documented on a Ship's Maintenance Action Form (OPNAV 4790/2K). Safety Hazard Codes 1 through 5 will be entered in block 15 of the OPNAV 4790/2K per paragraph A0404b.

R) f. The NAVOSH Deficiency Abatement Plan (NAVOSHDAP) shall consist of Option D of the Current Ships Maintenance Project (CSMP) 1 printout and other CSMP supporting documents required by reference A4-1. The safety officer shall maintain at least a quarterly updated copy of the Option D of the CSMP.

A0405. INTERIM CONTROLS

a. As soon as it is recognized that immediate correction of workplace deficiencies is not possible, appropriate interim controls shall be established and documented on the Safety Hazard Report. Interim controls may consist of physical barriers, written instructions, word passed over the 1 multi-channel (1MC), warning signs, or other measures as deemed appropriate. Interim controls shall meet or exceed minimum necessary requirements to prevent future damage to equipment or injury/death to personnel. Interim controls in effect more than 60 days shall be approved by the Safety Officer.

b. If an unabated deficiency is classified as critical or serious (RAC 1 or 2), the commanding officer shall be notified and will personally approve interim protective measures. Interim controls for other unabated deficiencies shall be approved by the appropriate department head.

A0406. BACK INJURY PREVENTION

R) a. Navy studies indicate that a significant amount of at-sea lost work days are from back injuries. From 1974 to 1992, there were 20,923 active duty personnel, first time hospital admissions for back injuries for which 43 percent eventually received medical or physical evaluation boards. Back problems can result in pain, lost work time, inconvenience (to the individual and the Navy), and possible disability. The back is the most injury-prone part of the body and, as a result, most personnel will suffer back pain at some time in their lives. Preventing back injury is easier than correcting it.

b. In order to reduce afloat back injuries, the following actions shall be taken:

(1) Conduct back injury prevention training. This training shall include: the causes of back injury, exercise programs to prevent back injury, back injury prevention on and off the job, lifting techniques, and back injury care. This training shall be conducted as a part of all hands occupational safety and health training (see paragraph A0703c). See Appendix A7-F for training aids to assist in this training. (R

(2) Investigate and determine the cause of back injuries. Develop appropriate corrective action to reduce future injury to personnel from the identified cause(s) (see reference A4-2). Such corrective action could include training on lift methods for heavy loads, reduction of load weight by breaking up loads into smaller packages, and modification of processes being used to avoid twisting when lifting or carrying a heavy load.

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## CHAPTER A4

## REFERENCES

A4-1. OPNAVINST 4790.4B, *Ships Maintenance and Material Management (3-M) Manual*, (NOTAL).

A4-2 OPNAVINST 5100.21B, *Afloat Mishap Investigation and Reporting*, (NOTAL). (A

# CHAPTER A5

# PROGRAM EVALUATION

## A0501. DISCUSSION

There are two methods of determining the status of a ship's NAVOSH Program. The first and most objective method is to monitor the number of occupational injuries and illnesses experienced by the ship and identify any mishap trends, taking into account crew size and ship's employment. In addition, evaluations can be based on whether the rate or severity of mishaps is increasing or decreasing or upon comparisons with similar units. Evaluations should identify methods and approaches for correcting deficiencies or preventing future mishaps and accidents. This is a measure of program effectiveness. The second, and more subjective method is to assess the degree of implementation of basic NAVOSH Program elements by the ship through the evaluation of program accomplishments, such as the amount of training conducted and received, the completion of inspections, the number of deficiencies abated, and the attitude of the crew towards the program. These are measures of program compliance. Both approaches should be used for both internal self-evaluation and external program review.

## A0502. SELF-EVALUATION

a. Checklists are provided as Appendix A5-A for the NAVOSH Program and as appendices to hazard-specific program, tag-out program, and personal protective equipment chapters in section B of this manual for use by commands in evaluating program compliance.

b. The Safety Council should periodically evaluate the effectiveness of the NAVOSH Program. As a minimum, an annual formal evaluation will be provided in council minutes. The following indicators should be used:

(1) A rise or decline in the number of mishaps reported by internal reports and injuries reported by the Medical Department.

(2) A rise or decline in the number of reported unsafe or unhealthful working conditions.

(3) The progress made (or lack thereof) in the correction of deficiencies, hazards, and unsafe or unhealthful working conditions.

(4) A rise or decline in the number of man-days lost due to work related injuries.

(5) A review of the quality and quantity of internal hazard safety reports, mishap reports, and SAFETYGRAMS submitted (see Chapter A6).

A) (6) Any unsatisfactory NAVOSH program evaluations received during a command inspection or Occupational Safety and Health Management Evaluation.

c. An evaluation of any facet of the safety program may be initiated anytime mishap, deficiency, or near-mishap indicators so warrant. The checklists provided should also be used for these impromptu evaluations.

A0503. EXTERNAL INSPECTIONS/EVALUATIONS/SURVEYS

The shipboard NAVOSH Program may be evaluated during various inspections, evaluations, and surveys conducted by INSURV, the Type Commander, BUMED, or the Naval Safety Center. Specific workplace safety/health deficiencies will be noted during such visits. Deficiencies from these inspections, evaluations, or surveys will be handled per Chapter A4 of this manual.

**Appendix A5-A**

**NAVOSH PROGRAM CHECKLIST**

Indicate by an X, the answer to each of the questions below. If a question is not applicable to the command, indicate by NA in the YES block. Explain or describe the condition warranting any NO answer on the space provided at the end of the checklist or on additional sheets, if necessary.

The location of the NAVOSH Manual reference for any question is provided at the end of the question.

| | YES | NO |
|---|---|---|
| **PROGRAM RESPONSIBILITY** | | |
| 1. Has the command primary or collateral duty safety officer been designated by the commanding officer? (A0203b(2)) | | |
| 2. Is the safety officer assigned directly under the executive officer but with direct access to the commanding officer? (3120.32C, Chap 7) | | |
| 3. Does the safety officer oversee ship-wide planning to implement all elements of the shipboard occupational safety and health program? (A0203c(2)) | | |
| 4. Has the safety officer prepared and submitted requests for outside OSH support (industrial hygiene, radiological health, and safety inspections) for the command? (A0203c(3)) | | |
| 5. Has the safety officer participated in appropriate mishap investigations? (A0203c(4)) | | |
| 6. Have mishap reports been submitted in a timely and accurate manner? (A0203c(5)) | | |
| 7. Does the safety officer maintain and analyze NAVOSH records (Inspection/Survey Reports, Injury Reports, Hazard Reports, and mishap statistics) and determine trends? (A0203c(6)) | | |
| 8. Does the safety officer participate in or appoint a trained NAVOSH representative to participate in zone inspections? (A0203c(7)) | | |
| 9. Does the safety officer ensure wide dissemination of NAVOSH information? (A0203c(8)) | | |

(R

| | | YES | NO |
|---|---|---|---|
| 10. | Does the medical department representative (MDR) have direct access to the commanding officer regarding the medical aspects of the NAVOSH Program? (A0203d(1)) | | |
| 11. | Does the MDR keep the safety officer and other department heads/division officers informed, as appropriate? (A0203d(1)) | | |
| 12. | Does the MDR provide health information to division officers/work center supervisors in support of the occupational health program? (A0203d(4)) | | |
| 13. | Does the MDR have a quality assurance program for occupational medicine? (A0203d(7)) | | |
| 14. | Is there a division safety petty officer appointed for each division (not applicable to submarines)? (A0203e(6)) | | |
| 15. | Are all of the division safety petty officers E-5 or above (not applicable to submarines)? (A0203e(6)) | | |
| 16. | Is the master-at-arms (MAA) force being effectively used as a safety force (have they identified hazards, reported material deficiencies, corrected safety deficiencies/ hazards on-the-spot when applicable) (not applicable to submarines)? (A0203f) | | |
| R) 17. | Do division safety petty officers inspect division spaces and submit Hazards Reports on identified deficiencies (not applicable to submarines)? (A0203g(1)) | | |
| 18. | Do division safety petty officers ensure that prescribed personal protective equipment is provided and properly used by trained division personnel (leading petty officers on submarines)? (A0203g(9)) | | |
| 19. | Has the Safety Council been meeting quarterly? (A0203h) | | |
| 20. | Is either the commanding officer or the executive officer the Safety Council chairperson? (A0203h) | | |
| 21. | Are required personnel in attendance or adequately represented at Safety Council meetings? (A0203h) | | |
| 22. | Has the Safety Council reviewed the command's safety statistics (Mishap/Near Mishap Reports, Inspection Reports, Injury Reports) and directed action be taken as a result of these statistics? (A0203h) | | |

| | | YES | NO | |
|---|---|---|---|---|
| 23. | Has the Enlisted Safety Committee been meeting quarterly as required (not applicable to submarines)? (A0203i) | | | |
| 24. | Have all divisions been consistently participating in the Enlisted Safety Committee (not applicable to submarines)? (A0203i) | | | |
| 25. | Are Safety Committee minutes reviewed and acted upon by the Safety Council (not applicable to submarines)? (A0203i) | | | |
| 26. | Does the safety officer have access to the following: (A0203) | | | |
| | a. OPNAVINST 3120.32C, Standard Organization and Regulations of the Navy | | | (R (D |
| | b. NAVSAFECEN 5202/30, Afloat Mishap Investigation Handbook | | | |
| | c. Naval Ships Technical Manuals | | | |
| | ***INSPECTIONS, SURVEYS AND MEDICAL SURVEILLANCE*** | | | |
| 27. | Has a safety inspection been conducted on every work space aboard ship within the past year and are the findings retained aboard for review at the next command/INSURV inspection? (A0302b) | | | |
| 28. | Has the ship arranged for an industrial hygiene survey within the past 18-24 months and are the findings retained aboard for review at the next command/INSURV inspection? (A0302c) | | | (R |
| 29. | Does the safety officer receive discrepancy sheets from assistance visits and inspections, identify hazards, and enter these in the NAVOSHDAP as appropriate? (A0302f) | | | |
| 30. | Are Hazard Reports (OPNAV 3120/5) available for use by all hands? (A0303b) | | | |
| 31. | Does the number and quality of Hazard Reports show this to be an effective program? (A0303) | | | |
| 32. | When reports are submitted by crew members, are conditions investigated and are responses provided promptly (within 10 days)? (A0303e) | | | |

| | | YES | NO |
|---|---|---|---|
| | 33. Are appeals regarding the reported conditions reported to the commanding officer and is a response provided promptly (within 10 days)? (A0303f) | | |
| | 34. When it is not possible to comply with an applicable NAVOSH standard, is a request for a variance initiated by the safety officer? (A0304a) | | |
| A) | 35. If Federal or State occupational safety and health inspectors request permission to conduct inspections aboard ship, has such permission been granted only to Federal inspectors? (A0305a) | | |
| A) | 36. Have situations in which access has been denied been reported to the CNO, copy to NAVSEASYSCOM? (A0305a) | | |
| A) | 37. Have OSHA officials been prohibited from taking photographs aboard ship; have any photographs been taken by Navy photographers and have they been properly released? (A0305a(5)) | | |
| | 38. Does the MDR, assisted by the safety officer, division officer, division safety petty officer, and work center supervisor, identify personnel requiring medical surveillance based on the results of industrial hygiene surveys? (A0306c) | | |
| | 39. Does the MDR make arrangements for required medical examinations and provide available information regarding each industrial exposure to the medical treatment facility, squadron medical officer, or ship's medical department? (A0306c) | | |
| | 40. Is the MDR monitoring medical surveillance results for trends due to hazardous exposure? (A0306d) | | |
| R) | 41. Does the MDR keep personnel, who are under medical surveillance, informed (verbally or in writing) of examination results and significance? (A0306e) | | |
| | 42. Are individuals provided with access to their medical records and personal exposure data upon request? (A0306e) | | |

| | YES | NO | |
|---|---|---|---|
| HAZARD CONTROL AND DEFICIENCY ABATEMENT | | | |
| 43. Are the results of work place inspections and surveys and appropriate Hazard Reports provided to the applicable division officer for correction of deficiences? (A0404a) | | | |
| 44. Are division officers taking prompt action to ensure correction of each identified deficiency? (A0404a) | | | (A |
| 45. Are industrial hygiene surveys, ISIC NAVOSH inspections, and NAVSAFECEN safety review- dentified deficiencies being entered into the CSMP (NAVOSHDAP)? (A0404a) | | | (A |
| 46. Are OPNAV 4790/2Ks generated on safety deficiencies assigned a Safety Hazard Code (RAC), entered into Block 15, and reviewed by the safety officer? (A0404b) | | | (R |
| 47. Are Risk Assessment Codes being properly determined? (A0404b) | | | |
| 48. Does the NAVOSH Deficiency Abatement Plan (NAVOSHDAP) consist of the Option D of the CSMP 1 and other CSMP supporting documents? (A0404f) | | | (R |
| 49. Does the safety officer maintain at least a quarterly updated copy of the option D of the CSMP? (A0404f) | | | (A |
| 50. Does the 3-M Coordinator support the safety officer with the hazard abatement plan and NAVOSH (block 15) identified 4720/2Ks? (A0404) | | | (A |
| 51. Is the NAVOSHDAP an effective tool? (A0404f) | | | |
| 52. Are interim controls in effect for more than 60 days approved by the safety officer? (A0405a) | | | |
| 53. Does the commanding officer personally approve any interim controls for critical and serious danger (RAC 1 and 2) deficiencies? (A0405b) | | | |
| 54. Does the command conduct back injury training which includes the causes of back injury, exercise programs to prevent back injury, back injury prevention on and off the job, lifting techniques, and back injury care? (A0406b(1)) | | | (A |
| 55. Has the command investigated and determined the cause of back injuries? (A0406b(2)) | | | (A |
| 56. Has the command developed corrective action to reduce future back injuries to personnel from the causes identified during mishap investigations? (A0406b(2)) | | | (A |

| | | YES | NO |
|---|---|---|---|
| | **PROGRAM EVALUATION** | | |
| | 57. Have checklists been used to evaluate the NAVOSH Program and specific hazard programs for compliance? (A0502a) | | |
| | 58. Has the NAVOSH Program been evaluated for effectiveness by the Safety Council? (A0502b) | | |
| | **MISHAP INVESTIGATION AND REPORTING** | | |
| R) | 59. Has the command incorporated mishap prevention, investigation, and reporting training, as required by the type commander, into the command's training program? (A0602k(1)) | | |
| R) | 60. Does the command inform the NAVSAFECEN of all Class A mishaps? (A0602k(2)and (4)) | | |
| R) | 61. Does the command ensure that personnel assigned to conduct informal mishap investigations, assigned as a member of an MIB, or assigned to assist the board are excluded from assignment to a JAG investigation of the same incident? (A0602k(3)) | | |
| R) | 62. Has the command notified the ISIC of mishaps warranting investigation by an MIB? (A0602k(5)) | | |
| R) | 63. Does the command make an attempt (where an MIB is convened) to protect the mishap site or damaged area from loss or further damage? (A0602k(6)) | | |
| R) | 64. Are procedures in place to direct the collection of any transitory medical evidence pertinent to a mishap investigation or direct the autopsy and toxilogical screen of personnel killed in a mishap? (A0602k(7) and (8)) | | |
| R) | 65. Does the command investigate all mishaps except those investigated by a MIB and report applicable mishaps as required by Appendix A6-D? (A0602k(11)) | | |
| A) | 66. Does the command investigate and report explosive mishaps and conventional ordnance deficiencies as outlined in Appendix A6-E? (A0602k(12)) | | |
| A) | 67. Has the command investigated and reported motor vehicle mishaps per Appendix A6-F? (A0602k(13)) | | |
| A) | 68. Has the command investigated and reported off-duty recreation, athletics, and home mishaps per Appendix A6-H? (A0602k(15)) | | |

| | | | YES | NO | |
|---|---|---|---|---|---|
| A) | 69. | Does the safety officer assist in conducting mishap investigations for all mishaps except those investigated by a MIB? (A06021(1)) | | | |
| A) | 70. | Does the safety ensure ship-wide dissemination of safety information and lessons learned resulting from mishap investigations? (A06021(2)) | | | |
| | 71. | Does the safety officer schedule and coordinate mishap prevention and hazard awareness training? (A06021(3)) | | | (A |
| | 72. | Do department heads, division officers, and workcenter supervisors incorporate information on mishap prevention and investigations into General Military Training (GMT)? (A0602m(1)) | | | (A |
| | 73. | Does the MDR report all on-duty injuries to the individual's division officer, the safety officer, and the officer of the deck using the Injury Report in a format similar to Appendix A6-I? (A0603k) | | | (A |
| | 74. | Do division officers evaluate the cause of injuries and recommend corrective action (if any) to prevent recurrence? (A0603k) | | | (A |
| | 75. | Does the safety officer maintain a complete file of MRs required by higher authority, internal Mishap/Near Mishap Reports, and Injury Reports for 5 years? (A06031) | | | (A |
| | 76. | Do the Safety Council and Enlisted Safety Committee evaluate mishap and injury reports and logs as part of the command safety program evaluation? This evaluation should ensure mishap investigation and reporting procedures aid in identifying mishaps and determining causes, trends, places and groups in order to target specific training topics to prevent recurrence. (A0603m) | | | (A |
| | 77. | Do all shipboard personnel receive indoctrination and annual refresher training on mishap prevention, investigation, and reporting with special emphasis on privileged information? (A0606a) | | | (A |
| | **TRAINING** | | | | |
| | 78. | Has the safety officer attended either the Afloat Safety Officer Course (J-4J-0020) or Submarine Safety Officer Course (F-4J-0020) as appropriate prior to or within 6 months of assuming this duty? (A0703a) | | | |
| | 79. | Do safety officers receive available refresher training? (A0703a) | | | |

| | | YES | NO | |
|---|---|---|---|---|
| 80. | Have all the petty officers who are assigned as division safety petty officers attended the Safety Program Afloat Course (J-493-2099) prior to or within 6 months of assuming their duties (not applicable to submarines)? (A0703b) | | | (R |
| 81. | Have division safety petty officers completed the PQS Safety Programs Afloat (NAVEDTRA 43460-4A) within 6 months of being assigned these duties (not applicable to submarines)? (A0703b) | | | |
| 82. | Have all personnel received NAVOSH Program training upon reporting aboard and annually thereafter? (A0703c) | | | |
| 83. | Have divisions used quarters to conduct two safety briefs per month (excluding submarines)? (A0703d) | | | (R |
| 84. | Whenever it was necessary to raise the level of safety awareness of personnel, has the command initiated a safety stand-down? (A0703e) | | | |
| 85. | Has the command conducted a safety stand-down within the past year? (A0703e) | | | |
| 86. | Are training films and periodicals used to enhance on-board training of safety topics? (A0703i) | | | |
| 87. | Does command have all of the videotapes listed in Appendix A7-F that have been distributed for use? (A0703i) | | | |

## CHAPTER A6

## MISHAP INVESTIGATION AND REPORTING

### A0601. DISCUSSION (R

a. Comprehensive, accurate mishap investigation is essential to the success of the NAVOSH Program. The reports required by this chapter are separate and independent of any investigative report required by the Manual of the Judge Advocate General (JAGMAN), reference A6-1. Mishap investigation reports require answers to the questions: who, what, where, when, and why; and require damage assessments and a description of the effectiveness of measures used to limit further damage after the mishap has occurred. People unintentionally cause the majority of mishaps. The crux of the entire mishap investigation effort is to find out why the mishap occurred. Too frequently investigators describe the cause of a mishap as "poor judgment," "carelessness," or "forgetfulness." Proper corrective action can best be developed from specific causes. Maximum investigative efforts must therefore be directed at the underlying human factors. Causes ranging from the physical and psychological condition of the person involved to the adequacy of his or her training and experience must be pursued. The man-machine interface must be considered along with the effect of environmental factors.

b. This chapter applies to:

(1) Commissioned, U.S. Navy ships and their embarked boats and landing craft or leased boats

(2) Pre-commissioned, U.S. Navy ships and their embarked boats and landing craft or leased boats beginning when the ship gets underway for Acceptance Trials

(3) LCACs

(4) USNS ships manned by Federal civilian mariners assigned to the Military Sealift Command (MSC).

**NOTE:**

Reference A6-2 contains guidance and administrative procedures for use by MSC ships and assigned civil service mariners and military detachment personnel.

c. Shipboard mishap investigation and reporting procedures in this chapter apply to mishaps resulting in

(1) Damage to the ships and craft listed above at all times, both underway and moored

(2) Death or injury to all personnel (including embarked personnel) aboard ships or craft listed above.

(3) Death or injury to ship's or craft military and Federal civilian mariner crew members (permanent or under temporary orders) when moored and when on-duty ashore.

(4) See paragraph A0603 for guidance as to what constitutes a "reportable afloat mishap" and a listing of mishaps not reportable.

d. Mishaps involving military and Federal civilian personnel assigned to a shore unit identification code (UIC) shall be investigated and reported per references A6-3 and A6-4, unless not reportable. Other civilians, dependents, or foreign personnel are not reportable under this chapter. Guidance on afloat mishap investigation and reporting requirements should be requested from Commander, Naval Safety Center (COMNAVSAFECEN).

e. References A6-5 and A6-6 charge commanding officers and ship's masters with absolute responsibility for the safety, well-being, and efficiency of their commands. Nevertheless, each year needless afloat mishaps result in deaths, injuries, the loss of thousands of hours of work, reduced combat readiness, and the waste of valuable assets. The adverse impact on professional pride, morale, physical well-being, and life itself is unacceptable. An effective NAVOSH Program must involve all levels of the chain of command to consistently reduce the number of mishaps. This reduction will be accomplished by:

(1) Establishing a fleet-wide environment in which the free and rapid exchange of information related to hazards is enhanced and encouraged.

(2) Ensuring the prompt identification, elimination, control, and correction of hazards. When identification and elimination efforts fail, mishaps shall be investigated and causes reported to prevent recurrence.

Superiors in the chain of command shall appoint a formal mishap investigation board (MIB) to investigate all military, afloat, Class A mishaps on surface ships (their embarked boats and landing craft or leased boats), LCACs, and submarines. MIBs shall submit findings and recommendations in a Mishap Investigation Report (MIR).

Shipboard personnel shall investigate all mishaps. For reportable mishaps, the command shall submit a Mishap Report (MR), Diving/Hyperbaric Treatment/Death Report (DV), Explosive Mishap Report (EMR), Conventional Ordnance Deficiency Report (CODR), Off-Duty Recreation, Athletics, and Home Safety (RAHS) Mishap Report, or Motor Vehicle Mishap Report (MV).

**NOTE:**

Paragraph A0603 defines mishap severity classifications, reportable mishaps, and special case mishaps.

Traditionally, the only source of mishap investigation information was a JAGMAN investigation governed by reference A6-1. The JAG investigation is also used to determine accountability and culpability. In this legal investigation, valuable safety information may be lost because of the reluctance of witnesses to divulge information for fear of retribution. The only purpose of the safety investigation is mishap prevention, not the determination of accountability. Therefore, reporting requirements for JAGMAN or other investigations shall be addressed by instructions governing those investigations.

e. Concept of Privilege. Military and Federal courts recognize that the information given under the promise of confidentiality is protected from release under executive privilege. Promises of confidentiality are given to witnesses and members of the MIB. Therefore, witness statements and the deliberative analyses of findings, conclusions, and recommendations of the MIB are privileged. Any information that the MIB would not have discovered except as a result of information provided under a promise of confidentiality is also privileged. Information calculated or developed by the MIB, when disclosing that information would reveal the MIB's deliberative process, is also deemed privileged. The promise of confidentiality guarantees that the information provided shall be used SOLELY for safety purposes. No one shall release privileged information for non-safety purposes or outside the Department of the Navy (DON). Forward requests for privileged information to Commander, Naval Safety Center (Code 03).

(1) Comprehensive, accurate mishap investigation requires the free and open disclosure of NAVOSH information. All surface ship, LCAC, and submarine mishaps investigated by an MIB shall apply the concept of "privileged information."

(2) The entire chain of command shall fully support the philosophy of, and tenaciously maintain a commitment to, the limited use of privileged information.

(3) Reference A6-7 allows for Limited Use Mishap Investigation Reports to restrict access to information on military systems and equipment. Some of the information obtained for this limited use report is held as, or considered privileged. The concept of privilege pervades the afloat safety program. Appendix A6-A explains the concept of privilege in detail.

(4) When a mishap occurs, any tendency to spare an individual's or the command's reputation shall be set aside in favor of providing completely candid reports and opinions designed to identify the precise cause(s). To encourage the free and open disclosure of safety information during an investigation, the concept of privileged information is used. Privileged information includes:

(a) Information provided under a promise of confidentiality.

(b) Information which would not have been discovered but for a promise of confidentiality.

(c) The deliberative analysis of findings, conclusions, and recommendations of the MIB.

(d) Calculations and deductions conducted by the MIB when disclosing that information would reveal the board's deliberative process.

(e) Forwarding endorsements to MIRs since they are a part of the deliberative process.

(5) Should the Navy use privileged information for any purpose other than safety, it would lose credibility of future assurances of privilege. If that credibility is lost, vital safety information in future mishaps also could be lost.

f. The rules in subparagraph A0601e apply to all DON personnel individually without further implementation. A violation of these provisions by military personnel is punishable under the Uniform Code of Military Justice (UCMJ) and is the basis for disciplinary action for civilian employees.

R) **A0602. RESPONSIBILITIES.** In addition to the duties and responsibilities found elsewhere in this instruction, the following mishap investigation and reporting responsibilities apply to:

a. Deputy Chief of Naval Operations (Logistics) (N4) shall:

(1) Serve as the central Navy office for ensuring accomplishment of ammunition, explosives, and chemical agents and systems mishap reporting, and as the point of contact between the Department of Defense Explosives Safety Board and U.S. Navy activities.

(2) Modify NAVOSH policies and guidance as a result of lessons learned from mishap investigations. Coordinate modifications with N8.

b. Deputy Chief of Naval Operations (Resources, Warfare Requirements, and Assessments) (N8) shall direct and supervise mishap investigation and reporting training for afloat primary and collateral duty safety officers.

(1) Director, Surface Warfare Division (N86) is responsible for the safe operation of assigned surface ships and support craft, including sponsoring the SEAOPS for LCACs; and ensuring training in mishap investigation and reporting is provided for primary and collateral duty safety officers.

(2) Director, Submarine Warfare Division (N87) is responsible for the safe operation of submarines, assigned surface ships, deep submergence systems, support craft, and diving operations; and ensuring training in mishap investigation and reporting is provided for primary and collateral duty safety officers.

(3) Director, Air Warfare Division (N88) is responsible for the safe operation of assigned surface ships and support craft; and ensuring training in

mishap investigation and reporting is provided for primary and collateral duty safety officers.

c. Systems Commanders shall:

(1) Assist MIBs in the investigative process, when requested.

(2) Respond to the recommendations and corrective actions developed by the type commanders.

(3) Issue proper documentation to correct hazardous conditions.

(4) Review and analyze MIRs when included in the endorsement chain. Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement.

d. COMNAVSAFECEN shall:

(1) Periodically review this chapter and provide revisions to CNO (N45) for publication. As CNO (N09F), COMNAVSAFECEN retains responsibility for mishap report control symbols and making necessary changes to mishap reporting formats to ensure the data collected satisfies the Navy's safety information requirements.

(2) Provide an advisor to MIBs for all afloat Class A mishaps.

(3) Coordinate, with the type commander, recommendations for investigation of other than Class A, afloat mishaps which may warrant an MIB.

(4) Provide an advisor, when agreed upon between the type commander and COMNAVSAFECEN, for other than Class A, afloat mishaps, if a trained investigator would benefit the investigation.

(5) Determine, when appropriate and if requested, the privileged or nonprivileged status of all evidence from Class A mishaps.

(6) Take custody, from the senior member, of all relevant documentary evidence, board members' personal notes, original copies of all witness statements and logs, photographs and negatives, and tape recordings (whether referenced in the MIR or not).

(7) Make available, upon request, any documentary evidence, logs, photographs, negatives, tape recordings which are not privileged either by transfer of originals (after making and retaining copies) or by inspection/copying to:

(a) MIR endorsers.

(b) Individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United

States or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

(8) Make available, upon request, any evidence, witness statements, logs, photographs, negatives, or tape recordings which are privileged per this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying, to MIR endorsers only.

(9) Conduct the final review and analysis of MIRs. Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement. Retain, as custodian, MIRs and the endorsements for at least 5 years.

(10) Retain or dispose of all relevant evidence, board members' personal notes, original copies of summaries of all statements and logs, photographs and negatives, and tape recordings as directed in paragraph 8 Appendix A6-B.

(11) Ensure prompt distribution of essential information, such as lessons learned, to cognizant commands.

(12) Monitor the completion of corrective action resulting from an MIR.

(13) Maintain a centralized, historical safety-data repository. Provide research and analysis of collected data to support identification, elimination, and control of shipboard hazards through safety awareness and equipment and system design.

(14) Sanitize MIRs and endorsements, when requested, for use in safety training. Sanitization includes removing all identifiable data that could connect the report to an individual, organization, or particular mishap.

(15) Ensure that mishap investigation board advisors from COMNAVSAFECEN receive detailed training in safety investigation techniques and reporting requirements.

e. Fleet Commanders in Chief; Numbered Fleet Commanders; and Commander MSC shall:

(1) Ensure subordinates assign mishap prevention and safety responsibilities at all levels in the chain of command.

(2) Ensure subordinate commands comply with current CNO safety and mishap prevention and injury reporting requirements.

(3) Serve as the appointing authority for mishaps involving more than one subordinate type commander and provide the Senior Member with the required endorsers. The endorsers for a mishap involving more than one type commander are provided in paragraph 4c of Appendix A6-C.

(4) Review and analyze MIRs when included in the endorsement chain. Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement.

f. Type Commanders, Commander Naval Special Warfare Command, Commander Mine Warfare Command, and Commanders MSC Atlantic and Pacific shall:

(1) Ensure subordinate units conduct timely and complete afloat safety mishap investigations.

(2) Direct the investigation of any Class B or other mishaps or near mishaps which may reveal vital safety information if investigated by an MIB.

(3) Incorporate mishap prevention, investigation, and reporting training into the training requirements of type commander training manuals, master training plans, or training guides.

(4) Serve as the appointing authority for mishaps involving more than one subordinate squadron or group commander and provide the senior member with the required endorsers. The minimum endorsers for a mishap involving more than one squadron or group commander are provided in paragraph 5c of Appendix A6-C.

(5) Send a message to the appointing authority of mishaps involving one subordinate squadron or group commander and provide the appointing authority with the required initial endorsers. The ISIC shall not delay the investigation awaiting the message. The minimum endorsers for a mishap involving one squadron or group commander are provided in paragraph 5c of Appendix A6-C.

(6) Coordinate with COMNAVSAFECEN, COMNAVSEASYSCOM, and other technical agencies in providing assistance to the mishap board, when requested.

(7) Monitor the timeliness and adequacy of the MIB's deliberations and final report and the timeliness and adequacy of each subsequent endorser.

(8) Assign responsibility for and monitor completion of corrective action on recommendations made by the MIB.

(9) Provide relevant safety information from the MIR to COMNAVSEASYSCOM, or other technical agency, when appropriate; unless otherwise restricted.

(10) Request any waivers or modifications to the investigation and reporting requirements from CNO (N8).

(11) Ensure appropriate group and squadron commanders are apprised of hazards identified during a mishap investigation.

(12) Collect and disseminate lessons learned and safety-related information. Include COMNAVSAFECEN NORFOLK VA//30/054// as an information addressee on any lessons learned issued.

(13) Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement.

g. Group and Squadron Commanders shall:

(1) Ensure subordinate commands incorporate mishap prevention, investigation, and reporting training, as directed by the type commander, into the group and squadron training requirements.

(2) Ensure commanding officers are apprised of hazards identified by a mishap investigation.

(3) Endorse the MIR within 14 days of receipt, if the ship's ISIC. If a group commander, not the ISIC, desires to endorse the MIR, notify all other endorsers within 14 days of receiving the MIR.

(4) Assist subordinate commands in conducting safety investigations for all other reportable and special case mishaps, as defined in paragraph A0603.

h. Group or Squadron Safety Officer shall:

(1) Maintain appropriate safety records and mishap statistics discussed in Chapter 3 and this chapter. Make the information available to a mishap board upon request.

(2) Assist subordinate commands in conducting safety investigations for all reportable and special case mishaps, as defined in paragraph A0603.

(3) Ensure dissemination of safety information and lessons learned resulting from mishap investigations.

(4) Schedule and coordinate mishap prevention training with the group or squadron training officer.

i. ISICs, including Commanding Officers of Assault Craft Units (ACUs) Five and Four shall serve as the appointing authority for MIBs, unless otherwise directed. The minimum endorsers for a mishap involving a single ship (its embarked boats and landing craft or leased boats) or LCAC are provided in paragraph 5c of Appendix A6-C.

j. The appointing authority shall:

(1) Appoint, in writing, the senior member of MIBs. (Appendix A6-B contains a sample MIB appointing letter.)

(a) The senior member shall be an unrestricted line officer in the U.S. Navy or U.S. Marine Corps, or a senior official in MSC with suitable training and experience. If possible, the senior member should be senior to the

commanding officer of the unit involved in the mishap. If junior to the commanding officer of the unit involved, the senior member shall be from another command.

(b) No one directly involved in a mishap shall serve as the senior member of the MIB for that mishap.

(c) No one having a personal interest in a mishap that might conflict with his/her objective and impartial performance of duties shall serve as the senior member of the MIB.

(d) Since the ISIC may take subsequent judicial or administrative action based on the JAG investigation, the commander shall not be the senior member to avoid the possible perception of a conflict of interest or the unauthorized use of privileged information.

(2) Appoint, or delegate the appointment of, the remaining members of the MIB.

(a) No one directly involved in a mishap shall serve as a member of the MIB for that mishap.

(b) No one having a personal interest in a mishap that might conflict with his/her objective and impartial performance of duties shall serve as a member of the MIB.

(3) Ensure all MIB members are thoroughly familiar with their duties and mishap investigation procedures.

k. Commanding Officers, Masters, and Craftmasters shall:

(1) Incorporate mishap prevention, investigation, and reporting training, as required by the type commander, into the command's training program.

(2) Inform the Naval Safety Center of all Class A mishaps by including COMNAVSAFECEN NORFOLK VA//30/02/054//, and AIG ONE THREE EIGHT SIX ZERO for mishaps involving LCACs, as information addressees on any OPREP-3 or UNIT SITREPs submitted per references A6-8 and A6-9. If the mishap involves a fatality, send an information copy of the OPREP-3 or UNIT SITREP to ARMED FORCES INSTITUTE OF PATHOLOGY WASHINGTON DC//CMEO//.

(3) Ensure personnel assigned to conduct informal mishap investigations, assigned as a member of an MIB, or assigned to assist the board are excluded from assignment to a JAG investigation of the same incident conducted per reference A6-1.

(4) Make a message report to COMNAVSAFECEN NORFOLK VA//30/02/054//) on any Class A mishap, if not previously informed by OPREP-3 or UNIT SITREP. Send the report, in the format of Appendix A6-D, within 24 hours. If the mishap

involves a fatality, send an information copy of the OPREP-3 or UNIT SITREP to ARMED FORCES INSTITUTE OF PATHOLOGY WASHINGTON DC//CMEO//.

(a) As a minimum, furnish the date and time of the mishap, the geographic location of the mishap, the reporting activity, the number of personnel involved, a description of the operation; and a brief explanation of the mishap in the initial report.

(b) As additional information becomes available, submit follow-up reports referencing the original and all subsequent reports.

(5) Inform the ISIC of any mishaps which may warrant investigation by an MIB.

(6) If possible, protect the mishap site or damaged area from loss or further damage. Operational requirements or damage control measures may require disturbing the scene of the mishap before the MIB arrives. In such cases, make every reasonable effort to:

(a) Make an accurate plot of the scene.

(b) Take photographs or videotape recordings of the wreckage, its distribution, and the surrounding area.

(c) Make a diagram of any underwater damage.

(7) Direct the collection of any transitory medical evidence, such as specimens to determine blood alcohol and drug levels, pertinent to the mishap investigation.

(8) Direct the autopsy and toxicological screen of all personnel killed in the mishap as authorized by Article 17-2(1), Manual of the Medical Department (NAVMED P-5065).

(a) Naval hospitals shall perform most autopsies; however, use other Federal or civilian hospitals when naval assets are not available.

(b) Commanders and commanding officers shall provide the necessary support to ensure the hospital completes the autopsies expeditiously.

(c) Following the autopsy, the prompt release of remains for preparation, encasement, and shipment is of major importance and shall be accomplished as required by the Manual of the Medical Department.

(9) Appoint members, except the senior member, if delegated by the appointing authority. Appendix A6-B contains a sample appointing letter.

(10) Provide administrative and logistic support for the MIB. Give the senior member authority to release messages specifically related to the mishap investigation and the MIR.

(11) Investigate all mishaps except those investigated by an MIB. Report applicable mishaps as required by Appendix A6-D.

(12) Investigate and report explosive mishaps and conventional ordnance deficiencies as outlined in Appendix A6-E.

(13) Investigate and report motor vehicle mishaps per Appendix A6-F.

(14) Investigate and report diving mishaps per Appendix A6-G.

(15) Investigate and report off-duty recreation, athletics, and home mishaps per Appendix A6-H.

(16) Endorse the MIR and provide a copy to all endorsers within 7 days of receipt of the MIR.

l. Ship's Safety Officer and Assault Craft Unit (ACU) Safety Officers shall:

(1) Assist the commanding officer in conducting mishap investigations for all mishaps except those investigated by an MIB. Ensure required MRs, DVs, MVs, RAHSs, EMRs, and CODRs are submitted as required by Appendices A6-D through A6-H.

(2) Ensure ship-wide dissemination of safety information and lessons learned resulting from mishap investigations.

(3) Schedule and coordinate mishap prevention and hazard awareness training.

(4) In the event of a mishap, assist the commanding officer in:

(a) Making an accurate plot of the scene.

(b) Taking photographs or videotape recordings of the wreckage, its distribution, and the surrounding area.

(c) Diagraming any underwater damage.

m. Department Heads, Division Officers, and Workcenter Supervisors shall:

(1) Incorporate information on mishap prevention and investigations into General Military Training (GMT).

(2) Notify the safety officer of all mishaps and near mishaps.

n. All Hands shall:

(1) Report to the supervisor any injuries, occupational illnesses, or property damage resulting from a mishap.

(2) Cooperate with all safety investigators in providing mishap information.

A) **A0603. MISHAP REPORTING REQUIREMENTS**

a. **Mishap Investigation Report**, Report Symbol *OPNAV 5102-7. This report is* submitted by the senior member of the MIB assigned to investigate military, afloat Class A mishaps (total cost of reportable damage is $1,000,000 or more; or any injury or work-related illness resulting in death or permanent total disability) and any Class B or other mishaps or near mishaps which may reveal vital safety information if investigated by an MIB on surface ships (their embarked boats and landing craft or leased boats), LCACs, and submarines. The MIBs shall submit findings and recommendations in an MIR per the procedures of Section A0604 and Appendix A6-C.

b. **Mishap Report**, Report Symbol OPNAV 5102-6. This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(1) Class A or B mishaps occurring to the ship's on-duty personnel while ashore or involving damage to the ship's equipment located ashore.

(2) Class B mishaps occurring on board ship that are not investigated by an MIB and reported by MIR.

(3) Reportable Class C mishaps occurring on board ship, to the ships's on-duty personnel ashore, or involving damage to the ship's equipment located ashore.

(4) Afloat special case mishaps occurring on board ship or to the ship's on-duty personnel ashore. They include:

(a) All cases of electric shock. (Include the voltage in the report).

(b) All cases of hazardous material, chemical, or toxic exposure requiring medical attention.

(c) All cases of back injury requiring medical attention.

(d) All mishaps involving explosives, oxidizers, incendiaries, explosive systems, or chemical warfare agents. They include the detonation, accidental launch, malfunction, dangerous defect, improper handling, damage to a launching device, weapon impact off-range, or other unusual or unexpected weapons-related occurrence.

(5) See Appendix A6-D for detailed information on MRs.

c. **Explosive Mishaps and Conventional Ordnance Deficiency Reports**, Report Symbol DD-FM&P(AR)1020(5102). These reports are submitted in the event of:

(1) Explosive Mishap. The following afloat events shall be reported:

(a) Unintentional detonation, deflagration, burning, or firing of an explosive material, component, or system. Accidental discharge of all guns, including small arms

(b) Inadvertent launch of a weapon

(c) Unintentional or inadvertent chemical agent release

(d) Leaking or spilled propellant fuels or oxidizers

(e) Ordnance impacting off range.

(2) Conventional Ordnance Deficiencies. These events include:

(a) Explosive component, weapon, or weapon system failure to function as designed

(b) Improper handling of ordnance attributable to human error

(c) Unintentional arming of an explosive component or weapon

(d) Defective weapon support equipment

(e) A discovered defective weapon or weapon system

(f) Other events described in Appendix A6-E.

(3) Detailed information on explosive mishaps and conventional ordnance deficiency reports can be found in Appendix A6-E.

d. **Motor Vehicle Mishap Report**, Report Symbol OPNAV 5102-4(MV)

(1) This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(a) A mishap involving the operation of a government-owned motor vehicle resulting in a collision with other vehicles, pedestrians (including joggers), bicyclists (when struck by a motor vehicle), or other objects; personal injury or property damage due to cargo shifting in a moving vehicle; personal injury in moving vehicles or by falling from moving vehicles; towing or pushing mishaps; and other injury or property damage when there is one or more of the following:

1. At least $2,000 property damage (total of all government- and privately-owned vehicles and property), or

2. A fatality or an injury resulting in 5 or more lost workdays to military and Navy civilian personnel, or

1. A civilian fatality while riding in, or caused by a government-owned motor vehicle.

(b) A traffic mishap, regardless of the identity of the operator, not involving a government-owned motor vehicle but resulting in:

1. A fatality or injury resulting in 5 or more lost workdays to on- and off-duty assigned military and on-duty Navy civilian personnel or

2. $2,000 or more government property damage.

3. A motor vehicle mishap causing death to any other person not otherwise defined occurring on a naval installation or as a result of military operations.

(2) Naval Reserve personnel on inactive duty for training (travel) (IDTT), who are involved in a motor vehicle mishap while traveling from their home directly to the drill site, or from the drill site directly home, shall be counted as an off-duty reportable motor vehicle mishap if they meet all other reporting requirements.

(3) See Appendix A6-F for detailed information on motor vehicle reports.

e. **Diving Mishap/Hyperbaric Treatment/Death Report**, Report Symbol OPNAV 5102-5. This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(1) Any Class A diving mishap involving the ship's divers when diving from a shore command.

(2) Any Class B and reportable Class C diving mishap involving the ship's divers when diving from the ship, ship's boat, or when diving from a shore command.

(3) Hyperbaric treatment or recompression therapy conducted as a result of a diving mishap in the ship's recompression chamber. Humanitarian civilian treatments are not reportable.

(4) Any diving injury or illness preventing a ship's diver from performing regularly established duty or work for 5 days or more when diving from the ship, ship's boat, or when diving from a shore command.

(5) Recreational diving mishaps resulting in a reportable injury to Navy military personnel require the submission of a RAHS report.

(6) See Appendix A6-G for detailed information on reporting diving and hyperbaric mishaps and Appendix A6-H for off-duty diving mishaps.

f. **Off-duty Recreation, Athletics and Home Safety Mishap Report**, Report Symbol OPNAV 5102-10. This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(1) An off-duty recreation, athletic or home death or injury preventing Navy military personnel assigned to afloat units from performing regularly scheduled work for 5 days or more after 2400 on the day of injury.

(2) All non-operational, serious injuries or deaths occurring to anyone either on or off a naval installation using Navy-owned and managed property (for example Morale, Welfare and Recreation (MWR) hobby shops, athletic facilities, and child development centers). Off-duty special case mishaps are reportable only if they involve negligence in the operation or maintenance of Navy property such as missing machine guards and damaged playground equipment. A serious injury is one comparable in severity to an injury or illness that would result in 5 or more lost work days.

(3) See Appendix A6-H for detailed information on off-duty recreation, athletic, or home safety mishap reporting.

g. **Heat/Cold Injury Report**, Report Symbol MED 6500/1. This report is submitted to the Chief, Bureau of Medicine and Surgery (BUMED) when personnel exposed to excessive heat stress, in the professional judgment of a trained medical department representative (MDR), suffer from a heat related injury as defined by reference B2-1. Any heat injury which results in a person's unconsciousness shall be investigated per Chapter B2 unless specifically waived by the ISIC. Should a heat related injury result in 5 or more lost workdays, it shall be investigated and reported per Section A0604.

h. **Radio frequency Radiation Incident Report** (no report symbol). This message report is submitted for any Radio frequency radiation exposure (alleged or actual) which is 5 times the permissible exposure limit (PEL) or greater. See Chapter B9 of this manual for detailed information on this report. This report is submitted to BUMED (MED-21) within 48 hours of incident discovery.

i. **Laser Radiation Incident Report** (no report symbol). A letter report submitted to BUMED (MED-02) within 30 days of an incident in which an eye injury is suspected or observed from exposure to laser radiation. See Chapter B9 of this manual for detailed information on this report.

j. The following mishaps are not reportable under this chapter:

(1) Mishaps involving nuclear weapons, nuclear propulsion plants, or radioactive materials involved in these systems. However, mishaps associated with the secondary side of the ship's nuclear propulsion plan or non-nuclear components are reportable.

(2) Damage or injury by direct action of an enemy or hostile force.

(3) Malfunction or failure of parts due to normal wear and tear, and the malfunction or failure is the only damage. The only necessary corrective action is to replace or repair the broken or failed part.

(4) Injuries associated with non-occupational diseases or chronic medical conditions, when the disease itself, not the injury, is the cause of the lost time. For example, a minor laceration suffered by a hemophiliac resulting in time away from work is not reportable. However, complications of an injury (such as the infection of a cut aggravated by a work-related activity) resulting in lost-work-time are reportable.

(5) Suicide, attempted suicide, homicide, or intentionally self-inflicted injuries.

(6) Injuries resulting from altercations, attack, or assault, unless they are incurred in the performance of official duties when an attack or assault would not be a felony. For example, a nurse assaulted by a patient in a mental institution is reportable.

(7) Injuries sustained before entry into the military service, or civilian employment, unless specifically aggravated by current tenure of service.

(8) Hospitalization for treatment where the patient is retained beyond the day of admission solely for administrative reasons.

(9) Hospitalization for observation or administrative reasons not related to the immediate injury or occupational illness.

(10) Injuries resulting from:

(a) Pre-existing musculoskeletal disorders.

(b) Minimum stress and strain (simple, natural, nonviolent body positions or actions as in dressing, sleeping, coughing, or sneezing). These are injuries, unrelated to accident-producing agents or environments, normally associated with active participation in daily work or recreation.

(11) Injuries or fatalities to anyone eluding or escaping from military or civilian custody or arrest.

(12) Death due to natural causes unrelated to the work environment.

(13) Intentional or expected damage to Department of Defense (DoD) equipment or property during authorized testing or combat training, including missile and ordnance firing.

(14) Foreign object damage (FOD) to gas turbine engines discovered during scheduled engine disassembly or bore-scope inspection.

(15) Injury or property damage resulting from vandalism, riots, civil disorders, sabotage, terrorist activities, or felonious acts, such as arson.

k. The MDR shall report all on-duty injuries to the individual's division officer, the safety officer, and the officer of the deck using the Injury Report in a format similar to Appendix A6-I. The division officer shall evaluate the cause of injury and recommend corrective action (if any) to prevent recurrence. The Injury Report shall be forwarded via the chain of command and then returned to the safety officer for filing. The individual's division officer shall ensure the thorough investigation of any mishap resulting in injuries or damage meeting the reporting criteria in paragraph A0603b. The division officer and the ship's safety officer shall prepare the MR for submission via the chain of command for transmission to COMNAVSAFECEN.

l. The safety officer shall maintain a complete file of MRs required by higher authority, internal Mishap/Near Mishap Reports, and Injury Reports. Such reports will be retained for 5 years and then destroyed.

m. The Safety Council and Enlisted Safety Committee shall evaluate mishap and injury reports and logs as part of the command safety program evaluation. This evaluation should ensure mishap investigation and reporting procedures aid in identifying mishaps and determining causes, trends, places and groups in order to target specific training topics to prevent recurrence.

**A0604. MISHAP INVESTIGATION** (A

Formal investigative procedures conducted by a designated MIB are required for all Class A shipboard mishaps. The senior member of the board directs the investigation and submits an MIR. The investigation and resulting findings are for safety purposes only and are restricted in there release. The mishap investigation takes precedence over any other investigation of the same mishap, unless the investigation uncovers evidence of a criminal act. Mishap investigation administrative procedures are contained in Appendix A6-B.

a. Conducting an Investigation

(1) The appointed members of the MIB are responsible for conducting an accurate, complete, and timely investigation of the assigned mishap. Their responsibilities include:

(a) Collecting, organizing, interpreting, and protecting all physical and testimonial evidence.

(b) Ensuring photographs and videotapes accurately depict the mishap scene, whether taken prior to or after arrival of the board.

1. Photographs staged by the MIB (planned or posed to illustrate a specific condition or situation) are privileged because of the deliberative process. Other photographs are nonprivileged.

2. All captions or markings placed on photographs suggesting the mishap board's deliberative process are also privileged.

3. Photographs of human injuries/remains that are not staged are not privileged, but may be exempt from disclosure under exemption b(6) of the Freedom of Information Act.

(c) Interpreting logs, records, blueprints, schematics, and written procedures.

(d) Taking oral statements from witnesses, including advising all witnesses in writing of the restricted uses of their privileged testimony.

(e) Reconstructing the sequence of events leading up to, and immediately following, the mishap.

(f) Preparing the MIR.

(g) Transferring custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements, photographs and negatives, and tape recordings (whether referred to in the MIR or not) to COMNAVSAFECEN. Return all nonprivileged physical evidence to the original custodian. Send an inventory itemizing all the evidence the board considered to COMNAVSAFECEN and all MIR endorsers.

(2) COMNAVSAFECEN shall assign a mishap investigation advisor to every board convened for a Class A mishap. The advisor is not a member of the MIB. The advisor is trained in investigative procedures and techniques and can provide the board with guidance.

(3) NAVSAFECEN 5102/30, Afloat Mishap Investigation Handbook, discusses various investigative techniques, includes checklists for various mishap investigations, and provides sample reports.

b. Related Investigations

(1) Besides the safety investigation, other organizations may conduct simultaneous investigations of the same mishap. The external investigations should not interfere with the safety investigation. They may include investigations by any of the following organizations:

(a) International Criminal Police Organization (INTERPOL)

(b) Judge Advocate General (JAG)

(c) Federal Bureau of Investigation (FBI)

(d) Occupational Safety and Health Administration (OSHA)

(e) Naval Criminal Investigative Service (NAVCRIMINVSER)

(f) U.S. Coast Guard (USCG)

(g) National Transportation Safety Board (NTSB)

(2) The MIB shall conduct its investigation of a mishap separately from all other investigations. Members of the board shall not release information revealing the source of any physical evidence obtained as a result of privileged information nor any testimony given under the assurance of privilege. Despite those limitations, cooperation and access to nonprivileged physical evidence and witnesses among investigators is encouraged.

(3) The most frequent, concurrent investigation is the JAGMAN investigation. The U.S. Navy chain of command directs JAGMAN investigations for legal or administrative purposes.

(a) Members of an MIB shall neither participate in nor conduct a JAGMAN investigation of the same mishap.

(b) Except for nonprivileged physical evidence, the JAGMAN investigator shall not use any part of the safety investigation in the JAGMAN investigation.

(c) The senior member of the MIB shall coordinate the disposition of physical evidence and the restoration of the mishap scene with JAGMAN, and other, investigators.

c. Privileged Information and Testimony. Privileged information is an essential element of an MIR. Appendix A6-A thoroughly discusses the concept of privilege.

d. Collection of Evidence

(1) The MIB collects various types of evidence. The board may uncover some physical evidence because of privileged testimony. Information revealing the source of physical evidence obtained by the board as a result of privileged information is also privileged and is never releasable.

(2) It is not feasible to list the methods of collecting evidence for each possible situation. The Navy must rely on the judgement of the senior member. Evidence may include:

(a) Witness Statements. A witness statement is an oral account of the circumstances surrounding a mishap recalled by the witness. The oral statement is not obtained under oath or in writing and may include opinions, secondhand information, and speculation about the mishap. All such witness statements provided orally to the board are privileged information. Members of the MIB shall ask probing questions of witnesses; but they will not ask witnesses to write a statement or to sign a summary the MIB has prepared. The member of the MIB should summarize the results of the interview, using care to

be as accurate and complete as possible, and may authenticate the summary of the interview by signing it.

1. No one shall give statements made to members of an MIB to any other investigator.

2. JAGMAN and other investigators may make their witnesses' statements available to the board. The MIB can glean information from the statements, but should re-interview appropriate witnesses. JAGMAN statements, taken under oath, may not contain as much information as statements made under the assurance of privilege and limited use.

3. An Advice to Witnesses form is provided as Appendix A6-J.

(b) Medical Materials. Medical materials the board may use as evidence include laboratory results, medical records, hospital admission forms, diagrams of wounds, psychological profiles, autopsy reports, or physician's written opinions.

1. Because of the transitory nature of some medical evidence, quick action by the medical department representative (MDR) at the scene is necessary. The MDR shall collect the initial, particularly transient, medical evidence as directed by the commanding officer or higher authority. The transient evidence includes specimens to determine blood alcohol and drug levels.

2. Medical factors, such as physiological, social, behavioral, and psychological, may provide insight into the cause of the mishap. The board may consider medical factors during its deliberations.

3. The medical officer, when assigned, shall coordinate the analysis of medical evidence with all other aspects of the investigation and participates fully in the investigation and deliberations of the board.

(c) Wreckage or Damaged Equipment. Wreckage or damaged equipment is physical proof of a mishap. The physical proof includes the area or equipment directly affected by the mishap and the surrounding damaged areas.

1. The commanding officer shall make every reasonable effort to preserve and protect damaged equipment and wreckage in its original position and condition following the mishap. If necessary, cordon off, secure or guard mishap scenes to prevent disturbance of wreckage.

2. Operational requirements or damage control measures may require disturbing the mishap scene before the board arrives. In such cases, the commanding officer of the ship involved in the mishap shall protect the mishap site or damaged area from loss or further damage; make every reasonable effort to make an accurate plot of the scene; and, take photographs or videotape recordings of the wreckage, its distribution, and the surrounding area.

1. Once an MIB is convened, only the senior member can authorize the disturbance of damaged areas or wreckage. The senior member must coordinate the disturbance of the mishap scene with other investigators.

4. To determine the cost of repair or replacement of all DoD property involved in the mishap, base estimates on the actual cost of materials and $16 for each hour for labor. When prepared in written form, all estimates shall conspicuously state:

**"This estimate is prepared solely for the purposes of Chapter A6 of OPNAVINST 5100.19C. It is not intended to reflect, in any way, the extent of any party's damages or liability for purposes of administrative claims or litigation."**

5. In all matters related, in any way, to damage to civilian or foreign ships on navigable water, to damage to any property or cargo on board such ships, or to injuries of persons on board such ships, refer to Chapter XII of reference A6-1 and/or contact the Office of the Judge Advocate General (OJAG), Admiralty Division (Code 31).

6. A survey of damages is a formal procedure relevant to admiralty claims and litigation. Only the Judge Advocate General may accept survey invitations from potential claimants, extend survey invitations to persons responsible for damage to naval property, or request representation of the United States by a marine surveyor. In no case shall any person involved in mishap investigating or reporting accept or offer on behalf of the United States, an invitation for a survey of damages. In any instance of receipt of invitation to a survey, refer to Chapter XII of reference A6-1 and notify OJAG, Admiralty Division (Code 31).

(d) Criminal. If, during the investigation, an investigator discovers signs of a criminal act related to the mishap, the senior member shall immediately inform the appointing authority who shall confer with legal counsel and notify the NAVCRIMINVSER together with COMNAVSAFECEN.

1. Nonprivileged evidence gathered by the MIB may be releasable to other investigators. The senior member shall not release information revealing the source of any physical evidence obtained as a result of privileged information, nor any testimony given under the assurance of privilege.

2. The senior member shall turn over all other nonprivileged physical evidence to the senior NAVCRIMINVSER agent.

3. The senior member may continue the safety investigation, if directed by the appointing authority and approved by OJAG. Valuable safety information may result from investigating a mishap which occurred subsequent to the criminal act.

4. According to the 1984 Memorandum of Understanding Between the Departments of Justice and Defense Relating to the Investigation and

Prosecution of Certain Crimes, a safety investigation shall not be initiated nor proceed without prior coordination with and concurrence from appropriate Department of Justice (DOJ) investigative and prosecutive agencies where a criminal investigation or prosecution by DOJ is ongoing.

e. Causes and Considerations

(1) The MIB shall consider all the possible causes of a mishap. The board must determine the cause(s), supported by the available evidence. The board may reject some possible causes because of a lack of supporting evidence.

(2) Classify possible causes as follows:

(a) Human Error. More than 50 percent of all mishap investigations determine the cause was human error. Human error findings take into account human involvement in the events leading up to a mishap, action taken by personnel as the mishap is occurring, and actions taken after the mishap occurred. Human error takes into account both physical and mental factors.

1. Physical human error factors to consider in a mishap investigation include ergonomics (design of the workplace), physical strength and condition of the individual, physical stresses, and the body's subsequent responses.

2. Mental human factors include the person's attitude, ability to retain and assimilate training, external mental stresses such as interpersonal relationships, and mental illnesses.

3. The medical officer, when assigned, investigates and analyzes human factors such as physical and mental conditions. In many cases, this may include a 72-hour account of activities of the key participants. Sometimes it could require a brief medical and psychological profile. Other considerations for each participant include:

a. Results of post-mishap physical examinations

b. Summary of life stressors

c. Relationships with co-workers, family, and friends

d. Acute and chronic medical problems

e. Use of medications and alcohol

(b) Maintenance and Support Factors. Maintenance and support factors may include improper maintenance, poor assignment of priorities on work requests, or lack of proper Quality Assurance (QA). Shipyards, Intermediate Maintenance Activities, contractors, or ship's force may be connected with maintenance- and support-related mishaps.

(c) Administrative and Supervisory Factors. The investigation shall consider the possible effect of regulations and their enforcement from all levels in the chain of command. Execution of procedures and policies published by higher authority, such as Naval Warfare Publications (NWPs), Navy Tactical Publications (NTPs), Ordnance Publications (OPs), the Safe Engineering and Operations Program (SEAOPS) for LCACs, Operational Orders (OPORDs), Engineering Operational Sequencing Systems (EOSS), and Standing Orders are possible contributing factors for the board to consider.

1. On board ship, supervisory factors concerning operating or maintenance personnel should be considered.

2. Examples of the causes are the level of supervision, lack of Personnel Qualification Standards (PQS) qualification, and inadequate crew and supervisor training. The training may include both formal and informal instruction.

(d) Material Failures or Malfunctions. The board shall consider all material failures and malfunctions thoroughly, regardless of whether they occurred because of faulty design, defective manufacture, or repair.

(e) Environmental Conditions. Environmental conditions are usually not cause factors. For example, a cause of a mishap might be excessive speed for existing sea conditions or failure to secure for sea but the high sea state did not cause the mishap.

f. Mishap Investigation Board Conclusions and Recommendations

(1) The board shall base its conclusions on all available information. Its conclusions are an assessment of what caused the mishap, and the subsequent damage or injury. The board should evaluate the conclusions under consideration by asking, "If someone had identified and eliminated the hazard(s) before the mishap, would the action have prevented the mishap (or subsequent damage or injury)?"

(a) Conclusions. During the analysis of mishap causes, determining "what happened" is not enough. The board must make every effort to determine the "why" of the mishap.

1. For example, an engine fails as a ship is mooring resulting in significant damage. The engine failure is not a cause--it is the effect. The cause might be an improperly manufactured piece of piping or maintenance error.

2. If the board cannot determine the cause(s), but they can infer the probable cause(s) from the evidence, its conclusion shall include the probable cause(s).

3. The board should only consider a finding of "Cause(s): Undetermined," for mishaps where the evidence, real and circumstantial, supports no other conclusion.

(b) Recommendations. Based on their conclusions, individual board members shall make recommendations to correct the cause(s) of the mishap. The board should evaluate the recommendations under consideration by again asking, "If someone had identified and eliminated the hazard(s) based on the recommendation before the mishap, would the action have prevented the mishap (or subsequent damage or injury)?" If the answer is no, then do not include the recommendation in the MIR. If the answer is yes, include the recommendation and recommended action agency in the MIR.

(c) Hazards Determined Not To Be Causes. During an investigation, the board may detect hazards which, though requiring corrective action, did not cause or contribute to the mishap. The board should not include unrelated hazards in the MIR. The senior member should inform the commanding officer of the ship of additional hazards detected. The ship should then report the hazards as required by Chapter A3.

(2) The senior member may use risk assessment codes (RACs) (see Chapter A4) to measure the severity of the mishap and probability of its recurrence, and include the RAC in the MIR.

g. Preparation of the MIR

(1) The senior member is responsible for drafting the MIR.

(a) The senior member shall send the MIR by naval message within 30 days of the convening of the board.

(b) If the senior member feels it will not be possible to meet the 30-day deadline, the senior member shall inform the appointing authority of the reason immediately and request an extension of the deadline.

(c) The appointing authority shall advise the type commander of any requests for extensions for submitting the MIR.

(2) Appendix A6-C provides a sample format for the MIR and report preparation guidance.

h. Disposition of Evidence. Once the MIR is completed, the Senior Member shall forward any evidence collected during the mishap investigation to COMNAVSAFECEN. Upon completion of the mishap investigation, the disposition of all evidence becomes the responsibility of COMNAVSAFECEN who shall:

(1) Take custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements and logs; photographs and negatives, tape recordings (whether referenced in the MIR or not), and the inventory itemizing all the evidence the board considered.

(2) Make available, upon request, any documentary evidence, logs, photographs, negatives, or tape recordings which are not privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying to:

(a) MIR endorsers.

(b) Individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United States or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

(3) Make available, upon request, any documentary evidence, summaries of witness' statements, logs, photographs, negatives, or tape recordings which are privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying, to MIR endorsers.

(4) After writing their endorsement, COMNAVSAFECEN shall:

(a) Turn over material (other than privileged information) to the JAG investigators for retention, if requested.

(b) Retain evidence requested by the type commander for use in lessons learned.

(c) Send originals of any deck or engineering smooth logs, if received, to CNO as required by OPNAVINST 3100.7B (NOTAL).

(d) Send original Service Record (USN) or Service Record Book (USMC) entries, if received, for missing or killed naval personnel per NAVMILPERS Manual (Section 5030140) (NOTAL), or USMC Individual Record/ Administration Manual, MCO P-1070.12 (NOTAL).

(e) In any case where the United States or any other party has commenced litigation, no evidence shall be destroyed without permission of the attorney representing the interests of the United States in the litigation.

(f) Retain custody of MIRs and their endorsements for 5 years, at which time they may be destroyed.

(g) Prior to disposing of any documentary or physical evidence, consult the Judge Advocate General, Admiralty Division (Code 31), who will, where appropriate, coordinate with other divisions within the Office of the Judge Advocate General.

(h) Unless otherwise directed by the Judge Advocate General, dispose of or destroy summaries of witness' statements, copies of logs, and

other records according to applicable regulations. Ensure privileged material is disposed of or destroyed according to applicable directives.

**A0605. THE SAFETY RECOMMENDATION (SAFEREC)**

a. The Safety Recommendation (SAFEREC) is designed to reduce injuries to personnel and damage to Navy property. The day-to-day experiences of sailors represent a large source of information which can be used to reduce or eliminate hazards. Many hazards will require Navy-wide action. SAFERECs should have a broad application to material, equipment, or personnel. A suggested SAFEREC may be submitted by means of a naval message or letter, via the chain of command, or by SAFETYGRAM (OPNAV 5102/4) (see Attachment 2 to Appendix A6-D). The Naval Aviation Safety Program, reference A6-10, includes Safety Recommendations.

(1) Suggested SAFERECs should be submitted to Commander, Naval Safety Center (COMNAVSAFECEN). COMNAVSAFECEN shall evaluate and, if appropriate, forward it to the proper action authority.

(2) SAFERECs may also be initiated by COMNAVSAFECEN based on MRs, MIRs, safety surveys results, or other correspondence.

b. SAFERECs are referred to the following action authorities:

(1) Systems Commands (SYSCOMs) (for example, COMNAVSEASYSCOM) for modification to equipment design or maintenance techniques

(2) Bureau of Personnel (BUPERS) for manning needs

(3) Chief, Naval Education and Training (CNET) for training needs

(4) OPNAV Warfare Sponsors or the appropriate Type Commander(s) for SHIPALT accomplishment or priority of funding

(5) Chief, Bureau of Medicine and Surgery (BUMED) for industrial hygiene and occupational health support.

Responsibility for action on a SAFEREC may change as it moves from initial design to fleet or field installation.

c. For SAFERECs to be effective, the final or concluding action must be well-defined. A SAFEREC can typically involve one or more of the following:

(1) Personnel or Maintenance Procedure. Includes developing new or revised training or personnel qualification standards (PQS), operating or maintenance procedures, or safety precautions.

(2) Technical References or Specifications. Includes changes to basic requirements documents such as: General Specifications for Ships of the United States Navy (GENSPECS), General Specification for Overhaul of Surface

Ships (GSO), Naval Ships' Technical Manual (NSTM), Naval Warfare Publications (NWPs), and other instructions and documents.

(3) Off-the-Shelf Systems or Non-Developmental Items (NDI). Includes suggestions or recommendations to consider the use of an existing item, product, or system readily available commercially or used by another service.

(4) Design Change to Existing Equipment or System. Includes specific engineering or design change or alteration to existing systems, subsystems, equipment, or components.

(5) New Equipment Development. Includes the development of a completely new system, subsystem, or component.

(6) Non-Developmental Items (NDI). Includes the purchase of equipment and other items directly from civilian sources for immediate use by the U.S. Navy or after slight modification for shipboard use.

d. A SAFEREC will be initiated by COMNAVSAFECEN notifying the appropriate action authority of a fleet or field input, MRs, MIRs, SAFETYGRAMs, or safety survey results using the letter format provided in Appendix A6-K. COMNAVSAFECEN shall:

(1) Ensure the SAFEREC concisely states the problem and the recommended action.

(2) Assign a risk assessment code (based on Chapter A4).

(3) Provide a point of contact (SAFEREC manager).

(4) Contact the appropriate program sponsors to determine if corrective action exists.

(5) Provide a copy of the initial SAFEREC letter to the primary program or warfare sponsor and the originator.

(6) Provide a management system to assist in monitoring the progress of action being taken by action authorities. Keep warfare sponsors, fleet commanders in chief, and type commanders advised of SAFEREC implementation status.

(7) Track the progress of action from planning through implementation. Close out the SAFEREC upon completion of the recommended action or other solution.

e. Action Agencies shall:

(1) Assign a point of contact for SAFEREC management including reporting of progress and technical difficulties. Notify appropriate commands

(COMNAVSAFECEN, warfare sponsors, fleet commanders in chief, and type commanders) of changes in the point of contact.

(2) Provide copies of formal correspondence pertinent to the SAFEREC evaluation or final corrective action to appropriate commands.

(3) For all fiscal programming actions, where funding shortages prevent using current fiscal year funds, establish reprogramming action and budget identity with milestone date(s). This allows an assessment of probability of fund receipt and continuation of effort.

(4) Provide periodic SAFEREC progress reports to appropriate commands.

(5) When there are delays in projected scheduled accomplishments, provide explanatory documentation to appropriate commands.

f. The Director, Surface Warfare Division (N86), Director, Submarine Warfare Division (N87), Director, Air Warfare Division (N88), and Director, Environmental Protection, Safety and Occupational Health Division (N45) shall:

(1) Prioritize the funding and accomplishment of SAFERECs.

(2) Regularly review SAFERECs under their cognizance.

(3) Ensure SAFEREC action authorities are progressing toward due dates or milestones.

(4) Reassign all misdirected or erroneously assigned SAFERECs and act as negotiator for any impasse between COMNAVSAFECEN and action authorities of SAFERECs.

A) **A0606. TRAINING**

a. All shipboard personnel shall receive indoctrination and annual refresher training on mishap prevention, investigation, and reporting with special emphasis on privileged information.

b. The MIB advisor from COMNAVSAFECEN shall receive detailed training in safety investigation techniques and reporting requirements.

**CHAPTER A6**

**REFERENCES**

A6-1. JAG Instruction 5800.7C, "Manual of the Judge Advocate General"

A6-2. COMSCINST 5100.17B, "Afloat Safety and Occupational Health Manual" (A (NOTAL)

A6-3. OPNAVINST 5100.23D, "Navy Occupational Safety and Health Program Manual" (A (NOTAL)

A6-4. OPNAVINST 5102.1C, "Mishap Investigation and Reporting" (NOTAL) (A

A6-5. U.S. Navy Regulations, 1990

A6-6. OPNAVINST 3120.32C, "Standard Organization and Regulations of the U.S. (R Navy"

A6-7. DoD Instruction 6055.7, "Mishap Investigation, Reporting, and Record-keeping" 10 April 1989 (NOTAL)

A6-8. OPNAVINST 3100.6G, "Special Incident Reporting (OPREP-3, Navy Blue, and UNIT SITREP) Procedures"

A6-9. CINCUSNAVEUR/CINCLANTFLT/CINCPACFLT INST 3100.7, "Special Incident Reporting (OPREP-3/UNIT SITREP)" (NOTAL)

A6-10. OPNAVINST 3750.6Q, "Naval Aviation Safety Program" (NOTAL)

## Appendix A6-A

## CONCEPT OF PRIVILEGE (A

1. Privileged information. That information voluntarily provided under a **promise of confidentiality**, or information which would not have been discovered but for information voluntarily provided under a **promise of confidentiality**.

a. Privileged Material. The deliberative analyses of findings, conclusions, and recommendations of the mishap investigation board (MIB) in the MIR are privileged. Also privileged are calculations and deductions the MIB makes that would reveal the board's deliberative process. Mishap investigation report endorsements (MIREs) are also part of the deliberative process and are similarly privileged against disclosure.

b. Authority. The concept of privilege applies to mishaps investigated by an MIB as defined in Appendices A6-B through A6-D. Reference A6-7 requires Limited Use Safety Mishap Investigation Reports for flight mishaps and mishaps involving complex weapons systems, equipment, or military-unique items (such as ships and shipboard systems) when the determination of cause factors is vital to the national defense. The SOLE PURPOSE of these closely held, internal, Department of Defense (DoD) communications is to prevent subsequent DoD mishaps. Any individual providing information to mishap investigators under a promise of confidentiality will be advised that the Navy will use its best efforts to ensure that the information is not released to any other agency or individual.

2. Privileged information shall not be used:

a. In making any determination affecting the interest of an individual making a statement under assurances of confidentiality or involved in a mishap.

b. As evidence, or to obtain evidence, in determining misconduct or line-of-duty status.

c. As evidence, or to obtain evidence, to determine the responsibility of personnel from the standpoint of discipline.

d. As evidence, or to obtain evidence, to assert affirmative claims on behalf of the government.

e. As evidence, or to obtain evidence, to determine the liability of the government for property damage caused by a mishap.

f. As evidence, or to obtain evidence, before administrative bodies, such as officer evaluation boards (USN) or Field Performance Boards (USMC).

g. As evidence, or to obtain evidence, in any other administrative or judicial proceeding(s) to determine misconduct or line of duty status, or governmental liability.

h. As evidence in any court, civilian or military.

3. The Purpose of Designating Information as Privileged. The actions limiting the use of privileged information are taken to:

a. Overcome any reluctance of an individual to reveal complete and candid information about the events surrounding a mishap.

b. Encourage MIBs and the endorsers of MIRs to provide complete, open, and forthright information, opinions, and recommendations about a mishap.

4. Rationale. If privileged information were allowed to be used for purposes other than safety, witnesses might withhold vital safety information.

a. Individuals may be reluctant to reveal information pertinent to a mishap because they believe certain uses of the information could be embarrassing or detrimental to themselves, their fellow service members, their command, their employer, or others. They also may elect to withhold information by exercising their constitutional right to avoid self-incrimination. Individual members of the armed forces must be assured that they may confide in others for the mutual benefit of fellow service members without incurring personal jeopardy in the process. Witnesses shall not provide statements to MIBs under oath or in writing, and requiring them to do so is prohibited. Mishap investigators must advise witnesses, in writing, of the purpose for which they are providing a statement and of the limited use to be made of the statement. The witnesses' statements shall not be limited to matters they could testify about in court. They may be invited to express opinions and speculate on possible causes of the mishap.

b. If MIBs and the endorsers of MIRs believe their deliberations, opinions, and recommendations could be used for other than safety purposes, they might be reluctant to develop or include vital safety information in their reports and in the mishap investigation report endorsements (MIREs).

5. Protection of Privileged Information. To foster the submission of privileged information in afloat MIRs and MIREs, witnesses must be provided with assurances of confidentiality. Should the DON use privileged information for any purpose other than safety, the Navy would lose credibility of future assurances of privilege. To protect privileged information against unauthorized disclosure, the Navy must safeguard the entire reporting cycle: assurances of confidentiality given; privileged information obtained, developed, and reported; privileged information protected against misuse or public disclosure; credibility of assurances maintained; and assurances of confidentiality given again. If any segment of the cycle fails, vital safety information may be lost. Obtaining safety information is therefore dependent upon the protection of privileged information against use for other than safety purposes. Accordingly, the following safeguards protect privileged information:

a. Witness Statements. Witness statements to an MIB shall not be provided to any activity except as authorized in this chapter. Once the witness makes a statement to the MIB, the contents of the statement become part of the MIB's privileged evidence and shall be released only per paragraph A0602f(8) and handled per paragraph 8a of appendix A6-C.

b. Photographs. Photographs staged by the MIB (planned or posed to illustrate a specific condition or situation) are privileged because of the deliberative process. All captions or markings placed on photographs suggesting the mishap board's deliberative process are also privileged.

c. Investigations. Mishap investigators must thoroughly understand the distinction between afloat mishap investigations and other investigations. Only in cases of a joint, DoD safety investigation (for example, a U.S. Army and U.S. Navy mishap), authorized by Commander, Naval Safety Center (COMNAVSAFECEN) or higher authority, shall any exchange of information and opinion outside the U.S. Navy MIB occur. In such cases, cooperation between safety investigators may include division of labor, joint review of evidence, exchange of witness statements, and joint deliberations.

d. Multiple/Concurrent Investigations. In all cases, afloat mishap investigations shall be independent and separate from JAGMAN and all other investigations. Safety investigators may only exchange the identity of witnesses and share nonprivileged evidence with JAGMAN and other investigators.

e. Outside Assistance. Afloat mishap investigations may require the assistance of other activities. Requests for such assistance are not privileged, and the senior member must meticulously review them to ensure they do not contain privileged information. Technical specialists providing assistance to MIBs are not members of the board and (except as authorized elsewhere in this chapter) shall not be given access to deliberations by the board or to the contents of Part Bravo or the endorsements on MIRs.

f. Investigators. Members of MIBs shall not, nor may they be requested to, divulge their opinions or any information they developed, or learned, as a member of the board. Members of MIBs shall not be assigned to any other investigation of the same mishap such as a JAGMAN investigation, an officer evaluation board (USN), or a Field Performance Board (USMC).

g. Independence of Mishap Investigation Reports

(1) MIRs consist of two parts. Part Alpha includes the nonprivileged data and Part Bravo, the privileged data. (See paragraph 5h of this appendix for further discussion of Parts Alpha and Bravo.) Part Bravo of an MIR, and extracts from Part Bravo, shall neither be appended to, nor included in, reports of JAGMAN investigations or any other report. The Office of the Navy Judge Advocate General shall not be an addressee on MIRs.

(2) To prevent any inference of association with disciplinary action, reports of JAGMAN investigations, officer evaluation boards (USN), or Field Performance Boards (USMC) shall not be appended to, nor made a part of, any MIR or endorsement.

h. Administrative Safeguards

(1) Since material in Part Alpha of an MIR is not privileged information, COMNAVSAFECEN may disclose the information to the public consistent with

exemption b(6) of the Freedom of Information Act. Since the material in Part Bravo is privileged information, COMNAVSAFECEN shall not release it to the general public. COMNAVSAFECEN is the only releasing authority for material in either Part Alpha or Part Bravo.

(2) Only military electronic communications facilities shall transmit MIRs and endorsements.

(3) Distribution of Part Bravo of MIRs by themselves, or together with the endorsements, outside the commands specified in this chapter, or authorized by CNO (09F), is strictly prohibited.

(4) Use Standard Subject Identification Code (SSIC) 05102 on all MIRs and endorsements to aid the receiving commands in limiting internal distribution to people requiring MIRs for safety purposes. Internal command distribution of MIRs shall be strictly limited to people requiring knowledge of the report for safety purposes.

(5) Privileged reports and endorsements required by this chapter shall include the following narrative at the beginning of the MIR or endorsement:

**"NARR/THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS."**

(6) Only CNO, Commandant of the Marine Corps (CMC), or COMNAVSAFECEN can readdress MIRs and MIR endorsements.

i. Special Handling. The term "special handling" means that the circulation of MIRs is restricted to ensure their use is limited to the furtherance of safety. Recipients must apply common sense to determine what handling actions are appropriate. For example:

(1) Uncontrolled disclosure of MIRs to those not requiring knowledge of their content for safety (such as placement in reading racks, message boards, or on bulletin boards) is not appropriate.

(2) Controlled passage of MIRs from individual to individual, or from office to office in file folders, to make sure only specific individuals requiring knowledge of their content for safety purposes see the MIR is appropriate.

j. For Official Use Only. All reports required by this chapter are designated "For Official Use Only (FOUO)." SECNAVINST 5720.42E (NOTAL) contains guidelines regarding handling, release, safeguarding, and disposing of material designated "For Official Use Only (FOUO)."

6. Dissemination of Essential Safety Information. When appropriate, COMNAVSAFECEN and the type commanders may extract safety information and issue lessons

learned based on MIRs submitted according to this chapter. The distribution of the lessons learned depends on the subject. The privileged status of an MIR or endorsement shall not restrict the dissemination of essential safety information by COMNAVSAFECEN or the type commanders. When an MIR contains essential safety information based on privileged or personal information, and the information has not been adequately distributed to those in need of the information, COMNAVSAFECEN or the type commanders shall take one of the following actions (listed in order of preference):

a. Extract. Extract only the essential safety information from the report and disseminate it appropriately. (COMNAVSAFECEN or type commanders)

b. Expunge. Scrub or sanitize all identifying information from the report that could link the report with an individual, organization, or mishap, and disseminate the essential safety information remaining in the report. (COMNAVSAFECEN only)

c. Readdress. Readdress the entire MIR. (COMNAVSAFECEN only)

7. Release of Program Information. The release of information in MIRs shall be as specified in this paragraph, and paragraph 11 of appendix A6-D for MRs, unless otherwise authorized by CNO (09F). The release of information on motor vehicle (MV) or off duty recreation, athletics, and home mishaps shall be per reference A6-4.

a. Protection of Privacy Information. To protect the privacy right of individuals, the names of individuals not involved in the mishaps and the social security numbers of all individuals in the report shall not be furnished under exemption (b)(6) of the Freedom of Information Act (FOIA). To protect the privacy rights of surviving family members, photographs of human remains included in the autopsy reports shall not be provided per exemption (b)(6).

b. Release Based on the Freedom of Information Act. Either expressed or implied requests for information made under the FOIA shall be sent to COMNAVSAFECEN, Attention: Code 03.

c. Release Based on the Privacy Act of 1974. Information in MIRs shall not be maintained in a system of records subject to the Privacy Act. Specifically, the information must not be retrievable by the name of an individual, or by social security number, or other identifying number, symbol, or unique identifier associated with an individual. Forward Privacy Act requests for information pertaining to an individual to COMNAVSAFECEN, Attention: Code 03.

d. Release by an Individual Having Knowledge of Mishap Investigation Reports. An individual having knowledge of the contents of an MIR is prohibited from disclosing the information, except as authorized by this chapter. If anyone asks for information from any individual having knowledge of the contents of an MIR, that individual should immediately contact COMNAVSAFECEN, Attention: Code 03.

e. Release to U.S. Navy, U.S. Marine Corps, and Other Department of the Navy Activities. Forward requests for mishap information from Navy, Marine Corps, and other DON activities to COMNAVSAFECEN, Attention: Code 03.

f. Release to Other U.S. Military Services. Exchange of safety program information among the military services shall be limited to the respective safety centers, and shall be controlled to prevent disclosure of privileged information.

g. Release to the News Media. DON Public Affairs Regulations, SECNAVINST 5720.44A (NOTAL) contains information on releasing mishap information to the media. The Navy shall, however, preserve the privileged information in MIRs which is not releasable to the media. Forward requests for MIRs to COMNAVSAFECEN, Attention: Code 03.

h. Release to Congress. Forward requests for information from Congress, Congressional committees or subcommittees, or staff members to CNO or CMC, as appropriate. Send a copy of the request to COMNAVSAFECEN, Attention: Code 03.

i. Subpoenas for Information. Refer any subpoenas for mishap information for use in civil or criminal proceedings, anticipated litigation, or in administrative claims against the government, to the Judge Advocate General, Department of the Navy (Code 34).

j. Release to Technical Representatives, Defense Contract Administration Services (DCAS) Representatives, and Contractors. Forward requests for mishap information from technical representatives, manufacturers, DCAS representatives, and contractors or their agents to COMNAVSAFECEN via COMNAVSEASYSCOM (SEA-09T4). The endorsement of COMNAVSEASYSCOM (SEA-09T4) shall certify whether the requested information is required for safety purposes with respect to product design or improvement. Any response shall include a warning to ensure the recipient uses the information for safety purposes only. The recipient shall not disclose the information to any other individual or entity.

k. Release to North Atlantic Treaty Organization (NATO) Nations. If a maritime incident involves units or personnel of two or more NATO nations, the provisions of NATO Standardization Agreement (STANAG) 1179 (NOTAL), Combined Investigation of Maritime Incidents, become effective. Under the provisions of STANAG 1179, NATO nations agree to conduct either a combined court of inquiry, a national inquiry attended by witnesses and/or observers from other nations, or an independent national inquiry coordinated by the presidents of the inquiries. Any command receiving a request for information from an afloat mishap investigation from a NATO country shall forward the request immediately to COMNAVSAFECEN, Attention: Code 03.

l. Release to Other Foreign Nations. Forward requests for information on mishaps from foreign governments to COMNAVSAFECEN, Attention: Code 03.

m. Unspecified Cases. Forward requests not stipulated above to COMNAVSAFECEN, Attention: Code 03.

## Appendix A6-B

## MISHAP INVESTIGATION BOARD ADMINISTRATION (A

The commanding officer shall notify higher authority of serious shipboard mishaps. The Immediate Superior in Command (ISIC), or other higher authority, shall appoint a mishap investigation board (MIB) for all afloat Class A mishaps. All MIBs shall consist of a senior member and at least two additional members. The board's purpose is to investigate the mishap fully to determine the causes. The board then prepares a Mishap Investigation Report (MIR) with its conclusions and recommendations.

1. Appointment of a Mishap Investigation Board

a. When a serious shipboard mishap occurs, the commanding officer or craftmaster shall notify Commander, Naval Safety Center (COMNAVSAFECEN) and the chain of command. This is usually accomplished through an OPREP-3 or UNIT SITREP submitted per references A6-8 and A6-9.

b. Upon notification of a potential Class A mishap, the fleet or type commander shall send a message to the appointing authority providing the minimum endorsement chain.

c. If the mishap meets the criteria of a Class A mishap, a formal investigation by a MIB is required.

d. MIB members are appointed, in writing. Unless a senior in the chain of command assumes the capacity as appointing authority, the ISIC is normally the appointing authority. For Military Sealift Command (MSC), the appointing authority is Commander, Military Sealift Command, Atlantic (COMSCLANT) or Military Sealift Command, Pacific (COMSCPAC).

2. Senior Member of the Mishap Investigation Board

a. The MIB shall consist of a senior member and at least two other members.

b. The senior member shall:

(1) Convene and direct the mishap investigation using the guidelines in this appendix and paragraph A0604.

(2) Request technical assistance for the investigation from the appointing authority or type commander, when required.

(3) Provide direction to MIB members on specific policies, procedures, and restrictions.

(4) Refer requests to COMNAVSAFECEN, if there are questions about releasability, for any physical evidence, summaries of witness' statements, logs, photographs, negatives, or tape recordings either by transfer of origi-

nals, if appropriate, or by making copies. The senior member and COMNAVSAFECEN shall consider requests only from individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United States, or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

(5) Prepare and send the MIR as outlined in paragraph A0603 and appendix A6-C.

(6) Transfer custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements, photographs and negatives, and tape recordings (whether referenced in the MIR or not) to COMNAVSAFECEN. Include an inventory itemizing all the evidence the board considered. Send a copy of the inventory to all endorsers.

3. Members of the Mishap Investigation Board

a. Members - The ISIC of the ship involved or the commanding officer of the ship involved, if the ISIC delegates appointment authority, shall appoint a minimum of two commissioned officers, with suitable experience, to the MIB. If commissioned officers of suitable experience are not available for landing craft, air cushioned (LCAC) mishap investigations, senior enlisted personnel may be appointed. For LCAC operational mishaps (OMs), at least one member of the board shall be a qualified and designated craftmaster.

b. Medical Member - In all cases involving death or injury, the commanding officer or the ISIC of the ship involved shall appoint a medical officer, or medical department representative for LCACs, as an additional member to the MIB.

c. MIB members shall:

(1) Assist the senior member in thoroughly investigating the mishap using the guidelines contained in section A0604.

(2) Not divulge, except during deliberations, any information or opinions of the board.

(3) Assist the senior member in preparing the MIR.

(4) Consolidate all personal notes upon completion of the MIR and give them to the senior member for transmittal to COMNAVSAFECEN with the other evidence.

4. Mishap Investigation Advisor

a. COMNAVSAFECEN shall appoint a trained mishap investigation advisor for all afloat Class A mishaps, and provide an advisor for other mishaps when a trained investigator would be beneficial to the investigation. The advisor shall be present at the initial convening of the board, if logistically feasible.

b. The advisor is not a member of the MIB, but serves to advise the board in investigation and reporting procedures.

c. The senior member shall extend unrestricted access to all evidence, summaries of witness' statements, and proceedings to the advisor.

d. The advisor may depart before the completion of the investigation, if the senior member and COMNAVSAFECEN agree.

5. Technical Assistance

a. The MIB may require the assistance of technical experts. Sources of technical assistance include, but are not limited to: COMNAVSAFECEN; Armed Forces Institute of Pathology; Navy Environmental and Preventive Medicine Units (NAVENPVNTMEDUs); COMNAVSEASYSCOM; Naval Coastal Systems Center (NAVCOAST-SYSCEN); Naval Surface Warfare Center, Ship Systems Engineering Station (NSWC NAVSSES); naval shipyards; hospitals; aviation depots; and equipment technical representatives.

(1) Request for Assistance. The appointing authority, the commanding officer of the ship involved, or the senior member may request assistance from local activities. Only the type commander, however, may request assistance when it involves distant activities, external agencies, or travel funding.

(2) Advisory Nature of Technical Assistance. Assistance given to a board is advisory in nature. Technical or medical specialists (other than the assigned medical member) are not members of the board. Serious consideration should be given to the recommendations offered by special advisors, but the board is not obligated to accept them. Except for the COMNAVSAFECEN mishap investigation advisor, the senior member shall not give the specialists access to board deliberations or the contents of Part Bravo of the MIR.

b. The senior member should contact the COMNAVSAFECEN (Code 30) if any questions or doubts arise during the mishap investigation. Anyone can obtain assistance or clarification on any matter about a mishap investigation by contacting COMNAVSAFECEN. The phone numbers are: DSN: 564-1562 or commercial: (804) 444-1562 during normal working hours (0800 - 1630 Eastern time); and, DSN: 564-3520 or commercial: (804) 444-3520 after working hours.

6. Mishap Investigation Board Proceedings

a. The ISIC and the commanding officer of the unit involved shall coordinate the time and location of the initial meeting of the MIB. The ISIC provides the convening date and location to the operational chain of command and COMNAVSAFECEN as soon as possible.

b. The ISIC or commanding officer of the unit involved shall provide accommodations, local transportation, and administrative support. The senior member shall have authority to release messages specifically related to the mishap investigation and the MIR.

c. The senior member convenes the board as directed by the appointing authority.

d. The MIB shall thoroughly investigate the mishap using the procedures in Section A0604 to determine the cause(s) and develop recommended actions to correct the hazard(s). The board shall prepare an MIR in the format of appendix A6-D.

e. The senior member of the board shall forward the MIR by naval message within 30 days of convening the board.

(1) If the MIB cannot meet the 30-day deadline, the senior member shall immediately inform the appointing authority of the reason and request a deadline extension.

(2) The appointing authority shall advise the type commander of any requests for extension or waiver.

f. Once the senior member forwards the MIR, the senior member shall transfer custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements, photographs and negatives, and tape recordings (whether referred to in the MIR or not) to COMNAVSAFECEN. Return all nonprivileged physical evidence to the original custodian. The senior member shall send an inventory itemizing all the evidence the board considered to COMNAVSAFECEN and all endorsers. Divide the inventory into at least the following four parts:

(1) Unclassified, **nonprivileged** evidence **sent** to COMNAVSAFECEN.

(2) Unclassified, **privileged** evidence **sent** to COMNAVSAFECEN.

(3) Classified, **nonprivileged** evidence **sent** to COMNAVSAFECEN.

(4) Unclassified, **nonprivileged** documents **not sent** to COMNAVSAFECEN.

g. Endorsers and other authorized recipients of the MIR and its endorsements shall retain them for 5 years from the date of the mishap, at which time they shall be destroyed.

h. COMNAVSAFECEN shall retain copies of MIRs and their endorsements for 5 years, at which time they may be destroyed.

i. Endorsers and other authorized recipients of an MIR and its endorsements may request, from COMNAVSAFECEN, copies of selected MIRs and their endorsements for safety training. MIRs and their endorsements shall be sanitized of all identifiable data which could connect them to an individual, organization, or a particular mishap. Sanitized MIRs and their endorsements shall be used for safety training purposes only.

j. MIRs and their endorsements shall not be filed under any individual's name or other personal identifier; nor shall information be retrievable from MIR

files by an individual's name or other personal identifier. Failure to follow these guidelines may result in the inadvertent disclosure of privileged information in response to a Privacy Act request.

7. Preparation of the MIR

a. The senior member is responsible for drafting the MIR.

(1) The senior member shall send the MIR by naval message within 30 days of the convening of the board.

(2) If the senior member feels it will not be possible to meet the 30 days deadline, the senior member shall inform the appointing authority of the reason immediately and request an extension of the deadline.

(3) The appointing authority shall advise the type commander of any requests for extensions for submitting the MIR.

b. Appendix A6-C provides a sample format for the MIR and report preparation guidance.

8. Disposition of Evidence. Once the MIR is completed, the senior member shall forward any evidence collected during the mishap investigation to COMNAVSAFECEN. Upon completion of the mishap investigation, the disposition of all evidence becomes the responsibility of COMNAVSAFECEN who shall:

a. Take custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements and logs; photographs and negatives, tape recordings (whether reference in the MIR or not), and the inventory itemizing all the evidence the board considered.

b. Make available, upon request, any documentary evidence, logs, photographs, negatives, or tape recordings which are not privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying to:

(1) MIR endorsers

(2) Individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United States, or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

c. Make available, upon request, any documentary evidence, board members' personal notes, summaries of witness' statements, logs, the evidence inventory, photographs, negatives, or tape recordings which are privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying, to MIR endorsers.

d. After writing an endorsement, COMNAVSAFECEN shall:

(1) Turn over material (other than privileged information) to the JAGMAN investigators for retention, if requested.

(2) Retain evidence requested by the type commander for use in lessons learned.

(3) Send originals of any deck or engineering smooth logs, if received, to CNO as required by OPNAVINST 3100.7B.

(4) Send original Service Record (USN) or Service Record Book (USMC) entries, if received, for missing or killed naval personnel according to NAVMILPERS Manual (Section 5030140), or USMC Individual Record/ Administration Manual, MCO P-1070.12.

(5) In any case where the United States or any other party has commenced litigation, no evidence shall be destroyed without permission of the attorney representing the interests of the United States in the litigation.

(6) Retain custody of MIRs and their endorsements for 5 years, at which time they may be destroyed.

(7) Prior to disposing of any documentary or physical evidence, consult the Judge Advocate General, Admiralty Division (Code 31), who will, where appropriate, coordinate with other divisions within the Office of the Judge Advocate General.

(8) Unless otherwise directed by the Judge Advocate General, dispose of or destroy summaries of witness' statements, copies of logs, and other records according to applicable regulations. Ensure privileged material is disposed of or destroyed according to applicable directives.

**Attachment A6-B-1**

**Sample Message to Appointing Authority**

FM Type Commander/Fleet Commander

TO Appointing Authority

INFO All MIR endorsers
Mishap ship(s)
ISIC
COMNAVSAFECEN NORFOLK VA//30/054//
Other appropriate commands

UNCLAS //N05102//

MSGID/GENADMIN/Type Commander//

SUBJ/CONVENING MISHAP INVESTIGATION BOARD//

REF/A/OPREP-3/Mishap ship/DTG//
REF/B/DOC/CNO/19JAN94//
NARR/REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT//
POC/name/rank/primary phone/-/Type Commander/secondary phone//
POC/S. V. SCUDDER/GS12/DSN 564-1562/-/NAVSAFECEN 30B/(804) 444-1562//

RMKS/1. REF A REPORTED A POSSIBLE CLASS A MISHAP INVOLVING USS SHIP. A MISHAP INVESTIGATION BOARD MAY BE REQUIRED IF THE MISHAP MEETS THE CRITERIA FOR A CLASS A MISHAP. THIS INCLUDES:

A. A DEATH, OR

B. AN INJURY RESULTING IN PERMANENT TOTAL DISABILITY, OR

C. THE TOTAL COST OF REPORTABLE DAMAGE IS $1,000,000 OR MORE.

2. IF YOU DETERMINE THE MISHAP MEETS CLASS A SEVERITY, ACCORDING TO PARA A0602A OF REF B YOU MUST APPOINT A MISHAP INVESTIGATION BOARD. MEMBERS OF THE MISHAP INVESTIGATION BOARD CAN NOT BE ASSIGNED TO ANY OTHER INVESTIGATION (JAGMAN, BOARD OF INQUIRY) INTO THE MISHAP.

3. THE NAVAL SAFETY CENTER IS STANDING BY TO SEND AN ADVISOR TO ASSIST THE BOARD IN THE INVESTIGATION. THEY NEED TO KNOW WHEN AND WHERE THE BOARD WILL CONVENE.

4. IF THE BOARD NEEDS TECHNICAL ASSISTANCE, THE SENIOR MEMBER MUST REQUEST ASSISTANCE THROUGH THE TYCOM.

5. UPON COMPLETION OF THE INVESTIGATION, THE SENIOR MEMBER SHOULD SEND THE MISHAP INVESTIGATION REPORT TO THE FOLLOWING MINIMUM ENDORSERS, UNLESS OTHERWISE ADVISED:

A. Mishap ship

B. ISIC

C. TYCOM

D. COMNAVSAFECEN//

BT

**Attachment A6-B-2**

**Sample Appointment Letter**

5100
Code
Date

From: (Commander, Commanding Officer)
To: (Rank, Name, SSN, Service)
Via: (Command of the appointed member, if different from the appointing authority)

Subj: APPOINTMENT AS MEMBER OF (ORGANIZATION) MISHAP INVESTIGATION BOARD

Ref: (a) OPNAVINST 5100.19C, NAVOSH Program Manual for Forces Afloat

1. Based on your professional experience and knowledge, I appoint you as (the Senior Member) (a member) of the (organization) Mishap Investigation Board. You shall comply with reference (a) in the performance of your duties.

2. I direct your attention to the provisions of reference (a) concerning privileged information. You shall properly safeguard all privileged information available to you as a member of the board.

3. When investigating and reporting a shipboard mishap, your duties as a member of the board shall take precedence over all other duties. You will not be assigned to do a JAG Manual or other investigation of the same mishap.

4. The responsibility inherent in the appointment extends beyond any loyalties you may hold to the command. The afloat safety program depends on the efforts of mishap investigators to analyze mishaps to identify and remove potential causes of damage and injury. The sole objective of the board is mishap prevention. Therefore, your efforts should include complete, open, and forthright expressions of your views. Rest assured, the MIR shall be used within the command, and elsewhere within the Department of the Navy, for safety purposes only.

5. Should any circumstances arise which would prevent the proper performance of your duties as a member of the board, you shall immediately notify me.

6. Contact the Naval Safety Center if you experience any difficulties in properly conducting the investigation.

//Signed//

Copy to:

**Appendix A6-C**

**MISHAP INVESTIGATION REPORTS (MIRS)** (R
**Report Symbol OPNAV 5102-7**

The mishap investigation board (MIB) shall write an MIR after completing its investigation. The release, distribution, and control of the MIR is limited to prevent unauthorized disclosure of report contents. MIRs are Limited Use Reports containing privileged information.

1. Mishap Investigation Report Elements

a. The MIR:

(1) Informs the chain of command of the probable cause(s) of the mishap.

(2) Summarizes lessons learned from the mishap to prevent recurrence.

(3) Identifies procedural changes or equipment alterations to prevent future mishaps.

b. The MIR has two parts:

(1) Part Alpha - Contains nonprivileged information that is generally releasable to the public. However, the release of certain, selected portions of Part Alpha, such as personal information covered by the Freedom of Information and Privacy Acts may be prohibited. Part Alpha includes mishap facts; such as the unit identification code (UIC), mishap location, information on injured personnel, and types of damage. Part Alpha is similar to the Mishap Report (MR) included in appendix A6-D. Part Alpha information is not privileged information and Commander, Naval Safety Center (COMNAVSAFECEN) may release Part Alpha information to the general public, except for information protected under exemption b(6) of the Freedom of Information Act.

(2) Part Bravo - Contains privileged information that is not releasable to the public. The SOLE USE is for safety purposes. Part Bravo includes a summary of the evidence collected, the sequence of events of the mishap, and the opinions and recommendations (and recommended action agency) of the board. Part Bravo information, together with the endorsements, is privileged information and COMNAVSAFECEN shall not release this information to the general public. Any privileged information that is released solely for safety purposes by COMNAVSAFECEN shall be appropriately sanitized or expunged to protect privileged or personal information. See appendix A6-A.

c. MIRs are Limited Use Reports, as defined in reference A6-7. They are used for safety purposes only. Other investigators shall not use the privileged information contained in the MIR or its endorsements in any other investigation or report.

(1) Freedom of Information Act Access. The Freedom of Information Act, 5 USC 552 (1982 and Supp. IV 1986) (FOIA) makes most of Part Alpha, including nonprivileged physical evidence and information in logs and other records releasable to the public, except for information protected under exemption b(6) of FOIA. Exemption b(5) to FOIA protects Part Bravo of a limited use MIR and its endorsements from disclosure. This exemption protects, for example, privileged witness statements, hearsay evidence, board opinions and recommendations, endorsements, and physical evidence acquired by the board as a result of privileged information.

(2) Privacy Act of 1974. Limited use MIRs, their endorsements, and information contained in them shall not be maintained in a system of records covered by the Privacy Act. In records covered by the Privacy Act, information can be retrieved by the name of an individual, an identifying number, symbol, or other unique identifier associated with an individual.

d. No one shall incorporate excerpts from an MIR, privileged statements, board opinions and recommendations, or endorsements into JAGMAN investigations or any other investigative report. To preclude association with disciplinary action, the senior member shall not include any reference to legal or administrative action, or other performance-related administrative action in an MIR.

e. Distribution of Part Bravo of MIRs, together with their endorsements, outside the commands specified in this chapter or authorized by Chief of Naval Operations (CNO) (N09F) is strictly prohibited. Appendix A6-A contains guidance on the release of MIR information.

2. Writing and Sending the MIR

a. The senior member shall draft the MIR based on the investigative procedures in Section A0604. Attachment 1 to this appendix is a sample format for the MIR.

b. The senior member shall send the MIR by naval message within 30 days of the convening of the MIB.

(1) If the senior member feels the board will not meet the 30-day deadline, the senior member shall inform the appointing authority of the reason immediately and request a deadline extension.

(2) The appointing authority shall advise the type commander of any requests by the senior member for an extension on the 30-day deadline for submitting the MIR.

c. To preclude association with disciplinary action, do not include any reference to legal or administrative action, or other performance-related administrative action in an MIR.

3. Classification and Handling of MIRs

a. MIRs are normally unclassified.

(1) If the senior member cannot complete a meaningful, unclassified report, the senior member may submit a separate classified addendum for an otherwise unclassified MIR.

(2) In all cases, the senior member shall include the following statement in the heading of the MIR:

**"THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY MILITARY PERSONNEL IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY CIVILIAN PERSONNEL WILL SUBJECT THEM TO DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL INSTRUCTION 752. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS."**

b. MIRs contain privileged information and require special handling. All recipients and endorsers of a MIR shall avoid its uncontrolled release which could result in unauthorized disclosure.

(1) Uncontrolled disclosure of MIRs, and their endorsements, to individuals not requiring access, such as placing an MIR on general access message boards, is not appropriate.

(2) Controlled handling of MIRs, and their endorsements, is appropriate. Ensure distribution only to specific individuals requiring knowledge of their content, for safety purposes, such as routing MIRs directly from individual to individual or from office to office in file folders.

4. Distribution of MIRs

a. The senior member should normally send the MIR after returning to his or her permanent command. However, there may be occasions when the MIR must be sent from the mishap ship. In this case the senior member shall ensure it is clear to all addressees that the MIR is from the Senior Member and not the mishap ship, such as using an office code following the ship's plain language address (PLA), using the appointing authority's PLA with an office code (//SENIOR MEMBER//), or as a detachment of the appointing authority.

b. The senior member shall distribute MIRs as follows:

(1) Address the MIR action to the required endorsers; including, the ship involved in the mishap; the ISIC; the type commander; and COMNAVSAFECEN NORFOLK VA//30/054//; and information to CNO WASHINGTON DC//N86D/N871D/

N885/N889E1/N45// and the appropriate fleet and group commander (when not an action addressee).

(a) If the mishap involved U.S. Marine Corps personnel or equipment, add Commandant of the Marine Corps (CMC WASHINGTON DC//MHS//) as an addressee.

(b) If the mishap involved MSC personnel or equipment, include Commander, Military Sealift Command (COMSC WASHINGTON DC//N4/N42/N00M/N3//) as an addressee.

(c) If the mishap involved a LCAC; add COMNAVSEASYSCOM WASHINGTON DC//PMS377// as an action addressee and NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// as an information addressee.

(d) If the mishap involved explosives or explosive systems or equipment, COMNAVSAFECEN shall provide a list of the appropriate additional information addressees based on the categories in paragraph 9 of appendix A6-E.

(2) Forward all evidence, listed in Section A0604, resulting from the mishap investigation to COMNAVSAFECEN for retention and disposition.

c. Distribution of MIRs, together with their endorsements, outside the commands specified in this chapter, or authorized by CNO (N09F), is strictly prohibited.

d. Use Standard Subject Identification Code (SSIC) 05102 on all MIRs so receiving commands can limit internal distribution to activities requiring the report for safety purposes. Internal command distribution of MIRs shall be limited to those who require knowledge of the report for safety purposes.

5. Endorsements

a. MIR endorsements are privileged and shall be made by message in the format of attachment 2 to this appendix.

(1) Use SSIC 05102 on all endorsements so receiving commands can limit internal distribution to activities requiring them for safety purposes. Internal command distribution of the endorsements shall be limited to those who require knowledge for safety purposes.

(2) Endorsers shall list each probable cause, rejected probable cause, and recommendation and recommended action agency on the MIR or previous endorsements and state their agreement or disagreement with each one. If the MIR, or a previous endorser, recommended action by the current endorser, state the action taken on that recommendation.

(3) If an endorser agrees with all conclusions and recommendations in the MIR, as modified by previous endorsements, then a brief statement of concurrence is sufficient.

(4) Since MIR endorsements become a part of the MIR, and fall under the concept of privileged information, endorsers shall provide complete and open information, opinions, and recommendations.

b. Endorsers may request any documentary evidence, copies of statements and logs, photographs and negatives, or tape recordings from COMNAVSAFECEN. The endorser shall return the material to COMNAVSAFECEN for retention and disposition.

c. The required endorsers for an MIR are:

(1) The commanding officer of the ship involved in the mishap shall endorse the MIR within 7 days of receipt.

(2) The ISIC of the ship involved in the mishap shall endorse the MIR within 14 days of receipt of the previous endorsement.

(3) The type commander shall endorse the report within 14 days of receipt of the previous endorsement.

(4) Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) (PMS-377) shall endorse all MIRs involving LCACs. COMNAVSEASYSCOM (PMS-377) shall endorse the report within 14 days of receipt of the previous endorsement.

(5) Other system commanders (e.g., COMNAVSEASYSCOM or COMNAVAIRSYSCOM code(s)), if requested by the senior member of the MIB or any endorser. The systems commander shall endorse the report within 14 days of receipt of the previous endorsement.

(6) Fleet commander in chief or numbered fleet commander (for mishaps involving more than one type commander) shall endorse the MIR within 14 days of receipt of the previous endorsement.

(7) COMNAVSAFECEN shall prepare their endorsement and send a copy to all endorsers within 14 days of receipt of the previous endorsement.

d. If an endorser cannot meet the above deadlines, he/she shall request an extension from the type commander by message. The request shall describe specific reasons for the extension.

e. The fleet commander in chief or type commander can direct other commands (for example, numbered fleet commanders and administrative group or squadron commanders) to endorse the report, if desired. If directed, those commands shall send the endorsement within 14 days of receipt of the previous endorsement.

f. If the commanding officer of a ship involved in a mishap detaches from the command before writing the endorsement, the type commander may provide him or her with a copy of the MIR and give him or her the opportunity to write a statement about the contents of the MIR. The detached commanding officer shall send the statement by naval message to the type commander within 14 days of receiving the MIR. Based on the contents of the statement, the type commander will either:

(1) Readdress the statement to all endorsers of the MIR for their consideration.

(2) Provide the statement to COMNAVSAFECEN only for inclusion with the mishap file.

6. Dissemination of Safety Information. COMNAVSAFECEN and the type commander, when appropriate, shall extract safety information and issue lessons learned, but shall avoid the disclosure of the source of privileged or personal information.

7. Release of Mishap Information. The release of MIR information shall be as specified in appendix A6-A unless otherwise authorized by CNO (N09F).

8. Retention and Disposition of Records

a. Once the senior member forwards the MIR, the senior member shall transfer custody of all relevant documentary evidence, board members' personal notes, original copies of all statements, photographs and negatives, and tape recordings (whether referred to in the MIR or not) to COMNAVSAFECEN. The senior member shall send an inventory itemizing all the evidence the board considered to COMNAVSAFECEN and all endorsers.

b. Endorsers and other authorized recipients shall retain custody of the MIR and its endorsements for 5 years from the date of the mishap, at which time they shall be destroyed.

c. COMNAVSAFECEN shall retain custody of the MIRs and their endorsements for 5 years, at which time they may be destroyed.

d. Endorsers and other authorized recipients of an MIR and its endorsements may request, from COMNAVSAFECEN, copies of selected MIRs and their endorsements for safety training. The MIRs and their endorsements shall be sanitized of all identifiable data which could connect them to an individual, organization, or a particular mishap. Sanitized MIRs and their endorsements shall be used for safety training purposes only.

**Attachment A6-C-1**

**Sample Message Format**
**Mishap Investigation Report (MIR)**
**Report Symbol OPNAV 5102-7**

Use the format and content below for reporting the results of the MIB. Send the report as a message:

(Precedence - normally ROUTINE)

FM Releasing command (Normally the Senior Member's command)

TO Mishap ship(s)
ISIC
Group Commander (when required)
Type Commander
COMNAVSEASYSCOM WASHINGTON DC//PMS377// (LCAC ONLY)
Systems Command//appropriate office code// (When determined by the senior member or other endorser)
Fleet Commander (when required)
COMNAVSAFECEN NORFOLK VA//30/054//

INFO NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// (LCAC ONLY)
CNO WASHINGTON DC//N86D/N871D/N885/N889E1/N45//
Fleet Commander (when not an action addressee)
Group Commander (when not an action addressee)

(If the mishap involves explosives or explosive systems or equipment, include addressees provided by COMNAVSAFECEN.)

UNCLAS //N05102//DISTRIBUTE ONLY TO THE COMMANDER OR OFFICE CODE(S) FOLLOWING EACH ADDRESSEE.
MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//
SUBJ/AFLOAT MISHAP INVESTIGATION REPORT (MIR) (REPORT SYMBOL OPNAV 5102-7)//
REF/A/(If follow-up message, refer to original message.)//
REF/B/DOC/CNO/19JAN94//
NARR/REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION, SAFETY MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY MILITARY PERSONNEL IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY CIVILIAN PERSONNEL WILL SUBJECT THEM TO DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL INSTRUCTION 752. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS.//

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/ALPHA: (NONPRIVILEGED)

1. UICs OF MISHAP COMMANDs

2. HULL NUMBER/SIDE NUMBER

3. *TYPE OF MISHAP (For example, flooding, fire, injury, electric shock, death,* collision, grounding, explosion, back injury, chemical or toxic exposure, or equipment damage.)

4. LOCAL TIME AND DATE OF MISHAP

5. GEOGRAPHIC LOCATION (Latitude/Longitude or port. If classified, give general area.)

6. WEATHER CONDITIONS (For example, temperature, relative humidity, visibility, lighting, ventilation, air quality, wind speed, sea state, current, tide, wind direction, precipitation, lightning, ducting, hurricane, and other.)

7. LOCATION WHERE MISHAP OCCURRED (Give workcenter or description of the location. For example, *torpedo room; main deck,* compartment number, side and frame number, mess decks, flight deck, or 76mm gun magazine.)

8. SHIP OR CRAFT'S EVOLUTION AT THE TIME OF MISHAP (For example, underway replenishment., mooring, and on-cushion approach to beach.)

9. SEA STATE AND DIRECTION

10. SHIP'S EMPLOYMENT (For example, type training (TYT), refit, independent steaming exercises (ISE), maintenance availability, underway, anchored, submerged, or dry-docked.)

11. PAYLOAD (For example, type cargo and load weight) *(LCAC-ONLY)*

12. SENIOR MEMBER and COMMAND (Include telephone number, if available.)

13. EQUIPMENT OR CRAFT DAMAGED OR DESTROYED BY THE MISHAP (Include EIC, TEC, FGC (functional group code), or NSN (if applicable); describe damage.)

14. ESTIMATED COST TO REPAIR OR REPLACE *DOD PROPERTY (Provide* the total dollar value and UIC and name of command having custody of the property (if different *from reporting activity).* The cost includes $16 for each hour of labor plus the cost of material and equipment.)

15. ESTIMATED COST OF NON-DOD PROPERTY DAMAGE

16. NUMBER OF SCHEDULED OPERATING DAYS *LOST*

17. NAME/SSN/AGE/SEX/RACE (Repeat items 17 through 24 if the mishap involves reportable injuries to more than one person.

18. RANK and DESIGNATOR or RATE and NEC, JOB AND EMPLOYMENT STATUS (Examples of employment status include USN, USNR, USNR-R, other Department of Defense personnel, Navy Federal civil servants, contractors, foreign military exchange personnel, and foreign civilians.)

19. DUTY STATUS (On- or off-duty.) and UIC (if different from reporting activity). (If the mishap involves injuries to people from different commands, specify the UIC of each individual.) CREW POSITION - LCAC ONLY.

20. SPECIFIC JOB OR ACTIVITY INDIVIDUAL ENGAGED IN AT TIME OF MISHAP (For example, conducting PMS, standing watch, loading stores, training, and boat crew.)

21. NUMBER OF MONTHS EXPERIENCE AT THE JOB OR ACTIVITY (in paragraph 20)

22. MEDICAL DIAGNOSIS (Include parts of body and type of injury.)

23. FATALITY, EXTENT OF INJURIES, AND PROGNOSIS FOR DISABILITY (Specify fatality, missing, permanent total disability, permanent partial disability, or no disability likely.)

24. ESTIMATE OF LOST TIME

A. TOTAL NUMBER OF DAYS AWAY FROM JOB (Lost work days)/DAYS LOST BEFORE PERMANENT LOSS TO COMMAND

B. DAYS IN HOSPITAL OR SICK BAY

C. DAYS OF LIGHT OR LIMITED DUTY

25. RISK ASSESSMENT CODE (RAC) (Optional)

BRAVO (PRIVILEGED) (Contains the MIB's deliberative evaluation.)

1. BRIEF DESCRIPTION OF THE MISHAP (Include chain of events leading up to, through, and subsequent to mishap)

2. SUMMARY OF EVIDENCE AND TESTIMONY ANALYZED (Include the date and the registered number of evidence package sent to COMNAVSAFECEN and the date (if different) copies of the inventory were sent all endorsers.)

3. DETAILED SEQUENCE OF EVENTS

4. OPINIONS OF THE MISHAP INVESTIGATION BOARD (AS APPLICABLE)

A. THE ADEQUACY AND USE OF APPROVED PROCEDURES

B. THE QUALIFICATIONS OF THE PEOPLE INVOLVED

C. THE STATE OF TRAINING OF THE PEOPLE INVOLVED AND OF THE CREW IN COMBATING THE MISHAP

D. THE EFFECTIVENESS OF SUPERVISION

E. THE EFFECTIVENESS OF THE QUALITY ASSURANCE PROGRAM, WHERE APPLICABLE

F. THE EFFECTIVENESS OF DAMAGE CONTROL EFFORTS

G. THE ROLE PREVENTIVE AND CORRECTIVE MAINTENANCE PLAYED IN THE MISHAP

H. ANY EXISTING MATERIAL DEFICIENCIES OR SHORTCOMING WHICH MAY HAVE CONTRIBUTED TO THE MISHAP

5. ANALYSIS OF FINDINGS

A. PROBABLE CAUSE(S) OF THE MISHAP (State each probable cause of damage and injury with a short rationale.)

B. OTHER CAUSES CONSIDERED BUT REJECTED (State each possible cause of damage and injury rejected by the MIB with a short rationale.)

6. RECOMMENDATIONS (State recommendations for changes in procedure, equipment, or training, to prevent the recurrence of the mishap. Include the MIB's recommended action agency for each recommendation and the proposed lessons learned.)

**Attachment A6-C-2**

**Sample Message Format**
**Mishap Investigation Report Endorsements (MIREs)**
**Report Symbol OPNAV 5102-7A**

Use the format and content below for endorsing the mishap investigation report (MIR). Send the endorsement as a message.

(Precedence - normally ROUTINE)

FM Endorsing command

TO Subsequent endorsers based on MIR addressees
COMNAVSAFECEN NORFOLK VA//30/054//

INFO NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// (LCAC ONLY)
CNO WASHINGTON DC//N8/N86D/N871/N885/N09/N45//
All previous endorsers

UNCLAS //NO5102//DISTRIBUTE ONLY TO THE COMMANDER OR OFFICE CODE(S) FOLLOWING EACH ADDRESSEE.

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/PRIVILEGED FIRST/SECOND ENDORSEMENT ON AFLOAT MISHAP INVESTIGATION REPORT (MIR) (REPORT SYMBOL OPNAV 5102-7A)//

REF/A/(Include the original MIR and all previous endorsements.)//
*REF/B/DOC/CNO/19JAN94//*
NARR/REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION, MISHAP INVESTIGATION REPORT ENDORSEMENT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS ENDORSEMENT IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS.//

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/1. Brief description of the mishap based on the MIR and previous endorsements. Include a general statement on the MIB findings and previous endorsements.

2. List each probable cause, rejected probable cause, and recommendation from the MIR and previous endorsements, and your agreement or disagreement with each. For each point of disagreement, identify alternative recommendations or actions and recommended action agency. For each recommendation under your cognizance, report the status and/or your plan of action and milestones for accomplishment.

3. Provide any amplifying information, additional comments, or action taken or intended by the endorser concerning the mishap.//
BT

## Appendix A6-D

## MISHAP REPORTs (MRs)
## Report Symbol 5102-6

(A

1. In the interest of mishap prevention, the Navy needs to investigate all mishaps. Class A shipboard mishaps require convening a mishap investigation board (MIB), investigating the mishap, and submitting an MIR. In certain instances, where vital safety information may be obtained, the type commander may direct an MIB for a Class B and other mishaps and near mishaps. Other reportable shipboard mishaps do not require a mishap board. However, they do require the submission of an MR in the format provided in this appendix.

2. The following mishaps require the submission of an MR:

a. Class A or B mishaps occurring to the ship's on-duty personnel while ashore or involving damage to the ship's equipment located ashore.

b. Class B mishaps occurring on board ship that are not investigated by an MIB and reported by MIR.

c. Reportable Class C mishaps occurring on board ship, to the ship's on-duty personnel ashore, or involving damage to the ship's equipment located ashore.

d. Afloat special case mishaps occurring on board ship or to the ship's on-duty personnel ashore.

3. The MR is a General Use Mishap Investigation Report, and shall not include privileged information. The MR shall not state the source of any information.

4. If investigating personnel determine there is a need to obtain privileged information that may reveal valuable safety information, they shall advise the commanding officer, who shall then ascertain the need for an MIB and inform the ISIC.

5. Reportable Afloat Mishaps

a. If an MIR is submitted, the mishap does not require a separate MR. Commanding officers shall report the following mishaps using an MR:

(1) Class B Mishap. The total cost of reportable property damage is $200,000 or more, but less than $1,000,000; an injury or work-related illness resulting in permanent partial disability; or a mishap resulting in the hospitalization of five or more people. The type commander may select some Class B and other mishaps or near mishaps for investigation by an MIB and report by an MIR. An MR is required for Class B mishaps not reported by an MIR.

(2) Class C Mishap. The resulting total cost of reportable property damage is $10,000 or more, but less than $200,000; or an injury preventing an individual from performing regularly scheduled duty or work beyond the day or shift on which it occurred; or a nonfatal illness or disability causing loss of time from work or disability at any time (lost time case). For data collection and analysis purposes, the following Class C mishaps shall be reported to Commander, Naval Safety Center (COMNAVSAFECEN):

(a) The resulting total cost of reportable property damage is $10,000 or more, but less than $200,000.

(b) An injury or disability preventing personnel from performing regularly scheduled duty for 5 days or more after 2359 on the day of injury or onset of illness.

(3) Afloat Special Case Mishaps. For data collection and analysis purposes, the following special case afloat mishaps require the submission of an MR:

(a) All cases of electric shock. Include the voltage in the report.

(b) All cases of hazardous material, chemical or toxic exposure requiring medical attention.

(c) All cases of back injury resulting from a mishap requiring medical attention.

(d) All mishaps involving explosives, oxidizers, incendiaries, explosive systems or chemical warfare agents. Mishaps include detonation, accidental launch, malfunction, dangerous defect, improper handling, damage to a launching device, weapon impact off range or other unusual or unexpected weapons-related occurrence. Follow the reporting requirements of appendix A6-E. If the explosive mishap meets the criteria for an afloat Class A mishap, an MIB shall conduct a formal mishap investigation which shall then submit an MIR.

(4) If an internal mishap investigation produces valuable lessons learned, submit an MR to COMNAVSAFECEN NORFOLK VA//30/054// even if the mishap is otherwise not reportable. This report could help other commands avoid the same mistake.

**NOTE:**

Commanding officers are encouraged to submit an MR with lessons learned for any mishap where other ships could benefit from reading about a minor mishap or near mishap or if a design or material defect caused a mishap and should be highlighted.

b. Diving mishaps, motor vehicle mishaps, or off-duty recreation, athletics, or home mishaps are discussed in Appendices A6-F through H. Compulsory physical training activities shall be reported by an MR.

c. The commanding officer shall submit an MR to COMNAVSAFECEN within 30 calendar days of mishap occurrence.

6. Investigation of Minor Mishaps

a. The commanding officer is concerned with all shipboard mishaps, regardless of severity. All shipboard mishaps warrant some level of investigation to prevent recurrence.

(1) A mishap resulting in little damage or minor injury may uncover a situation with the potential to cause frequent and severe mishaps.

(2) The investigation of a mishap may uncover a hazard which would rarely cause another mishap, but the information can only be determined through mishap investigation.

b. Commanding officers shall direct the investigation of Class B mishaps not investigated by an MIB, all Class C mishaps, all afloat special case mishaps, as well as near mishaps (events which could have resulted in a mishap but chance alone averted injury, death, or damage).

(1) The commanding officer may apply the mishap investigation procedures contained in Section A0604 to Class B, Class C, afloat special case, and other mishap investigations. However, the investigators shall not make any promise of confidentiality under the concept of privilege to any person and the proceedings of the board are not privileged.

(2) All reportable afloat mishaps not reported by MIR shall be reported to the COMNAVSAFECEN by MR.

c. The commanding officer shall:

(1) Direct the investigation of ALL mishaps.

(2) For mishaps which do not require external reporting, an internal report shall be initiated by the cognizant division officer in a format similar to attachment 1 to this appendix and submitted to the commanding officer via the chain of command. Division safety petty officers (leading petty officers aboard submarines) should be trained and utilized for mishap investigations and the use of internal reports.

(3) Use the SAFETYGRAM (OPNAV 3120/5), attachment 2 to this appendix, to report lessons learned which may affect other commands, if not reported by MR.

**NOTE:**

Commanding officers are encouraged to submit an MR with lessons learned for any mishap where other ships could benefit from reading about a minor mishap or near mishap or if a design or material defect caused a mishap and should be highlighted.

d. There is no requirement to submit an MR on minor mishaps not falling under the definition of reportable mishaps.

7. Preparing MRs

a. Use the format in attachment 3 to this appendix for all Class B mishaps not investigated by a board, all reportable Class C mishaps, and all afloat special case mishaps. Submit the report by message.

b. Reference any CASREPs, OPREP-3s, or UNIT SITREPs submitted and any previous mishaps reports in the MR.

c. Omit any reference to legal or administrative action, or other performance-related administrative action in an MR to preclude association with disciplinary action.

d. Provide as much information as is available. When the information available is not sufficient to complete a comprehensive MR within 30 days, submit the remaining details, when known.

8. Classification and Handling of MRs

a. MRs are normally unclassified. If the commanding officer cannot complete a meaningful, unclassified report, a separate classified addendum for an otherwise unclassified MR may be submitted.

b. MRs are handled as General Use Mishap Reports defined in reference A6-7. In all cases, the commanding officer shall include the following statement in the heading of the MR:

**"FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES AS DEFINED IN CHAPTER A6 OF OPNAVINST 5100.19C."**

c. MRs contain personal information and other sensitive data protected by the Freedom of Information and Privacy Acts.

(1) Users shall protect MRs from unauthorized disclosure. MRs shall not contain privileged information. They shall not state the source of any information.

(2) MRs, or information extracted from them, shall not be maintained in a system of records subject to the Privacy Act. In records covered by the Privacy Act, information can be retrieved by the name of the individual, an identifying number, symbol, or other unique identifier associated with an individual.

d. Recipients shall handle MRs as follows:

(1) MRs contain personal information protected by the Freedom of Information and Privacy Acts and require careful handling. All recipients of an MR shall avoid its uncontrolled release which could result in unauthorized disclosure.

(2) Ensure MRs are distributed only to specific individuals requiring knowledge of their content, for safety purposes.

9. Distribution of MRs

a. The commanding officer shall address MRs to:

(1) COMNAVSAFECEN NORFOLK VA//30/50/054//.

(2) Superiors in the chain of command, as directed.

(3) Any other command, as desired.

(4) Commander, Naval Sea Systems Command (COMNAVSEASYSCOM WASHINGTON DC//PMS377//) and information to Naval Coastal Systems Center (NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33//), CNO WASHINGTON DC//N86D/N866D//, and AIG ONE THREE EIGHT SIX ZERO (13860) for mishaps involving LCACs.

b. Direct questions regarding distribution of MRs to COMNAVSAFECEN or your chain of command.

10. Dissemination of Safety Information

a. COMNAVSAFECEN, when appropriate, shall extract safety information and issue lessons learned, but shall avoid the disclosure of information exempt from disclosure under the Freedom of Information and Privacy Acts.

b. Other commands, such as the type commander, may extract safety information and issue lessons learned, but shall avoid the disclosure of information exempt from disclosure under the Freedom of Information and Privacy Acts. Include COMNAVSAFECEN NORFOLK VA//30/054// as an information addressee on any lessons learned issued.

11. Release of Mishap Information. The release of nonprivileged afloat safety program MR information shall be as specified in this paragraph, unless otherwise authorized by CNO (N8).

a. Protection of Privacy Information. To protect the privacy rights of individuals, the names of individuals not involved in the mishaps and the social security numbers of all individuals in the report will not be furnished under exemption (b)(6) of the Freedom of Information Act (FOIA). To protect the privacy rights of surviving family members, photographs of human remains included in the autopsy reports shall not be provided per exemption (b)(6).

b. Release Based on the Freedom of Information Act (FOIA). Either expressed or implied requests for information under FOIA shall be sent to COMNAVSAFECEN, Attention: Code 03.

c. Privacy Act. Information in MRs shall not be maintained in a system of records subject to the Privacy Act. Specifically, the information must not be retrievable by the name of an individual, or by social security number, or other identifying number, symbol, or unique identifier associated with an individual.

d. Release by an Individual having Knowledge of MRs. An individual having knowledge of the contents of an MR is prohibited from disclosing the information, except as authorized by this chapter. If anyone asks for information from any individual having knowledge of the contents of an MR, they should immediately contact COMNAVSAFECEN, Attention: Code 03.

e. Release to U.S. Navy, U.S. Marine Corps, and Other Department of the Navy Activities. Forward requests for mishap information from Navy, Marine Corps, and other Department of the Navy activities to COMNAVSAFECEN, Attention: Code 03.

f. Release to Other U.S. Military Services. Exchange of safety program information among the military services shall be limited to the respective safety centers, and shall be controlled to prevent disclosure of information.

g. Release to the News Media. The Department of the Navy Public Affairs Regulations, SECNAVINST 5720.44A (NOTAL) contains information on releasing mishap information to the media. The Navy shall, however, preserve the information in MRs which is not releasable to the media.

h. Release to Congress. Forward requests for information from Congress, Congressional committees or subcommittees, or staff members to CNO or CMC, as appropriate.

i. Subpoenas for Information. Refer any subpoenas for mishap information for use in civil or criminal proceedings, anticipated litigation, or in administrative claims against the government, to the Judge Advocate General, Department of the Navy (Code 34).

j. Release to Technical Representatives, Defense Contract Administration Services (DCAS) Representatives, and Contractors. Forward requests for mishap information from technical representatives, manufacturers, Defense Contract Administration Services (DCAS) representatives, and contractors or their agents

to COMNAVSAFECEN via Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) (SEA-09T4). The endorsement of COMNAVSEASYSCOM (SEA-09T4) shall certify whether the requested information is required for safety purposes with respect to product design or improvement. Any response shall include a warning to ensure the recipient uses the information for safety purposes only. The recipient shall not disclose the information to any other individual or entity.

k. Release to North Atlantic Treary Organization (NATO) Nations. If a maritime incident involves units or personnel of two or more NATO nations, the provisions of NATO Standardization Agreement (STANAG) 1179 (NOTAL), Combined Investigation of Maritime Incidents, become effective. Under the provisions of STANAG 1179, NATO nations agree to conduct either a combined court of inquiry, a national inquiry attended by witnesses and/or observers from other nations, or an independent national inquiry coordinated by the presidents of the inquiries. Any command receiving a request for information from an afloat mishap investigation from a NATO country shall forward the request immediately to COMNAVSAFECEN, Attention: Code 03.

l. Release to Other Foreign Nations. Forward requests for information on mishaps from foreign governments to COMNAVSAFECEN, Attention: Code 03.

m. Unspecified Cases. Forward requests not stipulated above to COMNAV-SAFECEN, Attention: Code 03.

**Attachment A6-D-1**

**INTERNAL MISHAP/NEAR MISHAP INVESTIGATION REPORT**

From: _____ Division Officer
To: Commanding Officer
Via: (1) _____ Department Head
(2) Safety Officer
(3) Executive Officer

Date/Time of Mishap: _____ Mishap Category: _____

Location of Mishap: _____

Brief Description of Mishap (Including extent of injury and property damage):

_____

_____

_____

Work/Task Supervisor (at time of mishap): _____

Witnesses: _____

Photos taken (circle one)? YES NO N/A

Cause of Mishap: _____

_____

_____

Corrective Action Taken or Recommended: _____

_____

_____

_____
Signature/Date

_____

*2nd Endorsement*

Does Mishap Meet External Reporting Requirements (circle one)? YES NO

If yes, include the date-time-group of report: _____
(Attach copy of report)

_____
Safety Officer

RETURN COMPLETED INVESTIGATION REPORT TO SAFETY OFFICER

**INSTRUCTIONS FOR FILLING OUT INTERNAL MISHAP/NEAR MISHAP INVESTIGATION REPORT**

1. Complete this report within 10 working days of the mishap/near mishap. If the report is not completed in 10 working days, annotate on the report the reason for delay.

R) 2. Mishap Category examples are: Collision, Flooding, Grounding, Electric Shock, Deck Seamanship, Man Overboard, Chemical/Toxic Exposure, Heat Injury, Aircraft/Aviation, Material Failure, Machinery Operation, Heavy Weather, Small Boats, Injury, Cargo Handling, Explosion, Ordnance.

3. Location description should be as thorough as possible. Give compartment number and location within compartment, if applicable. Give frame number, deck (or level), and side if topside. Give location on pier, drydock, or building if off ship. A drawing of location may be useful and should be attached, if appropriate.

4. Work/Task Supervisor is the name of the person who assigned the task or was overseeing the evolution when the mishap occurred. If not applicable, so state.

D) 5. Reviewing officers shall either note the report or provide comments/ direction on the back or on a separate sheet. The completed report will be returned to the safety officer for filing.

Attachment A6-D-2

# SAFETYGRAM

(Mark X in appropriate box to indicate type of Command

☐ Surface Ship ☐ Submarine ☐ Diving/Salvage ☐ Aviation ☐ Shore

Command, Ship, or Ship Class

References:
Plan No./Tech Manual/etc.

State: What, where, why, how it can be prevented or corrected

(SIGNATURE NOT REQUIRED)

*Instructions:* (1) Send original to Commander NAVSAFECEN, and copies as appropriate. Retain file copy.
(2) May use pencil longhand; attach additional sheets as necessary. (3) If classified information included, follow appropriate marking and handling.
OPNAV 5102/4 (Rev. 10-92) S/N 0107-LF-015-8400 (Replaces NAVSAFECEN 5101-1/2 AND 5101/3 which may be utilized to deplete existing stocks.)

**Attachment A6-D-3**

**SAMPLE MESSAGE FORMAT**
**MISHAP REPORT (MR)**
**REPORT SYMBOL OPNAV 5102-6**

Use the format and content below to report all reportable mishaps not investigated by an MIB. Submit as much information as is available. Submit supplementary reports as necessary to supply the missing information, when it becomes available. The MR contains privileged information but shall not include the sources of any information. (R

IF THE REQUESTED DATA DOES NOT APPLY, IS NOT RELEVANT TO THE MISHAP, OR IS UNKNOWN, INSERT "NOT APPLICABLE" - "N/A" - or "UNKNOWN" - "UNK," AS APPROPRIATE.

(Precedence - normally ROUTINE)

FM REPORTING ACTIVITY
TO COMNAVSAFECEN NORFOLK VA//30/50/054//
*COMNAVSEASYSCOM WASHINGTON DC//PMS377//* (LCAC ONLY)
INFO As desired, directed, or requested by higher authority
NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// (LCAC ONLY)
*AIG ONE THREE EIGHT SIX ZERO* (LCAC ONLY)
CNO WASHINGTON DC//N86D/N866D// (LCAC ONLY)

UNCLAS //N05102//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/AFLOAT MISHAP REPORT (MR) (REPORT SYMBOL OPNAV 5102-6)//

REF/(If follow-up message, refer to original message.)//
USE GENADMIN FORMAT PROCEDURES.

NARR/THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, CONTROLLED DISTRIBUTION, SAFETY MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY MILITARY PERSONNEL IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY CIVILIAN PERSONNEL WILL SUBJECT THEM TO DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL INSTRUCTION 752. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS.// (R

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/ALPHA:

1. UICs OF MISHAP COMMANDs

2. HULL NUMBER/SIDE NUMBER

3. TYPE OF MISHAP (For example, flooding, fire, injury, electric shock, collision, grounding, explosion, back injury, chemical or toxic exposure, or equipment damage.)

4. LOCAL TIME AND DATE OF MISHAP

5. GEOGRAPHIC LOCATION (Latitude/Longitude or port. If classified, give general area.)

6. WEATHER CONDITIONS (For example, temperature, relative humidity, visibility, lighting, ventilation, air quality, wind speed, sea state, current, tide, wind direction, precipitation, lightning, ducting, hurricane, and other.)

7. LOCATION WHERE MISHAP OCCURRED (Give workcenter or description of the location. For example, torpedo room; main deck, compartment number, side and frame number, mess decks, flight deck, or 76mm gun magazine.)

8. SHIP'S OR CRAFT'S EVOLUTION AT THE TIME OF MISHAP (For example, underway replenishment, mooring, or on-cushion approach to beach.)

9. SEA STATE AND DIRECTION

10. SHIP'S EMPLOYMENT (For example, type training (TYT), refit, independent steaming exercises (ISE), maintenance availability, underway, anchored, submerged, or dry-docked.)

11. PAYLOAD (For example, type cargo and load weight) (LCAC ONLY)

12. RISK ASSESSMENT CODE (RAC) (Optional)

BRAVO:

1. EQUIPMENT OR CRAFT DAMAGED OR DESTROYED BY THE MISHAP (Include EIC, TEC, FGC (functional group code), or NSN (if applicable); describe damage.)

2. ESTIMATED COST TO REPAIR OR REPLACE DOD PROPERTY (Provide the total dollar value and UIC and name of command having custody of property (if different from reporting activity). The cost includes $16 for each hour of labor plus the cost of material and equipment.)

3. ESTIMATED COST OF NON-DOD PROPERTY DAMAGE

4. NUMBER OF SCHEDULED OPERATING DAYS LOST

CHARLIE:

1. NAME/SSN/AGE/SEX/RACE (Repeat items 1 through 8 if the mishap involves reportable injuries to more than one person.

2. RANK and DESIGNATOR or RATE and NEC, JOB AND EMPLOYMENT STATUS (Examples of employment status include USN, USNR, USNR-R, other Department of Defense personnel, Navy federal civil servants, contractors, Foreign Military Exchange personnel, and foreign civilians.)

3. DUTY STATUS (On- or off-duty) and UIC (if different from reporting activity). (If the mishap involves injuries to people from different commands, specify the UIC of each individual.) CREW POSITIONS - LCAC ONLY.

4. SPECIFIC JOB OR ACTIVITY INDIVIDUAL ENGAGED IN AT TIME OF MISHAP (For example, conducting planned maintenance (PMS), standing watch, loading stores, training, and boat crew.)

5. NUMBER OF MONTHS EXPERIENCE AT THE JOB OR ACTIVITY (in paragraph 4)

6. MEDICAL DIAGNOSIS (Include parts of body and type of injury.)

7. EXTENT OF INJURIES AND PROGNOSIS FOR DISABILITY (Specify extent of injuries and outlook; for example, permanent partial disability or no disability likely.)

8. ESTIMATE OF LOST TIME

A. TOTAL NUMBER OF DAYS AWAY FROM JOB (Lost work days)/DAYS LOST BEFORE PERMANENT LOSS TO COMMAND

B. DAYS IN HOSPITAL OR SICK BAY

C. DAYS OF LIGHT OR LIMITED DUTY

DELTA: NARRATIVE (PRIVILEGED - CONTAINS THE COMMAND'S DELIBERATIVE EVALUATION.)

1. CHAIN OF EVENTS LEADING UP TO, THROUGH AND SUBSEQUENT TO MISHAP (Explain (R
the "who, what, where, why, when, and how" of the mishap. Give the class (A, B, C, or D) of any fires. Include the source and how the fire was extinguished. If a flooding mishap, give the source of the flooding and de-watering technique. If a collision, give estimates of damage and identify ships involved. If a chemical or toxic exposure, try to identify the chemical or material involved, the amount or concentration, and length of exposure. For LCACs, discuss other embarked personnel, injured non-occupants, craft mission and evolution leading to the mishap, and payload involvement. If an electric shock, give the primary and alternate power sources and the voltage (AC or DC). If personal protective equipment (PPE) was required, was it worn? Was it effective? Evaluate the effectiveness of damage control equipment and procedures. Which one of the causes in paragraph DELTA 2 is believed to be the root (or primary) cause of this mishap?

A) 2. CAUSES OF THE MISHAP (State each cause of damage and injury with a short (less than 100 characters) rationale. The rationale is critical to identifying the cause because it links it to "who" or "what" was involved. Causes should be one of the four major categories listed below, with subcategories as listed. Omit those categories and subcategories that don't apply and include as many causes in each category you determine apply.) In paragraph DELTA 1, chain of events leading up to, through, and after the mishap, identify which of the causes you determine to be the root (or primary) cause of this mishap.

A. HUMAN FACTORS (PERSONNEL ERROR): Consider human involvement in the events leading up to a mishap, actions taken as the mishap is occurring, and actions taken after the mishap occurred. For mishaps involving personnel error, state each cause with a brief explanation in one of the subcategories listed below.

(1) UNSAFE ACTS

(A) ERRORS (Mistakes or unintentional acts)

(B) VIOLATIONS (Deliberate behavior that breaks established rules)

(2) UNSAFE SUPERVISION

(A) INADEQUATE (Unintentional mistakes or failures by supervisors including the supervisor's absence)

(B) VIOLATIONS (Deliberate rule breaking or disregard of authority by supervisors)

(3) UNSAFE CREW CONDITIONS

(A) ADVERSE PHYSIOLOGICAL STATE (For example, physical fatigue, illness, intoxication, and obesity)

(B) ADVERSE MENTAL STATE (For example, overconfidence, complacency, sleep loss, mental fatigue, and stress)

(C) CREW RESOURCE MANAGEMENT (Poor team coordination or ineffective communications)

(4) ORGANIZATIONAL INFLUENCE

(A) EXTERNAL (Factors controlled by sources outside the ship)

(B) INTERNAL (Factors controlled by the commanding officer (or below) such as watchbill assignments) Example: human factor, unsafe act, error. MS3 failed to tag out griddle.

B. PROCEDURAL FACTORS: Consider the possible effect of regulations, operations, and processes from all levels in the chain of command. Remember that a person not following written procedures is a human factor, not a procedural factor. Procedures and policies published by higher authority such as PMS, technical manuals, naval warfare publications (NWPs), navy tactical publications (NTPs), U.S. Navy Diving Manual, operational orders (OPORDs), ordnance publications (OPs), the safe engineering and operations of LCAC (SEAOPS) manual, and the commanding officer's standing orders may contain procedural errors.

(1) TOO COMPLEX (For example, the average sailor can't follow the written procedures because he or she can't understand or follow them):

(2) NOT AVAILABLE (For example, written procedures don't exist or have not been received):

(3) INCORRECT

(A) NOT VALIDATED FOR SHIP OR EQUIPMENT

(B) NOT UPDATED (Although the written procedures were correct in the past, modifications or alterations to the ship or equipment require changes to the procedures)

(C) STEP MISSING OR OUT OF SEQUENCE (Example: procedural factor, incorrect, not updated. Due to modifications, tech manual procedures for disconnecting hydraulic hoses were incorrect.)

C. MATERIAL FACTORS: Consider all material failures and malfunctions thoroughly, despite whether the failures or malfunctions occurred because of normal or abnormal means. This category includes failure due to improper repair or normal wear and tear.

(1) UNAUTHORIZED (For example, alterations made to the ship or equipment without authority):

(2) SAFETIES/GUARDS FAILED:

(3) CONDITION (FOR EXAMPLE, RUST OR CORROSION):

(4) INAPPROPRIATE FOR USE (For example, off-the-shelf purchases that don't work)

(5) INSTALLATION/REPAIR FAULTY

(6) DEFECTIVE

(7) NORMAL WEAR AND TEAR (Normally, wear and tear is not a reportable mishap. However, the investigation may lead to this cause and is worth

reporting.): Example: material/equipment factor, safeties/guards failed. Lube oil relief valve failed to open.

d. DESIGN FACTORS: Consider whether a design defect caused the mishap.

(1) HAZARD TO PERSONNEL (For example, anything involving design creating a hazard to personnel):

(2) HAZARD TO EQUIPMENT (For example, design that causes damage to equipment):

(3) MAINTAINABILITY (For example, the design makes it so difficult to accomplish the maintenance that it isn't completed or sailors are injured while doing the maintenance): Example: design factor, maintainability. Eye wash station was OOC because its location prohibited timely PMS.

R) 3. RECOMMENDATIONS OR ACTION TAKEN TO PREVENT RECURRENCE.//
BT

**Appendix A6-E**

**REPORTABLE EXPLOSIVE MISHAP OR CONVENTIONAL ORDNANCE DEFICIENCY REPORTS (EMRs/CODRs) (REPORT SYMBOL DD-A&T(AR) 1020 (5102)** (A

1. A significant potential for damage or injury exists in mishaps involving explosives. Therefore, the requirements for reporting explosive mishaps are more extensive than for other types. This appendix establishes the requirements and procedures for reporting all afloat mishaps and deficiencies involving conventional ordnance, explosives, ammunition, chemical agents, and all equipment or systems required to launch, fire, deliver, store, or transport ordnance.

2. Class B and C severity Explosive Mishap Reports (EMRs) and Conventional Ordnance Deficiency Reports (CODRs) are General Use Mishap Reports, as defined by reference A6-7. Reports of Class A explosive mishaps occurring afloat are Limited Use Mishap Reports, defined by reference A6-7, submitted by the mishap investigation board (MIB) using the procedures in section A0604 and the MIR format in appendix A6-C. Modify the MIR to include the information required by the sample Explosive Mishap Report in attachment 1 to this appendix. MIRs of Class A explosive mishaps are used for safety purposes only and contain privileged information. The release, distribution, and control of the reports is limited to prevent unauthorized disclosure of report contents.

3. Reportable Mishaps and Deficiencies

a. *Explosive Mishaps*. Report the following afloat events using the format in attachment 1 to this appendix. Use "Explosive Mishap Report" in the subject line. If you want an engineering investigation, add the request to the subject line. (Use "Explosive Mishap Report/Engineering Investigation Request" as the subject.) Also, include your request for the engineering investigation in Part I ECHO (narrative) of the message report. COMNAVSAFECEN will revise attachment A6-E-1 to conform with changes to reference A6-4.

(1) Detonation, Deflagration, Burning, or Firing. An unintentional or inadvertent initiation, explosion, or reaction of an explosive material, component, or system. Accidental discharge of all guns, including small arms.

(2) Inadvertent Launch. An unintentional launching of a weapon.

(3) Chemical Agent Release. Any unintentional or uncontrolled release of a chemical agent when:

(a) Damage occurs to property from contamination or costs are incurred for decontamination.

(b) Individuals exhibit physiological symptoms of agent exposure.

(c) The quantity released to the atmosphere creates a serious potential for exposure.

(4) Propellant Fuels and Oxidizers. Leaking or spilled propellant fuels and oxidizers less OTTO II fuel.

(5) All ordnance impacting off-range.

b. Conventional Ordnance Deficiencies. Report the following afloat events as conventional ordnance deficiencies using the format in attachment 1 to this appendix. Use "Conventional Ordnance Deficiency Report" in the subject line. If you want an engineering investigation, add the request to the subject line. (Use "Conventional Ordnance Deficiency Report/Engineering Investigation Request" as the subject.) Also, include your request for the engineering investigation in Part I ECHO (narrative) of the message report. COMNAVSAFECEN will revise attachment A6-E-1 to conform with changes to reference A6-4.

(1) Malfunctions. The failure of conventional ordnance, explosives, ammunition, small arms, weapons, or weapon system components that come in contact with the ordnance, to function properly. (For example, failure to launch, dud weapons, and gun fails to cycle).

(2) Improper Handling. Ordnance handling incidents attributed to human error. Examples include misuse of equipment, failure to follow established procedures, and violation of safety precautions resulting in dropped or damaged ordnance. Other examples include human error during processing, assembling, testing, loading, storing, and transporting ordnance.

(3) Inadvertent Arming. The unintentional arming of an explosive component or weapon.

(4) Defective Weapons Support Equipment. Deficiencies involving any equipment or device used in the manufacture, test, assembly, handling, or transportation (skids, trailers, or similar equipment) of any explosive system.

(5) Observed Defect. A discovered defective weapon or weapon system component that comes in direct contact with the ordnance, small arms, weapons, conventional ordnance, explosives, and ammunition (for example: protruding primers, cracked grains, damaged or broken breech bolts, missile radomes, and advanced corrosion).

(6) Other

(a) An event which, except for chance, would have been an explosive mishap.

(b) Any failure or malfunction of, or damage to, a launch device or associated hardware and software when handling or otherwise manipulating dummy, exercise, or explosive material.

(c) Unusual or unexpected occurrences, unnatural phenomena, unfavorable environments, or instances of equipment failure which may damage or affect safety of an explosive material or system. This includes Hazards of Electromagnetic Radiation to Ordnance (HERO) sensitive explosive systems exposed to radiation hazard (RADHAZ) environments.

(d) The failure of a missile or explosive system to test, calibrate, or otherwise meet pre-loading or pre-launch requirements. (For example, the failure of Built-in-Test (BIT).

(e) Use of Explosive Ordnance Disposal (EOD) services involving military explosives for other than routine disposal of explosives.

(f) OTTO II fuel spills.

c. Exceptions

(1) OPNAVINST 8600.2B (The Naval Airborne Weapons Maintenance Program) (NOTAL). Report mishaps or deficiencies occurring during airborne weapon systems and equipment operations, including armament supporting equipment (any equipment used in loading or unloading an explosive system or launch device on an aircraft), per OPNAVINST 8600.2B.

(2) OPNAVINST 3100.6G (Special Incident Reporting (OPREP-3, Navy Blue and UNIT SITREP) Procedures) and JCS Publication 1-03.7. Report nuclear weapons mishaps and incidents per OPNAVINST 3100.6G and JCS Publication 1-03.7.

(3) OPNAVINST 5102.1C (Mishap Investigation and Reporting). Report explosive mishaps and conventional ordnance deficiencies occurring ashore per OPNAVINST 5102.1C.

(4) NAVSEA OP 2165 Volume I (Navy Transportation Safety Handbook for Ammunition, Explosives and Related Hazardous Material) and NAVSEA OP 8020.13B. Weapons and ordnance stations report explosive mishaps and conventional ordnance deficiencies occurring while the explosive material or system is in the custody of a common (commercial) carrier per OP 2165 Volume I and NAVSEA OP 8020.13B.

d. Use the EMR/CODR Pathfinder (attachment 2 to appendix A6-E) to help determine if a reportable explosive mishap or conventional ordnance deficiency has occurred.

5. Post-Mishap and Deficiency Action

a. The activity experiencing the mishap or deficiency shall:

(1) Stop using the item, lot, or batch involved pending guidance from higher authority.

(2) Start the reporting procedures.

(3) Accurately and quickly respond to requests for additional information.

b. Depending on the severity of the explosive mishap or deficiency, other U.S. Navy commands and activities shall assist in identifying the actual cause and take steps to ensure that similar mishaps or deficiencies do not occur. For example:

(1) The mishap may require an MIR for a Class A mishap.

(2) Commander, Naval Ordnance Center; Commander, Naval Air Systems Command; or Commandant, U.S. Marine Corps may designate all related explosive systems unserviceable, direct follow-up test and evaluation of various lots to identify defective hardware, or initiate procedural changes in the use of the weapons system.

(3) Officer in Charge, Naval Ordnance Center (Inventory Management and Systems Division), Mechanicsburg, PA (NAVORDCEN IMSD MECHANICSBURG PA); shall support the above command decisions regarding disposition and use of defective or questionable parts by issuing a Notice of Ammunition Reclassification (NAR).

(4) Commander, Naval Safety Center shall enter all relevant unclassified information into a data repository.

6. Reporting Requirements

a. Appointing authorities shall require the investigation and reporting of all afloat Class A severity explosive mishaps occurring in their chain of command using the procedures in section A0604. The MIB shall submit an MIR in the format of appendix A6-C modified to include the information required by the sample Explosive Mishap Report in this appendix.

b. Commanding officers, officers in charge, and masters shall require the investigation and reporting of all Class B and C severity reportable explosive mishaps and reportable conventional ordnance deficiencies occurring within their command.

(1) Explosive Special Cases. When a report under this appendix is required solely as the result of Explosive Ordnance Disposal (EOD) service, the responsibility for submitting the report rests with the following, in the order given:

(a) The U.S. Navy activity requesting EOD services.

(b) The U.S. Navy activity having operational control of the EOD personnel rendering the service.

(c) In cases not covered by (a) or (b) above, the EOD group to which the EOD personnel are permanently attached.

(d) If EOD units respond in an explosive mishap, ensure the appropriate EOD units are information addressees on all reports.

c. Submission of Reports

(1) General. Reports are normally unclassified (FOR OFFICIAL USE ONLY). If the inclusion of classified material is essential, a separate classified addendum for an otherwise unclassified report may be submitted.

(2) Message Reports. The message report described in this appendix is required for all explosive mishaps and conventional ordnance deficiencies. The report shall be submitted in addition to any reports required by other directives.

(a) OPREP-3 Reports. The submission of an OPREP-3 report does not relieve the command from the requirement for submitting an explosive mishap or conventional ordnance deficiency report.

(b) Initial Message or Telephone Report. Make an initial Explosive Mishap Report for all Class A and B severity explosive mishaps by immediate message in the format provided in this appendix giving as much information you have available. When circumstances permit, also make a telephone report within 24 hours to the following (if they are action addressees on the message report):

1. During normal working hours (0800 -1630 Eastern time):

CNO (N411) - DSN: 225-7093 or commercial: (703) 695-7093
NAVORDCEN INDIAN HEAD (N71) - DSN: 354-6081 Ext 107 or commercial: (301) 743-6081
COMNAVAIRSYSCOM (AIR-516C1) - DSN: 222-8702 or commercial: (703) 692-8702 (Explosive material/equipment)
COMNAVAIRSYSCOM (AIR-09F) - DSN: 222-1234 or commercial: (703) 692-1234 (Deaths and injuries)
COMNAVSAFECEN (Code 43) - DSN: 564-3343 or commercial: (804) 444-3343

2. Outside normal working hours (1630 - 0800 Eastern time):

CNO (Navy Department Duty Captain) - DSN: 225-0231 or commercial: (703) 695-0231
COMNAVSEASYSCOM (Watch Officer) - DSN: 332-7527 or commercial: (703) 602-7527
COMNAVAIRSYSCOM (Duty Officer) - DSN: 222-1666 or commercial: (703) 692-1666
COMNAVSAFECEN (Duty Officer) - DSN: 564-3520 or commercial: (804) 444-3520

(c) Upon completion of the preliminary mishap investigation of a Class B mishap, submit a supplementary report providing additional or changed information from the initial report. Send all supplementary reports within 7 days of the initial report.

(d) Submit an initial routine explosive mishap or conventional ordnance deficiency message report within 24 hours for all Class C explosive mishaps and in the following circumstances:

1. One or more individuals exhibiting physiological symptoms of agent exposure.

2. An unintentional or uncontrolled release of chemical agent where the agent quantity released to the atmosphere creates a serious potential for injury or death.

3. Injuries sustained as a result of an explosive mishap or conventional ordnance deficiency which meets the definition of a lost time case.

(e) Submit a message report within 30 days for all other explosive mishaps or conventional ordnance deficiencies. Do not submit letter reports instead of messages.

7. Reports to the Department of Defense Explosives Safety Board (DDESB). Reference A6-7 requires each DoD component to submit reports to the DDESB for mishaps involving ammunition, explosives, and chemical agents and systems. CNO (N411) is the central U.S. Navy office responsible for ensuring accomplishment of the required reporting and investigation and the point of contact between DDESB and U.S. Navy activities.

8. Dissemination of Information. Each Navy and Marine Corps command receiving an Explosive Mishap or Conventional Ordnance Deficiency Report from a Class B and C severity mishap may release the data to appropriate subordinate commands and personnel. Paragraph 7 of appendix A6-A discusses the restrictions on disseminating information in MIRs on Class A explosive mishaps. If there are any questions on the use of this report, call COMNAVSAFECEN (Code 43) at DSN: 564-3342 or commercial (804) 444-3342.

9. Addressees of Message Report

a. For handling mishaps, also include appropriate additional addressees from lists headed Shipping Containers and Handling.

b. For all reports affecting **research and development**, make sure the following information addressees are included:

DEPT OF DEFENSE EXPLOSIVES SAFETY BD ALEXANDRIA VA//DDESB-IK//
CDRAMCCOM ROCK ISLAND IL//AMSMC-SF-P//
NAVORDCEN INDIAN HEAD MD//N71//
HQ AFSA KIRTLAND AFB NM//SEW//
DLA CAMERON STA VA//AQCOI//
* CDRMTMC FALLS CHURCH VA//MTCG//
* COMSC WASHINGTON DC//N00M/N33//
* HQ AMC SCOTT AFB IL//SE//

* - **MISHAPS INVOLVING TOMAHAWK MISSILES ONLY**

**Surface Launched Rockets**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N82//
COMNAVSURFPAC SAN DIEGO CA//N811/N812/N813//
NAVSURFWARCENDIV INDIAN HEAD MD//044/570//
NAVSURFWARCEN ORDSTA LOUISVILLE KY//0671/50//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
NAVSURFWARCENDIV CRANE IN//04/20//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Air Launched Rockets**

TO AIG FOUR TWO THREE
AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
NAVSURFWARCENDIV INDIAN HEAD MD//044/570//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Surface Launched Missiles**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E/N45//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N812/N813//
NAVSURFWARCENDIV INDIAN HEAD MD//044/620//
NAVSURFWARCENDIV CRANE IN//20/067//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA YORKTOWN VA//04/16/30/20/30/35//
WPNSTA SEAL BEACH CA//04/20//
WPNSTA CONCORD CA//04/20/30//
NWADIV CORONA CA//QA40//
NAVSURFWARCENDIV PORT HUENEME CA//1G00//
* PEOCMPANDUAV WASHINGTON DC//PMA280/PMA282/PMA2805/PMA2811//
Receiving weapons station (turn-in items only)
Chain of Command
* - **MISHAPS INVOLVING TOMAHAWK MISSILES ONLY**

**Air Launched Missiles**

TO AIG FOUR TWO THREE
AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
NAVSURFWARCENDIV INDIAN HEAD MD//044/580//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C84/C0804//
WPNSTA SEAL BEACH CA//04/20//
* PEOCMPANDUAV WASHINGTON DC//PMA280/PMA282/PMA280S/PMA2811//
NWADIV CORONA CA//QA44//
Receiving weapons station (turn-in items only)
Chain of Command

* - **MISHAPS INVOLVING TOMAHAWK MISSILES ONLY**

**Shipping Containers and Handling for NAVAIR Cognizance Items**

TO AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N422/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044//
NWADIV CORONA CA//QA40/
NAVAIRWARCENACDIV LAKEHURST NJ//17//
WPNSTA EARLE COLTS NECK NJ//04/20/50//
Receiving weapons station (turn-in items only)
Chain of Command

**Gun Ammunition 3-Inch 50 Cal. and Larger**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N432/N814//
COMNAVSEASYSCOM WASHINGTON DC//91W2//
NAVSURFWARCENDIV INDIAN HEAD MD//044/620//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA YORKTOWN VA//04/16/20/30/35//
WPNSTA SEAL BEACH CA//04/20/30//
WPNSTA CONCORD CA//04/20/30//
NAVSURFWARCENDIV CRANE IN//04/R67//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Gun Ammunition Smaller than 3-Inch 50 Cal.**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N432/N814//
COMNAVSEASYSCOM WASHINGTON DC//91W2//
NAVSURFWARCENDIV INDIAN HEAD MD//044/610//
NAVSURFWARCEN ORDSTA LOUISVILLE KY//0671/50//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA YORKTOWN VA//04/16/20/30/35//
WPNSTA SEAL BEACH CA//04/20//
WPNSTA CONCORD CA//04/20/30//
NAVSURFWARCENDIV CRANE IN//20/067//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Free Fall Weapons Excluding Mines and Depth Charges**

TO AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N442/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Small Arms and Landing Force Ammunition**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N4221/N814//
COMNAVSEASYSCOM WASHINGTON DC//91WE//
NAVSURFWARCENDIV INDIAN HEAD MD//044/620//
NAVSURFWARCEN ORDSTA LOUISVILLE KY//0671/50//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
NAVSURFWARCENDIV CRANE IN//20/067//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Torpedoes, Sonobuoys, and ASROC**

TO AIG FOUR ZERO TWO
AIG FOUR TWO THREE
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N43//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N432/N811//
NAVSURFWARCENDIV INDIAN HEAD MD//044/56//
WPNSTA YORKTOWN VA//04/16/30/20/35//
WPNSTA SEAL BEACH CA//04/20//
NAVUNSEAWARCENDIV KEYPORT WA//20/30/041/60//
NAVUNSEAWARCENDIV NEWPORT RI//0032/024/81//
NAVSURFWARCENDIV PORT HUENEME CA//1G00//
Receiving weapons station (turn-in items only)
Chain of Command

**Demolition Material and Bulk Explosives and Use of EOD Services**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N30M/N422/N4221/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/630//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
NAVSURFWARCENDIV CRANE IN//20/067//
WPNSTA YORKTOWN VA//04/16/30/20/35//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
NAVEODTECHDIV INDIAN HEAD MD//6011//
Receiving weapons station (turn-in items only)
Chain of Command

**Pyrotechnics and Chemicals**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N543//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/56//
WPNSTA SEAL BEACH CA//04/20//
NAVSURFWARCENDIV CRANE IN//04/067//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Mines and Projector Charges**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N43//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N30M/N42/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/630//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA SEAL BEACH CA//04/20//
WPNSTA YORKTOWN VA//04/16/20/30/35//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
NAVSURFWARCENDIV CRANE IN//20/067/4022/PM416//
COMINEWARCOM CORPUS CHRISTI TX//N3//
Receiving weapons station (turn-in items only)
Chain of Command

**Cartridges and Cartridge Activated Devices**

TO AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N30M/N42/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/50//
NAVSURFWARCENDIV CRANE IN//20/067/4022/PM416//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Shipping Containers and Handling for NAVSEA Cognizance Items**

TO AIG FOUR ZERO TWO
AIG FOUR TWO THREE
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N43//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N812/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044//
WPNSTA YORKTOWN VA//04/16/20/30/35///
WPNSTA SEAL BEACH CA//04/20//

Shipping Containers and Handling for NAVSEA Cognizance Items (continued)

INFO NCCOSC RDTE DIV SAN DIEGO CA//038//
NAVUNSEAWARCENDIV KEYPORT WA//20/30/041/60//
NAVUNSEAWARCENDIV NEWPORT RI//0032/024/81//
NAVSURFWARCENDIV PORT HUENEME CA//1G00//
Receiving weapons station (turn-in items only)
Chain of Command

10. Address Indicating Group (AIG) Composition

AIG FOUR ZERO TWO

TO NAVORDCEN INDIAN HEAD MD//044/610//
NAVORDCEN IMSD MECHANICSBURG PA//60//
INFO CMC WASHINGTON DC//ASL301//
CNO WASHINGTON DC//N411E//
COMNAVAIRSYSCOM WASHINGTON DC
COMNAVSEASYSCOM WASHINGTON DC
COMNAVAIRWARCENACDIV PATUXENT RIVER MD//CSDOPR//
COMNAVSAFECEN NORFOLK VA//43//
NAVSURFWARCENDIV DAHLGREN VA//C8105//
NAVAIRWARCENWPNDIV PT MUGU CA//2004/P2632//
COMMARFORLANT//ALD-D//
COMMARFORPAC//ALD-D//
CG FOURTH MAW//ALD-B//
NAVAVSCOLSCOM PENSACOLA FL//155//
SERVSCOLCOM GREAT LAKES IL//42//
FCTCLANT, DAM NECK VA//305//

AIG FOUR TWO THREE

TO COMNAVAIRSYSCOM WASHINGTON DC//5166Q//
ASO PHILADELPHIA PA//052.18//
INFO CNO WASHINGTON DC//N60T//
COMNAVSAFECEN NORFOLK VA//N43//
CG FOURTH MAW//ALD-B//
COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//913/93//
COMNAVSURFLANT NORFOLK VA//N42//
COMNAVSURFPAC SAN DIEGO CA//N9812/N811//
NAVORDCEN ESSOLANT NORFOLK VA//004//
NAVORDCEN ESSOPAC SAN DIEGO CA//004//
COMMARFORLANT//ALD-D//
COMMARFORPAC//ALD-D//
NAVAIRWARCENACDIV LAKEHURST NJ//PM23//
COMNAVRESFOR NEW ORLEANS LA//57//
NAVAVNDEPOTOPSCEN PATUXENT RIVER MD//0018//
MTCC CAMP BUTLER JA//G6 PLT CODE SF//
NAVAIRPRA DET OKINAWA JA//JJJ//
MARCORSYSCOM WASHINGTON DC//AM-EES//
NAVAVNDEPOT CHERRY PT NC//JJJ//
COMNAVAIRWARCENACDIV PATUXENT RIVER MD//SA-55//

**AIG SEVEN SIX TWO ZERO**

TO COMNAVAIRSYSCOM WASHINGTON DC//4101B//
NAVORDCEN IMSD MECHANICSBURG PA//8522//
NAVORDCEN INDIAN HD MD//JJJ//
INFO CNO WASHINGTON DC//N411//
CMC WASHINGTON DC//ASL30//
COMNAVSAFECEN NORFOLK VA///43//
COMNAVSEASYSCOM WASHINGTON DC
NAVAIRWARCENACDIV PATUXENT RIVER MD//JJJ//
NAVORDCEN INDIAN HEAD MD//N71//
NAVSURFWARCENDIV DAHLGREN VA//C8105//
NAVAVNDEPOTOPSCEN PATUXENT RIVER MD//1414/510/227//
NAVAIRWARCENWPNDIV PT MUGU CA//2004//
COMMARFORLANT//ALD-D//
COMMARFORPAC//ALD-D//
CG FOURTH MAW//ALD-B//
NAVAVSCOLSCOM PENSACOLA FL//155//
NAVORDCEN ESSOLANT NORFOLK VA//004//
NAVORDCEN ESSOPAC SAN DIEGO CA//004//
MARCORSYSCOM WASHINGTON DC//AM-EES//
SERVSCOLCOM GREAT LAKES IL//42//
FCTCLANT DAM NECK VA//305//

**Attachment A6-E-1**

**SAMPLE MESSAGE**
**EXPLOSIVE MISHAP OR CONVENTIONAL ORDNANCE**
**DEFICIENCY (REPORT)**
**(REPORT SYMBOL DD-A&T(AR) 1020 (5102)**
(For Class B, C, and less severe reportable mishaps)

1. General. Use format and content below for explosive mishap and conventional ordnance deficiency reports. Submit as much information as is available. Submit supplementary reports as necessary to supply the missing information when available. OMIT ITEMS THAT DO NOT APPLY OR ARE NOT RELEVANT TO THE REPORT. Avoid using "unknown" unless you give the reason for not having the information.

2. Content and Format.

(Precedence - normally ROUTINE)

FM REPORTING ACTIVITY

TO AIG--------(See paragraph 9 of Appendix A6-E)
CFA (Cognizant Field Activity)

INFO (See paragraph 9 of Appendix A6-E)

UNCLAS FOUO //N08020//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/EXPLOSIVE MISHAP REPORT or CONVENTIONAL ORDNANCE DEFICIENCY (REPORT /SYMBOL DD-A&T(AR) 1020 (5102) (MIN: CONSIDERED)//

REF/A/DOC/CNO/19JAN94//

REF/(If this is a follow-up message, include the DTG of all previous reports.)//

NARR/REF A IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES AS DEFINED IN CHAPTER A6 OF OPNAVINST 5100.19C.//

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/PART I
ALPHA:

1. UIC OF REPORTING UNIT (Also list UIC of mishap activity if different from the reporting activity.)

2. REPORT SERIAL NO. (Locally provided sequential number by calendar year.)

3. LOCAL TIME AND DATE OF MISHAP OR DEFICIENCY

4. GEOGRAPHIC LOCATION (If classified give general area.)

5. LOCATION WHERE OCCURRED (Location on ship or activity where mishap or deficiency occurred.)

6. EVOLUTION AT TIME (For example, loading, unloading, handling, UNREP, MISSILEX, GUNEX, or routine maintenance.)

7. SHIP STATUS (For example, underway, anchored, or normal inport workday.)

BRAVO: (MATERIAL/PROPERTY DAMAGE)

1. EQUIPMENT DAMAGED OR DESTROYED (Repeat following items for all systems involved.)

A. EXPLOSIVE SYSTEMS INVOLVED (Repeat following items for all systems involved.)

(1) NAME, MK, MOD, MODEL

(2) EIC, TEC

(3) DODIC or NALC (Mandatory)

(4) NATIONAL STOCK NUMBER

(5) LOT NO.

(6) SERIAL NO.

(7) DESCRIBE DAMAGE

(8) IF DEFECTIVE MATERIAL SUSPECTED, STATE NUMBER OF ITEMS REMAINING IN SAME LOT or BATCH

B. LAUNCH DEVICES (Repeat for all launch devices involved.)

(1) NAME, MK, MOD, MODEL

(2) EIC, TEC, FGC (functional group code)

(3) NATIONAL STOCK NUMBER

(4) LOCATION (For example, mount or station.)

(5) DESCRIBE DAMAGE

C. ASSOCIATED HARDWARE (For example, work stands, test sets, fuze setters or fire control director. Repeat for all associated hardware.)

(1) NAME, MK, MOD, MODEL

(2) EIC, TEC, FGC (functional group code)

(3) NATIONAL STOCK NUMBER

(4) DESCRIBE DAMAGE

D. BULK or BATCH EXPLOSIVE MATERIAL INVOLVED (Normally applies to quantities of materials not specifically identifiable by weapon system.)

(1) NAME OF EXPLOSIVES

(2) WEIGHT OF EXPLOSIVES

E. ALL OTHER DEPARTMENT OF DEFENSE PROPERTY

F. NON-DOD PROPERTY

2. ESTIMATED COST TO REPLACE or REPAIR (Provide a total cost to replace all hardware including $16 for each hour of labor. Do not list total cost of item unless it cannot be repaired.)

A. EXPLOSIVE SYSTEM

B. LAUNCH DEVICE

C. ASSOCIATED HARDWARE

D. ALL OTHER DEPARTMENT OF DEFENSE PROPERTY

E. NON-DOD PROPERTY

F. TOTAL DOLLAR LOSS (Mandatory - Include in supplementary message if all dollar values not initially available.)

CHARLIE: REPORTABLE INJURIES

1. EXTENT OF INJURIES OR OCCUPATIONAL ILLNESS (Specify if permanent partial disability or no disability likely. If the mishap involves more than one person, be specific in Paragraph CHARLIE about which person is being described. Repeat items 1 through 8 for each person.

2. NAME/SSN/AGE/SEX/RACE

3. RANK and DESIGNATOR or RATE and NEC, GRADE, JOB TITLE AND EMPLOYMENT STATUS (Examples of employment status include USN, USNR, USNR-R, other Department of

Defense personnel, Navy federal civil servants, contractors, foreign military exchange personnel, and foreign civilians.)

4. DUTY STATUS (On- or off-duty) and UIC (if different from reporting activity). (*If the mishap involves injuries to people from different commands, specify the UIC of each individual.*)

5. SPECIFIC JOB OR ACTIVITY INDIVIDUAL ENGAGED IN AT TIME OF MISHAP (For example, conducting planned maintenance (PMS), standing watch, handling ammunition, training, and weapons maintenance.)

6. NUMBER OF MONTHS EXPERIENCE AT THE JOB OR ACTIVITY (This information is to determine the experience the injured person possessed for the job or activity.)

7. MEDICAL DIAGNOSIS (Include part of body and type of injury.)

8. ESTIMATE OF LOST TIME

A. TOTAL LOST WORKDAYS AWAY FROM JOB (Actual number of days, including workdays hospitalized.)

B. DAYS ACTUALLY HOSPITALIZED (Actual number of days hospitalized, including weekends.)

C. DAYS OF LIGHT OR LIMITED DUTY

DELTA: TYPE OF MISHAP

1. DETONATION

2. INADVERTENT LAUNCH

3. MALFUNCTION

4. OBSERVED DEFECT

5. CHEMICAL AGENT RELEASE

6. OTHER

ECHO: NARRATIVE (The chain of events leading up to, through, and subsequent to the mishap or deficiency. State if mishap or deficiency was "induced" (caused by the reporting activity), or "discovered" (not caused by the reporting activity but revealed during inspection or test). Include as much information as possible to provide a clear understanding of exactly what happened or might have happened including suspected or known causes. List secondary cause, if applicable.

FOXTROT: CAUSE FACTORS

1. CAUSE OF MISHAP or DEFICIENCY (State appropriate type; for example, material failure, improper design, environment, human error, or supervisory error. If material or design, describe how equipment failed. If environment, state if not stored properly, corroded, etc. If human error, supervisory error, or improper procedure, complete items 2 through 4 below.)

2. WHAT DID THE PERSON OR PERSONS FAIL TO DO? (For example, correctly operate controls; accomplish planned or corrective maintenance properly; recognize hazardous situations; use proper caution for known risk; use protective clothing or equipment; use proper tool or equipment; plan adequately, supervise progress of work; or other.)

3. WHY DID THE PERSON OR PERSONS FAIL TO CARRY OUT ACTION OF PARAGRAPH FOXTROT TWO? (For example, lack of concern or interest; inadequate supervision, distracted or inattentive; haste, overconfidence; emotionally aroused; inadequate knowledge; insufficient experience; fatigue; alcohol; drugs; illness; misunderstanding; design; or other).

4. WHO CAUSED THE MISHAP?

A. SUPERVISOR, OPERATOR, MAINTENANCE WORKER, OFF-DUTY MILITARY, OTHER, or UNKNOWN

B. RANK and DESIGNATOR, RATE and NEC, or GRADE and JOB TITLE

C. WAS A SUPERVISOR OR SAFETY OBSERVER PRESENT?

D. QUALIFICATION or CERTIFICATION HELD (Enter Yes, No, or Not Required.) Indicate if each person involved in the mishap as a cause factor holds a current qualification or certification based on OPNAVINST 8023.2C or MCO 8023.2A (NOTAL).

GOLF: RECOMMENDATIONS and LESSONS LEARNED: Based on the above causes for the mishap or deficiency, give a recommendation on how to avoid future mishaps or deficiencies of the same, or a related, type. If several factors are involved, be sure to list them. Paragraph GOLF is, perhaps, the most important part of the report. If good recommendations are implemented, future mishaps can be prevented. If caused by a material or design defect, suggest changes needed for safer equipment. If caused by personnel or supervisory error, suggest changes in standard operating procedures, if appropriate.

HOTEL: SUPPLEMENTAL DATA

1. TECHNICAL INVESTIGATION (NOT) REQUESTED (Mandatory)

2. ITEM or FRAGMENTS (NOT) AVAILABLE

3. PHOTOGRAPHS (NOT) AVAILABLE

4. SUPPLEMENTARY MSG WILL (NOT) BE SUBMITTED: If the cause, lessons learned, recommendations, or dollar loss of equipment damages are not determined before the initial reporting time requirements, include them and other missing information in a supplementary message.

PART II (Complete only if surface-launched guided missiles are involved)

ALPHA:

In case of misfire or duds, if ready-to-fire light was not illuminated, determine, if possible, which of the following interlocks were not present:

1. LAUNCHER SYSTEM BLAST DOOR CLOSED

2. LAUNCHER SYNC

3. FIRING RAIL LOADED

4. MLC EXTENDED

5. LAUNCHER POINT TO SAFE FIRING ZONE

BRAVO: INTENDED OFF-LOAD DATE OF ITEMS INVOLVED AND ACTIVITY, IF KNOWN//

BT

**Appendix A6-F**

**MOTOR VEHICLE MISHAP REPORTING PROCEDURES (A**
**REPORT SYMBOL OPNAV 5102-4 (MV)**

1. In the interest of mishap prevention, the Navy must investigate all motor vehicle mishaps. Motor vehicle mishaps do not require a mishap investigation board. However, they may require the submission of a Motor Vehicle Safety Mishap Report (MV) in the format provided in this appendix. COMNAVSAFECEN will revise attachment A6-F-1 to conform with changes to reference A6-4.

2. REPORTABLE MOTOR VEHICLE MISHAPS

a. Government Motor Vehicle (GMV) Mishap. A mishap involving the operation of a GMV resulting in a collision with other vehicles, pedestrians (including joggers), bicyclists (when struck by a motor vehicle), or other objects; personal injury or property damage due to cargo shifting in a moving vehicle; personal injury in moving vehicles or by falling from moving vehicles; towing or pushing mishaps; and other injury or property damage when there is one or more of the following:

(1) At least $2,000 property damage (total of all government- and privately-owned vehicles and property), or

(2) A fatality or an injury resulting in 5 or more lost workdays to military and Navy civilian personnel, or

(3) A civilian fatality while riding in, or caused by a government motor vehicle.

b. Private Motor Vehicle (PMV) Mishap. A traffic mishap, regardless of the identity of the operator, not involving a GMV but resulting in:

(1) A fatality or an injury resulting in 5 or more lost workdays to on- and off-duty assigned military and on-duty Navy civilian personnel, or

(2) $2,000 or more government property damage.

(3) Collisions involving pedestrians (including joggers) or bicyclists (when struck by a motor vehicle), or collisions with other objects are included if they meet the reporting requirements of this paragraph.

(4) Naval Reserve personnel on inactive duty for training (travel) (IDTT), who are involved in a motor vehicle mishap while traveling from their home directly to the drill site, or from the drill site directly home, shall be counted as an off-duty reportable motor vehicle mishap if they meet all other reporting requirements of this appendix.

c. Motor Vehicle Special Cases. A motor vehicle mishap causing death to anyone not otherwise defined occurring on a naval installation or as a result of military operations is reportable.

d. Exceptions

(1) The following mishaps, although reportable and accountable, are not motor vehicle mishaps. They are accountable under other ground categories and reported under the provisions of reference A6-3 or this appendix for personnel assigned to afloat units using a Mishap Report (MR).

(a) Personal injuries that occur while loading or unloading, mounting or dismounting a motor vehicle which is not moving

(b) Damage to a properly parked GMV unless it is damaged by another GMV

(c) Property damage resulting solely from Acts of God are not reportable unless the activity did not adequately prepare for the extreme conditions.

(d) Damage to a GMV:

1. Being handled as a commodity and not being operated under its own power

2. By objects thrown or propelled into it

3. By fire when no motor vehicle mishap occurred. Refer to OPNAVINST 11320.25B (NOTAL) for additional reporting requirements.

(e) Attempted or consummated suicide or other intentionally self-inflicted injuries when a motor vehicle is involved.

(f) Injuries or death caused by attempted or consummated homicide or other criminal act or altercations, attack, or assault using a PMV.

(g) Injuries or death to military or on-duty Navy civilians escaping from or eluding military custody or arrest in a vehicle.

(h) Injury or death due to natural causes. For example, a driver of a motor vehicle has a heart attack or other medical emergency while driving. If medical authorities can determine the medical condition caused the mishap, the resultant injury or death is not reportable. However, injuries to others or property damage as a result of the mishap are reportable, if they meet minimum reporting criteria.

(i) Damage to a GMV resulting from vandalism, riot, civil disorder, sabotage, terrorist activity, or an act of felony.

(2) The following mishaps need not be reported under this appendix:

(a) Damage to a GMV as a result of vandalism, riots, civil disorders, sabotage, terrorist activities, or felonious acts (for example, arson and attempted murder)

(b) Injuries or fatalities to military or on-duty Navy civilian personnel escaping from or eluding military or civilian custody or arrest.

e. Off-road and combat vehicles. Motor vehicle equipment designed primarily for off-the-highway operations such as tracked or half-tracked vehicles, forklifts, road graders, agricultural tractors, and aircraft tugs are special purpose or combat vehicle use and are reported according to reference A6-3 when ashore and paragraph A0603a or A0603b when embarked.

3. REPORTING REQUIREMENTS

a. Responsibility. The commanding officer, officer in charge, or master of a ship shall ensure an investigation is conducted per this appendix. When afloat personnel are involved in a reportable motor-vehicle mishap away from their duty station, the naval activity nearest the scene will notify the victims' command(s). The two commands shall determine which one conducts the investigation. However, the final responsibility for ensuring that the report is submitted rests with the individuals' parent command(s). Establish contact between the ship's commanding officer, executive officer, or motor vehicle safety officer and the naval activity to ensure timely mishap investigation, reporting, and corrective actions.

b. Submission of Reports. Within 30 days, the investigating command shall release an Motor Vehicle Safety Report (MVSR) in the format contained in the sample format in this appendix by message to Commander, Naval Safety Center (COMNAVSAFECEN). Reporting activities shall include their chain of command as information addressees on mishaps meeting the reporting threshold for a Class A or B mishap.

c. Preliminary Reports

(1) A preliminary, priority message report must be made to COMNAVSAFECEN NORFOLK VA//42/40/50/30B/70/054// within 24 hours of a parent command's notification when any of the following occurs:

(a) Any on-duty motor vehicle mishap resulting in a fatality to one or more Navy military or Navy federal, non-appropriated fund (NAF), or foreign civilian personnel up to 6 months after the date of occurrence.

(b) Any on-duty motor vehicle mishap where five or more assigned military or Navy civilian personnel are admitted to the hospital.

(2) A preliminary, priority message report must be made to COMNAVSAFECEN NORFOLK VA//42/40/50/30B/70/054// within 48 hours of a parent command's notification when any of the following occurs:

(a) Any off-duty motor vehicle mishap resulting in a fatality to one or more Navy military personnel up to 6 months after the date of occurrence.

(b) Any off-duty motor vehicle mishap where five or more assigned military personnel are admitted to the hospital.

(3) For preliminary, priority reports, use the sample report format contained in attachment 1 to this appendix to provide available information. At a minimum, report the date and time of mishap; name and social security number of injured or dead people; location of mishap; description of the mishap; and extent of damage or injury. A preliminary, priority message report is not required if the required information has already been sent to COMNAVSAFECEN in an OPREP-3 or UNIT SITREP. Submission of the preliminary, priority message report does not relieve the command from submitting a complete report within 30 calendar days of the mishap. Send information copies of the report to the appropriate chain of command.

d. Additional Information. If additional information becomes available, or information originally submitted changes, submit a follow-up report. Give the local time and date of the mishap and the name(s) of the injured or dead reported on the original MV Report. Then, give only the items to be added or changed. Mark the report, "Modified" and send it to the same addressees as the original report. COMNAVSAFECEN may also request additional information, when needed.

**Attachment A6-F-1**

**SAMPLE MESSAGE FORMAT**
**MOTOR VEHICLE SAFETY MISHAP REPORT**
**REPORT SYMBOL OPNAV 5102-4 (MV)**

1. General

Use the following format and content for reporting personnel injuries and deaths and material (property) damage resulting from motor vehicle mishaps. Submit as much information as you have available in the initial report. Submit supplementary reports to supply missing information. Where requested data do not apply, insert "NOT APPLICABLE." Avoid using "unknown" unless you give the reason for not having the information.

2. Content and Format

(Precedence - normally ROUTINE)

FM ACTIVITY SUBMITTING REPORT

TO COMNAVSAFECEN NORFOLK VA//42/40/50/30B/70/054//

INFO As desired, directed, or required by higher authority

UNCLAS FOUO //N05102//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/MOTOR VEHICLE SAFETY MISHAP REPORT (REPORT SYMBOL OPNAV 5102-4) (MV)//

REF/A/CNO/01MAY91//

REF/B/DOC/CNO/19JAN94//

REF/C/ (If follow-up message, refer to all previous reports.)

NARR/REF A IS OPNAVINST 5100.12F, ISSUANCE OF NAVY TRAFFIC SAFETY PROGRAM. REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. REF C IS (subject of follow-up message.) THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES PER CHAPTER A6 OF OPNAVINST 5100.19C.//

POC/name/rank/primary phone/-/location/secondary phone//

RMKS/1. PER REFS A AND B, THE FOLLOWING INFORMATION IS SUBMITTED:

A. ALPHA. EVENT DATA:

(1) NAME AND UIC OF REPORTING ACTIVITY

(2) LOCAL DATE, TIME, AND DAY OF WEEK MISHAP OCCURRED

(3) GEOGRAPHIC LOCATION (Include city and state and whether on or off Navy property. If on Navy property, give name and UIC of installation where mishap occurred. If off base, provide the approximate distance (in miles) from the driver's duty station.)

(4) ENVIRONMENTAL CONDITIONS (For example, weather and road conditions.)

B. BRAVO: VEHICLE INVOLVEMENT. IDENTIFY ALL VEHICLES (Year, make, model, and whether government or privately owned. For motorcycles, mopeds, and all-terrain vehicles, include model and engine displacement. Was the motorcycle registered for operation on a Navy facility? If so, include the name and UIC of the command.)

C. CHARLIE: REPORTABLE OPERATOR INVOLVEMENT. Items C(1)-(6) apply only to motor vehicle operators. If parked vehicle, so state.

(1) IDENTIFY ALL OPERATORS (By name, sex, age, race, and marital status. State if operator is non-Department of Defense (DoD) civilian. For military and Navy civilian personnel, include duty status; social security number; officer designator; rank, rate, and NEC, or civil service grade and series; and driver's license number and issuing state. If a motorcyclist, indicate whether or not the driver's license was endorsed for motorcycle operation. Include the vehicle involvement (GMV/PMV) for each operator).

(2) NAME AND UIC OF DUTY STATION OF OPERATOR(s) (If not the same as the reporting activity.)

(3) For military and Navy civilian operators only, give date and type of operator training completed (For example, AAA, MRC-RSS, EVOC, no training received, etc.)

(4) DRUG/ALCOHOL/FATIGUE INVOLVEMENT AT TIME OF MISHAP. State specific drug name and whether prescription, non-prescription, or illegal; alcohol involvement and blood alcohol content for each operator; or whether fatigued, asleep, not drinking or taking drugs, or alert.

(5) FOR THE OPERATOR(s) INCLUDE DEGREE OF INJURY: Fatality, injury or no injury. (In fatality cases, include the cause of death. For example, head injury, internal injury, etc. In injury cases, include actual days hospitalized, and actual lost workdays (other than hospital days). If days are unknown, estimate. State if injury will result in a permanent total disability, permanent partial disability, or non-disabling injury. Include type(s) of injury. for example, head injury, internal injury, fractured arm or leg, etc.)

(6) INCLUDE SAFETY DEVICES USED BY THE OPERATOR(s) (For example, safety belt, air bag deployed, motorcycle helmet, boots, reflective vest, etc. State if operator was totally ejected from the vehicle or motorcycle, partially ejected, or not ejected. FOR GMV OPERATORS - If a personal injury results from

not using or the malfunctioning of a safety belt, explain why safety belts were not used, or in case of malfunction, what caused the malfunction, and what remedial actions have been taken to prevent recurrence).

D. DELTA: REPORTABLE NON-OPERATOR INJURIES. Items D(1)-(5) apply to all reportable "NON-MOTOR VEHICLE OPERATORS" Passengers, pedestrians, joggers, and bicyclists (when struck by a motor vehicle) injured or killed.

(1) IDENTIFY ALL NON-OPERATORS (By name, sex, age, race, and marital status. Also state if the individual is a civilian. For military and Navy civilian personnel give duty status; social security number; officer designator; rank, rate, NEC, or civil service grade and series. Include the vehicle involvement (GMV/PMV) for each person killed or injured. For passengers (vehicle or motorcycle), identify actual position in or on the vehicle. For example, right front passenger, center rear passenger, seated behind operator (motorcycles), etc. For pedestrians, joggers and bicyclists, identify location where struck. For example, in roadway, on shoulder, on sidewalk, etc.)

(2) NAME AND THE UIC OF DUTY STATION OF NON-OPERATORS KILLED OR INJURED IF DIFFERENT FROM REPORTING ACTIVITY.

(3) DRUG/ALCOHOL/FATIGUE INVOLVEMENT AT TIME OF MISHAP. State the specific drug name and whether prescription, non-prescription, or illegal; alcohol involvement and blood alcohol content for each non-operator killed or injured; or whether fatigued, asleep, not drinking or taking drugs, alert, etc.

(4) IF GMV MISHAP - PROVIDE THE FOLLOWING INFORMATION FOR EACH NON-OPERATOR INJURED OR KILLED; OR, IF PMV MISHAP - PROVIDE THE FOLLOWING INFORMATION FOR EACH DoD NON-OPERATOR INJURED OR KILLED:

INCLUDE DEGREE OF INJURY: Fatality or injury. (In fatality cases, include the cause of death. For example, head injury, internal injury, etc. In injury cases, include actual days hospitalized, and actual lost workdays (other than hospital days). If days are unknown, estimate. State if injury will result in a permanent total disability, permanent partial disability, or non-disabling injury. Include type(s) of injury, for example, head injury, internal injury, and fractured arm or leg, etc.)

(5) FOR EACH PASSENGER KILLED OR INJURED, GIVE SAFETY DEVICES USED (For example, safety belt, air bag deployed, motorcycle helmet, boots, reflective vest, etc. State if passenger was totally ejected from the vehicle or motorcycle, partially ejected, or not ejected.) FOR EACH PEDESTRIAN, JOGGER, OR BICYCLIST KILLED OR INJURED, GIVE SAFETY DEVICES USED (For example, light or dark clothing, reflective clothing, bicycle helmet, etc.) FOR GMV PASSENGERS - If a personal injury results from not using or the malfunction of a safety belt, explain why safety belts were not used by the injured person, or in cases of malfunction, what caused the malfunction, and what remedial actions have been taken to prevent recurrence).

E. ECHO: PROPERTY DAMAGE

(1) INCLUDE DoD PROPERTY DAMAGE (Government motor vehicle and other DoD property. Cost to repair or replace, and DoD work-hours to repair. If costs are unknown, give estimate).

(2) INCLUDE COST OF NON-DoD PROPERTY DAMAGE WHEN CAUSED BY GMV MISHAP (private vehicles and private property)

F. FOXTROT: 72-HOUR PROFILE. For each motor vehicle mishap involving a Class A or B injury or death include a 72-hour pre-mishap profile on the injured or dead person if that individual had an influence on the mishap occurrence or outcome (not a passive victim). If the person injured or killed was a passenger, provide the 72-hour pre-mishap profile on the driver(s) if military or on-duty civilian. COMNAVSAFECEN may request a 72 hour pre-mishap profile on other selected mishaps. The 72-hour profile includes:

(1) Travel completed during the 72 hours immediately preceding the mishap. Was individual commuting (by vehicle) from duty station to home daily or on weekends more than 100 miles one-way?

(2) Type of work performed and work schedule (hours) for the 72 hours immediately preceding the mishap.

(3) Periods of rest or sleep for 72 hours immediately preceding the mishap.

(4) Medications prescribed and were they taken.

(5) Alcohol and other drugs (prescription, nonprescription, and illegal) taken during the 72 hours immediately preceding the mishap.

(6) General physical condition, including illnesses.

(7) Individual's mental, emotional, and physical state including perceived stress and behavior changes (based on supervisor, next-of-kin (if available), co-workers, and friends.

(8) Other comments the supervisory, next-of-kin, co-workers, and friends wish to make related to the individual's condition or pre-mishap activities.

(9) Other factors prior to the mishap that could have effected the mishap occurrence or its outcome.

(10) Non-judicial punishment (NJP)/Uniform Code of Military Justice NJP/UCMJ record (military only) or any other behavior infractions for the past 3 years.

(11) Driver's experience or knowledge operating this particular type of vehicle.

G. GOLF: NARRATIVE OF THE MISHAP.

(1) Chain of events leading up to, through, and subsequent to the mishap. Elaborate with remarks so the who, what, when, where, how, and why are known. Be specific as to the major cause and contributing cause factors that lead up to the mishap.

(2) Corrective actions. Identify lessons learned and command follow-up information. *Identify specific action(s)* taken to prevent similar mishaps from occurring.//

BT

**Appendix A6-G**

**DIVING MISHAP AND HYPERBARIC TREATMENT (DV) REPORTING PROCEDURES
REPORT SYMBOL OPNAV 5102-5** (A

1. In the interest of mishap prevention, the Navy must investigate all diving mishaps. Class A diving mishaps require convening a mishap investigation board (MIB), investigating the mishap, and submitting an MIR. In certain instances, where vital safety information may be obtained, the type commander may direct an MIB for a Class B or other diving mishap or near mishap. Other reportable diving mishaps require the submission of a Diving Mishap/Hyperbaric Treatment/Death Report (DV) in the format provided in this attachment 1 to this appendix.

2. The following diving mishaps require the submission of a Diving Mishap/ Hyperbaric Treatment/Death Report (DV) for mishaps involving Navy-trained divers assigned to afloat units performing an on-duty working dive resulting in one or more of the following:

a. Any Class B and reportable Class C diving mishap involving the ship's divers when diving from the ship, ship's boat, or when diving from a shore command.

b. Hyperbaric treatment or recompression therapy conducted as a result of a diving mishap in a recompression chamber. Humanitarian civilian treatments are not reportable.

c. Any diving injury or illness preventing a diver from performing regularly established duty or work for 5 days or more when diving from the ship, ship's boat, or when diving from a shore command.

d. Diving mishaps resulting in a reportable injury to Navy divers making a recreational dive and diving mishaps not involving Navy divers require the submission of a report per appendix A6-H.

3. The DV is a General Use Mishap Investigation Report, and shall <u>not include</u> privileged witness information. The DV shall not state the source of any information.

4. If mishap investigators determine there is a <u>need to obtain privileged witness information</u> that may reveal valuable safety information in diving mishap, they shall advise the commanding officer who shall then ascertain the need for an MIB and inform the ISIC.

5. <u>Reportable Diving Mishap/Occupational Illness</u>

a. <u>Basic</u>

(1) Class A diving mishaps. Reports of diving mishaps resulting in a death, permanent total disability, or damage of more than $1,000,000 (Class A mishap) are Limited Use Mishap Reports, defined by reference A6-7, submitted by the MIB using the procedures in section A0604. and the MIR format in appendix A6-C.

(a) Modify Part Alpha of the MIR to include the information required by the sample report in attachment A6-G-1. MIRs of Class A diving mishaps are used for safety purposes only and contain privileged information. The release, distribution, and control of these reports are limited to prevent unauthorized disclosure of report contents.

(b) An autopsy is required for all on-duty diving deaths. Advise the servicing medical facility that the death was diving related. Include a copy of the autopsy with the mishap investigation evidence and forward autopsy results to:

Chairman of Forensic Sciences
Armed Forces Institute of Pathology
6825 16th St., NW
Washington, DC 20306-6000

(c) Impound, seal, and send all diving equipment involved in diving mishaps resulting in a fatality or permanent total disability to:

Commanding Officer
Naval Experimental Diving Unit
321 Bullfinch Road
Panama City, FL 32407-7015
Attn: Code 07 (Test and Evaluation)

(2) Off-duty and recreational diving mishaps. For off-duty and recreational diving mishaps (including recreational dives involving Navy divers), use appendix A6-H.

(3) Class B and C mishaps and hyperbaric treatment. Use this appendix for Class B and C mishaps and reportable hyperbaric treatment involving Navy-trained divers performing a working dive resulting in one or more of the following:

(a) Any Class B or reportable Class C diving mishap.

(b) Any hyperbaric treatment or recompression therapy conducted as a result of a Navy diving mishap. Humanitarian civilian treatments are not reportable.

(c) Any diving injury or illness preventing a military person from performing regularly established duty or work for 5 days or more. For civilian divers, report diving injury or illness preventing the employee from working for

five full shifts or more. Begin counting the 5 days or five full shifts at 2400 on the day of injury or illness.

b. Defective Equipment. Investigate and report instances of defective or malfunctioning equipment per the accident investigation section of the U.S. Navy Diving Manual.

c. Aviation Bends. Report aviation bends cases per reference A6-10.

d. USMC/USMCR Personnel. These reports are in addition to any others required by Marine Corps regulations.

6. REPORTING PROCEDURES

a. Responsibility. The immediate superior in command (ISIC), commanding officer, or officer in charge shall ensure that all diving mishaps are investigated and reported. The U.S. Navy Diving Manual, outlines diving mishap investigation requirements.

b. Preliminary Reports. A preliminary, priority message report must be made to COMNAVSAFECEN NORFOLK VA//30/054// within 24 hours of a parent command's notification for any Class A diving mishap not previously reported by OPREP-3 or UNIT SITREP.

c. Submission of Reports

(1) Report all Class A diving mishaps by submitting an MIR by the MIB using the procedures in section A0604 and the MIR format in appendix A6-C as modified by paragraph 5 of this appendix.

(2) Report all Class B and C diving mishaps or hyperbaric treatment by message.

(3) Use the format in attachment A6-G-1 to report Class B and C diving mishaps. Submit reports within 10 days of the mishap. Do not submit DD 2544, Diving Log, for any diving mishap reported per this appendix. Keep diving mishap reports unclassified, if possible. If the commanding officer cannot complete a meaningful, unclassified diving mishap report, submit a separate classified addendum for an otherwise unclassified DV.

(4) When the mishap occurs away from the diver's parent command, the treating facility will submit the Diving Mishap Report. They must notify the parent command as soon as possible. Ultimate responsibility for reporting the mishap lies with the diver's parent command.

(5) Report uneventful dives on DD 2544, Diving Log using the Dive Reporting System (DRS).

**Attachment A6-G-1**

**SAMPLE MESSAGE FORMAT**
**DIVING MISHAP and HYPERBARIC TREATMENT**
**REPORT SYMBOL OPNAV 5102-5**
(For on-duty Class B and C reportable mishaps and hyperbaric treatment.)

1. General

Use this format to report Class B or C diving mishaps involving damage, hyperbaric treatment, and lost-time cases. Submit as much of the information as available in the initial report. Submit supplementary reports to supply missing information. Where the requested data are not applicable or are not relevant to the analysis of the mishap, insert "Not Applicable" or "N/A." Avoid using "unknown" unless you give the reason for not having the information.

2. Content and Format

(Precedence - normally ROUTINE.)

FM REPORTING ACTIVITY

TO COMNAVSAFECEN NORFOLK VA//30/054//

INFO COMNAVSEASYSCOM WASHINGTON DC//00C//
NAVXDIVINGU PANAMA CITY FL//01//
NAVMEDRSCHINSTITUTE BETHESDA MD//DBTFA//
BUMED WASHINGTON DC//21//
(Others as desired, directed, or requested, by higher authority)

UNCLAS FOUO //N05102//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH

SUBJ/DIVING MISHAP REPORT (REPORT SYMBOL 5102-5)//

REF/A/DOC/NAVSEA/date//
REF/B/DOC/CNO/19JAN94//
REF/C/ (If this is a follow-up message, include the DTGs of all previous reports.)

NARR/REF A IS U.S. NAVY DIVING MANUAL. REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES PER CHAPTER A6 OF OPNAVINST 5100.19C//

POC/name/rank/primary phone/-/location/secondary phone//

RMKS/1. PER REFS A AND B, THE FOLLOWING INFORMATION IS SUBMITTED:

A. ALPHA:

A. Risk Assessment. Each identified/validated hazard shall be assigned a Risk Assessment Code (RAC) by the activity safety office. The RAC represents the degree of risk associated with the deficiency and combines the elements of hazard severity and mishap probability. The RAC is derived as follows:

1. Hazard Severity. The hazard severity is an assessment of the worst possible consequence, defined by the degree of injury, occupational illness, or property damage which is likely to occur as a result of a deficiency. Hazard severity categories shall be assigned by Roman numeral according to the following criteria:

(a) Category I - **Catastrophic**: The hazard may cause death or loss of a facility.

(b) Category II - **Critical**: May cause severe injury, severe occupational illness, or major property damage.

(c) Category III - **Marginal**: May cause minor injury, minor occupational illness, or minor property damage.

(d) Category IV - **Negligible**: Probably would not affect personnel safety or health, but is nevertheless in violation of a NAVOSH standard.

2. Mishap Probability. The mishap probability is the probability that a hazard will result in a mishap based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and affected population. Mishap probability shall be assigned an Arabic letter according to the following criteria:

(a) **Subcategory A** - Likely to occur immediately or within a short period of time.

(b) **Subcategory B** - Probably will occur in time.

(c) **Subcategory C** - May occur in time.

(d) **Subcategory D** - Unlikely to occur.

3. Risk Assessment Code (RAC). The RAC is an expression of risk which combines the elements of hazard severity and mishap probability. Using the matrix shown below, the RAC is expressed as a single Arabic number that can be used to help determine hazard abatement priorities.

| HAZARD SEVERITY | MISHAP PROBABILITY | | | |
|---|---|---|---|---|
| | A | B | C | D |
| Category I | 1 | 1 | 2 | 3 |
| Category II | 1 | 2 | 3 | 4 |
| Category III | 2 | 3 | 4 | 5 |
| Category IV | 3 | 4 | 5 | 5 |

| RAC |
|---|
| 1 - Critical |
| 2 - Serious |
| 3 - Moderate |
| 4 - Minor |
| 5 - Negligible |

OPNAV FORM 3120/5 (Rev. 5-99) BACK

**Appendix A3-B**

**Inspection of Department of the Navy Workplaces by Federal and State OSH Representatives**

| | AFLOAT | | |
|---|---|---|---|
| | Contractor Workplaces | Civilian Workplaces | Exclusively Military Workplaces |
| FEDERAL OSH REPRESENTATIVES | YES [1,2,3] | YES [1,2,3] | NO |
| STATE OSH REPRESENTATIVES | NO | NO | NO |

NOTES:
1. Ships or service craft must be in port; Navy Department will not transport Federal OSHA representatives to ships or service craft that are underway.
2. Federal and state OSH representatives have no jurisdiction over military unique operations or equipment. In addition, these officials are not authorized to inspect workplaces or operations for compliance with any standard implementing 10 U.S.C. 172 (explosive safety) or 42 U.S.C. Section, 2012, 2021, or 2022 (nuclear safety).
3. Inspections may be announced or unannounced.

## CHAPTER A4

## HAZARD CONTROL AND DEFICIENCY ABATEMENT

### A0401. DISCUSSION

There are three methods of controlling the impact of hazards. The first, and preferred, is to prevent the hazard at the design stage. The second, is to identify and eliminate existing hazards. The third is to reduce the likelihood and severity of mishaps from hazards that cannot be eliminated.

### A0402. HAZARD PREVENTION

Hazards may be prevented through appropriate actions during the design process, when operating procedures are developed and when equipment is purchased. Since many effective actions such as system safety reviews, design reviews, and the development of operating and purchasing procedures are the responsibility of the Systems Commands, only those actions which can be taken at the shipboard level to prevent hazards will be addressed.

a. Preventive Maintenance. Some hazards arise as the result of an inadequate preventive maintenance program. An effective shipboard preventive maintenance program can keep equipment and material from degrading to the point where it becomes an operational hazard.

b. Operating Procedures. Standard operating procedures (SOPs), instructions, or similar directives that are issued to identify the manner in which work is to be performed can prevent hazards from occurring. Obvious examples include tank cleaning, foul weather operations, and asbestos removal. Personnel must be familiar with the appropriate SOPs and current updates applicable to their duties.

c. Purchasing Procedures. Many hazards may be prevented by incorporating appropriate specifications into purchase orders for equipment/material. Normally, ship personnel have little control over specifications for equipment/material purchased through the Navy supply system. However, since a considerable amount of material/equipment is locally purchased, the ship can prevent hazards by purchasing the proper types of material and the proper amounts. Hazardous material is of special concern. All local purchases of potentially hazardous material shall be accomplished per paragraph B0305 of this manual.

### A0403. PRINCIPLES OF HAZARD CONTROL

Deficiency abatement will help control the frequency and severity of mishaps for those hazards which are impossible to eliminate in the operational environment. Short of complete elimination of the hazard, methods of hazard control, in order of preferred application, are substitution, engineering controls, administrative controls, and use of personal protective equipment. (R

a. Substitution. The risk of injury or illness may be reduced by replacement of an existing process, material, or equipment with a similar item having a lower hazard potential. Care must be exercised in any substitution to ensure that the substitute materials are technically acceptable and that a new hazard is not being introduced. COMNAVSEASYSCOM/COMNAVAIRSYSCOM should be contacted for substitution approval.

R) b. Engineering Controls. This means of hazard control is primarily accomplished through design and advanced planning. Whenever these methods are used for abatement aboard ship, they should be approved by the cognizant safety officer or industrial hygienist prior to implementation. Examples of engineering control methods include isolation and ventilation.

(1) Isolation. Isolation is the physical separation of a hazard from personnel to eliminate or minimize contact. This involves the use of a barrier or limiter and may be in the form of a physical barrier, time separation, or distance. Examples include machine guards, electrical insulation, sound barriers, and remote controlled equipment.

(2) Ventilation. This is the control of potentially hazardous airborne substances through the movement of air. Two methods are "general ventilation" or "dilution ventilation" and "local exhaust ventilation". General ventilation is the dilution of an airborne substance by mixing it with uncontaminated air. Local exhaust ventilation is the removal of an airborne substance at its source or point of generation. Local exhaust ventilation is the preferred and more economical method. The use of general ventilation should be limited to the control of heat/humidity or low toxicity solvent vapors if no other ventilation is possible.

c. Administrative Control. This method of abatement employs special operating procedures to reduce the exposure of individuals to hazards. Examples include limiting access to high hazard areas, or, adjusted work schedules and use of semi-automatic equipment that does not require constant attendance (time-separation). Adjusted work schedules are appropriate only when the hazard is recognized as having a limit below which all personnel may be repeatedly exposed without adverse effect.

The amount of time by which a limit may be exceeded for short periods without injury depends on several factors such as the nature of the hazard, whether or not the effects are cumulative, the frequency with which the hazard occurs, and the duration of the hazard. All factors must be taken into consideration in determining whether a hazardous condition exists and whether or not exposures above the limit are permitted. Exposures above established limits shall not be allowed without the commanding officer's approval.

d. Personal Protective Equipment. This method of hazard control is the least preferred because any equipment breakdown, failure, or misuse immediately exposes the wearer to the hazard. Nevertheless, there are instances where adequate risk reduction cannot be achieved through other methods and personal

protective devices must be used, either alone or in conjunction with other protective measures. Chapter B12 of this manual discusses personal protective equipment in general. Other chapters describe personal protective equipment requirements for specific programs.

A0404. ABATEMENT PROCEDURES

a. The results of workplace inspections and surveys and Hazard Reports (OPNAV 3120/5) shall be provided by the safety officer to the division officer in charge of the operation/space evaluated. Upon receipt of this report, the division officer shall take prompt action to ensure correction of each identified deficiency. (R

NOTE:

When cases of imminent danger are identified, the senior person on the scene must be notified and must stop all work immediately except in an operational emergency. The commanding officer shall be notified of the situation, and action taken as soon as possible. Imminent danger is defined as a shipboard condition which immediately threatens the loss of life, bodily injury, or illness to personnel.

b. Abatement Priorities. Once the results of workplace monitoring are evaluated, validated deficiencies shall be assigned a Risk Assessment Code (RAC) and recommendations made to eliminate the deficiency and therefore control the hazard. If a deficiency cannot be corrected within 30 days, a Ship's Maintenance Action Form (OPNAV 4790/2K, reference A4-1) shall be prepared with a Safety Hazard Code (the RAC shall be used to determine this code) entered into Block 15, Safety Hazard. The ship's 3M Coordinator shall forward all OPNAV 4790/2Ks with a Block 15 entry to the safety officer for review. The safety officer shall enter the RAC into the NAVOSH Deficiency Abatement Plan (NAVOSHDAP). (R

NOTE:

Only NAVOSH deficiencies shall be identified in block 15.

Hazards evaluated during an industrial hygiene survey will have the causative deficiencies identified and shall be assigned RACs by the evaluating industrial hygienist. (R

c. Risk Assessment. The RAC provides a measure of the degree of risk associated with a deficiency by assessing both the severity of the hazard produced by the deficiency and the probability of a mishap occurring and, therefore, provides a priority for the correction of deficiencies. The RAC is derived as follows: (R

(1) Hazard Severity. The hazard severity is an assessment of the worst potential consequence, defined by degree of injury, illness, or physical

damage which is likely to occur as a result of the deficiency. Hazard severity categories are assigned Roman numerals according to the following criteria:

| Description | Category | Results |
|---|---|---|
| CATASTROPHIC | I | Death or operational system loss. |
| CRITICAL | II | Severe injury, severe occupational illness, or major operational system damage. |
| MARGINAL | III | Minor injury, minor occupational illness, or minor system damage. |
| NEGLIGIBLE | IV | Probably would not effect personnel safety or health, but is nevertheless a violation of a NAVOSH standard. |

(2) Mishap Probability. The mishap probability is the likelihood that a deficiency will result in a mishap, based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and affected population. Mishap probability is assigned a letter according to the following criteria:

| Subcategory | Description |
|---|---|
| A | Likely to occur immediately or in a short period of time. |
| B | Probably will occur in time. |
| C | May occur in time. |
| D | Unlikely to occur. |

(3) Risk Assessment Code (RAC). To derive the RAC from the elements of hazard severity and mishap probability, use the matrix shown below. The RAC is expressed as a single Arabic number (1, 2, 3, 4, or 5) that can be used to help determine hazard abatement priorities.

| | | Mishap Probability | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| Hazard Severity | I | 1 | 1 | 2 | 3 |
| | II | 1 | 2 | 3 | 4 |
| | III | 2 | 3 | 4 | 5 |
| | IV | 3 | 4 | 5 | 5 |

| Code | Description |
|---|---|
| 1 | CRITICAL SAFETY OR HEALTH DEFICIENCY-CORRECT AS SOON AS POSSIBLE<br>This is a deficiency which presents a critical safety hazard to personnel or machinery or health hazard to personnel which must be corrected immediately. This code is to be used for items such as electric shock hazards, inoperative interlock or safety devices, missing or damaged lifelines, inoperable escape scuttles, a leaking refrigerant system (air conditioning or refrigeration) into a confined space, leaking component containing PCBs, and the like. All efforts must be exerted to correct these items prior to any other maintenance deficiencies. Suspension of use of equipment/system/space is mandatory. |
| 2 | SERIOUS SAFETY OR HEALTH DEFICIENCY-SUSPENSION OF EQUIPMENT/ SYSTEM/SPACE USE IS REQUIRED<br>These items deal with serious safety hazards to personnel or machinery or health hazards which must be corrected prior to resuming use of equipment/system/space. |
| 3 | MODERATE SAFETY OR HEALTH DEFICIENCY-WAIVER OF EQUIPMENT/ SYSTEM/SPACE USE IS GRANTED PENDING CORRECTION OF THE ITEM<br>This category is to be used in cases where the equipment/ system/space can be operated or utilized in a satisfactory manner without greatly risking personal injury, serious damage to the equipment/system/space, or greatly risking personal health. |
| 4 | MINOR SAFETY OR HEALTH DEFICIENCY<br>This is a category of safety or health deficiency which should be corrected when resources become available, but use of equipment/ system/space is unrestricted. |

5 NEGLIGIBLE SAFETY OR HEALTH DEFICIENCY
This category is used to identify those deficiencies which are noted for record purposes and may be corrected when other work is accomplished on the equipment/system/space.

d. Some deficiencies can be corrected "on the spot." When this is possible, the division officer will either notify the safety officer or complete the applicable portion of the Safety Hazard Report and return it to the safety officer via the appropriate department head.

R) e. Shipboard hazards that cannot be corrected "on the spot" shall be documented in the Work Center Work List (WCWL)/Job Sequence Number (JSN) Log per reference A4-1. Any item that is not corrected within 30 days is documented on a Ship's Maintenance Action Form (OPNAV 4790/2K). Safety Hazard Codes 1 through 5 will be entered in block 15 of the OPNAV 4790/2K per paragraph A0404b.

R) f. The NAVOSH Deficiency Abatement Plan (NAVOSHDAP) shall consist of Option D of the Current Ships Maintenance Project (CSMP) 1 printout and other CSMP supporting documents required by reference A4-1. The safety officer shall maintain at least a quarterly updated copy of the Option D of the CSMP.

A0405. INTERIM CONTROLS

a. As soon as it is recognized that immediate correction of workplace deficiencies is not possible, appropriate interim controls shall be established and documented on the Safety Hazard Report. Interim controls may consist of physical barriers, written instructions, word passed over the 1 multi-channel (1MC), warning signs, or other measures as deemed appropriate. Interim controls shall meet or exceed minimum necessary requirements to prevent future damage to equipment or injury/death to personnel. Interim controls in effect more than 60 days shall be approved by the Safety Officer.

b. If an unabated deficiency is classified as critical or serious (RAC 1 or 2), the commanding officer shall be notified and will personally approve interim protective measures. Interim controls for other unabated deficiencies shall be approved by the appropriate department head.

A0406. BACK INJURY PREVENTION

R) a. Navy studies indicate that a significant amount of at-sea lost work days are from back injuries. From 1974 to 1992, there were 20,923 active duty personnel, first time hospital admissions for back injuries for which 43 percent eventually received medical or physical evaluation boards. Back problems can result in pain, lost work time, inconvenience (to the individual and the Navy), and possible disability. The back is the most injury-prone part of the body and, as a result, most personnel will suffer back pain at some time in their lives. Preventing back injury is easier than correcting it.

b. In order to reduce afloat back injuries, the following actions shall be taken:

(1) Conduct back injury prevention training. This training shall include: the causes of back injury, exercise programs to prevent back injury, back injury prevention on and off the job, lifting techniques, and back injury care. This training shall be conducted as a part of all hands occupational safety and health training (see paragraph A0703c). See Appendix A7-F for training aids to assist in this training. (R

(2) Investigate and determine the cause of back injuries. Develop appropriate corrective action to reduce future injury to personnel from the identified cause(s) (see reference A4-2). Such corrective action could include training on lift methods for heavy loads, reduction of load weight by breaking up loads into smaller packages, and modification of processes being used to avoid twisting when lifting or carrying a heavy load.

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## CHAPTER A4

## REFERENCES

A4-1. OPNAVINST 4790.4B, *Ships Maintenance and Material Management (3-M) Manual*, (NOTAL).

A4-2 OPNAVINST 5100.21B, *Afloat Mishap Investigation and Reporting*, (NOTAL). (A

# CHAPTER A5

# PROGRAM EVALUATION

## A0501. DISCUSSION

There are two methods of determining the status of a ship's NAVOSH Program. The first and most objective method is to monitor the number of occupational injuries and illnesses experienced by the ship and identify any mishap trends, taking into account crew size and ship's employment. In addition, evaluations can be based on whether the rate or severity of mishaps is increasing or decreasing or upon comparisons with similar units. Evaluations should identify methods and approaches for correcting deficiencies or preventing future mishaps and accidents. This is a measure of program effectiveness. The second, and more subjective method is to assess the degree of implementation of basic NAVOSH Program elements by the ship through the evaluation of program accomplishments, such as the amount of training conducted and received, the completion of inspections, the number of deficiencies abated, and the attitude of the crew towards the program. These are measures of program compliance. Both approaches should be used for both internal self-evaluation and external program review.

## A0502. SELF-EVALUATION

a. Checklists are provided as Appendix A5-A for the NAVOSH Program and as appendices to hazard-specific program, tag-out program, and personal protective equipment chapters in section B of this manual for use by commands in evaluating program compliance.

b. The Safety Council should periodically evaluate the effectiveness of the NAVOSH Program. As a minimum, an annual formal evaluation will be provided in council minutes. The following indicators should be used:

(1) A rise or decline in the number of mishaps reported by internal reports and injuries reported by the Medical Department.

(2) A rise or decline in the number of reported unsafe or unhealthful working conditions.

(3) The progress made (or lack thereof) in the correction of deficiencies, hazards, and unsafe or unhealthful working conditions.

(4) A rise or decline in the number of man-days lost due to work related injuries.

(5) A review of the quality and quantity of internal hazard safety reports, mishap reports, and SAFETYGRAMS submitted (see Chapter A6).

A) (6) Any unsatisfactory NAVOSH program evaluations received during a command inspection or Occupational Safety and Health Management Evaluation.

c. An evaluation of any facet of the safety program may be initiated anytime mishap, deficiency, or near-mishap indicators so warrant. The checklists provided should also be used for these impromptu evaluations.

A0503. EXTERNAL INSPECTIONS/EVALUATIONS/SURVEYS

The shipboard NAVOSH Program may be evaluated during various inspections, evaluations, and surveys conducted by INSURV, the Type Commander, BUMED, or the Naval Safety Center. Specific workplace safety/health deficiencies will be noted during such visits. Deficiencies from these inspections, evaluations, or surveys will be handled per Chapter A4 of this manual.

**Appendix A5-A**

**NAVOSH PROGRAM CHECKLIST**

Indicate by an X, the answer to each of the questions below. If a question is not applicable to the command, indicate by NA in the YES block. Explain or describe the condition warranting any NO answer on the space provided at the end of the checklist or on additional sheets, if necessary.

The location of the NAVOSH Manual reference for any question is provided at the end of the question.

| | YES | NO |
|---|---|---|
| **PROGRAM RESPONSIBILITY** | | |
| 1. Has the command primary or collateral duty safety officer been designated by the commanding officer? (A0203b(2)) | | |
| 2. Is the safety officer assigned directly under the executive officer but with direct access to the commanding officer? (3120.32C, Chap 7) | | |
| 3. Does the safety officer oversee ship-wide planning to implement all elements of the shipboard occupational safety and health program? (A0203c(2)) | | |
| 4. Has the safety officer prepared and submitted requests for outside OSH support (industrial hygiene, radiological health, and safety inspections) for the command? (A0203c(3)) | | |
| 5. Has the safety officer participated in appropriate mishap investigations? (A0203c(4)) | | |
| 6. Have mishap reports been submitted in a timely and accurate manner? (A0203c(5)) | | |
| 7. Does the safety officer maintain and analyze NAVOSH records (Inspection/Survey Reports, Injury Reports, Hazard Reports, and mishap statistics) and determine trends? (A0203c(6)) | | |
| 8. Does the safety officer participate in or appoint a trained NAVOSH representative to participate in zone inspections? (A0203c(7)) | | |
| 9. Does the safety officer ensure wide dissemination of NAVOSH information? (A0203c(8)) | | |

(R

| | | YES | NO |
|---|---|---|---|
| 10. | Does the medical department representative (MDR) have direct access to the commanding officer regarding the medical aspects of the NAVOSH Program? (A0203d(1)) | | |
| 11. | Does the MDR keep the safety officer and other department heads/division officers informed, as appropriate? (A0203d(1)) | | |
| 12. | Does the MDR provide health information to division officers/work center supervisors in support of the occupational health program? (A0203d(4)) | | |
| 13. | Does the MDR have a quality assurance program for occupational medicine? (A0203d(7)) | | |
| 14. | Is there a division safety petty officer appointed for each division (not applicable to submarines)? (A0203e(6)) | | |
| 15. | Are all of the division safety petty officers E-5 or above (not applicable to submarines)? (A0203e(6)) | | |
| 16. | Is the master-at-arms (MAA) force being effectively used as a safety force (have they identified hazards, reported material deficiencies, corrected safety deficiencies/ hazards on-the-spot when applicable) (not applicable to submarines)? (A0203f) | | |
| R) 17. | Do division safety petty officers inspect division spaces and submit Hazards Reports on identified deficiencies (not applicable to submarines)? (A0203g(1)) | | |
| 18. | Do division safety petty officers ensure that prescribed personal protective equipment is provided and properly used by trained division personnel (leading petty officers on submarines)? (A0203g(9)) | | |
| 19. | Has the Safety Council been meeting quarterly? (A0203h) | | |
| 20. | Is either the commanding officer or the executive officer the Safety Council chairperson? (A0203h) | | |
| 21. | Are required personnel in attendance or adequately represented at Safety Council meetings? (A0203h) | | |
| 22. | Has the Safety Council reviewed the command's safety statistics (Mishap/Near Mishap Reports, Inspection Reports, Injury Reports) and directed action be taken as a result of these statistics? (A0203h) | | |

| | | YES | NO | |
|---|---|---|---|---|
| 23. | Has the Enlisted Safety Committee been meeting quarterly as required (not applicable to submarines)? (A0203i) | | | |
| 24. | Have all divisions been consistently participating in the Enlisted Safety Committee (not applicable to submarines)? (A0203i) | | | |
| 25. | Are Safety Committee minutes reviewed and acted upon by the Safety Council (not applicable to submarines)? (A0203i) | | | |
| 26. | Does the safety officer have access to the following: (A0203) | | | |
| | a. OPNAVINST 3120.32C, Standard Organization and Regulations of the Navy | | | (R (D |
| | b. NAVSAFECEN 5202/30, Afloat Mishap Investigation Handbook | | | |
| | c. Naval Ships Technical Manuals | | | |
| | ***INSPECTIONS, SURVEYS AND MEDICAL SURVEILLANCE*** | | | |
| 27. | Has a safety inspection been conducted on every work space aboard ship within the past year and are the findings retained aboard for review at the next command/INSURV inspection? (A0302b) | | | |
| 28. | Has the ship arranged for an industrial hygiene survey within the past 18-24 months and are the findings retained aboard for review at the next command/INSURV inspection? (A0302c) | | | (R |
| 29. | Does the safety officer receive discrepancy sheets from assistance visits and inspections, identify hazards, and enter these in the NAVOSHDAP as appropriate? (A0302f) | | | |
| 30. | Are Hazard Reports (OPNAV 3120/5) available for use by all hands? (A0303b) | | | |
| 31. | Does the number and quality of Hazard Reports show this to be an effective program? (A0303) | | | |
| 32. | When reports are submitted by crew members, are conditions investigated and are responses provided promptly (within 10 days)? (A0303e) | | | |

| | | YES | NO |
|---|---|---|---|
| | 33. Are appeals regarding the reported conditions reported to the commanding officer and is a response provided promptly (within 10 days)? (A0303f) | | |
| | 34. When it is not possible to comply with an applicable NAVOSH standard, is a request for a variance initiated by the safety officer? (A0304a) | | |
| A) | 35. If Federal or State occupational safety and health inspectors request permission to conduct inspections aboard ship, has such permission been granted only to Federal inspectors? (A0305a) | | |
| A) | 36. Have situations in which access has been denied been reported to the CNO, copy to NAVSEASYSCOM? (A0305a) | | |
| A) | 37. Have OSHA officials been prohibited from taking photographs aboard ship; have any photographs been taken by Navy photographers and have they been properly released? (A0305a(5)) | | |
| | 38. Does the MDR, assisted by the safety officer, division officer, division safety petty officer, and work center supervisor, identify personnel requiring medical surveillance based on the results of industrial hygiene surveys? (A0306c) | | |
| | 39. Does the MDR make arrangements for required medical examinations and provide available information regarding each industrial exposure to the medical treatment facility, squadron medical officer, or ship's medical department? (A0306c) | | |
| | 40. Is the MDR monitoring medical surveillance results for trends due to hazardous exposure? (A0306d) | | |
| R) | 41. Does the MDR keep personnel, who are under medical surveillance, informed (verbally or in writing) of examination results and significance? (A0306e) | | |
| | 42. Are individuals provided with access to their medical records and personal exposure data upon request? (A0306e) | | |

| | YES | NO | |
|---|---|---|---|
| HAZARD CONTROL AND DEFICIENCY ABATEMENT | | | |
| 43. Are the results of work place inspections and surveys and appropriate Hazard Reports provided to the applicable division officer for correction of deficiences? (A0404a) | | | |
| 44. Are division officers taking prompt action to ensure correction of each identified deficiency? (A0404a) | | | (A |
| 45. Are industrial hygiene surveys, ISIC NAVOSH inspections, and NAVSAFECEN safety review- dentified deficiencies being entered into the CSMP (NAVOSHDAP)? (A0404a) | | | (A |
| 46. Are OPNAV 4790/2Ks generated on safety deficiencies assigned a Safety Hazard Code (RAC), entered into Block 15, and reviewed by the safety officer? (A0404b) | | | (R |
| 47. Are Risk Assessment Codes being properly determined? (A0404b) | | | |
| 48. Does the NAVOSH Deficiency Abatement Plan (NAVOSHDAP) consist of the Option D of the CSMP 1 and other CSMP supporting documents? (A0404f) | | | (R |
| 49. Does the safety officer maintain at least a quarterly updated copy of the option D of the CSMP? (A0404f) | | | (A |
| 50. Does the 3-M Coordinator support the safety officer with the hazard abatement plan and NAVOSH (block 15) identified 4720/2Ks? (A0404) | | | (A |
| 51. Is the NAVOSHDAP an effective tool? (A0404f) | | | |
| 52. Are interim controls in effect for more than 60 days approved by the safety officer? (A0405a) | | | |
| 53. Does the commanding officer personally approve any interim controls for critical and serious danger (RAC 1 and 2) deficiencies? (A0405b) | | | |
| 54. Does the command conduct back injury training which includes the causes of back injury, exercise programs to prevent back injury, back injury prevention on and off the job, lifting techniques, and back injury care? (A0406b(1)) | | | (A |
| 55. Has the command investigated and determined the cause of back injuries? (A0406b(2)) | | | (A |
| 56. Has the command developed corrective action to reduce future back injuries to personnel from the causes identified during mishap investigations? (A0406b(2)) | | | (A |

| | | YES | NO |
|---|---|---|---|
| | **PROGRAM EVALUATION** | | |
| | 57. Have checklists been used to evaluate the NAVOSH Program and specific hazard programs for compliance? (A0502a) | | |
| | 58. Has the NAVOSH Program been evaluated for effectiveness by the Safety Council? (A0502b) | | |
| | **MISHAP INVESTIGATION AND REPORTING** | | |
| R) | 59. Has the command incorporated mishap prevention, investigation, and reporting training, as required by the type commander, into the command's training program? (A0602k(1)) | | |
| R) | 60. Does the command inform the NAVSAFECEN of all Class A mishaps? (A0602k(2)and (4)) | | |
| R) | 61. Does the command ensure that personnel assigned to conduct informal mishap investigations, assigned as a member of an MIB, or assigned to assist the board are excluded from assignment to a JAG investigation of the same incident? (A0602k(3)) | | |
| R) | 62. Has the command notified the ISIC of mishaps warranting investigation by an MIB? (A0602k(5)) | | |
| R) | 63. Does the command make an attempt (where an MIB is convened) to protect the mishap site or damaged area from loss or further damage? (A0602k(6)) | | |
| R) | 64. Are procedures in place to direct the collection of any transitory medical evidence pertinent to a mishap investigation or direct the autopsy and toxilogical screen of personnel killed in a mishap? (A0602k(7) and (8)) | | |
| R) | 65. Does the command investigate all mishaps except those investigated by a MIB and report applicable mishaps as required by Appendix A6-D? (A0602k(11)) | | |
| A) | 66. Does the command investigate and report explosive mishaps and conventional ordnance deficiencies as outlined in Appendix A6-E? (A0602k(12)) | | |
| A) | 67. Has the command investigated and reported motor vehicle mishaps per Appendix A6-F? (A0602k(13)) | | |
| A) | 68. Has the command investigated and reported off-duty recreation, athletics, and home mishaps per Appendix A6-H? (A0602k(15)) | | |

| | | | YES | NO | |
|---|---|---|---|---|---|
| A) | 69. | Does the safety officer assist in conducting mishap investigations for all mishaps except those investigated by a MIB? (A06021(1)) | | | |
| A) | 70. | Does the safety ensure ship-wide dissemination of safety information and lessons learned resulting from mishap investigations? (A06021(2)) | | | |
| | 71. | Does the safety officer schedule and coordinate mishap prevention and hazard awareness training? (A06021(3)) | | | (A |
| | 72. | Do department heads, division officers, and workcenter supervisors incorporate information on mishap prevention and investigations into General Military Training (GMT)? (A0602m(1)) | | | (A |
| | 73. | Does the MDR report all on-duty injuries to the individual's division officer, the safety officer, and the officer of the deck using the Injury Report in a format similar to Appendix A6-I? (A0603k) | | | (A |
| | 74. | Do division officers evaluate the cause of injuries and recommend corrective action (if any) to prevent recurrence? (A0603k) | | | (A |
| | 75. | Does the safety officer maintain a complete file of MRs required by higher authority, internal Mishap/Near Mishap Reports, and Injury Reports for 5 years? (A06031) | | | (A |
| | 76. | Do the Safety Council and Enlisted Safety Committee evaluate mishap and injury reports and logs as part of the command safety program evaluation? This evaluation should ensure mishap investigation and reporting procedures aid in identifying mishaps and determining causes, trends, places and groups in order to target specific training topics to prevent recurrence. (A0603m) | | | (A |
| | 77. | Do all shipboard personnel receive indoctrination and annual refresher training on mishap prevention, investigation, and reporting with special emphasis on privileged information? (A0606a) | | | (A |
| | **TRAINING** | | | | |
| | 78. | Has the safety officer attended either the Afloat Safety Officer Course (J-4J-0020) or Submarine Safety Officer Course (F-4J-0020) as appropriate prior to or within 6 months of assuming this duty? (A0703a) | | | |
| | 79. | Do safety officers receive available refresher training? (A0703a) | | | |

| | | YES | NO | |
|---|---|---|---|---|
| 80. | Have all the petty officers who are assigned as division safety petty officers attended the Safety Program Afloat Course (J-493-2099) prior to or within 6 months of assuming their duties (not applicable to submarines)? (A0703b) | | | (R |
| 81. | Have division safety petty officers completed the PQS Safety Programs Afloat (NAVEDTRA 43460-4A) within 6 months of being assigned these duties (not applicable to submarines)? (A0703b) | | | |
| 82. | Have all personnel received NAVOSH Program training upon reporting aboard and annually thereafter? (A0703c) | | | |
| 83. | Have divisions used quarters to conduct two safety briefs per month (excluding submarines)? (A0703d) | | | (R |
| 84. | Whenever it was necessary to raise the level of safety awareness of personnel, has the command initiated a safety stand-down? (A0703e) | | | |
| 85. | Has the command conducted a safety stand-down within the past year? (A0703e) | | | |
| 86. | Are training films and periodicals used to enhance on-board training of safety topics? (A0703i) | | | |
| 87. | Does command have all of the videotapes listed in Appendix A7-F that have been distributed for use? (A0703i) | | | |

## CHAPTER A6

## MISHAP INVESTIGATION AND REPORTING

### A0601. DISCUSSION (R

a. Comprehensive, accurate mishap investigation is essential to the success of the NAVOSH Program. The reports required by this chapter are separate and independent of any investigative report required by the Manual of the Judge Advocate General (JAGMAN), reference A6-1. Mishap investigation reports require answers to the questions: who, what, where, when, and why; and require damage assessments and a description of the effectiveness of measures used to limit further damage after the mishap has occurred. People unintentionally cause the majority of mishaps. The crux of the entire mishap investigation effort is to find out why the mishap occurred. Too frequently investigators describe the cause of a mishap as "poor judgment," "carelessness," or "forgetfulness." Proper corrective action can best be developed from specific causes. Maximum investigative efforts must therefore be directed at the underlying human factors. Causes ranging from the physical and psychological condition of the person involved to the adequacy of his or her training and experience must be pursued. The man-machine interface must be considered along with the effect of environmental factors.

b. This chapter applies to:

(1) Commissioned, U.S. Navy ships and their embarked boats and landing craft or leased boats

(2) Pre-commissioned, U.S. Navy ships and their embarked boats and landing craft or leased boats beginning when the ship gets underway for Acceptance Trials

(3) LCACs

(4) USNS ships manned by Federal civilian mariners assigned to the Military Sealift Command (MSC).

**NOTE:**

Reference A6-2 contains guidance and administrative procedures for use by MSC ships and assigned civil service mariners and military detachment personnel.

c. Shipboard mishap investigation and reporting procedures in this chapter apply to mishaps resulting in

(1) Damage to the ships and craft listed above at all times, both underway and moored

(2) Death or injury to all personnel (including embarked personnel) aboard ships or craft listed above.

(3) Death or injury to ship's or craft military and Federal civilian mariner crew members (permanent or under temporary orders) when moored and when on-duty ashore.

(4) See paragraph A0603 for guidance as to what constitutes a "reportable afloat mishap" and a listing of mishaps not reportable.

d. Mishaps involving military and Federal civilian personnel assigned to a shore unit identification code (UIC) shall be investigated and reported per references A6-3 and A6-4, unless not reportable. Other civilians, dependents, or foreign personnel are not reportable under this chapter. Guidance on afloat mishap investigation and reporting requirements should be requested from Commander, Naval Safety Center (COMNAVSAFECEN).

e. References A6-5 and A6-6 charge commanding officers and ship's masters with absolute responsibility for the safety, well-being, and efficiency of their commands. Nevertheless, each year needless afloat mishaps result in deaths, injuries, the loss of thousands of hours of work, reduced combat readiness, and the waste of valuable assets. The adverse impact on professional pride, morale, physical well-being, and life itself is unacceptable. An effective NAVOSH Program must involve all levels of the chain of command to consistently reduce the number of mishaps. This reduction will be accomplished by:

(1) Establishing a fleet-wide environment in which the free and rapid exchange of information related to hazards is enhanced and encouraged.

(2) Ensuring the prompt identification, elimination, control, and correction of hazards. When identification and elimination efforts fail, mishaps shall be investigated and causes reported to prevent recurrence.

Superiors in the chain of command shall appoint a formal mishap investigation board (MIB) to investigate all military, afloat, Class A mishaps on surface ships (their embarked boats and landing craft or leased boats), LCACs, and submarines. MIBs shall submit findings and recommendations in a Mishap Investigation Report (MIR).

Shipboard personnel shall investigate all mishaps. For reportable mishaps, the command shall submit a Mishap Report (MR), Diving/Hyperbaric Treatment/Death Report (DV), Explosive Mishap Report (EMR), Conventional Ordnance Deficiency Report (CODR), Off-Duty Recreation, Athletics, and Home Safety (RAHS) Mishap Report, or Motor Vehicle Mishap Report (MV).

**NOTE:**

Paragraph A0603 defines mishap severity classifications, reportable mishaps, and special case mishaps.

Traditionally, the only source of mishap investigation information was a JAGMAN investigation governed by reference A6-1. The JAG investigation is also used to determine accountability and culpability. In this legal investigation, valuable safety information may be lost because of the reluctance of witnesses to divulge information for fear of retribution. The only purpose of the safety investigation is mishap prevention, not the determination of accountability. Therefore, reporting requirements for JAGMAN or other investigations shall be addressed by instructions governing those investigations.

e. Concept of Privilege. Military and Federal courts recognize that the information given under the promise of confidentiality is protected from release under executive privilege. Promises of confidentiality are given to witnesses and members of the MIB. Therefore, witness statements and the deliberative analyses of findings, conclusions, and recommendations of the MIB are privileged. Any information that the MIB would not have discovered except as a result of information provided under a promise of confidentiality is also privileged. Information calculated or developed by the MIB, when disclosing that information would reveal the MIB's deliberative process, is also deemed privileged. The promise of confidentiality guarantees that the information provided shall be used SOLELY for safety purposes. No one shall release privileged information for non-safety purposes or outside the Department of the Navy (DON). Forward requests for privileged information to Commander, Naval Safety Center (Code 03).

(1) Comprehensive, accurate mishap investigation requires the free and open disclosure of NAVOSH information. All surface ship, LCAC, and submarine mishaps investigated by an MIB shall apply the concept of "privileged information."

(2) The entire chain of command shall fully support the philosophy of, and tenaciously maintain a commitment to, the limited use of privileged information.

(3) Reference A6-7 allows for Limited Use Mishap Investigation Reports to restrict access to information on military systems and equipment. Some of the information obtained for this limited use report is held as, or considered privileged. The concept of privilege pervades the afloat safety program. Appendix A6-A explains the concept of privilege in detail.

(4) When a mishap occurs, any tendency to spare an individual's or the command's reputation shall be set aside in favor of providing completely candid reports and opinions designed to identify the precise cause(s). To encourage the free and open disclosure of safety information during an investigation, the concept of privileged information is used. Privileged information includes:

(a) Information provided under a promise of confidentiality.

(b) Information which would not have been discovered but for a promise of confidentiality.

(c) The deliberative analysis of findings, conclusions, and recommendations of the MIB.

(d) Calculations and deductions conducted by the MIB when disclosing that information would reveal the board's deliberative process.

(e) Forwarding endorsements to MIRs since they are a part of the deliberative process.

(5) Should the Navy use privileged information for any purpose other than safety, it would lose credibility of future assurances of privilege. If that credibility is lost, vital safety information in future mishaps also could be lost.

f. The rules in subparagraph A0601e apply to all DON personnel individually without further implementation. A violation of these provisions by military personnel is punishable under the Uniform Code of Military Justice (UCMJ) and is the basis for disciplinary action for civilian employees.

R) **A0602. RESPONSIBILITIES.** In addition to the duties and responsibilities found elsewhere in this instruction, the following mishap investigation and reporting responsibilities apply to:

a. Deputy Chief of Naval Operations (Logistics) (N4) shall:

(1) Serve as the central Navy office for ensuring accomplishment of ammunition, explosives, and chemical agents and systems mishap reporting, and as the point of contact between the Department of Defense Explosives Safety Board and U.S. Navy activities.

(2) Modify NAVOSH policies and guidance as a result of lessons learned from mishap investigations. Coordinate modifications with N8.

b. Deputy Chief of Naval Operations (Resources, Warfare Requirements, and Assessments) (N8) shall direct and supervise mishap investigation and reporting training for afloat primary and collateral duty safety officers.

(1) Director, Surface Warfare Division (N86) is responsible for the safe operation of assigned surface ships and support craft, including sponsoring the SEAOPS for LCACs; and ensuring training in mishap investigation and reporting is provided for primary and collateral duty safety officers.

(2) Director, Submarine Warfare Division (N87) is responsible for the safe operation of submarines, assigned surface ships, deep submergence systems, support craft, and diving operations; and ensuring training in mishap investigation and reporting is provided for primary and collateral duty safety officers.

(3) Director, Air Warfare Division (N88) is responsible for the safe operation of assigned surface ships and support craft; and ensuring training in

mishap investigation and reporting is provided for primary and collateral duty safety officers.

c. Systems Commanders shall:

(1) Assist MIBs in the investigative process, when requested.

(2) Respond to the recommendations and corrective actions developed by the type commanders.

(3) Issue proper documentation to correct hazardous conditions.

(4) Review and analyze MIRs when included in the endorsement chain. Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement.

d. COMNAVSAFECEN shall:

(1) Periodically review this chapter and provide revisions to CNO (N45) for publication. As CNO (N09F), COMNAVSAFECEN retains responsibility for mishap report control symbols and making necessary changes to mishap reporting formats to ensure the data collected satisfies the Navy's safety information requirements.

(2) Provide an advisor to MIBs for all afloat Class A mishaps.

(3) Coordinate, with the type commander, recommendations for investigation of other than Class A, afloat mishaps which may warrant an MIB.

(4) Provide an advisor, when agreed upon between the type commander and COMNAVSAFECEN, for other than Class A, afloat mishaps, if a trained investigator would benefit the investigation.

(5) Determine, when appropriate and if requested, the privileged or nonprivileged status of all evidence from Class A mishaps.

(6) Take custody, from the senior member, of all relevant documentary evidence, board members' personal notes, original copies of all witness statements and logs, photographs and negatives, and tape recordings (whether referenced in the MIR or not).

(7) Make available, upon request, any documentary evidence, logs, photographs, negatives, tape recordings which are not privileged either by transfer of originals (after making and retaining copies) or by inspection/copying to:

(a) MIR endorsers.

(b) Individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United

States or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

(8) Make available, upon request, any evidence, witness statements, logs, photographs, negatives, or tape recordings which are privileged per this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying, to MIR endorsers only.

(9) Conduct the final review and analysis of MIRs. Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement. Retain, as custodian, MIRs and the endorsements for at least 5 years.

(10) Retain or dispose of all relevant evidence, board members' personal notes, original copies of summaries of all statements and logs, photographs and negatives, and tape recordings as directed in paragraph 8 Appendix A6-B.

(11) Ensure prompt distribution of essential information, such as lessons learned, to cognizant commands.

(12) Monitor the completion of corrective action resulting from an MIR.

(13) Maintain a centralized, historical safety-data repository. Provide research and analysis of collected data to support identification, elimination, and control of shipboard hazards through safety awareness and equipment and system design.

(14) Sanitize MIRs and endorsements, when requested, for use in safety training. Sanitization includes removing all identifiable data that could connect the report to an individual, organization, or particular mishap.

(15) Ensure that mishap investigation board advisors from COMNAVSAFECEN receive detailed training in safety investigation techniques and reporting requirements.

e. Fleet Commanders in Chief; Numbered Fleet Commanders; and Commander MSC shall:

(1) Ensure subordinates assign mishap prevention and safety responsibilities at all levels in the chain of command.

(2) Ensure subordinate commands comply with current CNO safety and mishap prevention and injury reporting requirements.

(3) Serve as the appointing authority for mishaps involving more than one subordinate type commander and provide the Senior Member with the required endorsers. The endorsers for a mishap involving more than one type commander are provided in paragraph 4c of Appendix A6-C.

(4) Review and analyze MIRs when included in the endorsement chain. Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement.

f. Type Commanders, Commander Naval Special Warfare Command, Commander Mine Warfare Command, and Commanders MSC Atlantic and Pacific shall:

(1) Ensure subordinate units conduct timely and complete afloat safety mishap investigations.

(2) Direct the investigation of any Class B or other mishaps or near mishaps which may reveal vital safety information if investigated by an MIB.

(3) Incorporate mishap prevention, investigation, and reporting training into the training requirements of type commander training manuals, master training plans, or training guides.

(4) Serve as the appointing authority for mishaps involving more than one subordinate squadron or group commander and provide the senior member with the required endorsers. The minimum endorsers for a mishap involving more than one squadron or group commander are provided in paragraph 5c of Appendix A6-C.

(5) Send a message to the appointing authority of mishaps involving one subordinate squadron or group commander and provide the appointing authority with the required initial endorsers. The ISIC shall not delay the investigation awaiting the message. The minimum endorsers for a mishap involving one squadron or group commander are provided in paragraph 5c of Appendix A6-C.

(6) Coordinate with COMNAVSAFECEN, COMNAVSEASYSCOM, and other technical agencies in providing assistance to the mishap board, when requested.

(7) Monitor the timeliness and adequacy of the MIB's deliberations and final report and the timeliness and adequacy of each subsequent endorser.

(8) Assign responsibility for and monitor completion of corrective action on recommendations made by the MIB.

(9) Provide relevant safety information from the MIR to COMNAVSEASYSCOM, or other technical agency, when appropriate; unless otherwise restricted.

(10) Request any waivers or modifications to the investigation and reporting requirements from CNO (N8).

(11) Ensure appropriate group and squadron commanders are apprised of hazards identified during a mishap investigation.

(12) Collect and disseminate lessons learned and safety-related information. Include COMNAVSAFECEN NORFOLK VA//30/054// as an information addressee on any lessons learned issued.

(13) Endorse the MIR, in turn, and provide a copy to all endorsers within 14 days of receipt of the previous endorsement.

g. Group and Squadron Commanders shall:

(1) Ensure subordinate commands incorporate mishap prevention, investigation, and reporting training, as directed by the type commander, into the group and squadron training requirements.

(2) Ensure commanding officers are apprised of hazards identified by a mishap investigation.

(3) Endorse the MIR within 14 days of receipt, if the ship's ISIC. If a group commander, not the ISIC, desires to endorse the MIR, notify all other endorsers within 14 days of receiving the MIR.

(4) Assist subordinate commands in conducting safety investigations for all other reportable and special case mishaps, as defined in paragraph A0603.

h. Group or Squadron Safety Officer shall:

(1) Maintain appropriate safety records and mishap statistics discussed in Chapter 3 and this chapter. Make the information available to a mishap board upon request.

(2) Assist subordinate commands in conducting safety investigations for all reportable and special case mishaps, as defined in paragraph A0603.

(3) Ensure dissemination of safety information and lessons learned resulting from mishap investigations.

(4) Schedule and coordinate mishap prevention training with the group or squadron training officer.

i. ISICs, including Commanding Officers of Assault Craft Units (ACUs) Five and Four shall serve as the appointing authority for MIBs, unless otherwise directed. The minimum endorsers for a mishap involving a single ship (its embarked boats and landing craft or leased boats) or LCAC are provided in paragraph 5c of Appendix A6-C.

j. The appointing authority shall:

(1) Appoint, in writing, the senior member of MIBs. (Appendix A6-B contains a sample MIB appointing letter.)

(a) The senior member shall be an unrestricted line officer in the U.S. Navy or U.S. Marine Corps, or a senior official in MSC with suitable training and experience. If possible, the senior member should be senior to the

commanding officer of the unit involved in the mishap. If junior to the commanding officer of the unit involved, the senior member shall be from another command.

(b) No one directly involved in a mishap shall serve as the senior member of the MIB for that mishap.

(c) No one having a personal interest in a mishap that might conflict with his/her objective and impartial performance of duties shall serve as the senior member of the MIB.

(d) Since the ISIC may take subsequent judicial or administrative action based on the JAG investigation, the commander shall not be the senior member to avoid the possible perception of a conflict of interest or the unauthorized use of privileged information.

(2) Appoint, or delegate the appointment of, the remaining members of the MIB.

(a) No one directly involved in a mishap shall serve as a member of the MIB for that mishap.

(b) No one having a personal interest in a mishap that might conflict with his/her objective and impartial performance of duties shall serve as a member of the MIB.

(3) Ensure all MIB members are thoroughly familiar with their duties and mishap investigation procedures.

k. Commanding Officers, Masters, and Craftmasters shall:

(1) Incorporate mishap prevention, investigation, and reporting training, as required by the type commander, into the command's training program.

(2) Inform the Naval Safety Center of all Class A mishaps by including COMNAVSAFECEN NORFOLK VA//30/02/054//, and AIG ONE THREE EIGHT SIX ZERO for mishaps involving LCACs, as information addressees on any OPREP-3 or UNIT SITREPs submitted per references A6-8 and A6-9. If the mishap involves a fatality, send an information copy of the OPREP-3 or UNIT SITREP to ARMED FORCES INSTITUTE OF PATHOLOGY WASHINGTON DC//CMEO//.

(3) Ensure personnel assigned to conduct informal mishap investigations, assigned as a member of an MIB, or assigned to assist the board are excluded from assignment to a JAG investigation of the same incident conducted per reference A6-1.

(4) Make a message report to COMNAVSAFECEN NORFOLK VA//30/02/054//) on any Class A mishap, if not previously informed by OPREP-3 or UNIT SITREP. Send the report, in the format of Appendix A6-D, within 24 hours. If the mishap

involves a fatality, send an information copy of the OPREP-3 or UNIT SITREP to ARMED FORCES INSTITUTE OF PATHOLOGY WASHINGTON DC//CMEO//.

(a) As a minimum, furnish the date and time of the mishap, the geographic location of the mishap, the reporting activity, the number of personnel involved, a description of the operation; and a brief explanation of the mishap in the initial report.

(b) As additional information becomes available, submit follow-up reports referencing the original and all subsequent reports.

(5) Inform the ISIC of any mishaps which may warrant investigation by an MIB.

(6) If possible, protect the mishap site or damaged area from loss or further damage. Operational requirements or damage control measures may require disturbing the scene of the mishap before the MIB arrives. In such cases, make every reasonable effort to:

(a) Make an accurate plot of the scene.

(b) Take photographs or videotape recordings of the wreckage, its distribution, and the surrounding area.

(c) Make a diagram of any underwater damage.

(7) Direct the collection of any transitory medical evidence, such as specimens to determine blood alcohol and drug levels, pertinent to the mishap investigation.

(8) Direct the autopsy and toxicological screen of all personnel killed in the mishap as authorized by Article 17-2(1), Manual of the Medical Department (NAVMED P-5065).

(a) Naval hospitals shall perform most autopsies; however, use other Federal or civilian hospitals when naval assets are not available.

(b) Commanders and commanding officers shall provide the necessary support to ensure the hospital completes the autopsies expeditiously.

(c) Following the autopsy, the prompt release of remains for preparation, encasement, and shipment is of major importance and shall be accomplished as required by the Manual of the Medical Department.

(9) Appoint members, except the senior member, if delegated by the appointing authority. Appendix A6-B contains a sample appointing letter.

(10) Provide administrative and logistic support for the MIB. Give the senior member authority to release messages specifically related to the mishap investigation and the MIR.

(11) Investigate all mishaps except those investigated by an MIB. Report applicable mishaps as required by Appendix A6-D.

(12) Investigate and report explosive mishaps and conventional ordnance deficiencies as outlined in Appendix A6-E.

(13) Investigate and report motor vehicle mishaps per Appendix A6-F.

(14) Investigate and report diving mishaps per Appendix A6-G.

(15) Investigate and report off-duty recreation, athletics, and home mishaps per Appendix A6-H.

(16) Endorse the MIR and provide a copy to all endorsers within 7 days of receipt of the MIR.

l. Ship's Safety Officer and Assault Craft Unit (ACU) Safety Officers shall:

(1) Assist the commanding officer in conducting mishap investigations for all mishaps except those investigated by an MIB. Ensure required MRs, DVs, MVs, RAHSs, EMRs, and CODRs are submitted as required by Appendices A6-D through A6-H.

(2) Ensure ship-wide dissemination of safety information and lessons learned resulting from mishap investigations.

(3) Schedule and coordinate mishap prevention and hazard awareness training.

(4) In the event of a mishap, assist the commanding officer in:

(a) Making an accurate plot of the scene.

(b) Taking photographs or videotape recordings of the wreckage, its distribution, and the surrounding area.

(c) Diagraming any underwater damage.

m. Department Heads, Division Officers, and Workcenter Supervisors shall:

(1) Incorporate information on mishap prevention and investigations into General Military Training (GMT).

(2) Notify the safety officer of all mishaps and near mishaps.

n. All Hands shall:

(1) Report to the supervisor any injuries, occupational illnesses, or property damage resulting from a mishap.

(2) Cooperate with all safety investigators in providing mishap information.

A) **A0603. MISHAP REPORTING REQUIREMENTS**

a. **Mishap Investigation Report**, Report Symbol *OPNAV 5102-7. This report is* submitted by the senior member of the MIB assigned to investigate military, afloat Class A mishaps (total cost of reportable damage is $1,000,000 or more; or any injury or work-related illness resulting in death or permanent total disability) and any Class B or other mishaps or near mishaps which may reveal vital safety information if investigated by an MIB on surface ships (their embarked boats and landing craft or leased boats), LCACs, and submarines. The MIBs shall submit findings and recommendations in an MIR per the procedures of Section A0604 and Appendix A6-C.

b. **Mishap Report**, Report Symbol OPNAV 5102-6. This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(1) Class A or B mishaps occurring to the ship's on-duty personnel while ashore or involving damage to the ship's equipment located ashore.

(2) Class B mishaps occurring on board ship that are not investigated by an MIB and reported by MIR.

(3) Reportable Class C mishaps occurring on board ship, to the ships's on-duty personnel ashore, or involving damage to the ship's equipment located ashore.

(4) Afloat special case mishaps occurring on board ship or to the ship's on-duty personnel ashore. They include:

(a) All cases of electric shock. (Include the voltage in the report).

(b) All cases of hazardous material, chemical, or toxic exposure requiring medical attention.

(c) All cases of back injury requiring medical attention.

(d) All mishaps involving explosives, oxidizers, incendiaries, explosive systems, or chemical warfare agents. They include the detonation, accidental launch, malfunction, dangerous defect, improper handling, damage to a launching device, weapon impact off-range, or other unusual or unexpected weapons-related occurrence.

(5) See Appendix A6-D for detailed information on MRs.

c. **Explosive Mishaps and Conventional Ordnance Deficiency Reports**, Report Symbol DD-FM&P(AR)1020(5102). These reports are submitted in the event of:

(1) Explosive Mishap. The following afloat events shall be reported:

(a) Unintentional detonation, deflagration, burning, or firing of an explosive material, component, or system. Accidental discharge of all guns, including small arms

(b) Inadvertent launch of a weapon

(c) Unintentional or inadvertent chemical agent release

(d) Leaking or spilled propellant fuels or oxidizers

(e) Ordnance impacting off range.

(2) Conventional Ordnance Deficiencies. These events include:

(a) Explosive component, weapon, or weapon system failure to function as designed

(b) Improper handling of ordnance attributable to human error

(c) Unintentional arming of an explosive component or weapon

(d) Defective weapon support equipment

(e) A discovered defective weapon or weapon system

(f) Other events described in Appendix A6-E.

(3) Detailed information on explosive mishaps and conventional ordnance deficiency reports can be found in Appendix A6-E.

d. **Motor Vehicle Mishap Report**, Report Symbol OPNAV 5102-4(MV)

(1) This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(a) A mishap involving the operation of a government-owned motor vehicle resulting in a collision with other vehicles, pedestrians (including joggers), bicyclists (when struck by a motor vehicle), or other objects; personal injury or property damage due to cargo shifting in a moving vehicle; personal injury in moving vehicles or by falling from moving vehicles; towing or pushing mishaps; and other injury or property damage when there is one or more of the following:

1. At least $2,000 property damage (total of all government- and privately-owned vehicles and property), or

2. A fatality or an injury resulting in 5 or more lost workdays to military and Navy civilian personnel, or

1. A civilian fatality while riding in, or caused by a government-owned motor vehicle.

(b) A traffic mishap, regardless of the identity of the operator, not involving a government-owned motor vehicle but resulting in:

1. A fatality or injury resulting in 5 or more lost workdays to on- and off-duty assigned military and on-duty Navy civilian personnel or

2. $2,000 or more government property damage.

3. A motor vehicle mishap causing death to any other person not otherwise defined occurring on a naval installation or as a result of military operations.

(2) Naval Reserve personnel on inactive duty for training (travel) (IDTT), who are involved in a motor vehicle mishap while traveling from their home directly to the drill site, or from the drill site directly home, shall be counted as an off-duty reportable motor vehicle mishap if they meet all other reporting requirements.

(3) See Appendix A6-F for detailed information on motor vehicle reports.

e. **Diving Mishap/Hyperbaric Treatment/Death Report**, Report Symbol OPNAV 5102-5. This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(1) Any Class A diving mishap involving the ship's divers when diving from a shore command.

(2) Any Class B and reportable Class C diving mishap involving the ship's divers when diving from the ship, ship's boat, or when diving from a shore command.

(3) Hyperbaric treatment or recompression therapy conducted as a result of a diving mishap in the ship's recompression chamber. Humanitarian civilian treatments are not reportable.

(4) Any diving injury or illness preventing a ship's diver from performing regularly established duty or work for 5 days or more when diving from the ship, ship's boat, or when diving from a shore command.

(5) Recreational diving mishaps resulting in a reportable injury to Navy military personnel require the submission of a RAHS report.

(6) See Appendix A6-G for detailed information on reporting diving and hyperbaric mishaps and Appendix A6-H for off-duty diving mishaps.

f. **Off-duty Recreation, Athletics and Home Safety Mishap Report**, Report Symbol OPNAV 5102-10. This report is submitted to the Naval Safety Center within 30 days, by the command in the event of:

(1) An off-duty recreation, athletic or home death or injury preventing Navy military personnel assigned to afloat units from performing regularly scheduled work for 5 days or more after 2400 on the day of injury.

(2) All non-operational, serious injuries or deaths occurring to anyone either on or off a naval installation using Navy-owned and managed property (for example Morale, Welfare and Recreation (MWR) hobby shops, athletic facilities, and child development centers). Off-duty special case mishaps are reportable only if they involve negligence in the operation or maintenance of Navy property such as missing machine guards and damaged playground equipment. A serious injury is one comparable in severity to an injury or illness that would result in 5 or more lost work days.

(3) See Appendix A6-H for detailed information on off-duty recreation, athletic, or home safety mishap reporting.

g. **Heat/Cold Injury Report**, Report Symbol MED 6500/1. This report is submitted to the Chief, Bureau of Medicine and Surgery (BUMED) when personnel exposed to excessive heat stress, in the professional judgment of a trained medical department representative (MDR), suffer from a heat related injury as defined by reference B2-1. Any heat injury which results in a person's unconsciousness shall be investigated per Chapter B2 unless specifically waived by the ISIC. Should a heat related injury result in 5 or more lost workdays, it shall be investigated and reported per Section A0604.

h. **Radio frequency Radiation Incident Report** (no report symbol). This message report is submitted for any Radio frequency radiation exposure (alleged or actual) which is 5 times the permissible exposure limit (PEL) or greater. See Chapter B9 of this manual for detailed information on this report. This report is submitted to BUMED (MED-21) within 48 hours of incident discovery.

i. **Laser Radiation Incident Report** (no report symbol). A letter report submitted to BUMED (MED-02) within 30 days of an incident in which an eye injury is suspected or observed from exposure to laser radiation. See Chapter B9 of this manual for detailed information on this report.

j. The following mishaps are not reportable under this chapter:

(1) Mishaps involving nuclear weapons, nuclear propulsion plants, or radioactive materials involved in these systems. However, mishaps associated with the secondary side of the ship's nuclear propulsion plan or non-nuclear components are reportable.

(2) Damage or injury by direct action of an enemy or hostile force.

(3) Malfunction or failure of parts due to normal wear and tear, and the malfunction or failure is the only damage. The only necessary corrective action is to replace or repair the broken or failed part.

(4) Injuries associated with non-occupational diseases or chronic medical conditions, when the disease itself, not the injury, is the cause of the lost time. For example, a minor laceration suffered by a hemophiliac resulting in time away from work is not reportable. However, complications of an injury (such as the infection of a cut aggravated by a work-related activity) resulting in lost-work-time are reportable.

(5) Suicide, attempted suicide, homicide, or intentionally self-inflicted injuries.

(6) Injuries resulting from altercations, attack, or assault, unless they are incurred in the performance of official duties when an attack or assault would not be a felony. For example, a nurse assaulted by a patient in a mental institution is reportable.

(7) Injuries sustained before entry into the military service, or civilian employment, unless specifically aggravated by current tenure of service.

(8) Hospitalization for treatment where the patient is retained beyond the day of admission solely for administrative reasons.

(9) Hospitalization for observation or administrative reasons not related to the immediate injury or occupational illness.

(10) Injuries resulting from:

(a) Pre-existing musculoskeletal disorders.

(b) Minimum stress and strain (simple, natural, nonviolent body positions or actions as in dressing, sleeping, coughing, or sneezing). These are injuries, unrelated to accident-producing agents or environments, normally associated with active participation in daily work or recreation.

(11) Injuries or fatalities to anyone eluding or escaping from military or civilian custody or arrest.

(12) Death due to natural causes unrelated to the work environment.

(13) Intentional or expected damage to Department of Defense (DoD) equipment or property during authorized testing or combat training, including missile and ordnance firing.

(14) Foreign object damage (FOD) to gas turbine engines discovered during scheduled engine disassembly or bore-scope inspection.

(15) Injury or property damage resulting from vandalism, riots, civil disorders, sabotage, terrorist activities, or felonious acts, such as arson.

k. The MDR shall report all on-duty injuries to the individual's division officer, the safety officer, and the officer of the deck using the Injury Report in a format similar to Appendix A6-I. The division officer shall evaluate the cause of injury and recommend corrective action (if any) to prevent recurrence. The Injury Report shall be forwarded via the chain of command and then returned to the safety officer for filing. The individual's division officer shall ensure the thorough investigation of any mishap resulting in injuries or damage meeting the reporting criteria in paragraph A0603b. The division officer and the ship's safety officer shall prepare the MR for submission via the chain of command for transmission to COMNAVSAFECEN.

l. The safety officer shall maintain a complete file of MRs required by higher authority, internal Mishap/Near Mishap Reports, and Injury Reports. Such reports will be retained for 5 years and then destroyed.

m. The Safety Council and Enlisted Safety Committee shall evaluate mishap and injury reports and logs as part of the command safety program evaluation. This evaluation should ensure mishap investigation and reporting procedures aid in identifying mishaps and determining causes, trends, places and groups in order to target specific training topics to prevent recurrence.

**A0604. MISHAP INVESTIGATION** (A

Formal investigative procedures conducted by a designated MIB are required for all Class A shipboard mishaps. The senior member of the board directs the investigation and submits an MIR. The investigation and resulting findings are for safety purposes only and are restricted in there release. The mishap investigation takes precedence over any other investigation of the same mishap, unless the investigation uncovers evidence of a criminal act. Mishap investigation administrative procedures are contained in Appendix A6-B.

a. Conducting an Investigation

(1) The appointed members of the MIB are responsible for conducting an accurate, complete, and timely investigation of the assigned mishap. Their responsibilities include:

(a) Collecting, organizing, interpreting, and protecting all physical and testimonial evidence.

(b) Ensuring photographs and videotapes accurately depict the mishap scene, whether taken prior to or after arrival of the board.

1. Photographs staged by the MIB (planned or posed to illustrate a specific condition or situation) are privileged because of the deliberative process. Other photographs are nonprivileged.

2. All captions or markings placed on photographs suggesting the mishap board's deliberative process are also privileged.

3. Photographs of human injuries/remains that are not staged are not privileged, but may be exempt from disclosure under exemption b(6) of the Freedom of Information Act.

(c) Interpreting logs, records, blueprints, schematics, and written procedures.

(d) Taking oral statements from witnesses, including advising all witnesses in writing of the restricted uses of their privileged testimony.

(e) Reconstructing the sequence of events leading up to, and immediately following, the mishap.

(f) Preparing the MIR.

(g) Transferring custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements, photographs and negatives, and tape recordings (whether referred to in the MIR or not) to COMNAVSAFECEN. Return all nonprivileged physical evidence to the original custodian. Send an inventory itemizing all the evidence the board considered to COMNAVSAFECEN and all MIR endorsers.

(2) COMNAVSAFECEN shall assign a mishap investigation advisor to every board convened for a Class A mishap. The advisor is not a member of the MIB. The advisor is trained in investigative procedures and techniques and can provide the board with guidance.

(3) NAVSAFECEN 5102/30, Afloat Mishap Investigation Handbook, discusses various investigative techniques, includes checklists for various mishap investigations, and provides sample reports.

b. Related Investigations

(1) Besides the safety investigation, other organizations may conduct simultaneous investigations of the same mishap. The external investigations should not interfere with the safety investigation. They may include investigations by any of the following organizations:

(a) International Criminal Police Organization (INTERPOL)

(b) Judge Advocate General (JAG)

(c) Federal Bureau of Investigation (FBI)

(d) Occupational Safety and Health Administration (OSHA)

(e) Naval Criminal Investigative Service (NAVCRIMINVSER)

(f) U.S. Coast Guard (USCG)

(g) National Transportation Safety Board (NTSB)

(2) The MIB shall conduct its investigation of a mishap separately from all other investigations. Members of the board shall not release information revealing the source of any physical evidence obtained as a result of privileged information nor any testimony given under the assurance of privilege. Despite those limitations, cooperation and access to nonprivileged physical evidence and witnesses among investigators is encouraged.

(3) The most frequent, concurrent investigation is the JAGMAN investigation. The U.S. Navy chain of command directs JAGMAN investigations for legal or administrative purposes.

(a) Members of an MIB shall neither participate in nor conduct a JAGMAN investigation of the same mishap.

(b) Except for nonprivileged physical evidence, the JAGMAN investigator shall not use any part of the safety investigation in the JAGMAN investigation.

(c) The senior member of the MIB shall coordinate the disposition of physical evidence and the restoration of the mishap scene with JAGMAN, and other, investigators.

c. Privileged Information and Testimony. Privileged information is an essential element of an MIR. Appendix A6-A thoroughly discusses the concept of privilege.

d. Collection of Evidence

(1) The MIB collects various types of evidence. The board may uncover some physical evidence because of privileged testimony. Information revealing the source of physical evidence obtained by the board as a result of privileged information is also privileged and is never releasable.

(2) It is not feasible to list the methods of collecting evidence for each possible situation. The Navy must rely on the judgement of the senior member. Evidence may include:

(a) Witness Statements. A witness statement is an oral account of the circumstances surrounding a mishap recalled by the witness. The oral statement is not obtained under oath or in writing and may include opinions, secondhand information, and speculation about the mishap. All such witness statements provided orally to the board are privileged information. Members of the MIB shall ask probing questions of witnesses; but they will not ask witnesses to write a statement or to sign a summary the MIB has prepared. The member of the MIB should summarize the results of the interview, using care to

be as accurate and complete as possible, and may authenticate the summary of the interview by signing it.

1. No one shall give statements made to members of an MIB to any other investigator.

2. JAGMAN and other investigators may make their witnesses' statements available to the board. The MIB can glean information from the statements, but should re-interview appropriate witnesses. JAGMAN statements, taken under oath, may not contain as much information as statements made under the assurance of privilege and limited use.

3. An Advice to Witnesses form is provided as Appendix A6-J.

(b) Medical Materials. Medical materials the board may use as evidence include laboratory results, medical records, hospital admission forms, diagrams of wounds, psychological profiles, autopsy reports, or physician's written opinions.

1. Because of the transitory nature of some medical evidence, quick action by the medical department representative (MDR) at the scene is necessary. The MDR shall collect the initial, particularly transient, medical evidence as directed by the commanding officer or higher authority. The transient evidence includes specimens to determine blood alcohol and drug levels.

2. Medical factors, such as physiological, social, behavioral, and psychological, may provide insight into the cause of the mishap. The board may consider medical factors during its deliberations.

3. The medical officer, when assigned, shall coordinate the analysis of medical evidence with all other aspects of the investigation and participates fully in the investigation and deliberations of the board.

(c) Wreckage or Damaged Equipment. Wreckage or damaged equipment is physical proof of a mishap. The physical proof includes the area or equipment directly affected by the mishap and the surrounding damaged areas.

1. The commanding officer shall make every reasonable effort to preserve and protect damaged equipment and wreckage in its original position and condition following the mishap. If necessary, cordon off, secure or guard mishap scenes to prevent disturbance of wreckage.

2. Operational requirements or damage control measures may require disturbing the mishap scene before the board arrives. In such cases, the commanding officer of the ship involved in the mishap shall protect the mishap site or damaged area from loss or further damage; make every reasonable effort to make an accurate plot of the scene; and, take photographs or videotape recordings of the wreckage, its distribution, and the surrounding area.

1. Once an MIB is convened, only the senior member can authorize the disturbance of damaged areas or wreckage. The senior member must coordinate the disturbance of the mishap scene with other investigators.

4. To determine the cost of repair or replacement of all DoD property involved in the mishap, base estimates on the actual cost of materials and $16 for each hour for labor. When prepared in written form, all estimates shall conspicuously state:

**"This estimate is prepared solely for the purposes of Chapter A6 of OPNAVINST 5100.19C. It is not intended to reflect, in any way, the extent of any party's damages or liability for purposes of administrative claims or litigation."**

5. In all matters related, in any way, to damage to civilian or foreign ships on navigable water, to damage to any property or cargo on board such ships, or to injuries of persons on board such ships, refer to Chapter XII of reference A6-1 and/or contact the Office of the Judge Advocate General (OJAG), Admiralty Division (Code 31).

6. A survey of damages is a formal procedure relevant to admiralty claims and litigation. Only the Judge Advocate General may accept survey invitations from potential claimants, extend survey invitations to persons responsible for damage to naval property, or request representation of the United States by a marine surveyor. In no case shall any person involved in mishap investigating or reporting accept or offer on behalf of the United States, an invitation for a survey of damages. In any instance of receipt of invitation to a survey, refer to Chapter XII of reference A6-1 and notify OJAG, Admiralty Division (Code 31).

(d) Criminal. If, during the investigation, an investigator discovers signs of a criminal act related to the mishap, the senior member shall immediately inform the appointing authority who shall confer with legal counsel and notify the NAVCRIMINVSER together with COMNAVSAFECEN.

1. Nonprivileged evidence gathered by the MIB may be releasable to other investigators. The senior member shall not release information revealing the source of any physical evidence obtained as a result of privileged information, nor any testimony given under the assurance of privilege.

2. The senior member shall turn over all other nonprivileged physical evidence to the senior NAVCRIMINVSER agent.

3. The senior member may continue the safety investigation, if directed by the appointing authority and approved by OJAG. Valuable safety information may result from investigating a mishap which occurred subsequent to the criminal act.

4. According to the 1984 Memorandum of Understanding Between the Departments of Justice and Defense Relating to the Investigation and

Prosecution of Certain Crimes, a safety investigation shall not be initiated nor proceed without prior coordination with and concurrence from appropriate Department of Justice (DOJ) investigative and prosecutive agencies where a criminal investigation or prosecution by DOJ is ongoing.

e. Causes and Considerations

(1) The MIB shall consider all the possible causes of a mishap. The board must determine the cause(s), supported by the available evidence. The board may reject some possible causes because of a lack of supporting evidence.

(2) Classify possible causes as follows:

(a) Human Error. More than 50 percent of all mishap investigations determine the cause was human error. Human error findings take into account human involvement in the events leading up to a mishap, action taken by personnel as the mishap is occurring, and actions taken after the mishap occurred. Human error takes into account both physical and mental factors.

1. Physical human error factors to consider in a mishap investigation include ergonomics (design of the workplace), physical strength and condition of the individual, physical stresses, and the body's subsequent responses.

2. Mental human factors include the person's attitude, ability to retain and assimilate training, external mental stresses such as interpersonal relationships, and mental illnesses.

3. The medical officer, when assigned, investigates and analyzes human factors such as physical and mental conditions. In many cases, this may include a 72-hour account of activities of the key participants. Sometimes it could require a brief medical and psychological profile. Other considerations for each participant include:

a. Results of post-mishap physical examinations

b. Summary of life stressors

c. Relationships with co-workers, family, and friends

d. Acute and chronic medical problems

e. Use of medications and alcohol

(b) Maintenance and Support Factors. Maintenance and support factors may include improper maintenance, poor assignment of priorities on work requests, or lack of proper Quality Assurance (QA). Shipyards, Intermediate Maintenance Activities, contractors, or ship's force may be connected with maintenance- and support-related mishaps.

(c) Administrative and Supervisory Factors. The investigation shall consider the possible effect of regulations and their enforcement from all levels in the chain of command. Execution of procedures and policies published by higher authority, such as Naval Warfare Publications (NWPs), Navy Tactical Publications (NTPs), Ordnance Publications (OPs), the Safe Engineering and Operations Program (SEAOPS) for LCACs, Operational Orders (OPORDs), Engineering Operational Sequencing Systems (EOSS), and Standing Orders are possible contributing factors for the board to consider.

1. On board ship, supervisory factors concerning operating or maintenance personnel should be considered.

2. Examples of the causes are the level of supervision, lack of Personnel Qualification Standards (PQS) qualification, and inadequate crew and supervisor training. The training may include both formal and informal instruction.

(d) Material Failures or Malfunctions. The board shall consider all material failures and malfunctions thoroughly, regardless of whether they occurred because of faulty design, defective manufacture, or repair.

(e) Environmental Conditions. Environmental conditions are usually not cause factors. For example, a cause of a mishap might be excessive speed for existing sea conditions or failure to secure for sea but the high sea state did not cause the mishap.

f. Mishap Investigation Board Conclusions and Recommendations

(1) The board shall base its conclusions on all available information. Its conclusions are an assessment of what caused the mishap, and the subsequent damage or injury. The board should evaluate the conclusions under consideration by asking, "If someone had identified and eliminated the hazard(s) before the mishap, would the action have prevented the mishap (or subsequent damage or injury)?"

(a) Conclusions. During the analysis of mishap causes, determining "what happened" is not enough. The board must make every effort to determine the "why" of the mishap.

1. For example, an engine fails as a ship is mooring resulting in significant damage. The engine failure is not a cause--it is the effect. The cause might be an improperly manufactured piece of piping or maintenance error.

2. If the board cannot determine the cause(s), but they can infer the probable cause(s) from the evidence, its conclusion shall include the probable cause(s).

3. The board should only consider a finding of "Cause(s): Undetermined," for mishaps where the evidence, real and circumstantial, supports no other conclusion.

(b) Recommendations. Based on their conclusions, individual board members shall make recommendations to correct the cause(s) of the mishap. The board should evaluate the recommendations under consideration by again asking, "If someone had identified and eliminated the hazard(s) based on the recommendation before the mishap, would the action have prevented the mishap (or subsequent damage or injury)?" If the answer is no, then do not include the recommendation in the MIR. If the answer is yes, include the recommendation and recommended action agency in the MIR.

(c) Hazards Determined Not To Be Causes. During an investigation, the board may detect hazards which, though requiring corrective action, did not cause or contribute to the mishap. The board should not include unrelated hazards in the MIR. The senior member should inform the commanding officer of the ship of additional hazards detected. The ship should then report the hazards as required by Chapter A3.

(2) The senior member may use risk assessment codes (RACs) (see Chapter A4) to measure the severity of the mishap and probability of its recurrence, and include the RAC in the MIR.

g. Preparation of the MIR

(1) The senior member is responsible for drafting the MIR.

(a) The senior member shall send the MIR by naval message within 30 days of the convening of the board.

(b) If the senior member feels it will not be possible to meet the 30-day deadline, the senior member shall inform the appointing authority of the reason immediately and request an extension of the deadline.

(c) The appointing authority shall advise the type commander of any requests for extensions for submitting the MIR.

(2) Appendix A6-C provides a sample format for the MIR and report preparation guidance.

h. Disposition of Evidence. Once the MIR is completed, the Senior Member shall forward any evidence collected during the mishap investigation to COMNAVSAFECEN. Upon completion of the mishap investigation, the disposition of all evidence becomes the responsibility of COMNAVSAFECEN who shall:

(1) Take custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements and logs; photographs and negatives, tape recordings (whether referenced in the MIR or not), and the inventory itemizing all the evidence the board considered.

(2) Make available, upon request, any documentary evidence, logs, photographs, negatives, or tape recordings which are not privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying to:

(a) MIR endorsers.

(b) Individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United States or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

(3) Make available, upon request, any documentary evidence, summaries of witness' statements, logs, photographs, negatives, or tape recordings which are privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying, to MIR endorsers.

(4) After writing their endorsement, COMNAVSAFECEN shall:

(a) Turn over material (other than privileged information) to the JAG investigators for retention, if requested.

(b) Retain evidence requested by the type commander for use in lessons learned.

(c) Send originals of any deck or engineering smooth logs, if received, to CNO as required by OPNAVINST 3100.7B (NOTAL).

(d) Send original Service Record (USN) or Service Record Book (USMC) entries, if received, for missing or killed naval personnel per NAVMILPERS Manual (Section 5030140) (NOTAL), or USMC Individual Record/ Administration Manual, MCO P-1070.12 (NOTAL).

(e) In any case where the United States or any other party has commenced litigation, no evidence shall be destroyed without permission of the attorney representing the interests of the United States in the litigation.

(f) Retain custody of MIRs and their endorsements for 5 years, at which time they may be destroyed.

(g) Prior to disposing of any documentary or physical evidence, consult the Judge Advocate General, Admiralty Division (Code 31), who will, where appropriate, coordinate with other divisions within the Office of the Judge Advocate General.

(h) Unless otherwise directed by the Judge Advocate General, dispose of or destroy summaries of witness' statements, copies of logs, and

other records according to applicable regulations. Ensure privileged material is disposed of or destroyed according to applicable directives.

**A0605. THE SAFETY RECOMMENDATION (SAFEREC)**

a. The Safety Recommendation (SAFEREC) is designed to reduce injuries to personnel and damage to Navy property. The day-to-day experiences of sailors represent a large source of information which can be used to reduce or eliminate hazards. Many hazards will require Navy-wide action. SAFERECs should have a broad application to material, equipment, or personnel. A suggested SAFEREC may be submitted by means of a naval message or letter, via the chain of command, or by SAFETYGRAM (OPNAV 5102/4) (see Attachment 2 to Appendix A6-D). The Naval Aviation Safety Program, reference A6-10, includes Safety Recommendations.

(1) Suggested SAFERECs should be submitted to Commander, Naval Safety Center (COMNAVSAFECEN). COMNAVSAFECEN shall evaluate and, if appropriate, forward it to the proper action authority.

(2) SAFERECs may also be initiated by COMNAVSAFECEN based on MRs, MIRs, safety surveys results, or other correspondence.

b. SAFERECs are referred to the following action authorities:

(1) Systems Commands (SYSCOMs) (for example, COMNAVSEASYSCOM) for modification to equipment design or maintenance techniques

(2) Bureau of Personnel (BUPERS) for manning needs

(3) Chief, Naval Education and Training (CNET) for training needs

(4) OPNAV Warfare Sponsors or the appropriate Type Commander(s) for SHIPALT accomplishment or priority of funding

(5) Chief, Bureau of Medicine and Surgery (BUMED) for industrial hygiene and occupational health support.

Responsibility for action on a SAFEREC may change as it moves from initial design to fleet or field installation.

c. For SAFERECs to be effective, the final or concluding action must be well-defined. A SAFEREC can typically involve one or more of the following:

(1) Personnel or Maintenance Procedure. Includes developing new or revised training or personnel qualification standards (PQS), operating or maintenance procedures, or safety precautions.

(2) Technical References or Specifications. Includes changes to basic requirements documents such as: General Specifications for Ships of the United States Navy (GENSPECS), General Specification for Overhaul of Surface

Ships (GSO), Naval Ships' Technical Manual (NSTM), Naval Warfare Publications (NWPs), and other instructions and documents.

(3) Off-the-Shelf Systems or Non-Developmental Items (NDI). Includes suggestions or recommendations to consider the use of an existing item, product, or system readily available commercially or used by another service.

(4) Design Change to Existing Equipment or System. Includes specific engineering or design change or alteration to existing systems, subsystems, equipment, or components.

(5) New Equipment Development. Includes the development of a completely new system, subsystem, or component.

(6) Non-Developmental Items (NDI). Includes the purchase of equipment and other items directly from civilian sources for immediate use by the U.S. Navy or after slight modification for shipboard use.

d. A SAFEREC will be initiated by COMNAVSAFECEN notifying the appropriate action authority of a fleet or field input, MRs, MIRs, SAFETYGRAMs, or safety survey results using the letter format provided in Appendix A6-K. COMNAVSAFECEN shall:

(1) Ensure the SAFEREC concisely states the problem and the recommended action.

(2) Assign a risk assessment code (based on Chapter A4).

(3) Provide a point of contact (SAFEREC manager).

(4) Contact the appropriate program sponsors to determine if corrective action exists.

(5) Provide a copy of the initial SAFEREC letter to the primary program or warfare sponsor and the originator.

(6) Provide a management system to assist in monitoring the progress of action being taken by action authorities. Keep warfare sponsors, fleet commanders in chief, and type commanders advised of SAFEREC implementation status.

(7) Track the progress of action from planning through implementation. Close out the SAFEREC upon completion of the recommended action or other solution.

e. Action Agencies shall:

(1) Assign a point of contact for SAFEREC management including reporting of progress and technical difficulties. Notify appropriate commands

(COMNAVSAFECEN, warfare sponsors, fleet commanders in chief, and type commanders) of changes in the point of contact.

(2) Provide copies of formal correspondence pertinent to the SAFEREC evaluation or final corrective action to appropriate commands.

(3) For all fiscal programming actions, where funding shortages prevent using current fiscal year funds, establish reprogramming action and budget identity with milestone date(s). This allows an assessment of probability of fund receipt and continuation of effort.

(4) Provide periodic SAFEREC progress reports to appropriate commands.

(5) When there are delays in projected scheduled accomplishments, provide explanatory documentation to appropriate commands.

f. The Director, Surface Warfare Division (N86), Director, Submarine Warfare Division (N87), Director, Air Warfare Division (N88), and Director, Environmental Protection, Safety and Occupational Health Division (N45) shall:

(1) Prioritize the funding and accomplishment of SAFERECs.

(2) Regularly review SAFERECs under their cognizance.

(3) Ensure SAFEREC action authorities are progressing toward due dates or milestones.

(4) Reassign all misdirected or erroneously assigned SAFERECs and act as negotiator for any impasse between COMNAVSAFECEN and action authorities of SAFERECs.

A) **A0606. TRAINING**

a. All shipboard personnel shall receive indoctrination and annual refresher training on mishap prevention, investigation, and reporting with special emphasis on privileged information.

b. The MIB advisor from COMNAVSAFECEN shall receive detailed training in safety investigation techniques and reporting requirements.

**CHAPTER A6**

**REFERENCES**

A6-1. JAG Instruction 5800.7C, "Manual of the Judge Advocate General"

A6-2. COMSCINST 5100.17B, "Afloat Safety and Occupational Health Manual" (A (NOTAL)

A6-3. OPNAVINST 5100.23D, "Navy Occupational Safety and Health Program Manual" (A (NOTAL)

A6-4. OPNAVINST 5102.1C, "Mishap Investigation and Reporting" (NOTAL) (A

A6-5. U.S. Navy Regulations, 1990

A6-6. OPNAVINST 3120.32C, "Standard Organization and Regulations of the U.S. (R Navy"

A6-7. DoD Instruction 6055.7, "Mishap Investigation, Reporting, and Record-keeping" 10 April 1989 (NOTAL)

A6-8. OPNAVINST 3100.6G, "Special Incident Reporting (OPREP-3, Navy Blue, and UNIT SITREP) Procedures"

A6-9. CINCUSNAVEUR/CINCLANTFLT/CINCPACFLT INST 3100.7, "Special Incident Reporting (OPREP-3/UNIT SITREP)" (NOTAL)

A6-10. OPNAVINST 3750.6Q, "Naval Aviation Safety Program" (NOTAL)

## Appendix A6-A

## CONCEPT OF PRIVILEGE (A

1. Privileged information. That information voluntarily provided under a **promise of confidentiality**, or information which would not have been discovered but for information voluntarily provided under a **promise of confidentiality**.

a. Privileged Material. The deliberative analyses of findings, conclusions, and recommendations of the mishap investigation board (MIB) in the MIR are privileged. Also privileged are calculations and deductions the MIB makes that would reveal the board's deliberative process. Mishap investigation report endorsements (MIREs) are also part of the deliberative process and are similarly privileged against disclosure.

b. Authority. The concept of privilege applies to mishaps investigated by an MIB as defined in Appendices A6-B through A6-D. Reference A6-7 requires Limited Use Safety Mishap Investigation Reports for flight mishaps and mishaps involving complex weapons systems, equipment, or military-unique items (such as ships and shipboard systems) when the determination of cause factors is vital to the national defense. The SOLE PURPOSE of these closely held, internal, Department of Defense (DoD) communications is to prevent subsequent DoD mishaps. Any individual providing information to mishap investigators under a promise of confidentiality will be advised that the Navy will use its best efforts to ensure that the information is not released to any other agency or individual.

2. Privileged information shall not be used:

a. In making any determination affecting the interest of an individual making a statement under assurances of confidentiality or involved in a mishap.

b. As evidence, or to obtain evidence, in determining misconduct or line-of-duty status.

c. As evidence, or to obtain evidence, to determine the responsibility of personnel from the standpoint of discipline.

d. As evidence, or to obtain evidence, to assert affirmative claims on behalf of the government.

e. As evidence, or to obtain evidence, to determine the liability of the government for property damage caused by a mishap.

f. As evidence, or to obtain evidence, before administrative bodies, such as officer evaluation boards (USN) or Field Performance Boards (USMC).

g. As evidence, or to obtain evidence, in any other administrative or judicial proceeding(s) to determine misconduct or line of duty status, or governmental liability.

h. As evidence in any court, civilian or military.

3. The Purpose of Designating Information as Privileged. The actions limiting the use of privileged information are taken to:

a. Overcome any reluctance of an individual to reveal complete and candid information about the events surrounding a mishap.

b. Encourage MIBs and the endorsers of MIRs to provide complete, open, and forthright information, opinions, and recommendations about a mishap.

4. Rationale. If privileged information were allowed to be used for purposes other than safety, witnesses might withhold vital safety information.

a. Individuals may be reluctant to reveal information pertinent to a mishap because they believe certain uses of the information could be embarrassing or detrimental to themselves, their fellow service members, their command, their employer, or others. They also may elect to withhold information by exercising their constitutional right to avoid self-incrimination. Individual members of the armed forces must be assured that they may confide in others for the mutual benefit of fellow service members without incurring personal jeopardy in the process. Witnesses shall not provide statements to MIBs under oath or in writing, and requiring them to do so is prohibited. Mishap investigators must advise witnesses, in writing, of the purpose for which they are providing a statement and of the limited use to be made of the statement. The witnesses' statements shall not be limited to matters they could testify about in court. They may be invited to express opinions and speculate on possible causes of the mishap.

b. If MIBs and the endorsers of MIRs believe their deliberations, opinions, and recommendations could be used for other than safety purposes, they might be reluctant to develop or include vital safety information in their reports and in the mishap investigation report endorsements (MIREs).

5. Protection of Privileged Information. To foster the submission of privileged information in afloat MIRs and MIREs, witnesses must be provided with assurances of confidentiality. Should the DON use privileged information for any purpose other than safety, the Navy would lose credibility of future assurances of privilege. To protect privileged information against unauthorized disclosure, the Navy must safeguard the entire reporting cycle: assurances of confidentiality given; privileged information obtained, developed, and reported; privileged information protected against misuse or public disclosure; credibility of assurances maintained; and assurances of confidentiality given again. If any segment of the cycle fails, vital safety information may be lost. Obtaining safety information is therefore dependent upon the protection of privileged information against use for other than safety purposes. Accordingly, the following safeguards protect privileged information:

a. Witness Statements. Witness statements to an MIB shall not be provided to any activity except as authorized in this chapter. Once the witness makes a statement to the MIB, the contents of the statement become part of the MIB's privileged evidence and shall be released only per paragraph A0602f(8) and handled per paragraph 8a of appendix A6-C.

b. Photographs. Photographs staged by the MIB (planned or posed to illustrate a specific condition or situation) are privileged because of the deliberative process. All captions or markings placed on photographs suggesting the mishap board's deliberative process are also privileged.

c. Investigations. Mishap investigators must thoroughly understand the distinction between afloat mishap investigations and other investigations. Only in cases of a joint, DoD safety investigation (for example, a U.S. Army and U.S. Navy mishap), authorized by Commander, Naval Safety Center (COMNAVSAFECEN) or higher authority, shall any exchange of information and opinion outside the U.S. Navy MIB occur. In such cases, cooperation between safety investigators may include division of labor, joint review of evidence, exchange of witness statements, and joint deliberations.

d. Multiple/Concurrent Investigations. In all cases, afloat mishap investigations shall be independent and separate from JAGMAN and all other investigations. Safety investigators may only exchange the identity of witnesses and share nonprivileged evidence with JAGMAN and other investigators.

e. Outside Assistance. Afloat mishap investigations may require the assistance of other activities. Requests for such assistance are not privileged, and the senior member must meticulously review them to ensure they do not contain privileged information. Technical specialists providing assistance to MIBs are not members of the board and (except as authorized elsewhere in this chapter) shall not be given access to deliberations by the board or to the contents of Part Bravo or the endorsements on MIRs.

f. Investigators. Members of MIBs shall not, nor may they be requested to, divulge their opinions or any information they developed, or learned, as a member of the board. Members of MIBs shall not be assigned to any other investigation of the same mishap such as a JAGMAN investigation, an officer evaluation board (USN), or a Field Performance Board (USMC).

g. Independence of Mishap Investigation Reports

(1) MIRs consist of two parts. Part Alpha includes the nonprivileged data and Part Bravo, the privileged data. (See paragraph 5h of this appendix for further discussion of Parts Alpha and Bravo.) Part Bravo of an MIR, and extracts from Part Bravo, shall neither be appended to, nor included in, reports of JAGMAN investigations or any other report. The Office of the Navy Judge Advocate General shall not be an addressee on MIRs.

(2) To prevent any inference of association with disciplinary action, reports of JAGMAN investigations, officer evaluation boards (USN), or Field Performance Boards (USMC) shall not be appended to, nor made a part of, any MIR or endorsement.

h. Administrative Safeguards

(1) Since material in Part Alpha of an MIR is not privileged information, COMNAVSAFECEN may disclose the information to the public consistent with

exemption b(6) of the Freedom of Information Act. Since the material in Part Bravo is privileged information, COMNAVSAFECEN shall not release it to the general public. COMNAVSAFECEN is the only releasing authority for material in either Part Alpha or Part Bravo.

(2) Only military electronic communications facilities shall transmit MIRs and endorsements.

(3) Distribution of Part Bravo of MIRs by themselves, or together with the endorsements, outside the commands specified in this chapter, or authorized by CNO (09F), is strictly prohibited.

(4) Use Standard Subject Identification Code (SSIC) 05102 on all MIRs and endorsements to aid the receiving commands in limiting internal distribution to people requiring MIRs for safety purposes. Internal command distribution of MIRs shall be strictly limited to people requiring knowledge of the report for safety purposes.

(5) Privileged reports and endorsements required by this chapter shall include the following narrative at the beginning of the MIR or endorsement:

**"NARR/THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS."**

(6) Only CNO, Commandant of the Marine Corps (CMC), or COMNAVSAFECEN can readdress MIRs and MIR endorsements.

i. Special Handling. The term "special handling" means that the circulation of MIRs is restricted to ensure their use is limited to the furtherance of safety. Recipients must apply common sense to determine what handling actions are appropriate. For example:

(1) Uncontrolled disclosure of MIRs to those not requiring knowledge of their content for safety (such as placement in reading racks, message boards, or on bulletin boards) is not appropriate.

(2) Controlled passage of MIRs from individual to individual, or from office to office in file folders, to make sure only specific individuals requiring knowledge of their content for safety purposes see the MIR is appropriate.

j. For Official Use Only. All reports required by this chapter are designated "For Official Use Only (FOUO)." SECNAVINST 5720.42E (NOTAL) contains guidelines regarding handling, release, safeguarding, and disposing of material designated "For Official Use Only (FOUO)."

6. Dissemination of Essential Safety Information. When appropriate, COMNAVSAFECEN and the type commanders may extract safety information and issue lessons

learned based on MIRs submitted according to this chapter. The distribution of the lessons learned depends on the subject. The privileged status of an MIR or endorsement shall not restrict the dissemination of essential safety information by COMNAVSAFECEN or the type commanders. When an MIR contains essential safety information based on privileged or personal information, and the information has not been adequately distributed to those in need of the information, COMNAVSAFECEN or the type commanders shall take one of the following actions (listed in order of preference):

a. Extract. Extract only the essential safety information from the report and disseminate it appropriately. (COMNAVSAFECEN or type commanders)

b. Expunge. Scrub or sanitize all identifying information from the report that could link the report with an individual, organization, or mishap, and disseminate the essential safety information remaining in the report. (COMNAVSAFECEN only)

c. Readdress. Readdress the entire MIR. (COMNAVSAFECEN only)

7. Release of Program Information. The release of information in MIRs shall be as specified in this paragraph, and paragraph 11 of appendix A6-D for MRs, unless otherwise authorized by CNO (09F). The release of information on motor vehicle (MV) or off duty recreation, athletics, and home mishaps shall be per reference A6-4.

a. Protection of Privacy Information. To protect the privacy right of individuals, the names of individuals not involved in the mishaps and the social security numbers of all individuals in the report shall not be furnished under exemption (b)(6) of the Freedom of Information Act (FOIA). To protect the privacy rights of surviving family members, photographs of human remains included in the autopsy reports shall not be provided per exemption (b)(6).

b. Release Based on the Freedom of Information Act. Either expressed or implied requests for information made under the FOIA shall be sent to COMNAVSAFECEN, Attention: Code 03.

c. Release Based on the Privacy Act of 1974. Information in MIRs shall not be maintained in a system of records subject to the Privacy Act. Specifically, the information must not be retrievable by the name of an individual, or by social security number, or other identifying number, symbol, or unique identifier associated with an individual. Forward Privacy Act requests for information pertaining to an individual to COMNAVSAFECEN, Attention: Code 03.

d. Release by an Individual Having Knowledge of Mishap Investigation Reports. An individual having knowledge of the contents of an MIR is prohibited from disclosing the information, except as authorized by this chapter. If anyone asks for information from any individual having knowledge of the contents of an MIR, that individual should immediately contact COMNAVSAFECEN, Attention: Code 03.

e. Release to U.S. Navy, U.S. Marine Corps, and Other Department of the Navy Activities. Forward requests for mishap information from Navy, Marine Corps, and other DON activities to COMNAVSAFECEN, Attention: Code 03.

f. Release to Other U.S. Military Services. Exchange of safety program information among the military services shall be limited to the respective safety centers, and shall be controlled to prevent disclosure of privileged information.

g. Release to the News Media. DON Public Affairs Regulations, SECNAVINST 5720.44A (NOTAL) contains information on releasing mishap information to the media. The Navy shall, however, preserve the privileged information in MIRs which is not releasable to the media. Forward requests for MIRs to COMNAVSAFECEN, Attention: Code 03.

h. Release to Congress. Forward requests for information from Congress, Congressional committees or subcommittees, or staff members to CNO or CMC, as appropriate. Send a copy of the request to COMNAVSAFECEN, Attention: Code 03.

i. Subpoenas for Information. Refer any subpoenas for mishap information for use in civil or criminal proceedings, anticipated litigation, or in administrative claims against the government, to the Judge Advocate General, Department of the Navy (Code 34).

j. Release to Technical Representatives, Defense Contract Administration Services (DCAS) Representatives, and Contractors. Forward requests for mishap information from technical representatives, manufacturers, DCAS representatives, and contractors or their agents to COMNAVSAFECEN via COMNAVSEASYSCOM (SEA-09T4). The endorsement of COMNAVSEASYSCOM (SEA-09T4) shall certify whether the requested information is required for safety purposes with respect to product design or improvement. Any response shall include a warning to ensure the recipient uses the information for safety purposes only. The recipient shall not disclose the information to any other individual or entity.

k. Release to North Atlantic Treaty Organization (NATO) Nations. If a maritime incident involves units or personnel of two or more NATO nations, the provisions of NATO Standardization Agreement (STANAG) 1179 (NOTAL), Combined Investigation of Maritime Incidents, become effective. Under the provisions of STANAG 1179, NATO nations agree to conduct either a combined court of inquiry, a national inquiry attended by witnesses and/or observers from other nations, or an independent national inquiry coordinated by the presidents of the inquiries. Any command receiving a request for information from an afloat mishap investigation from a NATO country shall forward the request immediately to COMNAVSAFECEN, Attention: Code 03.

l. Release to Other Foreign Nations. Forward requests for information on mishaps from foreign governments to COMNAVSAFECEN, Attention: Code 03.

m. Unspecified Cases. Forward requests not stipulated above to COMNAVSAFECEN, Attention: Code 03.

## Appendix A6-B

## MISHAP INVESTIGATION BOARD ADMINISTRATION (A

The commanding officer shall notify higher authority of serious shipboard mishaps. The Immediate Superior in Command (ISIC), or other higher authority, shall appoint a mishap investigation board (MIB) for all afloat Class A mishaps. All MIBs shall consist of a senior member and at least two additional members. The board's purpose is to investigate the mishap fully to determine the causes. The board then prepares a Mishap Investigation Report (MIR) with its conclusions and recommendations.

1. Appointment of a Mishap Investigation Board

a. When a serious shipboard mishap occurs, the commanding officer or craftmaster shall notify Commander, Naval Safety Center (COMNAVSAFECEN) and the chain of command. This is usually accomplished through an OPREP-3 or UNIT SITREP submitted per references A6-8 and A6-9.

b. Upon notification of a potential Class A mishap, the fleet or type commander shall send a message to the appointing authority providing the minimum endorsement chain.

c. If the mishap meets the criteria of a Class A mishap, a formal investigation by a MIB is required.

d. MIB members are appointed, in writing. Unless a senior in the chain of command assumes the capacity as appointing authority, the ISIC is normally the appointing authority. For Military Sealift Command (MSC), the appointing authority is Commander, Military Sealift Command, Atlantic (COMSCLANT) or Military Sealift Command, Pacific (COMSCPAC).

2. Senior Member of the Mishap Investigation Board

a. The MIB shall consist of a senior member and at least two other members.

b. The senior member shall:

(1) Convene and direct the mishap investigation using the guidelines in this appendix and paragraph A0604.

(2) Request technical assistance for the investigation from the appointing authority or type commander, when required.

(3) Provide direction to MIB members on specific policies, procedures, and restrictions.

(4) Refer requests to COMNAVSAFECEN, if there are questions about releasability, for any physical evidence, summaries of witness' statements, logs, photographs, negatives, or tape recordings either by transfer of origi-

nals, if appropriate, or by making copies. The senior member and COMNAVSAFECEN shall consider requests only from individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United States, or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

(5) Prepare and send the MIR as outlined in paragraph A0603 and appendix A6-C.

(6) Transfer custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements, photographs and negatives, and tape recordings (whether referenced in the MIR or not) to COMNAVSAFECEN. Include an inventory itemizing all the evidence the board considered. Send a copy of the inventory to all endorsers.

3. Members of the Mishap Investigation Board

a. Members - The ISIC of the ship involved or the commanding officer of the ship involved, if the ISIC delegates appointment authority, shall appoint a minimum of two commissioned officers, with suitable experience, to the MIB. If commissioned officers of suitable experience are not available for landing craft, air cushioned (LCAC) mishap investigations, senior enlisted personnel may be appointed. For LCAC operational mishaps (OMs), at least one member of the board shall be a qualified and designated craftmaster.

b. Medical Member - In all cases involving death or injury, the commanding officer or the ISIC of the ship involved shall appoint a medical officer, or medical department representative for LCACs, as an additional member to the MIB.

c. MIB members shall:

(1) Assist the senior member in thoroughly investigating the mishap using the guidelines contained in section A0604.

(2) Not divulge, except during deliberations, any information or opinions of the board.

(3) Assist the senior member in preparing the MIR.

(4) Consolidate all personal notes upon completion of the MIR and give them to the senior member for transmittal to COMNAVSAFECEN with the other evidence.

4. Mishap Investigation Advisor

a. COMNAVSAFECEN shall appoint a trained mishap investigation advisor for all afloat Class A mishaps, and provide an advisor for other mishaps when a trained investigator would be beneficial to the investigation. The advisor shall be present at the initial convening of the board, if logistically feasible.

b. The advisor is not a member of the MIB, but serves to advise the board in investigation and reporting procedures.

c. The senior member shall extend unrestricted access to all evidence, summaries of witness' statements, and proceedings to the advisor.

d. The advisor may depart before the completion of the investigation, if the senior member and COMNAVSAFECEN agree.

5. Technical Assistance

a. The MIB may require the assistance of technical experts. Sources of technical assistance include, but are not limited to: COMNAVSAFECEN; Armed Forces Institute of Pathology; Navy Environmental and Preventive Medicine Units (NAVENPVNTMEDUs); COMNAVSEASYSCOM; Naval Coastal Systems Center (NAVCOAST-SYSCEN); Naval Surface Warfare Center, Ship Systems Engineering Station (NSWC NAVSSES); naval shipyards; hospitals; aviation depots; and equipment technical representatives.

(1) Request for Assistance. The appointing authority, the commanding officer of the ship involved, or the senior member may request assistance from local activities. Only the type commander, however, may request assistance when it involves distant activities, external agencies, or travel funding.

(2) Advisory Nature of Technical Assistance. Assistance given to a board is advisory in nature. Technical or medical specialists (other than the assigned medical member) are not members of the board. Serious consideration should be given to the recommendations offered by special advisors, but the board is not obligated to accept them. Except for the COMNAVSAFECEN mishap investigation advisor, the senior member shall not give the specialists access to board deliberations or the contents of Part Bravo of the MIR.

b. The senior member should contact the COMNAVSAFECEN (Code 30) if any questions or doubts arise during the mishap investigation. Anyone can obtain assistance or clarification on any matter about a mishap investigation by contacting COMNAVSAFECEN. The phone numbers are: DSN: 564-1562 or commercial: (804) 444-1562 during normal working hours (0800 - 1630 Eastern time); and, DSN: 564-3520 or commercial: (804) 444-3520 after working hours.

6. Mishap Investigation Board Proceedings

a. The ISIC and the commanding officer of the unit involved shall coordinate the time and location of the initial meeting of the MIB. The ISIC provides the convening date and location to the operational chain of command and COMNAVSAFECEN as soon as possible.

b. The ISIC or commanding officer of the unit involved shall provide accommodations, local transportation, and administrative support. The senior member shall have authority to release messages specifically related to the mishap investigation and the MIR.

c. The senior member convenes the board as directed by the appointing authority.

d. The MIB shall thoroughly investigate the mishap using the procedures in Section A0604 to determine the cause(s) and develop recommended actions to correct the hazard(s). The board shall prepare an MIR in the format of appendix A6-D.

e. The senior member of the board shall forward the MIR by naval message within 30 days of convening the board.

(1) If the MIB cannot meet the 30-day deadline, the senior member shall immediately inform the appointing authority of the reason and request a deadline extension.

(2) The appointing authority shall advise the type commander of any requests for extension or waiver.

f. Once the senior member forwards the MIR, the senior member shall transfer custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements, photographs and negatives, and tape recordings (whether referred to in the MIR or not) to COMNAVSAFECEN. Return all nonprivileged physical evidence to the original custodian. The senior member shall send an inventory itemizing all the evidence the board considered to COMNAVSAFECEN and all endorsers. Divide the inventory into at least the following four parts:

(1) Unclassified, **nonprivileged** evidence **sent** to COMNAVSAFECEN.

(2) Unclassified, **privileged** evidence **sent** to COMNAVSAFECEN.

(3) Classified, **nonprivileged** evidence **sent** to COMNAVSAFECEN.

(4) Unclassified, **nonprivileged** documents **not sent** to COMNAVSAFECEN.

g. Endorsers and other authorized recipients of the MIR and its endorsements shall retain them for 5 years from the date of the mishap, at which time they shall be destroyed.

h. COMNAVSAFECEN shall retain copies of MIRs and their endorsements for 5 years, at which time they may be destroyed.

i. Endorsers and other authorized recipients of an MIR and its endorsements may request, from COMNAVSAFECEN, copies of selected MIRs and their endorsements for safety training. MIRs and their endorsements shall be sanitized of all identifiable data which could connect them to an individual, organization, or a particular mishap. Sanitized MIRs and their endorsements shall be used for safety training purposes only.

j. MIRs and their endorsements shall not be filed under any individual's name or other personal identifier; nor shall information be retrievable from MIR

files by an individual's name or other personal identifier. Failure to follow these guidelines may result in the inadvertent disclosure of privileged information in response to a Privacy Act request.

7. Preparation of the MIR

a. The senior member is responsible for drafting the MIR.

(1) The senior member shall send the MIR by naval message within 30 days of the convening of the board.

(2) If the senior member feels it will not be possible to meet the 30 days deadline, the senior member shall inform the appointing authority of the reason immediately and request an extension of the deadline.

(3) The appointing authority shall advise the type commander of any requests for extensions for submitting the MIR.

b. Appendix A6-C provides a sample format for the MIR and report preparation guidance.

8. Disposition of Evidence. Once the MIR is completed, the senior member shall forward any evidence collected during the mishap investigation to COMNAVSAFECEN. Upon completion of the mishap investigation, the disposition of all evidence becomes the responsibility of COMNAVSAFECEN who shall:

a. Take custody of all relevant documentary evidence, board members' personal notes, original copies of summaries of all statements and logs; photographs and negatives, tape recordings (whether reference in the MIR or not), and the inventory itemizing all the evidence the board considered.

b. Make available, upon request, any documentary evidence, logs, photographs, negatives, or tape recordings which are not privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying to:

(1) MIR endorsers

(2) Individuals conducting a concurrent investigation under proper regulatory authority of any agency or department of the Government of the United States, or by attorneys representing the interests of the United States in any litigation related to the incident which is the subject of the mishap investigation.

c. Make available, upon request, any documentary evidence, board members' personal notes, summaries of witness' statements, logs, the evidence inventory, photographs, negatives, or tape recordings which are privileged according to the terms of this chapter, either by transfer of originals (after making and retaining copies) or by inspection/copying, to MIR endorsers.

d. After writing an endorsement, COMNAVSAFECEN shall:

(1) Turn over material (other than privileged information) to the JAGMAN investigators for retention, if requested.

(2) Retain evidence requested by the type commander for use in lessons learned.

(3) Send originals of any deck or engineering smooth logs, if received, to CNO as required by OPNAVINST 3100.7B.

(4) Send original Service Record (USN) or Service Record Book (USMC) entries, if received, for missing or killed naval personnel according to NAVMILPERS Manual (Section 5030140), or USMC Individual Record/ Administration Manual, MCO P-1070.12.

(5) In any case where the United States or any other party has commenced litigation, no evidence shall be destroyed without permission of the attorney representing the interests of the United States in the litigation.

(6) Retain custody of MIRs and their endorsements for 5 years, at which time they may be destroyed.

(7) Prior to disposing of any documentary or physical evidence, consult the Judge Advocate General, Admiralty Division (Code 31), who will, where appropriate, coordinate with other divisions within the Office of the Judge Advocate General.

(8) Unless otherwise directed by the Judge Advocate General, dispose of or destroy summaries of witness' statements, copies of logs, and other records according to applicable regulations. Ensure privileged material is disposed of or destroyed according to applicable directives.

**Attachment A6-B-1**

**Sample Message to Appointing Authority**

FM Type Commander/Fleet Commander

TO Appointing Authority

INFO All MIR endorsers
Mishap ship(s)
ISIC
COMNAVSAFECEN NORFOLK VA//30/054//
Other appropriate commands

UNCLAS //N05102//

MSGID/GENADMIN/Type Commander//

SUBJ/CONVENING MISHAP INVESTIGATION BOARD//

REF/A/OPREP-3/Mishap ship/DTG//
REF/B/DOC/CNO/19JAN94//
NARR/REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT//
POC/name/rank/primary phone/-/Type Commander/secondary phone//
POC/S. V. SCUDDER/GS12/DSN 564-1562/-/NAVSAFECEN 30B/(804) 444-1562//

RMKS/1. REF A REPORTED A POSSIBLE CLASS A MISHAP INVOLVING USS SHIP. A MISHAP INVESTIGATION BOARD MAY BE REQUIRED IF THE MISHAP MEETS THE CRITERIA FOR A CLASS A MISHAP. THIS INCLUDES:

A. A DEATH, OR

B. AN INJURY RESULTING IN PERMANENT TOTAL DISABILITY, OR

C. THE TOTAL COST OF REPORTABLE DAMAGE IS $1,000,000 OR MORE.

2. IF YOU DETERMINE THE MISHAP MEETS CLASS A SEVERITY, ACCORDING TO PARA A0602A OF REF B YOU MUST APPOINT A MISHAP INVESTIGATION BOARD. MEMBERS OF THE MISHAP INVESTIGATION BOARD CAN NOT BE ASSIGNED TO ANY OTHER INVESTIGATION (JAGMAN, BOARD OF INQUIRY) INTO THE MISHAP.

3. THE NAVAL SAFETY CENTER IS STANDING BY TO SEND AN ADVISOR TO ASSIST THE BOARD IN THE INVESTIGATION. THEY NEED TO KNOW WHEN AND WHERE THE BOARD WILL CONVENE.

4. IF THE BOARD NEEDS TECHNICAL ASSISTANCE, THE SENIOR MEMBER MUST REQUEST ASSISTANCE THROUGH THE TYCOM.

5. UPON COMPLETION OF THE INVESTIGATION, THE SENIOR MEMBER SHOULD SEND THE MISHAP INVESTIGATION REPORT TO THE FOLLOWING MINIMUM ENDORSERS, UNLESS OTHERWISE ADVISED:

A. Mishap ship

B. ISIC

C. TYCOM

D. COMNAVSAFECEN//

BT

**Attachment A6-B-2**

**Sample Appointment Letter**

5100
Code
Date

From: (Commander, Commanding Officer)
To: (Rank, Name, SSN, Service)
Via: (Command of the appointed member, if different from the appointing authority)

Subj: APPOINTMENT AS MEMBER OF (ORGANIZATION) MISHAP INVESTIGATION BOARD

Ref: (a) OPNAVINST 5100.19C, NAVOSH Program Manual for Forces Afloat

1. Based on your professional experience and knowledge, I appoint you as (the Senior Member) (a member) of the (organization) Mishap Investigation Board. You shall comply with reference (a) in the performance of your duties.

2. I direct your attention to the provisions of reference (a) concerning privileged information. You shall properly safeguard all privileged information available to you as a member of the board.

3. When investigating and reporting a shipboard mishap, your duties as a member of the board shall take precedence over all other duties. You will not be assigned to do a JAG Manual or other investigation of the same mishap.

4. The responsibility inherent in the appointment extends beyond any loyalties you may hold to the command. The afloat safety program depends on the efforts of mishap investigators to analyze mishaps to identify and remove potential causes of damage and injury. The sole objective of the board is mishap prevention. Therefore, your efforts should include complete, open, and forthright expressions of your views. Rest assured, the MIR shall be used within the command, and elsewhere within the Department of the Navy, for safety purposes only.

5. Should any circumstances arise which would prevent the proper performance of your duties as a member of the board, you shall immediately notify me.

6. Contact the Naval Safety Center if you experience any difficulties in properly conducting the investigation.

//Signed//

Copy to:

**Appendix A6-C**

**MISHAP INVESTIGATION REPORTS (MIRS)** (R
**Report Symbol OPNAV 5102-7**

The mishap investigation board (MIB) shall write an MIR after completing its investigation. The release, distribution, and control of the MIR is limited to prevent unauthorized disclosure of report contents. MIRs are Limited Use Reports containing privileged information.

1. Mishap Investigation Report Elements

a. The MIR:

(1) Informs the chain of command of the probable cause(s) of the mishap.

(2) Summarizes lessons learned from the mishap to prevent recurrence.

(3) Identifies procedural changes or equipment alterations to prevent future mishaps.

b. The MIR has two parts:

(1) Part Alpha - Contains nonprivileged information that is generally releasable to the public. However, the release of certain, selected portions of Part Alpha, such as personal information covered by the Freedom of Information and Privacy Acts may be prohibited. Part Alpha includes mishap facts; such as the unit identification code (UIC), mishap location, information on injured personnel, and types of damage. Part Alpha is similar to the Mishap Report (MR) included in appendix A6-D. Part Alpha information is not privileged information and Commander, Naval Safety Center (COMNAVSAFECEN) may release Part Alpha information to the general public, except for information protected under exemption b(6) of the Freedom of Information Act.

(2) Part Bravo - Contains privileged information that is not releasable to the public. The SOLE USE is for safety purposes. Part Bravo includes a summary of the evidence collected, the sequence of events of the mishap, and the opinions and recommendations (and recommended action agency) of the board. Part Bravo information, together with the endorsements, is privileged information and COMNAVSAFECEN shall not release this information to the general public. Any privileged information that is released solely for safety purposes by COMNAVSAFECEN shall be appropriately sanitized or expunged to protect privileged or personal information. See appendix A6-A.

c. MIRs are Limited Use Reports, as defined in reference A6-7. They are used for safety purposes only. Other investigators shall not use the privileged information contained in the MIR or its endorsements in any other investigation or report.

(1) Freedom of Information Act Access. The Freedom of Information Act, 5 USC 552 (1982 and Supp. IV 1986) (FOIA) makes most of Part Alpha, including nonprivileged physical evidence and information in logs and other records releasable to the public, except for information protected under exemption b(6) of FOIA. Exemption b(5) to FOIA protects Part Bravo of a limited use MIR and its endorsements from disclosure. This exemption protects, for example, privileged witness statements, hearsay evidence, board opinions and recommendations, endorsements, and physical evidence acquired by the board as a result of privileged information.

(2) Privacy Act of 1974. Limited use MIRs, their endorsements, and information contained in them shall not be maintained in a system of records covered by the Privacy Act. In records covered by the Privacy Act, information can be retrieved by the name of an individual, an identifying number, symbol, or other unique identifier associated with an individual.

d. No one shall incorporate excerpts from an MIR, privileged statements, board opinions and recommendations, or endorsements into JAGMAN investigations or any other investigative report. To preclude association with disciplinary action, the senior member shall not include any reference to legal or administrative action, or other performance-related administrative action in an MIR.

e. Distribution of Part Bravo of MIRs, together with their endorsements, outside the commands specified in this chapter or authorized by Chief of Naval Operations (CNO) (N09F) is strictly prohibited. Appendix A6-A contains guidance on the release of MIR information.

2. Writing and Sending the MIR

a. The senior member shall draft the MIR based on the investigative procedures in Section A0604. Attachment 1 to this appendix is a sample format for the MIR.

b. The senior member shall send the MIR by naval message within 30 days of the convening of the MIB.

(1) If the senior member feels the board will not meet the 30-day deadline, the senior member shall inform the appointing authority of the reason immediately and request a deadline extension.

(2) The appointing authority shall advise the type commander of any requests by the senior member for an extension on the 30-day deadline for submitting the MIR.

c. To preclude association with disciplinary action, do not include any reference to legal or administrative action, or other performance-related administrative action in an MIR.

3. Classification and Handling of MIRs

a. MIRs are normally unclassified.

(1) If the senior member cannot complete a meaningful, unclassified report, the senior member may submit a separate classified addendum for an otherwise unclassified MIR.

(2) In all cases, the senior member shall include the following statement in the heading of the MIR:

**"THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY MILITARY PERSONNEL IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY CIVILIAN PERSONNEL WILL SUBJECT THEM TO DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL INSTRUCTION 752. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS."**

b. MIRs contain privileged information and require special handling. All recipients and endorsers of a MIR shall avoid its uncontrolled release which could result in unauthorized disclosure.

(1) Uncontrolled disclosure of MIRs, and their endorsements, to individuals not requiring access, such as placing an MIR on general access message boards, is not appropriate.

(2) Controlled handling of MIRs, and their endorsements, is appropriate. Ensure distribution only to specific individuals requiring knowledge of their content, for safety purposes, such as routing MIRs directly from individual to individual or from office to office in file folders.

4. Distribution of MIRs

a. The senior member should normally send the MIR after returning to his or her permanent command. However, there may be occasions when the MIR must be sent from the mishap ship. In this case the senior member shall ensure it is clear to all addressees that the MIR is from the Senior Member and not the mishap ship, such as using an office code following the ship's plain language address (PLA), using the appointing authority's PLA with an office code (//SENIOR MEMBER//), or as a detachment of the appointing authority.

b. The senior member shall distribute MIRs as follows:

(1) Address the MIR action to the required endorsers; including, the ship involved in the mishap; the ISIC; the type commander; and COMNAVSAFECEN NORFOLK VA//30/054//; and information to CNO WASHINGTON DC//N86D/N871D/

N885/N889E1/N45// and the appropriate fleet and group commander (when not an action addressee).

(a) If the mishap involved U.S. Marine Corps personnel or equipment, add Commandant of the Marine Corps (CMC WASHINGTON DC//MHS//) as an addressee.

(b) If the mishap involved MSC personnel or equipment, include Commander, Military Sealift Command (COMSC WASHINGTON DC//N4/N42/N00M/N3//) as an addressee.

(c) If the mishap involved a LCAC; add COMNAVSEASYSCOM WASHINGTON DC//PMS377// as an action addressee and NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// as an information addressee.

(d) If the mishap involved explosives or explosive systems or equipment, COMNAVSAFECEN shall provide a list of the appropriate additional information addressees based on the categories in paragraph 9 of appendix A6-E.

(2) Forward all evidence, listed in Section A0604, resulting from the mishap investigation to COMNAVSAFECEN for retention and disposition.

c. Distribution of MIRs, together with their endorsements, outside the commands specified in this chapter, or authorized by CNO (N09F), is strictly prohibited.

d. Use Standard Subject Identification Code (SSIC) 05102 on all MIRs so receiving commands can limit internal distribution to activities requiring the report for safety purposes. Internal command distribution of MIRs shall be limited to those who require knowledge of the report for safety purposes.

5. Endorsements

a. MIR endorsements are privileged and shall be made by message in the format of attachment 2 to this appendix.

(1) Use SSIC 05102 on all endorsements so receiving commands can limit internal distribution to activities requiring them for safety purposes. Internal command distribution of the endorsements shall be limited to those who require knowledge for safety purposes.

(2) Endorsers shall list each probable cause, rejected probable cause, and recommendation and recommended action agency on the MIR or previous endorsements and state their agreement or disagreement with each one. If the MIR, or a previous endorser, recommended action by the current endorser, state the action taken on that recommendation.

(3) If an endorser agrees with all conclusions and recommendations in the MIR, as modified by previous endorsements, then a brief statement of concurrence is sufficient.

(4) Since MIR endorsements become a part of the MIR, and fall under the concept of privileged information, endorsers shall provide complete and open information, opinions, and recommendations.

b. Endorsers may request any documentary evidence, copies of statements and logs, photographs and negatives, or tape recordings from COMNAVSAFECEN. The endorser shall return the material to COMNAVSAFECEN for retention and disposition.

c. The required endorsers for an MIR are:

(1) The commanding officer of the ship involved in the mishap shall endorse the MIR within 7 days of receipt.

(2) The ISIC of the ship involved in the mishap shall endorse the MIR within 14 days of receipt of the previous endorsement.

(3) The type commander shall endorse the report within 14 days of receipt of the previous endorsement.

(4) Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) (PMS-377) shall endorse all MIRs involving LCACs. COMNAVSEASYSCOM (PMS-377) shall endorse the report within 14 days of receipt of the previous endorsement.

(5) Other system commanders (e.g., COMNAVSEASYSCOM or COMNAVAIRSYSCOM code(s)), if requested by the senior member of the MIB or any endorser. The systems commander shall endorse the report within 14 days of receipt of the previous endorsement.

(6) Fleet commander in chief or numbered fleet commander (for mishaps involving more than one type commander) shall endorse the MIR within 14 days of receipt of the previous endorsement.

(7) COMNAVSAFECEN shall prepare their endorsement and send a copy to all endorsers within 14 days of receipt of the previous endorsement.

d. If an endorser cannot meet the above deadlines, he/she shall request an extension from the type commander by message. The request shall describe specific reasons for the extension.

e. The fleet commander in chief or type commander can direct other commands (for example, numbered fleet commanders and administrative group or squadron commanders) to endorse the report, if desired. If directed, those commands shall send the endorsement within 14 days of receipt of the previous endorsement.

f. If the commanding officer of a ship involved in a mishap detaches from the command before writing the endorsement, the type commander may provide him or her with a copy of the MIR and give him or her the opportunity to write a statement about the contents of the MIR. The detached commanding officer shall send the statement by naval message to the type commander within 14 days of receiving the MIR. Based on the contents of the statement, the type commander will either:

(1) Readdress the statement to all endorsers of the MIR for their consideration.

(2) Provide the statement to COMNAVSAFECEN only for inclusion with the mishap file.

6. Dissemination of Safety Information. COMNAVSAFECEN and the type commander, when appropriate, shall extract safety information and issue lessons learned, but shall avoid the disclosure of the source of privileged or personal information.

7. Release of Mishap Information. The release of MIR information shall be as specified in appendix A6-A unless otherwise authorized by CNO (N09F).

8. Retention and Disposition of Records

a. Once the senior member forwards the MIR, the senior member shall transfer custody of all relevant documentary evidence, board members' personal notes, original copies of all statements, photographs and negatives, and tape recordings (whether referred to in the MIR or not) to COMNAVSAFECEN. The senior member shall send an inventory itemizing all the evidence the board considered to COMNAVSAFECEN and all endorsers.

b. Endorsers and other authorized recipients shall retain custody of the MIR and its endorsements for 5 years from the date of the mishap, at which time they shall be destroyed.

c. COMNAVSAFECEN shall retain custody of the MIRs and their endorsements for 5 years, at which time they may be destroyed.

d. Endorsers and other authorized recipients of an MIR and its endorsements may request, from COMNAVSAFECEN, copies of selected MIRs and their endorsements for safety training. The MIRs and their endorsements shall be sanitized of all identifiable data which could connect them to an individual, organization, or a particular mishap. Sanitized MIRs and their endorsements shall be used for safety training purposes only.

**Attachment A6-C-1**

**Sample Message Format**
**Mishap Investigation Report (MIR)**
**Report Symbol OPNAV 5102-7**

Use the format and content below for reporting the results of the MIB. Send the report as a message:

(Precedence - normally ROUTINE)

FM Releasing command (Normally the Senior Member's command)

TO Mishap ship(s)
ISIC
Group Commander (when required)
Type Commander
COMNAVSEASYSCOM WASHINGTON DC//PMS377// (LCAC ONLY)
Systems Command//appropriate office code// (When determined by the senior member or other endorser)
Fleet Commander (when required)
COMNAVSAFECEN NORFOLK VA//30/054//

INFO NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// (LCAC ONLY)
CNO WASHINGTON DC//N86D/N871D/N885/N889E1/N45//
Fleet Commander (when not an action addressee)
Group Commander (when not an action addressee)

(If the mishap involves explosives or explosive systems or equipment, include addressees provided by COMNAVSAFECEN.)

UNCLAS //N05102//DISTRIBUTE ONLY TO THE COMMANDER OR OFFICE CODE(S) FOLLOWING EACH ADDRESSEE.
MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//
SUBJ/AFLOAT MISHAP INVESTIGATION REPORT (MIR) (REPORT SYMBOL OPNAV 5102-7)//
REF/A/(If follow-up message, refer to original message.)//
REF/B/DOC/CNO/19JAN94//
NARR/REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION, SAFETY MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY MILITARY PERSONNEL IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY CIVILIAN PERSONNEL WILL SUBJECT THEM TO DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL INSTRUCTION 752. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS.//

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/ALPHA: (NONPRIVILEGED)

1. UICs OF MISHAP COMMANDs

2. HULL NUMBER/SIDE NUMBER

3. *TYPE OF MISHAP (For example, flooding, fire, injury, electric shock, death,* collision, grounding, explosion, back injury, chemical or toxic exposure, or equipment damage.)

4. LOCAL TIME AND DATE OF MISHAP

5. GEOGRAPHIC LOCATION (Latitude/Longitude or port. If classified, give general area.)

6. WEATHER CONDITIONS (For example, temperature, relative humidity, visibility, lighting, ventilation, air quality, wind speed, sea state, current, tide, wind direction, precipitation, lightning, ducting, hurricane, and other.)

7. LOCATION WHERE MISHAP OCCURRED (Give workcenter or description of the location. For example, *torpedo room; main deck,* compartment number, side and frame number, mess decks, flight deck, or 76mm gun magazine.)

8. SHIP OR CRAFT'S EVOLUTION AT THE TIME OF MISHAP (For example, underway replenishment., mooring, and on-cushion approach to beach.)

9. SEA STATE AND DIRECTION

10. SHIP'S EMPLOYMENT (For example, type training (TYT), refit, independent steaming exercises (ISE), maintenance availability, underway, anchored, submerged, or dry-docked.)

11. PAYLOAD (For example, type cargo and load weight) *(LCAC-ONLY)*

12. SENIOR MEMBER and COMMAND (Include telephone number, if available.)

13. EQUIPMENT OR CRAFT DAMAGED OR DESTROYED BY THE MISHAP (Include EIC, TEC, FGC (functional group code), or NSN (if applicable); describe damage.)

14. ESTIMATED COST TO REPAIR OR REPLACE *DOD PROPERTY (Provide* the total dollar value and UIC and name of command having custody of the property (if different *from reporting activity).* The cost includes $16 for each hour of labor plus the cost of material and equipment.)

15. ESTIMATED COST OF NON-DOD PROPERTY DAMAGE

16. NUMBER OF SCHEDULED OPERATING DAYS *LOST*

17. NAME/SSN/AGE/SEX/RACE (Repeat items 17 through 24 if the mishap involves reportable injuries to more than one person.

18. RANK and DESIGNATOR or RATE and NEC, JOB AND EMPLOYMENT STATUS (Examples of employment status include USN, USNR, USNR-R, other Department of Defense personnel, Navy Federal civil servants, contractors, foreign military exchange personnel, and foreign civilians.)

19. DUTY STATUS (On- or off-duty.) and UIC (if different from reporting activity). (If the mishap involves injuries to people from different commands, specify the UIC of each individual.) CREW POSITION - LCAC ONLY.

20. SPECIFIC JOB OR ACTIVITY INDIVIDUAL ENGAGED IN AT TIME OF MISHAP (For example, conducting PMS, standing watch, loading stores, training, and boat crew.)

21. NUMBER OF MONTHS EXPERIENCE AT THE JOB OR ACTIVITY (in paragraph 20)

22. MEDICAL DIAGNOSIS (Include parts of body and type of injury.)

23. FATALITY, EXTENT OF INJURIES, AND PROGNOSIS FOR DISABILITY (Specify fatality, missing, permanent total disability, permanent partial disability, or no disability likely.)

24. ESTIMATE OF LOST TIME

A. TOTAL NUMBER OF DAYS AWAY FROM JOB (Lost work days)/DAYS LOST BEFORE PERMANENT LOSS TO COMMAND

B. DAYS IN HOSPITAL OR SICK BAY

C. DAYS OF LIGHT OR LIMITED DUTY

25. RISK ASSESSMENT CODE (RAC) (Optional)

BRAVO (PRIVILEGED) (Contains the MIB's deliberative evaluation.)

1. BRIEF DESCRIPTION OF THE MISHAP (Include chain of events leading up to, through, and subsequent to mishap)

2. SUMMARY OF EVIDENCE AND TESTIMONY ANALYZED (Include the date and the registered number of evidence package sent to COMNAVSAFECEN and the date (if different) copies of the inventory were sent all endorsers.)

3. DETAILED SEQUENCE OF EVENTS

4. OPINIONS OF THE MISHAP INVESTIGATION BOARD (AS APPLICABLE)

A. THE ADEQUACY AND USE OF APPROVED PROCEDURES

B. THE QUALIFICATIONS OF THE PEOPLE INVOLVED

C. THE STATE OF TRAINING OF THE PEOPLE INVOLVED AND OF THE CREW IN COMBATING THE MISHAP

D. THE EFFECTIVENESS OF SUPERVISION

E. THE EFFECTIVENESS OF THE QUALITY ASSURANCE PROGRAM, WHERE APPLICABLE

F. THE EFFECTIVENESS OF DAMAGE CONTROL EFFORTS

G. THE ROLE PREVENTIVE AND CORRECTIVE MAINTENANCE PLAYED IN THE MISHAP

H. ANY EXISTING MATERIAL DEFICIENCIES OR SHORTCOMING WHICH MAY HAVE CONTRIBUTED TO THE MISHAP

5. ANALYSIS OF FINDINGS

A. PROBABLE CAUSE(S) OF THE MISHAP (State each probable cause of damage and injury with a short rationale.)

B. OTHER CAUSES CONSIDERED BUT REJECTED (State each possible cause of damage and injury rejected by the MIB with a short rationale.)

6. RECOMMENDATIONS (State recommendations for changes in procedure, equipment, or training, to prevent the recurrence of the mishap. Include the MIB's recommended action agency for each recommendation and the proposed lessons learned.)

**Attachment A6-C-2**

**Sample Message Format**
**Mishap Investigation Report Endorsements (MIREs)**
**Report Symbol OPNAV 5102-7A**

Use the format and content below for endorsing the mishap investigation report (MIR). Send the endorsement as a message.

(Precedence - normally ROUTINE)

FM Endorsing command

TO Subsequent endorsers based on MIR addressees
COMNAVSAFECEN NORFOLK VA//30/054//

INFO NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// (LCAC ONLY)
CNO WASHINGTON DC//N8/N86D/N871/N885/N09/N45//
All previous endorsers

UNCLAS //NO5102//DISTRIBUTE ONLY TO THE COMMANDER OR OFFICE CODE(S) FOLLOWING EACH ADDRESSEE.

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/PRIVILEGED FIRST/SECOND ENDORSEMENT ON AFLOAT MISHAP INVESTIGATION REPORT (MIR) (REPORT SYMBOL OPNAV 5102-7A)//

REF/A/(Include the original MIR and all previous endorsements.)//
*REF/B/DOC/CNO/19JAN94//*
NARR/REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, LIMITED USE, CONTROLLED DISTRIBUTION, MISHAP INVESTIGATION REPORT ENDORSEMENT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS ENDORSEMENT IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS.//

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/1. Brief description of the mishap based on the MIR and previous endorsements. Include a general statement on the MIB findings and previous endorsements.

2. List each probable cause, rejected probable cause, and recommendation from the MIR and previous endorsements, and your agreement or disagreement with each. For each point of disagreement, identify alternative recommendations or actions and recommended action agency. For each recommendation under your cognizance, report the status and/or your plan of action and milestones for accomplishment.

3. Provide any amplifying information, additional comments, or action taken or intended by the endorser concerning the mishap.//
BT

## Appendix A6-D

## MISHAP REPORTs (MRs)
## Report Symbol 5102-6

(A

1. In the interest of mishap prevention, the Navy needs to investigate all mishaps. Class A shipboard mishaps require convening a mishap investigation board (MIB), investigating the mishap, and submitting an MIR. In certain instances, where vital safety information may be obtained, the type commander may direct an MIB for a Class B and other mishaps and near mishaps. Other reportable shipboard mishaps do not require a mishap board. However, they do require the submission of an MR in the format provided in this appendix.

2. The following mishaps require the submission of an MR:

a. Class A or B mishaps occurring to the ship's on-duty personnel while ashore or involving damage to the ship's equipment located ashore.

b. Class B mishaps occurring on board ship that are not investigated by an MIB and reported by MIR.

c. Reportable Class C mishaps occurring on board ship, to the ship's on-duty personnel ashore, or involving damage to the ship's equipment located ashore.

d. Afloat special case mishaps occurring on board ship or to the ship's on-duty personnel ashore.

3. The MR is a General Use Mishap Investigation Report, and shall not include privileged information. The MR shall not state the source of any information.

4. If investigating personnel determine there is a need to obtain privileged information that may reveal valuable safety information, they shall advise the commanding officer, who shall then ascertain the need for an MIB and inform the ISIC.

5. Reportable Afloat Mishaps

a. If an MIR is submitted, the mishap does not require a separate MR. Commanding officers shall report the following mishaps using an MR:

(1) Class B Mishap. The total cost of reportable property damage is $200,000 or more, but less than $1,000,000; an injury or work-related illness resulting in permanent partial disability; or a mishap resulting in the hospitalization of five or more people. The type commander may select some Class B and other mishaps or near mishaps for investigation by an MIB and report by an MIR. An MR is required for Class B mishaps not reported by an MIR.

(2) Class C Mishap. The resulting total cost of reportable property damage is $10,000 or more, but less than $200,000; or an injury preventing an individual from performing regularly scheduled duty or work beyond the day or shift on which it occurred; or a nonfatal illness or disability causing loss of time from work or disability at any time (lost time case). For data collection and analysis purposes, the following Class C mishaps shall be reported to Commander, Naval Safety Center (COMNAVSAFECEN):

(a) The resulting total cost of reportable property damage is $10,000 or more, but less than $200,000.

(b) An injury or disability preventing personnel from performing regularly scheduled duty for 5 days or more after 2359 on the day of injury or onset of illness.

(3) Afloat Special Case Mishaps. For data collection and analysis purposes, the following special case afloat mishaps require the submission of an MR:

(a) All cases of electric shock. Include the voltage in the report.

(b) All cases of hazardous material, chemical or toxic exposure requiring medical attention.

(c) All cases of back injury resulting from a mishap requiring medical attention.

(d) All mishaps involving explosives, oxidizers, incendiaries, explosive systems or chemical warfare agents. Mishaps include detonation, accidental launch, malfunction, dangerous defect, improper handling, damage to a launching device, weapon impact off range or other unusual or unexpected weapons-related occurrence. Follow the reporting requirements of appendix A6-E. If the explosive mishap meets the criteria for an afloat Class A mishap, an MIB shall conduct a formal mishap investigation which shall then submit an MIR.

(4) If an internal mishap investigation produces valuable lessons learned, submit an MR to COMNAVSAFECEN NORFOLK VA//30/054// even if the mishap is otherwise not reportable. This report could help other commands avoid the same mistake.

**NOTE:**

Commanding officers are encouraged to submit an MR with lessons learned for any mishap where other ships could benefit from reading about a minor mishap or near mishap or if a design or material defect caused a mishap and should be highlighted.

b. Diving mishaps, motor vehicle mishaps, or off-duty recreation, athletics, or home mishaps are discussed in Appendices A6-F through H. Compulsory physical training activities shall be reported by an MR.

c. The commanding officer shall submit an MR to COMNAVSAFECEN within 30 calendar days of mishap occurrence.

6. Investigation of Minor Mishaps

a. The commanding officer is concerned with all shipboard mishaps, regardless of severity. All shipboard mishaps warrant some level of investigation to prevent recurrence.

(1) A mishap resulting in little damage or minor injury may uncover a situation with the potential to cause frequent and severe mishaps.

(2) The investigation of a mishap may uncover a hazard which would rarely cause another mishap, but the information can only be determined through mishap investigation.

b. Commanding officers shall direct the investigation of Class B mishaps not investigated by an MIB, all Class C mishaps, all afloat special case mishaps, as well as near mishaps (events which could have resulted in a mishap but chance alone averted injury, death, or damage).

(1) The commanding officer may apply the mishap investigation procedures contained in Section A0604 to Class B, Class C, afloat special case, and other mishap investigations. However, the investigators shall not make any promise of confidentiality under the concept of privilege to any person and the proceedings of the board are not privileged.

(2) All reportable afloat mishaps not reported by MIR shall be reported to the COMNAVSAFECEN by MR.

c. The commanding officer shall:

(1) Direct the investigation of ALL mishaps.

(2) For mishaps which do not require external reporting, an internal report shall be initiated by the cognizant division officer in a format similar to attachment 1 to this appendix and submitted to the commanding officer via the chain of command. Division safety petty officers (leading petty officers aboard submarines) should be trained and utilized for mishap investigations and the use of internal reports.

(3) Use the SAFETYGRAM (OPNAV 3120/5), attachment 2 to this appendix, to report lessons learned which may affect other commands, if not reported by MR.

**NOTE:**

Commanding officers are encouraged to submit an MR with lessons learned for any mishap where other ships could benefit from reading about a minor mishap or near mishap or if a design or material defect caused a mishap and should be highlighted.

d. There is no requirement to submit an MR on minor mishaps not falling under the definition of reportable mishaps.

7. Preparing MRs

a. Use the format in attachment 3 to this appendix for all Class B mishaps not investigated by a board, all reportable Class C mishaps, and all afloat special case mishaps. Submit the report by message.

b. Reference any CASREPs, OPREP-3s, or UNIT SITREPs submitted and any previous mishaps reports in the MR.

c. Omit any reference to legal or administrative action, or other performance-related administrative action in an MR to preclude association with disciplinary action.

d. Provide as much information as is available. When the information available is not sufficient to complete a comprehensive MR within 30 days, submit the remaining details, when known.

8. Classification and Handling of MRs

a. MRs are normally unclassified. If the commanding officer cannot complete a meaningful, unclassified report, a separate classified addendum for an otherwise unclassified MR may be submitted.

b. MRs are handled as General Use Mishap Reports defined in reference A6-7. In all cases, the commanding officer shall include the following statement in the heading of the MR:

**"FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES AS DEFINED IN CHAPTER A6 OF OPNAVINST 5100.19C."**

c. MRs contain personal information and other sensitive data protected by the Freedom of Information and Privacy Acts.

(1) Users shall protect MRs from unauthorized disclosure. MRs shall not contain privileged information. They shall not state the source of any information.

(2) MRs, or information extracted from them, shall not be maintained in a system of records subject to the Privacy Act. In records covered by the Privacy Act, information can be retrieved by the name of the individual, an identifying number, symbol, or other unique identifier associated with an individual.

d. Recipients shall handle MRs as follows:

(1) MRs contain personal information protected by the Freedom of Information and Privacy Acts and require careful handling. All recipients of an MR shall avoid its uncontrolled release which could result in unauthorized disclosure.

(2) Ensure MRs are distributed only to specific individuals requiring knowledge of their content, for safety purposes.

9. Distribution of MRs

a. The commanding officer shall address MRs to:

(1) COMNAVSAFECEN NORFOLK VA//30/50/054//.

(2) Superiors in the chain of command, as directed.

(3) Any other command, as desired.

(4) Commander, Naval Sea Systems Command (COMNAVSEASYSCOM WASHINGTON DC//PMS377//) and information to Naval Coastal Systems Center (NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33//), CNO WASHINGTON DC//N86D/N866D//, and AIG ONE THREE EIGHT SIX ZERO (13860) for mishaps involving LCACs.

b. Direct questions regarding distribution of MRs to COMNAVSAFECEN or your chain of command.

10. Dissemination of Safety Information

a. COMNAVSAFECEN, when appropriate, shall extract safety information and issue lessons learned, but shall avoid the disclosure of information exempt from disclosure under the Freedom of Information and Privacy Acts.

b. Other commands, such as the type commander, may extract safety information and issue lessons learned, but shall avoid the disclosure of information exempt from disclosure under the Freedom of Information and Privacy Acts. Include COMNAVSAFECEN NORFOLK VA//30/054// as an information addressee on any lessons learned issued.

11. Release of Mishap Information. The release of nonprivileged afloat safety program MR information shall be as specified in this paragraph, unless otherwise authorized by CNO (N8).

a. Protection of Privacy Information. To protect the privacy rights of individuals, the names of individuals not involved in the mishaps and the social security numbers of all individuals in the report will not be furnished under exemption (b)(6) of the Freedom of Information Act (FOIA). To protect the privacy rights of surviving family members, photographs of human remains included in the autopsy reports shall not be provided per exemption (b)(6).

b. Release Based on the Freedom of Information Act (FOIA). Either expressed or implied requests for information under FOIA shall be sent to COMNAVSAFECEN, Attention: Code 03.

c. Privacy Act. Information in MRs shall not be maintained in a system of records subject to the Privacy Act. Specifically, the information must not be retrievable by the name of an individual, or by social security number, or other identifying number, symbol, or unique identifier associated with an individual.

d. Release by an Individual having Knowledge of MRs. An individual having knowledge of the contents of an MR is prohibited from disclosing the information, except as authorized by this chapter. If anyone asks for information from any individual having knowledge of the contents of an MR, they should immediately contact COMNAVSAFECEN, Attention: Code 03.

e. Release to U.S. Navy, U.S. Marine Corps, and Other Department of the Navy Activities. Forward requests for mishap information from Navy, Marine Corps, and other Department of the Navy activities to COMNAVSAFECEN, Attention: Code 03.

f. Release to Other U.S. Military Services. Exchange of safety program information among the military services shall be limited to the respective safety centers, and shall be controlled to prevent disclosure of information.

g. Release to the News Media. The Department of the Navy Public Affairs Regulations, SECNAVINST 5720.44A (NOTAL) contains information on releasing mishap information to the media. The Navy shall, however, preserve the information in MRs which is not releasable to the media.

h. Release to Congress. Forward requests for information from Congress, Congressional committees or subcommittees, or staff members to CNO or CMC, as appropriate.

i. Subpoenas for Information. Refer any subpoenas for mishap information for use in civil or criminal proceedings, anticipated litigation, or in administrative claims against the government, to the Judge Advocate General, Department of the Navy (Code 34).

j. Release to Technical Representatives, Defense Contract Administration Services (DCAS) Representatives, and Contractors. Forward requests for mishap information from technical representatives, manufacturers, Defense Contract Administration Services (DCAS) representatives, and contractors or their agents

to COMNAVSAFECEN via Commander, Naval Sea Systems Command (COMNAVSEASYSCOM) (SEA-09T4). The endorsement of COMNAVSEASYSCOM (SEA-09T4) shall certify whether the requested information is required for safety purposes with respect to product design or improvement. Any response shall include a warning to ensure the recipient uses the information for safety purposes only. The recipient shall not disclose the information to any other individual or entity.

k. Release to North Atlantic Treary Organization (NATO) Nations. If a maritime incident involves units or personnel of two or more NATO nations, the provisions of NATO Standardization Agreement (STANAG) 1179 (NOTAL), Combined Investigation of Maritime Incidents, become effective. Under the provisions of STANAG 1179, NATO nations agree to conduct either a combined court of inquiry, a national inquiry attended by witnesses and/or observers from other nations, or an independent national inquiry coordinated by the presidents of the inquiries. Any command receiving a request for information from an afloat mishap investigation from a NATO country shall forward the request immediately to COMNAVSAFECEN, Attention: Code 03.

l. Release to Other Foreign Nations. Forward requests for information on mishaps from foreign governments to COMNAVSAFECEN, Attention: Code 03.

m. Unspecified Cases. Forward requests not stipulated above to COMNAV-SAFECEN, Attention: Code 03.

**Attachment A6-D-1**

**INTERNAL MISHAP/NEAR MISHAP INVESTIGATION REPORT**

From: _____ Division Officer
To: Commanding Officer
Via: (1) _____ Department Head
(2) Safety Officer
(3) Executive Officer

Date/Time of Mishap: _____ Mishap Category: _____

Location of Mishap: _____

Brief Description of Mishap (Including extent of injury and property damage):

_____

_____

_____

Work/Task Supervisor (at time of mishap): _____

Witnesses: _____

Photos taken (circle one)? YES NO N/A

Cause of Mishap: _____

_____

_____

Corrective Action Taken or Recommended: _____

_____

_____

_____
Signature/Date

_____

*2nd Endorsement*

Does Mishap Meet External Reporting Requirements (circle one)? YES NO

If yes, include the date-time-group of report: _____
(Attach copy of report)

_____
Safety Officer

RETURN COMPLETED INVESTIGATION REPORT TO SAFETY OFFICER

**INSTRUCTIONS FOR FILLING OUT INTERNAL MISHAP/NEAR MISHAP INVESTIGATION REPORT**

1. Complete this report within 10 working days of the mishap/near mishap. If the report is not completed in 10 working days, annotate on the report the reason for delay.

R) 2. Mishap Category examples are: Collision, Flooding, Grounding, Electric Shock, Deck Seamanship, Man Overboard, Chemical/Toxic Exposure, Heat Injury, Aircraft/Aviation, Material Failure, Machinery Operation, Heavy Weather, Small Boats, Injury, Cargo Handling, Explosion, Ordnance.

3. Location description should be as thorough as possible. Give compartment number and location within compartment, if applicable. Give frame number, deck (or level), and side if topside. Give location on pier, drydock, or building if off ship. A drawing of location may be useful and should be attached, if appropriate.

4. Work/Task Supervisor is the name of the person who assigned the task or was overseeing the evolution when the mishap occurred. If not applicable, so state.

D) 5. Reviewing officers shall either note the report or provide comments/ direction on the back or on a separate sheet. The completed report will be returned to the safety officer for filing.

Attachment A6-D-2

# SAFETYGRAM

(Mark X in appropriate box to indicate type of Command

☐ Surface Ship ☐ Submarine ☐ Diving/Salvage ☐ Aviation ☐ Shore

Command, Ship, or Ship Class

References:
Plan No./Tech Manual/etc.

State: What, where, why, how it can be prevented or corrected

(SIGNATURE NOT REQUIRED)

*Instructions:* (1) Send original to Commander NAVSAFECEN, and copies as appropriate. Retain file copy.
(2) May use pencil longhand; attach additional sheets as necessary. (3) If classified information included, follow appropriate marking and handling.
OPNAV 5102/4 (Rev. 10-92) S/N 0107-LF-015-8400 (Replaces NAVSAFECEN 5101-1/2 AND 5101/3 which may be utilized to deplete existing stocks.)

**Attachment A6-D-3**

**SAMPLE MESSAGE FORMAT**
**MISHAP REPORT (MR)**
**REPORT SYMBOL OPNAV 5102-6**

Use the format and content below to report all reportable mishaps not investigated by an MIB. Submit as much information as is available. Submit supplementary reports as necessary to supply the missing information, when it becomes available. The MR contains privileged information but shall not include the sources of any information. (R

IF THE REQUESTED DATA DOES NOT APPLY, IS NOT RELEVANT TO THE MISHAP, OR IS UNKNOWN, INSERT "NOT APPLICABLE" - "N/A" - or "UNKNOWN" - "UNK," AS APPROPRIATE.

(Precedence - normally ROUTINE)

FM REPORTING ACTIVITY
TO COMNAVSAFECEN NORFOLK VA//30/50/054//
*COMNAVSEASYSCOM WASHINGTON DC//PMS377//* (LCAC ONLY)
INFO As desired, directed, or requested by higher authority
NAVSURFWARCEN COASTALSTA PANAMA CITY FL//33// (LCAC ONLY)
*AIG ONE THREE EIGHT SIX ZERO* (LCAC ONLY)
CNO WASHINGTON DC//N86D/N866D// (LCAC ONLY)

UNCLAS //N05102//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/AFLOAT MISHAP REPORT (MR) (REPORT SYMBOL OPNAV 5102-6)//

REF/(If follow-up message, refer to original message.)//
USE GENADMIN FORMAT PROCEDURES.

NARR/THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A PRIVILEGED, CONTROLLED DISTRIBUTION, SAFETY MISHAP INVESTIGATION REPORT. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY MILITARY PERSONNEL IS A CRIMINAL OFFENSE PUNISHABLE UNDER ARTICLE 92, UNIFORM CODE OF MILITARY JUSTICE. UNAUTHORIZED DISCLOSURE OF THE INFORMATION IN THIS REPORT BY CIVILIAN PERSONNEL WILL SUBJECT THEM TO DISCIPLINARY ACTION UNDER CIVILIAN PERSONNEL INSTRUCTION 752. SEE CHAPTER A6 OF OPNAVINST 5100.19C FOR RESTRICTIONS.// (R

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/ALPHA:

1. UICs OF MISHAP COMMANDs

2. HULL NUMBER/SIDE NUMBER

3. TYPE OF MISHAP (For example, flooding, fire, injury, electric shock, collision, grounding, explosion, back injury, chemical or toxic exposure, or equipment damage.)

4. LOCAL TIME AND DATE OF MISHAP

5. GEOGRAPHIC LOCATION (Latitude/Longitude or port. If classified, give general area.)

6. WEATHER CONDITIONS (For example, temperature, relative humidity, visibility, lighting, ventilation, air quality, wind speed, sea state, current, tide, wind direction, precipitation, lightning, ducting, hurricane, and other.)

7. LOCATION WHERE MISHAP OCCURRED (Give workcenter or description of the location. For example, torpedo room; main deck, compartment number, side and frame number, mess decks, flight deck, or 76mm gun magazine.)

8. SHIP'S OR CRAFT'S EVOLUTION AT THE TIME OF MISHAP (For example, underway replenishment, mooring, or on-cushion approach to beach.)

9. SEA STATE AND DIRECTION

10. SHIP'S EMPLOYMENT (For example, type training (TYT), refit, independent steaming exercises (ISE), maintenance availability, underway, anchored, submerged, or dry-docked.)

11. PAYLOAD (For example, type cargo and load weight) (LCAC ONLY)

12. RISK ASSESSMENT CODE (RAC) (Optional)

BRAVO:

1. EQUIPMENT OR CRAFT DAMAGED OR DESTROYED BY THE MISHAP (Include EIC, TEC, FGC (functional group code), or NSN (if applicable); describe damage.)

2. ESTIMATED COST TO REPAIR OR REPLACE DOD PROPERTY (Provide the total dollar value and UIC and name of command having custody of property (if different from reporting activity). The cost includes $16 for each hour of labor plus the cost of material and equipment.)

3. ESTIMATED COST OF NON-DOD PROPERTY DAMAGE

4. NUMBER OF SCHEDULED OPERATING DAYS LOST

CHARLIE:

1. NAME/SSN/AGE/SEX/RACE (Repeat items 1 through 8 if the mishap involves reportable injuries to more than one person.

2. RANK and DESIGNATOR or RATE and NEC, JOB AND EMPLOYMENT STATUS (Examples of employment status include USN, USNR, USNR-R, other Department of Defense personnel, Navy federal civil servants, contractors, Foreign Military Exchange personnel, and foreign civilians.)

3. DUTY STATUS (On- or off-duty) and UIC (if different from reporting activity). (If the mishap involves injuries to people from different commands, specify the UIC of each individual.) CREW POSITIONS - LCAC ONLY.

4. SPECIFIC JOB OR ACTIVITY INDIVIDUAL ENGAGED IN AT TIME OF MISHAP (For example, conducting planned maintenance (PMS), standing watch, loading stores, training, and boat crew.)

5. NUMBER OF MONTHS EXPERIENCE AT THE JOB OR ACTIVITY (in paragraph 4)

6. MEDICAL DIAGNOSIS (Include parts of body and type of injury.)

7. EXTENT OF INJURIES AND PROGNOSIS FOR DISABILITY (Specify extent of injuries and outlook; for example, permanent partial disability or no disability likely.)

8. ESTIMATE OF LOST TIME

A. TOTAL NUMBER OF DAYS AWAY FROM JOB (Lost work days)/DAYS LOST BEFORE PERMANENT LOSS TO COMMAND

B. DAYS IN HOSPITAL OR SICK BAY

C. DAYS OF LIGHT OR LIMITED DUTY

DELTA: NARRATIVE (PRIVILEGED - CONTAINS THE COMMAND'S DELIBERATIVE EVALUATION.)

1. CHAIN OF EVENTS LEADING UP TO, THROUGH AND SUBSEQUENT TO MISHAP (Explain (R
the "who, what, where, why, when, and how" of the mishap. Give the class (A, B, C, or D) of any fires. Include the source and how the fire was extinguished. If a flooding mishap, give the source of the flooding and de-watering technique. If a collision, give estimates of damage and identify ships involved. If a chemical or toxic exposure, try to identify the chemical or material involved, the amount or concentration, and length of exposure. For LCACs, discuss other embarked personnel, injured non-occupants, craft mission and evolution leading to the mishap, and payload involvement. If an electric shock, give the primary and alternate power sources and the voltage (AC or DC). If personal protective equipment (PPE) was required, was it worn? Was it effective? Evaluate the effectiveness of damage control equipment and procedures. Which one of the causes in paragraph DELTA 2 is believed to be the root (or primary) cause of this mishap?

A) 2. CAUSES OF THE MISHAP (State each cause of damage and injury with a short (less than 100 characters) rationale. The rationale is critical to identifying the cause because it links it to "who" or "what" was involved. Causes should be one of the four major categories listed below, with subcategories as listed. Omit those categories and subcategories that don't apply and include as many causes in each category you determine apply.) In paragraph DELTA 1, chain of events leading up to, through, and after the mishap, identify which of the causes you determine to be the root (or primary) cause of this mishap.

A. HUMAN FACTORS (PERSONNEL ERROR): Consider human involvement in the events leading up to a mishap, actions taken as the mishap is occurring, and actions taken after the mishap occurred. For mishaps involving personnel error, state each cause with a brief explanation in one of the subcategories listed below.

(1) UNSAFE ACTS

(A) ERRORS (Mistakes or unintentional acts)

(B) VIOLATIONS (Deliberate behavior that breaks established rules)

(2) UNSAFE SUPERVISION

(A) INADEQUATE (Unintentional mistakes or failures by supervisors including the supervisor's absence)

(B) VIOLATIONS (Deliberate rule breaking or disregard of authority by supervisors)

(3) UNSAFE CREW CONDITIONS

(A) ADVERSE PHYSIOLOGICAL STATE (For example, physical fatigue, illness, intoxication, and obesity)

(B) ADVERSE MENTAL STATE (For example, overconfidence, complacency, sleep loss, mental fatigue, and stress)

(C) CREW RESOURCE MANAGEMENT (Poor team coordination or ineffective communications)

(4) ORGANIZATIONAL INFLUENCE

(A) EXTERNAL (Factors controlled by sources outside the ship)

(B) INTERNAL (Factors controlled by the commanding officer (or below) such as watchbill assignments) Example: human factor, unsafe act, error. MS3 failed to tag out griddle.

B. PROCEDURAL FACTORS: Consider the possible effect of regulations, operations, and processes from all levels in the chain of command. Remember that a person not following written procedures is a human factor, not a procedural factor. Procedures and policies published by higher authority such as PMS, technical manuals, naval warfare publications (NWPs), navy tactical publications (NTPs), U.S. Navy Diving Manual, operational orders (OPORDs), ordnance publications (OPs), the safe engineering and operations of LCAC (SEAOPS) manual, and the commanding officer's standing orders may contain procedural errors.

(1) TOO COMPLEX (For example, the average sailor can't follow the written procedures because he or she can't understand or follow them):

(2) NOT AVAILABLE (For example, written procedures don't exist or have not been received):

(3) INCORRECT

(A) NOT VALIDATED FOR SHIP OR EQUIPMENT

(B) NOT UPDATED (Although the written procedures were correct in the past, modifications or alterations to the ship or equipment require changes to the procedures)

(C) STEP MISSING OR OUT OF SEQUENCE (Example: procedural factor, incorrect, not updated. Due to modifications, tech manual procedures for disconnecting hydraulic hoses were incorrect.)

C. MATERIAL FACTORS: Consider all material failures and malfunctions thoroughly, despite whether the failures or malfunctions occurred because of normal or abnormal means. This category includes failure due to improper repair or normal wear and tear.

(1) UNAUTHORIZED (For example, alterations made to the ship or equipment without authority):

(2) SAFETIES/GUARDS FAILED:

(3) CONDITION (FOR EXAMPLE, RUST OR CORROSION):

(4) INAPPROPRIATE FOR USE (For example, off-the-shelf purchases that don't work)

(5) INSTALLATION/REPAIR FAULTY

(6) DEFECTIVE

(7) NORMAL WEAR AND TEAR (Normally, wear and tear is not a reportable mishap. However, the investigation may lead to this cause and is worth

reporting.): Example: material/equipment factor, safeties/guards failed. Lube oil relief valve failed to open.

d. DESIGN FACTORS: Consider whether a design defect caused the mishap.

(1) HAZARD TO PERSONNEL (For example, anything involving design creating a hazard to personnel):

(2) HAZARD TO EQUIPMENT (For example, design that causes damage to equipment):

(3) MAINTAINABILITY (For example, the design makes it so difficult to accomplish the maintenance that it isn't completed or sailors are injured while doing the maintenance): Example: design factor, maintainability. Eye wash station was OOC because its location prohibited timely PMS.

R) 3. RECOMMENDATIONS OR ACTION TAKEN TO PREVENT RECURRENCE.//
BT

**Appendix A6-E**

**REPORTABLE EXPLOSIVE MISHAP OR CONVENTIONAL ORDNANCE DEFICIENCY REPORTS (EMRs/CODRs) (REPORT SYMBOL DD-A&T(AR) 1020 (5102)** (A

1. A significant potential for damage or injury exists in mishaps involving explosives. Therefore, the requirements for reporting explosive mishaps are more extensive than for other types. This appendix establishes the requirements and procedures for reporting all afloat mishaps and deficiencies involving conventional ordnance, explosives, ammunition, chemical agents, and all equipment or systems required to launch, fire, deliver, store, or transport ordnance.

2. Class B and C severity Explosive Mishap Reports (EMRs) and Conventional Ordnance Deficiency Reports (CODRs) are General Use Mishap Reports, as defined by reference A6-7. Reports of Class A explosive mishaps occurring afloat are Limited Use Mishap Reports, defined by reference A6-7, submitted by the mishap investigation board (MIB) using the procedures in section A0604 and the MIR format in appendix A6-C. Modify the MIR to include the information required by the sample Explosive Mishap Report in attachment 1 to this appendix. MIRs of Class A explosive mishaps are used for safety purposes only and contain privileged information. The release, distribution, and control of the reports is limited to prevent unauthorized disclosure of report contents.

3. Reportable Mishaps and Deficiencies

a. *Explosive Mishaps*. Report the following afloat events using the format in attachment 1 to this appendix. Use "Explosive Mishap Report" in the subject line. If you want an engineering investigation, add the request to the subject line. (Use "Explosive Mishap Report/Engineering Investigation Request" as the subject.) Also, include your request for the engineering investigation in Part I ECHO (narrative) of the message report. COMNAVSAFECEN will revise attachment A6-E-1 to conform with changes to reference A6-4.

(1) Detonation, Deflagration, Burning, or Firing. An unintentional or inadvertent initiation, explosion, or reaction of an explosive material, component, or system. Accidental discharge of all guns, including small arms.

(2) Inadvertent Launch. An unintentional launching of a weapon.

(3) Chemical Agent Release. Any unintentional or uncontrolled release of a chemical agent when:

(a) Damage occurs to property from contamination or costs are incurred for decontamination.

(b) Individuals exhibit physiological symptoms of agent exposure.

(c) The quantity released to the atmosphere creates a serious potential for exposure.

(4) Propellant Fuels and Oxidizers. Leaking or spilled propellant fuels and oxidizers less OTTO II fuel.

(5) All ordnance impacting off-range.

b. Conventional Ordnance Deficiencies. Report the following afloat events as conventional ordnance deficiencies using the format in attachment 1 to this appendix. Use "Conventional Ordnance Deficiency Report" in the subject line. If you want an engineering investigation, add the request to the subject line. (Use "Conventional Ordnance Deficiency Report/Engineering Investigation Request" as the subject.) Also, include your request for the engineering investigation in Part I ECHO (narrative) of the message report. COMNAVSAFECEN will revise attachment A6-E-1 to conform with changes to reference A6-4.

(1) Malfunctions. The failure of conventional ordnance, explosives, ammunition, small arms, weapons, or weapon system components that come in contact with the ordnance, to function properly. (For example, failure to launch, dud weapons, and gun fails to cycle).

(2) Improper Handling. Ordnance handling incidents attributed to human error. Examples include misuse of equipment, failure to follow established procedures, and violation of safety precautions resulting in dropped or damaged ordnance. Other examples include human error during processing, assembling, testing, loading, storing, and transporting ordnance.

(3) Inadvertent Arming. The unintentional arming of an explosive component or weapon.

(4) Defective Weapons Support Equipment. Deficiencies involving any equipment or device used in the manufacture, test, assembly, handling, or transportation (skids, trailers, or similar equipment) of any explosive system.

(5) Observed Defect. A discovered defective weapon or weapon system component that comes in direct contact with the ordnance, small arms, weapons, conventional ordnance, explosives, and ammunition (for example: protruding primers, cracked grains, damaged or broken breech bolts, missile radomes, and advanced corrosion).

(6) Other

(a) An event which, except for chance, would have been an explosive mishap.

(b) Any failure or malfunction of, or damage to, a launch device or associated hardware and software when handling or otherwise manipulating dummy, exercise, or explosive material.

(c) Unusual or unexpected occurrences, unnatural phenomena, unfavorable environments, or instances of equipment failure which may damage or affect safety of an explosive material or system. This includes Hazards of Electromagnetic Radiation to Ordnance (HERO) sensitive explosive systems exposed to radiation hazard (RADHAZ) environments.

(d) The failure of a missile or explosive system to test, calibrate, or otherwise meet pre-loading or pre-launch requirements. (For example, the failure of Built-in-Test (BIT).

(e) Use of Explosive Ordnance Disposal (EOD) services involving military explosives for other than routine disposal of explosives.

(f) OTTO II fuel spills.

c. Exceptions

(1) OPNAVINST 8600.2B (The Naval Airborne Weapons Maintenance Program) (NOTAL). Report mishaps or deficiencies occurring during airborne weapon systems and equipment operations, including armament supporting equipment (any equipment used in loading or unloading an explosive system or launch device on an aircraft), per OPNAVINST 8600.2B.

(2) OPNAVINST 3100.6G (Special Incident Reporting (OPREP-3, Navy Blue and UNIT SITREP) Procedures) and JCS Publication 1-03.7. Report nuclear weapons mishaps and incidents per OPNAVINST 3100.6G and JCS Publication 1-03.7.

(3) OPNAVINST 5102.1C (Mishap Investigation and Reporting). Report explosive mishaps and conventional ordnance deficiencies occurring ashore per OPNAVINST 5102.1C.

(4) NAVSEA OP 2165 Volume I (Navy Transportation Safety Handbook for Ammunition, Explosives and Related Hazardous Material) and NAVSEA OP 8020.13B. Weapons and ordnance stations report explosive mishaps and conventional ordnance deficiencies occurring while the explosive material or system is in the custody of a common (commercial) carrier per OP 2165 Volume I and NAVSEA OP 8020.13B.

d. Use the EMR/CODR Pathfinder (attachment 2 to appendix A6-E) to help determine if a reportable explosive mishap or conventional ordnance deficiency has occurred.

5. Post-Mishap and Deficiency Action

a. The activity experiencing the mishap or deficiency shall:

(1) Stop using the item, lot, or batch involved pending guidance from higher authority.

(2) Start the reporting procedures.

(3) Accurately and quickly respond to requests for additional information.

b. Depending on the severity of the explosive mishap or deficiency, other U.S. Navy commands and activities shall assist in identifying the actual cause and take steps to ensure that similar mishaps or deficiencies do not occur. For example:

(1) The mishap may require an MIR for a Class A mishap.

(2) Commander, Naval Ordnance Center; Commander, Naval Air Systems Command; or Commandant, U.S. Marine Corps may designate all related explosive systems unserviceable, direct follow-up test and evaluation of various lots to identify defective hardware, or initiate procedural changes in the use of the weapons system.

(3) Officer in Charge, Naval Ordnance Center (Inventory Management and Systems Division), Mechanicsburg, PA (NAVORDCEN IMSD MECHANICSBURG PA); shall support the above command decisions regarding disposition and use of defective or questionable parts by issuing a Notice of Ammunition Reclassification (NAR).

(4) Commander, Naval Safety Center shall enter all relevant unclassified information into a data repository.

6. Reporting Requirements

a. Appointing authorities shall require the investigation and reporting of all afloat Class A severity explosive mishaps occurring in their chain of command using the procedures in section A0604. The MIB shall submit an MIR in the format of appendix A6-C modified to include the information required by the sample Explosive Mishap Report in this appendix.

b. Commanding officers, officers in charge, and masters shall require the investigation and reporting of all Class B and C severity reportable explosive mishaps and reportable conventional ordnance deficiencies occurring within their command.

(1) Explosive Special Cases. When a report under this appendix is required solely as the result of Explosive Ordnance Disposal (EOD) service, the responsibility for submitting the report rests with the following, in the order given:

(a) The U.S. Navy activity requesting EOD services.

(b) The U.S. Navy activity having operational control of the EOD personnel rendering the service.

(c) In cases not covered by (a) or (b) above, the EOD group to which the EOD personnel are permanently attached.

(d) If EOD units respond in an explosive mishap, ensure the appropriate EOD units are information addressees on all reports.

c. Submission of Reports

(1) General. Reports are normally unclassified (FOR OFFICIAL USE ONLY). If the inclusion of classified material is essential, a separate classified addendum for an otherwise unclassified report may be submitted.

(2) Message Reports. The message report described in this appendix is required for all explosive mishaps and conventional ordnance deficiencies. The report shall be submitted in addition to any reports required by other directives.

(a) OPREP-3 Reports. The submission of an OPREP-3 report does not relieve the command from the requirement for submitting an explosive mishap or conventional ordnance deficiency report.

(b) Initial Message or Telephone Report. Make an initial Explosive Mishap Report for all Class A and B severity explosive mishaps by immediate message in the format provided in this appendix giving as much information you have available. When circumstances permit, also make a telephone report within 24 hours to the following (if they are action addressees on the message report):

1. During normal working hours (0800 -1630 Eastern time):

CNO (N411) - DSN: 225-7093 or commercial: (703) 695-7093
NAVORDCEN INDIAN HEAD (N71) - DSN: 354-6081 Ext 107 or commercial: (301) 743-6081
COMNAVAIRSYSCOM (AIR-516C1) - DSN: 222-8702 or commercial: (703) 692-8702 (Explosive material/equipment)
COMNAVAIRSYSCOM (AIR-09F) - DSN: 222-1234 or commercial: (703) 692-1234 (Deaths and injuries)
COMNAVSAFECEN (Code 43) - DSN: 564-3343 or commercial: (804) 444-3343

2. Outside normal working hours (1630 - 0800 Eastern time):

CNO (Navy Department Duty Captain) - DSN: 225-0231 or commercial: (703) 695-0231
COMNAVSEASYSCOM (Watch Officer) - DSN: 332-7527 or commercial: (703) 602-7527
COMNAVAIRSYSCOM (Duty Officer) - DSN: 222-1666 or commercial: (703) 692-1666
COMNAVSAFECEN (Duty Officer) - DSN: 564-3520 or commercial: (804) 444-3520

(c) Upon completion of the preliminary mishap investigation of a Class B mishap, submit a supplementary report providing additional or changed information from the initial report. Send all supplementary reports within 7 days of the initial report.

(d) Submit an initial routine explosive mishap or conventional ordnance deficiency message report within 24 hours for all Class C explosive mishaps and in the following circumstances:

1. One or more individuals exhibiting physiological symptoms of agent exposure.

2. An unintentional or uncontrolled release of chemical agent where the agent quantity released to the atmosphere creates a serious potential for injury or death.

3. Injuries sustained as a result of an explosive mishap or conventional ordnance deficiency which meets the definition of a lost time case.

(e) Submit a message report within 30 days for all other explosive mishaps or conventional ordnance deficiencies. Do not submit letter reports instead of messages.

7. Reports to the Department of Defense Explosives Safety Board (DDESB). Reference A6-7 requires each DoD component to submit reports to the DDESB for mishaps involving ammunition, explosives, and chemical agents and systems. CNO (N411) is the central U.S. Navy office responsible for ensuring accomplishment of the required reporting and investigation and the point of contact between DDESB and U.S. Navy activities.

8. Dissemination of Information. Each Navy and Marine Corps command receiving an Explosive Mishap or Conventional Ordnance Deficiency Report from a Class B and C severity mishap may release the data to appropriate subordinate commands and personnel. Paragraph 7 of appendix A6-A discusses the restrictions on disseminating information in MIRs on Class A explosive mishaps. If there are any questions on the use of this report, call COMNAVSAFECEN (Code 43) at DSN: 564-3342 or commercial (804) 444-3342.

9. Addressees of Message Report

a. For handling mishaps, also include appropriate additional addressees from lists headed Shipping Containers and Handling.

b. For all reports affecting **research and development**, make sure the following information addressees are included:

DEPT OF DEFENSE EXPLOSIVES SAFETY BD ALEXANDRIA VA//DDESB-IK//
CDRAMCCOM ROCK ISLAND IL//AMSMC-SF-P//
NAVORDCEN INDIAN HEAD MD//N71//
HQ AFSA KIRTLAND AFB NM//SEW//
DLA CAMERON STA VA//AQCOI//
* CDRMTMC FALLS CHURCH VA//MTCG//
* COMSC WASHINGTON DC//N00M/N33//
* HQ AMC SCOTT AFB IL//SE//

* - **MISHAPS INVOLVING TOMAHAWK MISSILES ONLY**

**Surface Launched Rockets**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N82//
COMNAVSURFPAC SAN DIEGO CA//N811/N812/N813//
NAVSURFWARCENDIV INDIAN HEAD MD//044/570//
NAVSURFWARCEN ORDSTA LOUISVILLE KY//0671/50//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
NAVSURFWARCENDIV CRANE IN//04/20//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Air Launched Rockets**

TO AIG FOUR TWO THREE
AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
NAVSURFWARCENDIV INDIAN HEAD MD//044/570//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Surface Launched Missiles**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E/N45//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N812/N813//
NAVSURFWARCENDIV INDIAN HEAD MD//044/620//
NAVSURFWARCENDIV CRANE IN//20/067//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA YORKTOWN VA//04/16/30/20/30/35//
WPNSTA SEAL BEACH CA//04/20//
WPNSTA CONCORD CA//04/20/30//
NWADIV CORONA CA//QA40//
NAVSURFWARCENDIV PORT HUENEME CA//1G00//
* PEOCMPANDUAV WASHINGTON DC//PMA280/PMA282/PMA2805/PMA2811//
Receiving weapons station (turn-in items only)
Chain of Command
* - **MISHAPS INVOLVING TOMAHAWK MISSILES ONLY**

**Air Launched Missiles**

TO AIG FOUR TWO THREE
AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
NAVSURFWARCENDIV INDIAN HEAD MD//044/580//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C84/C0804//
WPNSTA SEAL BEACH CA//04/20//
* PEOCMPANDUAV WASHINGTON DC//PMA280/PMA282/PMA280S/PMA2811//
NWADIV CORONA CA//QA44//
Receiving weapons station (turn-in items only)
Chain of Command

* - **MISHAPS INVOLVING TOMAHAWK MISSILES ONLY**

**Shipping Containers and Handling for NAVAIR Cognizance Items**

TO AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N422/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044//
NWADIV CORONA CA//QA40/
NAVAIRWARCENACDIV LAKEHURST NJ//17//
WPNSTA EARLE COLTS NECK NJ//04/20/50//
Receiving weapons station (turn-in items only)
Chain of Command

**Gun Ammunition 3-Inch 50 Cal. and Larger**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N432/N814//
COMNAVSEASYSCOM WASHINGTON DC//91W2//
NAVSURFWARCENDIV INDIAN HEAD MD//044/620//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA YORKTOWN VA//04/16/20/30/35//
WPNSTA SEAL BEACH CA//04/20/30//
WPNSTA CONCORD CA//04/20/30//
NAVSURFWARCENDIV CRANE IN//04/R67//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Gun Ammunition Smaller than 3-Inch 50 Cal.**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N432/N814//
COMNAVSEASYSCOM WASHINGTON DC//91W2//
NAVSURFWARCENDIV INDIAN HEAD MD//044/610//
NAVSURFWARCEN ORDSTA LOUISVILLE KY//0671/50//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA YORKTOWN VA//04/16/20/30/35//
WPNSTA SEAL BEACH CA//04/20//
WPNSTA CONCORD CA//04/20/30//
NAVSURFWARCENDIV CRANE IN//20/067//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Free Fall Weapons Excluding Mines and Depth Charges**

TO AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N442/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Small Arms and Landing Force Ammunition**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N4221/N814//
COMNAVSEASYSCOM WASHINGTON DC//91WE//
NAVSURFWARCENDIV INDIAN HEAD MD//044/620//
NAVSURFWARCEN ORDSTA LOUISVILLE KY//0671/50//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
NAVSURFWARCENDIV CRANE IN//20/067//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Torpedoes, Sonobuoys, and ASROC**

TO AIG FOUR ZERO TWO
AIG FOUR TWO THREE
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N43//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N432/N811//
NAVSURFWARCENDIV INDIAN HEAD MD//044/56//
WPNSTA YORKTOWN VA//04/16/30/20/35//
WPNSTA SEAL BEACH CA//04/20//
NAVUNSEAWARCENDIV KEYPORT WA//20/30/041/60//
NAVUNSEAWARCENDIV NEWPORT RI//0032/024/81//
NAVSURFWARCENDIV PORT HUENEME CA//1G00//
Receiving weapons station (turn-in items only)
Chain of Command

**Demolition Material and Bulk Explosives and Use of EOD Services**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N30M/N422/N4221/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/630//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
NAVSURFWARCENDIV CRANE IN//20/067//
WPNSTA YORKTOWN VA//04/16/30/20/35//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
NAVEODTECHDIV INDIAN HEAD MD//6011//
Receiving weapons station (turn-in items only)
Chain of Command

**Pyrotechnics and Chemicals**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N543//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N42/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/56//
WPNSTA SEAL BEACH CA//04/20//
NAVSURFWARCENDIV CRANE IN//04/067//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Mines and Projector Charges**

TO AIG FOUR ZERO TWO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N43//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N30M/N42/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/630//
NAVSURFWARCEN WHITE OAK DET SILVER SPRING MD//450/R95//
MARCORSYSCOM WASHINGTON DC//AM-EES//
WPNSTA SEAL BEACH CA//04/20//
WPNSTA YORKTOWN VA//04/16/20/30/35//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//C02A/C02B/C85/C0804//
NAVSURFWARCENDIV CRANE IN//20/067/4022/PM416//
COMINEWARCOM CORPUS CHRISTI TX//N3//
Receiving weapons station (turn-in items only)
Chain of Command

**Cartridges and Cartridge Activated Devices**

TO AIG SEVEN SIX TWO ZERO
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N30M/N42/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044/50//
NAVSURFWARCENDIV CRANE IN//20/067/4022/PM416//
WPNSTA SEAL BEACH CA//04/20//
CDRAMCCOM ROCK ISLAND IL//AMSMC-QAS//
Receiving weapons station (turn-in items only)
Chain of Command

**Shipping Containers and Handling for NAVSEA Cognizance Items**

TO AIG FOUR ZERO TWO
AIG FOUR TWO THREE
CFA (Cognizant Field Activity)
INFO COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//N85/N85E//
COMSUBLANT NORFOLK VA//N7/N42/N43//
COMSUBPAC PEARL HARBOR HI//N7/N42//
COMNAVSURFLANT NORFOLK VA//N6/N8//
COMNAVSURFPAC SAN DIEGO CA//N812/N814//
NAVSURFWARCENDIV INDIAN HEAD MD//044//
WPNSTA YORKTOWN VA//04/16/20/30/35///
WPNSTA SEAL BEACH CA//04/20//

Shipping Containers and Handling for NAVSEA Cognizance Items (continued)

INFO NCCOSC RDTE DIV SAN DIEGO CA//038//
NAVUNSEAWARCENDIV KEYPORT WA//20/30/041/60//
NAVUNSEAWARCENDIV NEWPORT RI//0032/024/81//
NAVSURFWARCENDIV PORT HUENEME CA//1G00//
Receiving weapons station (turn-in items only)
Chain of Command

10. Address Indicating Group (AIG) Composition

AIG FOUR ZERO TWO

TO NAVORDCEN INDIAN HEAD MD//044/610//
NAVORDCEN IMSD MECHANICSBURG PA//60//
INFO CMC WASHINGTON DC//ASL301//
CNO WASHINGTON DC//N411E//
COMNAVAIRSYSCOM WASHINGTON DC
COMNAVSEASYSCOM WASHINGTON DC
COMNAVAIRWARCENACDIV PATUXENT RIVER MD//CSDOPR//
COMNAVSAFECEN NORFOLK VA//43//
NAVSURFWARCENDIV DAHLGREN VA//C8105//
NAVAIRWARCENWPNDIV PT MUGU CA//2004/P2632//
COMMARFORLANT//ALD-D//
COMMARFORPAC//ALD-D//
CG FOURTH MAW//ALD-B//
NAVAVSCOLSCOM PENSACOLA FL//155//
SERVSCOLCOM GREAT LAKES IL//42//
FCTCLANT, DAM NECK VA//305//

AIG FOUR TWO THREE

TO COMNAVAIRSYSCOM WASHINGTON DC//5166Q//
ASO PHILADELPHIA PA//052.18//
INFO CNO WASHINGTON DC//N60T//
COMNAVSAFECEN NORFOLK VA//N43//
CG FOURTH MAW//ALD-B//
COMNAVAIRLANT NORFOLK VA//N85//
COMNAVAIRPAC SAN DIEGO CA//913/93//
COMNAVSURFLANT NORFOLK VA//N42//
COMNAVSURFPAC SAN DIEGO CA//N9812/N811//
NAVORDCEN ESSOLANT NORFOLK VA//004//
NAVORDCEN ESSOPAC SAN DIEGO CA//004//
COMMARFORLANT//ALD-D//
COMMARFORPAC//ALD-D//
NAVAIRWARCENACDIV LAKEHURST NJ//PM23//
COMNAVRESFOR NEW ORLEANS LA//57//
NAVAVNDEPOTOPSCEN PATUXENT RIVER MD//0018//
MTCC CAMP BUTLER JA//G6 PLT CODE SF//
NAVAIRPRA DET OKINAWA JA//JJJ//
MARCORSYSCOM WASHINGTON DC//AM-EES//
NAVAVNDEPOT CHERRY PT NC//JJJ//
COMNAVAIRWARCENACDIV PATUXENT RIVER MD//SA-55//

**AIG SEVEN SIX TWO ZERO**

TO COMNAVAIRSYSCOM WASHINGTON DC//4101B//
NAVORDCEN IMSD MECHANICSBURG PA//8522//
NAVORDCEN INDIAN HD MD//JJJ//
INFO CNO WASHINGTON DC//N411//
CMC WASHINGTON DC//ASL30//
COMNAVSAFECEN NORFOLK VA///43//
COMNAVSEASYSCOM WASHINGTON DC
NAVAIRWARCENACDIV PATUXENT RIVER MD//JJJ//
NAVORDCEN INDIAN HEAD MD//N71//
NAVSURFWARCENDIV DAHLGREN VA//C8105//
NAVAVNDEPOTOPSCEN PATUXENT RIVER MD//1414/510/227//
NAVAIRWARCENWPNDIV PT MUGU CA//2004//
COMMARFORLANT//ALD-D//
COMMARFORPAC//ALD-D//
CG FOURTH MAW//ALD-B//
NAVAVSCOLSCOM PENSACOLA FL//155//
NAVORDCEN ESSOLANT NORFOLK VA//004//
NAVORDCEN ESSOPAC SAN DIEGO CA//004//
MARCORSYSCOM WASHINGTON DC//AM-EES//
SERVSCOLCOM GREAT LAKES IL//42//
FCTCLANT DAM NECK VA//305//

**Attachment A6-E-1**

**SAMPLE MESSAGE**
**EXPLOSIVE MISHAP OR CONVENTIONAL ORDNANCE**
**DEFICIENCY (REPORT)**
**(REPORT SYMBOL DD-A&T(AR) 1020 (5102)**
(For Class B, C, and less severe reportable mishaps)

1. General. Use format and content below for explosive mishap and conventional ordnance deficiency reports. Submit as much information as is available. Submit supplementary reports as necessary to supply the missing information when available. OMIT ITEMS THAT DO NOT APPLY OR ARE NOT RELEVANT TO THE REPORT. Avoid using "unknown" unless you give the reason for not having the information.

2. Content and Format.

(Precedence - normally ROUTINE)

FM REPORTING ACTIVITY

TO AIG--------(See paragraph 9 of Appendix A6-E)
CFA (Cognizant Field Activity)

INFO (See paragraph 9 of Appendix A6-E)

UNCLAS FOUO //N08020//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/EXPLOSIVE MISHAP REPORT or CONVENTIONAL ORDNANCE DEFICIENCY (REPORT /SYMBOL DD-A&T(AR) 1020 (5102) (MIN: CONSIDERED)//

REF/A/DOC/CNO/19JAN94//

REF/(If this is a follow-up message, include the DTG of all previous reports.)//

NARR/REF A IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES AS DEFINED IN CHAPTER A6 OF OPNAVINST 5100.19C.//

POC/NAME/RANK/PRIMARY PHONE/PRIMARY FREQ/LOCATION/SECONDARY PHONE/SECONDARY FREQ//

RMKS/PART I
ALPHA:

1. UIC OF REPORTING UNIT (Also list UIC of mishap activity if different from the reporting activity.)

2. REPORT SERIAL NO. (Locally provided sequential number by calendar year.)

3. LOCAL TIME AND DATE OF MISHAP OR DEFICIENCY

4. GEOGRAPHIC LOCATION (If classified give general area.)

5. LOCATION WHERE OCCURRED (Location on ship or activity where mishap or deficiency occurred.)

6. EVOLUTION AT TIME (For example, loading, unloading, handling, UNREP, MISSILEX, GUNEX, or routine maintenance.)

7. SHIP STATUS (For example, underway, anchored, or normal inport workday.)

BRAVO: (MATERIAL/PROPERTY DAMAGE)

1. EQUIPMENT DAMAGED OR DESTROYED (Repeat following items for all systems involved.)

A. EXPLOSIVE SYSTEMS INVOLVED (Repeat following items for all systems involved.)

(1) NAME, MK, MOD, MODEL

(2) EIC, TEC

(3) DODIC or NALC (Mandatory)

(4) NATIONAL STOCK NUMBER

(5) LOT NO.

(6) SERIAL NO.

(7) DESCRIBE DAMAGE

(8) IF DEFECTIVE MATERIAL SUSPECTED, STATE NUMBER OF ITEMS REMAINING IN SAME LOT or BATCH

B. LAUNCH DEVICES (Repeat for all launch devices involved.)

(1) NAME, MK, MOD, MODEL

(2) EIC, TEC, FGC (functional group code)

(3) NATIONAL STOCK NUMBER

(4) LOCATION (For example, mount or station.)

(5) DESCRIBE DAMAGE

C. ASSOCIATED HARDWARE (For example, work stands, test sets, fuze setters or fire control director. Repeat for all associated hardware.)

(1) NAME, MK, MOD, MODEL

(2) EIC, TEC, FGC (functional group code)

(3) NATIONAL STOCK NUMBER

(4) DESCRIBE DAMAGE

D. BULK or BATCH EXPLOSIVE MATERIAL INVOLVED (Normally applies to quantities of materials not specifically identifiable by weapon system.)

(1) NAME OF EXPLOSIVES

(2) WEIGHT OF EXPLOSIVES

E. ALL OTHER DEPARTMENT OF DEFENSE PROPERTY

F. NON-DOD PROPERTY

2. ESTIMATED COST TO REPLACE or REPAIR (Provide a total cost to replace all hardware including $16 for each hour of labor. Do not list total cost of item unless it cannot be repaired.)

A. EXPLOSIVE SYSTEM

B. LAUNCH DEVICE

C. ASSOCIATED HARDWARE

D. ALL OTHER DEPARTMENT OF DEFENSE PROPERTY

E. NON-DOD PROPERTY

F. TOTAL DOLLAR LOSS (Mandatory - Include in supplementary message if all dollar values not initially available.)

CHARLIE: REPORTABLE INJURIES

1. EXTENT OF INJURIES OR OCCUPATIONAL ILLNESS (Specify if permanent partial disability or no disability likely. If the mishap involves more than one person, be specific in Paragraph CHARLIE about which person is being described. Repeat items 1 through 8 for each person.

2. NAME/SSN/AGE/SEX/RACE

3. RANK and DESIGNATOR or RATE and NEC, GRADE, JOB TITLE AND EMPLOYMENT STATUS (Examples of employment status include USN, USNR, USNR-R, other Department of

Defense personnel, Navy federal civil servants, contractors, foreign military exchange personnel, and foreign civilians.)

4. DUTY STATUS (On- or off-duty) and UIC (if different from reporting activity). (*If the mishap involves injuries to people from different commands, specify the UIC of each individual.*)

5. SPECIFIC JOB OR ACTIVITY INDIVIDUAL ENGAGED IN AT TIME OF MISHAP (For example, conducting planned maintenance (PMS), standing watch, handling ammunition, training, and weapons maintenance.)

6. NUMBER OF MONTHS EXPERIENCE AT THE JOB OR ACTIVITY (This information is to determine the experience the injured person possessed for the job or activity.)

7. MEDICAL DIAGNOSIS (Include part of body and type of injury.)

8. ESTIMATE OF LOST TIME

A. TOTAL LOST WORKDAYS AWAY FROM JOB (Actual number of days, including workdays hospitalized.)

B. DAYS ACTUALLY HOSPITALIZED (Actual number of days hospitalized, including weekends.)

C. DAYS OF LIGHT OR LIMITED DUTY

DELTA: TYPE OF MISHAP

1. DETONATION

2. INADVERTENT LAUNCH

3. MALFUNCTION

4. OBSERVED DEFECT

5. CHEMICAL AGENT RELEASE

6. OTHER

ECHO: NARRATIVE (The chain of events leading up to, through, and subsequent to the mishap or deficiency. State if mishap or deficiency was "induced" (caused by the reporting activity), or "discovered" (not caused by the reporting activity but revealed during inspection or test). Include as much information as possible to provide a clear understanding of exactly what happened or might have happened including suspected or known causes. List secondary cause, if applicable.

FOXTROT: CAUSE FACTORS

1. CAUSE OF MISHAP or DEFICIENCY (State appropriate type; for example, material failure, improper design, environment, human error, or supervisory error. If material or design, describe how equipment failed. If environment, state if not stored properly, corroded, etc. If human error, supervisory error, or improper procedure, complete items 2 through 4 below.)

2. WHAT DID THE PERSON OR PERSONS FAIL TO DO? (For example, correctly operate controls; accomplish planned or corrective maintenance properly; recognize hazardous situations; use proper caution for known risk; use protective clothing or equipment; use proper tool or equipment; plan adequately, supervise progress of work; or other.)

3. WHY DID THE PERSON OR PERSONS FAIL TO CARRY OUT ACTION OF PARAGRAPH FOXTROT TWO? (For example, lack of concern or interest; inadequate supervision, distracted or inattentive; haste, overconfidence; emotionally aroused; inadequate knowledge; insufficient experience; fatigue; alcohol; drugs; illness; misunderstanding; design; or other).

4. WHO CAUSED THE MISHAP?

A. SUPERVISOR, OPERATOR, MAINTENANCE WORKER, OFF-DUTY MILITARY, OTHER, or UNKNOWN

B. RANK and DESIGNATOR, RATE and NEC, or GRADE and JOB TITLE

C. WAS A SUPERVISOR OR SAFETY OBSERVER PRESENT?

D. QUALIFICATION or CERTIFICATION HELD (Enter Yes, No, or Not Required.) Indicate if each person involved in the mishap as a cause factor holds a current qualification or certification based on OPNAVINST 8023.2C or MCO 8023.2A (NOTAL).

GOLF: RECOMMENDATIONS and LESSONS LEARNED: Based on the above causes for the mishap or deficiency, give a recommendation on how to avoid future mishaps or deficiencies of the same, or a related, type. If several factors are involved, be sure to list them. Paragraph GOLF is, perhaps, the most important part of the report. If good recommendations are implemented, future mishaps can be prevented. If caused by a material or design defect, suggest changes needed for safer equipment. If caused by personnel or supervisory error, suggest changes in standard operating procedures, if appropriate.

HOTEL: SUPPLEMENTAL DATA

1. TECHNICAL INVESTIGATION (NOT) REQUESTED (Mandatory)

2. ITEM or FRAGMENTS (NOT) AVAILABLE

3. PHOTOGRAPHS (NOT) AVAILABLE

4. SUPPLEMENTARY MSG WILL (NOT) BE SUBMITTED: If the cause, lessons learned, recommendations, or dollar loss of equipment damages are not determined before the initial reporting time requirements, include them and other missing information in a supplementary message.

PART II (Complete only if surface-launched guided missiles are involved)

ALPHA:

In case of misfire or duds, if ready-to-fire light was not illuminated, determine, if possible, which of the following interlocks were not present:

1. LAUNCHER SYSTEM BLAST DOOR CLOSED

2. LAUNCHER SYNC

3. FIRING RAIL LOADED

4. MLC EXTENDED

5. LAUNCHER POINT TO SAFE FIRING ZONE

BRAVO: INTENDED OFF-LOAD DATE OF ITEMS INVOLVED AND ACTIVITY, IF KNOWN//

BT

**Appendix A6-F**

**MOTOR VEHICLE MISHAP REPORTING PROCEDURES (A**
**REPORT SYMBOL OPNAV 5102-4 (MV)**

1. In the interest of mishap prevention, the Navy must investigate all motor vehicle mishaps. Motor vehicle mishaps do not require a mishap investigation board. However, they may require the submission of a Motor Vehicle Safety Mishap Report (MV) in the format provided in this appendix. COMNAVSAFECEN will revise attachment A6-F-1 to conform with changes to reference A6-4.

2. REPORTABLE MOTOR VEHICLE MISHAPS

a. Government Motor Vehicle (GMV) Mishap. A mishap involving the operation of a GMV resulting in a collision with other vehicles, pedestrians (including joggers), bicyclists (when struck by a motor vehicle), or other objects; personal injury or property damage due to cargo shifting in a moving vehicle; personal injury in moving vehicles or by falling from moving vehicles; towing or pushing mishaps; and other injury or property damage when there is one or more of the following:

(1) At least $2,000 property damage (total of all government- and privately-owned vehicles and property), or

(2) A fatality or an injury resulting in 5 or more lost workdays to military and Navy civilian personnel, or

(3) A civilian fatality while riding in, or caused by a government motor vehicle.

b. Private Motor Vehicle (PMV) Mishap. A traffic mishap, regardless of the identity of the operator, not involving a GMV but resulting in:

(1) A fatality or an injury resulting in 5 or more lost workdays to on- and off-duty assigned military and on-duty Navy civilian personnel, or

(2) $2,000 or more government property damage.

(3) Collisions involving pedestrians (including joggers) or bicyclists (when struck by a motor vehicle), or collisions with other objects are included if they meet the reporting requirements of this paragraph.

(4) Naval Reserve personnel on inactive duty for training (travel) (IDTT), who are involved in a motor vehicle mishap while traveling from their home directly to the drill site, or from the drill site directly home, shall be counted as an off-duty reportable motor vehicle mishap if they meet all other reporting requirements of this appendix.

c. Motor Vehicle Special Cases. A motor vehicle mishap causing death to anyone not otherwise defined occurring on a naval installation or as a result of military operations is reportable.

d. Exceptions

(1) The following mishaps, although reportable and accountable, are not motor vehicle mishaps. They are accountable under other ground categories and reported under the provisions of reference A6-3 or this appendix for personnel assigned to afloat units using a Mishap Report (MR).

(a) Personal injuries that occur while loading or unloading, mounting or dismounting a motor vehicle which is not moving

(b) Damage to a properly parked GMV unless it is damaged by another GMV

(c) Property damage resulting solely from Acts of God are not reportable unless the activity did not adequately prepare for the extreme conditions.

(d) Damage to a GMV:

1. Being handled as a commodity and not being operated under its own power

2. By objects thrown or propelled into it

3. By fire when no motor vehicle mishap occurred. Refer to OPNAVINST 11320.25B (NOTAL) for additional reporting requirements.

(e) Attempted or consummated suicide or other intentionally self-inflicted injuries when a motor vehicle is involved.

(f) Injuries or death caused by attempted or consummated homicide or other criminal act or altercations, attack, or assault using a PMV.

(g) Injuries or death to military or on-duty Navy civilians escaping from or eluding military custody or arrest in a vehicle.

(h) Injury or death due to natural causes. For example, a driver of a motor vehicle has a heart attack or other medical emergency while driving. If medical authorities can determine the medical condition caused the mishap, the resultant injury or death is not reportable. However, injuries to others or property damage as a result of the mishap are reportable, if they meet minimum reporting criteria.

(i) Damage to a GMV resulting from vandalism, riot, civil disorder, sabotage, terrorist activity, or an act of felony.

(2) The following mishaps need not be reported under this appendix:

(a) Damage to a GMV as a result of vandalism, riots, civil disorders, sabotage, terrorist activities, or felonious acts (for example, arson and attempted murder)

(b) Injuries or fatalities to military or on-duty Navy civilian personnel escaping from or eluding military or civilian custody or arrest.

e. Off-road and combat vehicles. Motor vehicle equipment designed primarily for off-the-highway operations such as tracked or half-tracked vehicles, forklifts, road graders, agricultural tractors, and aircraft tugs are special purpose or combat vehicle use and are reported according to reference A6-3 when ashore and paragraph A0603a or A0603b when embarked.

3. REPORTING REQUIREMENTS

a. Responsibility. The commanding officer, officer in charge, or master of a ship shall ensure an investigation is conducted per this appendix. When afloat personnel are involved in a reportable motor-vehicle mishap away from their duty station, the naval activity nearest the scene will notify the victims' command(s). The two commands shall determine which one conducts the investigation. However, the final responsibility for ensuring that the report is submitted rests with the individuals' parent command(s). Establish contact between the ship's commanding officer, executive officer, or motor vehicle safety officer and the naval activity to ensure timely mishap investigation, reporting, and corrective actions.

b. Submission of Reports. Within 30 days, the investigating command shall release an Motor Vehicle Safety Report (MVSR) in the format contained in the sample format in this appendix by message to Commander, Naval Safety Center (COMNAVSAFECEN). Reporting activities shall include their chain of command as information addressees on mishaps meeting the reporting threshold for a Class A or B mishap.

c. Preliminary Reports

(1) A preliminary, priority message report must be made to COMNAVSAFECEN NORFOLK VA//42/40/50/30B/70/054// within 24 hours of a parent command's notification when any of the following occurs:

(a) Any on-duty motor vehicle mishap resulting in a fatality to one or more Navy military or Navy federal, non-appropriated fund (NAF), or foreign civilian personnel up to 6 months after the date of occurrence.

(b) Any on-duty motor vehicle mishap where five or more assigned military or Navy civilian personnel are admitted to the hospital.

(2) A preliminary, priority message report must be made to COMNAVSAFECEN NORFOLK VA//42/40/50/30B/70/054// within 48 hours of a parent command's notification when any of the following occurs:

(a) Any off-duty motor vehicle mishap resulting in a fatality to one or more Navy military personnel up to 6 months after the date of occurrence.

(b) Any off-duty motor vehicle mishap where five or more assigned military personnel are admitted to the hospital.

(3) For preliminary, priority reports, use the sample report format contained in attachment 1 to this appendix to provide available information. At a minimum, report the date and time of mishap; name and social security number of injured or dead people; location of mishap; description of the mishap; and extent of damage or injury. A preliminary, priority message report is not required if the required information has already been sent to COMNAVSAFECEN in an OPREP-3 or UNIT SITREP. Submission of the preliminary, priority message report does not relieve the command from submitting a complete report within 30 calendar days of the mishap. Send information copies of the report to the appropriate chain of command.

d. Additional Information. If additional information becomes available, or information originally submitted changes, submit a follow-up report. Give the local time and date of the mishap and the name(s) of the injured or dead reported on the original MV Report. Then, give only the items to be added or changed. Mark the report, "Modified" and send it to the same addressees as the original report. COMNAVSAFECEN may also request additional information, when needed.

**Attachment A6-F-1**

**SAMPLE MESSAGE FORMAT**
**MOTOR VEHICLE SAFETY MISHAP REPORT**
**REPORT SYMBOL OPNAV 5102-4 (MV)**

1. General

Use the following format and content for reporting personnel injuries and deaths and material (property) damage resulting from motor vehicle mishaps. Submit as much information as you have available in the initial report. Submit supplementary reports to supply missing information. Where requested data do not apply, insert "NOT APPLICABLE." Avoid using "unknown" unless you give the reason for not having the information.

2. Content and Format

(Precedence - normally ROUTINE)

FM ACTIVITY SUBMITTING REPORT

TO COMNAVSAFECEN NORFOLK VA//42/40/50/30B/70/054//

INFO As desired, directed, or required by higher authority

UNCLAS FOUO //N05102//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/MOTOR VEHICLE SAFETY MISHAP REPORT (REPORT SYMBOL OPNAV 5102-4) (MV)//

REF/A/CNO/01MAY91//

REF/B/DOC/CNO/19JAN94//

REF/C/ (If follow-up message, refer to all previous reports.)

NARR/REF A IS OPNAVINST 5100.12F, ISSUANCE OF NAVY TRAFFIC SAFETY PROGRAM. REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. REF C IS (subject of follow-up message.) THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES PER CHAPTER A6 OF OPNAVINST 5100.19C.//

POC/name/rank/primary phone/-/location/secondary phone//

RMKS/1. PER REFS A AND B, THE FOLLOWING INFORMATION IS SUBMITTED:

A. ALPHA. EVENT DATA:

(1) NAME AND UIC OF REPORTING ACTIVITY

(2) LOCAL DATE, TIME, AND DAY OF WEEK MISHAP OCCURRED

(3) GEOGRAPHIC LOCATION (Include city and state and whether on or off Navy property. If on Navy property, give name and UIC of installation where mishap occurred. If off base, provide the approximate distance (in miles) from the driver's duty station.)

(4) ENVIRONMENTAL CONDITIONS (For example, weather and road conditions.)

B. BRAVO: VEHICLE INVOLVEMENT. IDENTIFY ALL VEHICLES (Year, make, model, and whether government or privately owned. For motorcycles, mopeds, and all-terrain vehicles, include model and engine displacement. Was the motorcycle registered for operation on a Navy facility? If so, include the name and UIC of the command.)

C. CHARLIE: REPORTABLE OPERATOR INVOLVEMENT. Items C(1)-(6) apply only to motor vehicle operators. If parked vehicle, so state.

(1) IDENTIFY ALL OPERATORS (By name, sex, age, race, and marital status. State if operator is non-Department of Defense (DoD) civilian. For military and Navy civilian personnel, include duty status; social security number; officer designator; rank, rate, and NEC, or civil service grade and series; and driver's license number and issuing state. If a motorcyclist, indicate whether or not the driver's license was endorsed for motorcycle operation. Include the vehicle involvement (GMV/PMV) for each operator).

(2) NAME AND UIC OF DUTY STATION OF OPERATOR(s) (If not the same as the reporting activity.)

(3) For military and Navy civilian operators only, give date and type of operator training completed (For example, AAA, MRC-RSS, EVOC, no training received, etc.)

(4) DRUG/ALCOHOL/FATIGUE INVOLVEMENT AT TIME OF MISHAP. State specific drug name and whether prescription, non-prescription, or illegal; alcohol involvement and blood alcohol content for each operator; or whether fatigued, asleep, not drinking or taking drugs, or alert.

(5) FOR THE OPERATOR(s) INCLUDE DEGREE OF INJURY: Fatality, injury or no injury. (In fatality cases, include the cause of death. For example, head injury, internal injury, etc. In injury cases, include actual days hospitalized, and actual lost workdays (other than hospital days). If days are unknown, estimate. State if injury will result in a permanent total disability, permanent partial disability, or non-disabling injury. Include type(s) of injury. for example, head injury, internal injury, fractured arm or leg, etc.)

(6) INCLUDE SAFETY DEVICES USED BY THE OPERATOR(s) (For example, safety belt, air bag deployed, motorcycle helmet, boots, reflective vest, etc. State if operator was totally ejected from the vehicle or motorcycle, partially ejected, or not ejected. FOR GMV OPERATORS - If a personal injury results from

not using or the malfunctioning of a safety belt, explain why safety belts were not used, or in case of malfunction, what caused the malfunction, and what remedial actions have been taken to prevent recurrence).

D. DELTA: REPORTABLE NON-OPERATOR INJURIES. Items D(1)-(5) apply to all reportable "NON-MOTOR VEHICLE OPERATORS" Passengers, pedestrians, joggers, and bicyclists (when struck by a motor vehicle) injured or killed.

(1) IDENTIFY ALL NON-OPERATORS (By name, sex, age, race, and marital status. Also state if the individual is a civilian. For military and Navy civilian personnel give duty status; social security number; officer designator; rank, rate, NEC, or civil service grade and series. Include the vehicle involvement (GMV/PMV) for each person killed or injured. For passengers (vehicle or motorcycle), identify actual position in or on the vehicle. For example, right front passenger, center rear passenger, seated behind operator (motorcycles), etc. For pedestrians, joggers and bicyclists, identify location where struck. For example, in roadway, on shoulder, on sidewalk, etc.)

(2) NAME AND THE UIC OF DUTY STATION OF NON-OPERATORS KILLED OR INJURED IF DIFFERENT FROM REPORTING ACTIVITY.

(3) DRUG/ALCOHOL/FATIGUE INVOLVEMENT AT TIME OF MISHAP. State the specific drug name and whether prescription, non-prescription, or illegal; alcohol involvement and blood alcohol content for each non-operator killed or injured; or whether fatigued, asleep, not drinking or taking drugs, alert, etc.

(4) IF GMV MISHAP - PROVIDE THE FOLLOWING INFORMATION FOR EACH NON-OPERATOR INJURED OR KILLED; OR, IF PMV MISHAP - PROVIDE THE FOLLOWING INFORMATION FOR EACH DoD NON-OPERATOR INJURED OR KILLED:

INCLUDE DEGREE OF INJURY: Fatality or injury. (In fatality cases, include the cause of death. For example, head injury, internal injury, etc. In injury cases, include actual days hospitalized, and actual lost workdays (other than hospital days). If days are unknown, estimate. State if injury will result in a permanent total disability, permanent partial disability, or non-disabling injury. Include type(s) of injury, for example, head injury, internal injury, and fractured arm or leg, etc.)

(5) FOR EACH PASSENGER KILLED OR INJURED, GIVE SAFETY DEVICES USED (For example, safety belt, air bag deployed, motorcycle helmet, boots, reflective vest, etc. State if passenger was totally ejected from the vehicle or motorcycle, partially ejected, or not ejected.) FOR EACH PEDESTRIAN, JOGGER, OR BICYCLIST KILLED OR INJURED, GIVE SAFETY DEVICES USED (For example, light or dark clothing, reflective clothing, bicycle helmet, etc.) FOR GMV PASSENGERS - If a personal injury results from not using or the malfunction of a safety belt, explain why safety belts were not used by the injured person, or in cases of malfunction, what caused the malfunction, and what remedial actions have been taken to prevent recurrence).

E. ECHO: PROPERTY DAMAGE

(1) INCLUDE DoD PROPERTY DAMAGE (Government motor vehicle and other DoD property. Cost to repair or replace, and DoD work-hours to repair. If costs are unknown, give estimate).

(2) INCLUDE COST OF NON-DoD PROPERTY DAMAGE WHEN CAUSED BY GMV MISHAP (private vehicles and private property)

F. FOXTROT: 72-HOUR PROFILE. For each motor vehicle mishap involving a Class A or B injury or death include a 72-hour pre-mishap profile on the injured or dead person if that individual had an influence on the mishap occurrence or outcome (not a passive victim). If the person injured or killed was a passenger, provide the 72-hour pre-mishap profile on the driver(s) if military or on-duty civilian. COMNAVSAFECEN may request a 72 hour pre-mishap profile on other selected mishaps. The 72-hour profile includes:

(1) Travel completed during the 72 hours immediately preceding the mishap. Was individual commuting (by vehicle) from duty station to home daily or on weekends more than 100 miles one-way?

(2) Type of work performed and work schedule (hours) for the 72 hours immediately preceding the mishap.

(3) Periods of rest or sleep for 72 hours immediately preceding the mishap.

(4) Medications prescribed and were they taken.

(5) Alcohol and other drugs (prescription, nonprescription, and illegal) taken during the 72 hours immediately preceding the mishap.

(6) General physical condition, including illnesses.

(7) Individual's mental, emotional, and physical state including perceived stress and behavior changes (based on supervisor, next-of-kin (if available), co-workers, and friends.

(8) Other comments the supervisory, next-of-kin, co-workers, and friends wish to make related to the individual's condition or pre-mishap activities.

(9) Other factors prior to the mishap that could have effected the mishap occurrence or its outcome.

(10) Non-judicial punishment (NJP)/Uniform Code of Military Justice NJP/UCMJ record (military only) or any other behavior infractions for the past 3 years.

(11) Driver's experience or knowledge operating this particular type of vehicle.

G. GOLF: NARRATIVE OF THE MISHAP.

(1) Chain of events leading up to, through, and subsequent to the mishap. Elaborate with remarks so the who, what, when, where, how, and why are known. Be specific as to the major cause and contributing cause factors that lead up to the mishap.

(2) Corrective actions. Identify lessons learned and command follow-up information. *Identify specific action(s)* taken to prevent similar mishaps from occurring.//

BT

**Appendix A6-G**

**DIVING MISHAP AND HYPERBARIC TREATMENT (DV) REPORTING PROCEDURES
REPORT SYMBOL OPNAV 5102-5** (A

1. In the interest of mishap prevention, the Navy must investigate all diving mishaps. Class A diving mishaps require convening a mishap investigation board (MIB), investigating the mishap, and submitting an MIR. In certain instances, where vital safety information may be obtained, the type commander may direct an MIB for a Class B or other diving mishap or near mishap. Other reportable diving mishaps require the submission of a Diving Mishap/Hyperbaric Treatment/Death Report (DV) in the format provided in this attachment 1 to this appendix.

2. The following diving mishaps require the submission of a Diving Mishap/ Hyperbaric Treatment/Death Report (DV) for mishaps involving Navy-trained divers assigned to afloat units performing an on-duty working dive resulting in one or more of the following:

a. Any Class B and reportable Class C diving mishap involving the ship's divers when diving from the ship, ship's boat, or when diving from a shore command.

b. Hyperbaric treatment or recompression therapy conducted as a result of a diving mishap in a recompression chamber. Humanitarian civilian treatments are not reportable.

c. Any diving injury or illness preventing a diver from performing regularly established duty or work for 5 days or more when diving from the ship, ship's boat, or when diving from a shore command.

d. Diving mishaps resulting in a reportable injury to Navy divers making a recreational dive and diving mishaps not involving Navy divers require the submission of a report per appendix A6-H.

3. The DV is a General Use Mishap Investigation Report, and shall <u>not include</u> privileged witness information. The DV shall not state the source of any information.

4. If mishap investigators determine there is a <u>need to obtain privileged witness information</u> that may reveal valuable safety information in diving mishap, they shall advise the commanding officer who shall then ascertain the need for an MIB and inform the ISIC.

5. <u>Reportable Diving Mishap/Occupational Illness</u>

a. <u>Basic</u>

(1) Class A diving mishaps. Reports of diving mishaps resulting in a death, permanent total disability, or damage of more than $1,000,000 (Class A mishap) are Limited Use Mishap Reports, defined by reference A6-7, submitted by the MIB using the procedures in section A0604. and the MIR format in appendix A6-C.

(a) Modify Part Alpha of the MIR to include the information required by the sample report in attachment A6-G-1. MIRs of Class A diving mishaps are used for safety purposes only and contain privileged information. The release, distribution, and control of these reports are limited to prevent unauthorized disclosure of report contents.

(b) An autopsy is required for all on-duty diving deaths. Advise the servicing medical facility that the death was diving related. Include a copy of the autopsy with the mishap investigation evidence and forward autopsy results to:

Chairman of Forensic Sciences
Armed Forces Institute of Pathology
6825 16th St., NW
Washington, DC 20306-6000

(c) Impound, seal, and send all diving equipment involved in diving mishaps resulting in a fatality or permanent total disability to:

Commanding Officer
Naval Experimental Diving Unit
321 Bullfinch Road
Panama City, FL 32407-7015
Attn: Code 07 (Test and Evaluation)

(2) Off-duty and recreational diving mishaps. For off-duty and recreational diving mishaps (including recreational dives involving Navy divers), use appendix A6-H.

(3) Class B and C mishaps and hyperbaric treatment. Use this appendix for Class B and C mishaps and reportable hyperbaric treatment involving Navy-trained divers performing a working dive resulting in one or more of the following:

(a) Any Class B or reportable Class C diving mishap.

(b) Any hyperbaric treatment or recompression therapy conducted as a result of a Navy diving mishap. Humanitarian civilian treatments are not reportable.

(c) Any diving injury or illness preventing a military person from performing regularly established duty or work for 5 days or more. For civilian divers, report diving injury or illness preventing the employee from working for

five full shifts or more. Begin counting the 5 days or five full shifts at 2400 on the day of injury or illness.

b. Defective Equipment. Investigate and report instances of defective or malfunctioning equipment per the accident investigation section of the U.S. Navy Diving Manual.

c. Aviation Bends. Report aviation bends cases per reference A6-10.

d. USMC/USMCR Personnel. These reports are in addition to any others required by Marine Corps regulations.

6. REPORTING PROCEDURES

a. Responsibility. The immediate superior in command (ISIC), commanding officer, or officer in charge shall ensure that all diving mishaps are investigated and reported. The U.S. Navy Diving Manual, outlines diving mishap investigation requirements.

b. Preliminary Reports. A preliminary, priority message report must be made to COMNAVSAFECEN NORFOLK VA//30/054// within 24 hours of a parent command's notification for any Class A diving mishap not previously reported by OPREP-3 or UNIT SITREP.

c. Submission of Reports

(1) Report all Class A diving mishaps by submitting an MIR by the MIB using the procedures in section A0604 and the MIR format in appendix A6-C as modified by paragraph 5 of this appendix.

(2) Report all Class B and C diving mishaps or hyperbaric treatment by message.

(3) Use the format in attachment A6-G-1 to report Class B and C diving mishaps. Submit reports within 10 days of the mishap. Do not submit DD 2544, Diving Log, for any diving mishap reported per this appendix. Keep diving mishap reports unclassified, if possible. If the commanding officer cannot complete a meaningful, unclassified diving mishap report, submit a separate classified addendum for an otherwise unclassified DV.

(4) When the mishap occurs away from the diver's parent command, the treating facility will submit the Diving Mishap Report. They must notify the parent command as soon as possible. Ultimate responsibility for reporting the mishap lies with the diver's parent command.

(5) Report uneventful dives on DD 2544, Diving Log using the Dive Reporting System (DRS).

**Attachment A6-G-1**

**SAMPLE MESSAGE FORMAT**
**DIVING MISHAP and HYPERBARIC TREATMENT**
**REPORT SYMBOL OPNAV 5102-5**
(For on-duty Class B and C reportable mishaps and hyperbaric treatment.)

1. General

Use this format to report Class B or C diving mishaps involving damage, hyperbaric treatment, and lost-time cases. Submit as much of the information as available in the initial report. Submit supplementary reports to supply missing information. Where the requested data are not applicable or are not relevant to the analysis of the mishap, insert "Not Applicable" or "N/A." Avoid using "unknown" unless you give the reason for not having the information.

2. Content and Format

(Precedence - normally ROUTINE.)

FM REPORTING ACTIVITY

TO COMNAVSAFECEN NORFOLK VA//30/054//

INFO COMNAVSEASYSCOM WASHINGTON DC//00C//
NAVXDIVINGU PANAMA CITY FL//01//
NAVMEDRSCHINSTITUTE BETHESDA MD//DBTFA//
BUMED WASHINGTON DC//21//
(Others as desired, directed, or requested, by higher authority)

UNCLAS FOUO //N05102//

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH

SUBJ/DIVING MISHAP REPORT (REPORT SYMBOL 5102-5)//

REF/A/DOC/NAVSEA/date//
REF/B/DOC/CNO/19JAN94//
REF/C/ (If this is a follow-up message, include the DTGs of all previous reports.)

NARR/REF A IS U.S. NAVY DIVING MANUAL. REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES PER CHAPTER A6 OF OPNAVINST 5100.19C//

POC/name/rank/primary phone/-/location/secondary phone//

RMKS/1. PER REFS A AND B, THE FOLLOWING INFORMATION IS SUBMITTED:

A. ALPHA:

(1) UIC OF REPORTING ACTIVITY

(2) TYPE OF MISHAP (For example, hyperbaric treatment, 5 days or more lost work time.)

(3) LOCAL DATE AND TIME OF MISHAP

(4) UIC OF DIVER'S PARENT ACTIVITY

(5) EVOLUTION AT TIME OF MISHAP (Brief scenario of diving operation. If mishap occurred during formal Navy training, include the course identification number (CIN).)

B. BRAVO:

(1) DIVING SYSTEM USED (Include type of diving system employed and description of equipment malfunction, if applicable.)

(2) BREATHING GAS PERCENTAGE (For example: 79% N2/21% O2, 100% O2, and 87% HE/13% O2.)

(3) LOCAL TIME LEFT SURFACE (Use 24 hour clock. For example, 0630 and 1800.)

(4) MAXIMUM DEPTH OF DIVE IN FEET, SALT WATER (FSW)

(5) BOTTOM TIME AND SCHEDULE. IF REPETITIVE DIVE, LIST DEPTHS, BOTTOM TIMES, SURFACE INTERVALS AND SCHEDULES OF ALL DIVES.

(6) LOCAL TIME REACHED SURFACE (Use 24 hour clock. For example, 0800, 0930, and 1500.)

(7) AIR TEMP/WATER TEMP/PURPOSE OF DIVE/DIVE PLATFORM

(8) SATURATION DIVE DATA: COMPRESSION RATES TO DEPTHS AS FEET PER MINUTE (FPM) TO FSW (For example, for a 700 FSW dive: 30 FPM TO 100 FSW/20 FPM TO 250 FSW/3 FPM TO 700 FSW)

(A) STORAGE ATMOSPHERE IN FSW

(B) CHAMBER ATMOSPHERE IN OXYGEN PARTIAL PRESSURE (MINIMUM AND MAXIMUM)

(C) MINIMUM EXCURSION DEPTH ATTAINED (IN FSW)

(D) MAXIMUM EXCURSION DEPTH ATTAINED (IN FSW)

C. CHARLIE: REPORTABLE INJURIES

(1) NAME/SSN/NOBC OR NEC/AGE/SEX/RACE/HEIGHT/WEIGHT

(2) RANK or RATE/DESIGNATOR/PAY GRADE/SERVICE and UIC (Include UIC if different from reporting activity)

(3) ONSET OF SYMPTOMS (month/day/local time/depth) Use two digits for month and day, four digits for time (24 hour clock), and four digits for depth. (For example, 03/10/1525/0025.)

(4) TYPE OF SYMPTOMS (For example, gas embolism, DCS Type I, or Type II)

(5) RECOMPRESSION STARTED (month/day/local time) Use two digits for month and day and four digits for time (24 hour clock). (For example, 03/10/1525.)

(6) FIRST RELIEF (month/day/local time/depth) Use two digits for month and day, four digits for time (24 hour clock), and four digits for depth. (For example, 03/10/1525/0025.)

(7) REACHED MAXIMUM TREATMENT DEPTH (month/day/local time/depth) Use two digits for month and day, four digits for time (24 hour clock), and four digits for depth. (For example, 03/10/1525/0025.)

(8) TIME OF COMPLETE RELIEF (month/day/local time/depth) Use two digits for month and day, four digits for time (24 hour clock), and four digits for depth. (For example, 03/10/1525/0025.)

(9) TIME LEFT MAX TREATMENT DEPTH (month/day/local time) Use two digits for month and day and four digits for time (24 hour clock). (For example, 03/10/1525.)

(10) COMPLETION OF TREATMENT (month/day/local time) Use two digits for month and day and four digits for time (24 hour clock). (For example, 03/10/1525.)

(11) RECURRENCE NUMBER (For example, 0 indicates no recurrence and 1 indicates first recurrence.)

(12) TREATMENT TABLE USED (For recurrences, state all tables used.)

(13) DIAGNOSIS

(14) DRUGS USED IN TREATMENT

(15) OXYGEN PARTIAL PRESSURE USED IN TREATMENT IN TENTHS OF ATMOSPHERES (numerically in two digits)

(16) TREATMENT OUTCOME (For example, complete relief, substantial relief, and no relief.)

(17) TREATED BY (For example, MDV, DMO, or DMT)

(18) TOTAL NUMBER OF DAYS AWAY FROM WORK (estimated)

(19) TOTAL NUMBER OF DAYS RESTRICTED FROM DIVING

D. DELTA: CAUSE OF MISHAP (For example, personnel error, unsafe condition, improper procedure, material failure, improper design, environment, unknown, or combination of the above.)

E. ECHO: NARRATIVE (Chain of events leading up to, through and subsequent to mishap. Explain how each cause in paragraph DELTA contributed to the mishap. Be specific. Give recommendations and lessons learned.//

BT

## Appendix A6-H

## OFF-DUTY RECREATION, ATHLETICS, AND HOME MISHAP REPORTING PROCEDURES REPORT SYMBOL OPNAV 5102-10

(A

1. In the interest of mishap prevention, the Navy needs to investigate off-duty recreation, athletics, and home mishaps. These mishaps do not require a mishap investigation board. However, they may require the submission of an Off-duty Recreation, Athletic, and Home Safety (RAHS) Mishap Report in the format provided in attachment A6-H-2. COMNAVSAFECEN will revise attachment A6-H-2 to conform with changes to reference A6-4.

2. All off-duty recreation, athletic, and home deaths or injuries preventing ship's off-duty personnel from performing regularly scheduled work for 5 days or more require the submission of an Off-duty RAHS mishap report.

3. Recreation and athletic mishaps during compulsory physical training activities, where personnel are considered on-duty (including compulsory sports and command sponsored activities during working hours), require the submission of an MR as explained in appendix A6-D. Include the 72-hour pre-mishap profile (paragraph 1c(6) of the RAHS Mishap Report) for Class A and B mishaps resulting from compulsory physical training or physical readiness tests.

4. The RAHS Mishap Report is a General Use Mishap Investigation Report, and shall not include privileged witness information. The RAHS Mishap Report shall not state the source of any information.

5. Reportable Off-Duty Recreation, Athletic, and Home Mishaps

a. Off-Duty Mishap. An off-duty recreation, athletic and home death or injury preventing Navy military personnel assigned to afloat units from performing regularly scheduled work for 5 days or more after 2400 on the day of injury shall be investigated and reported using the format of attachment A6-H-2.

b. Off-duty Special Case Mishap. Report all non-operational, serious injuries or deaths occurring to personnel not included in paragraph A0601c occurring either on or off a naval installation using Navy-owned and -managed property (for example Morale, Welfare and Recreation (MWR) hobby shops, athletic facilities, and child development centers). Special case mishaps are reportable only if they involve negligence in the operation or maintenance of Navy property such as missing machine guards and damaged playground equipment. A serious injury is one comparable in severity to an injury or illness that would result in 5 or more lost work days.

6. REPORTING REQUIREMENTS

a. Responsibility. The commanding officer, officer in charge, or master shall require the investigation and reporting of all off-duty recreation, athletic, and home reportable mishaps occurring to personnel within the command.

When a Sailor assigned to a ship is injured or killed away from the ship, the naval activity nearest the scene will notify the victim's command. Unless relieved by the victims's command or higher authority, the naval activity nearest the scene of the mishap will investigate and report it as prescribed in attachment A6-H-2. However, the final responsibility for ensuring the report is submitted rests with victim's command. The Recreation, Athletics and Home Mishap Flow Chart in attachment 1 to this appendix can be used to determine reporting requirements. Establish contact between the ship's commanding officer, executive officer, or recreation, athletics, and home safety (RAHS) officer and the naval activity to ensure timely mishap investigation, reporting, and corrective actions.

b. Submission of Reports. Commanding officers, officers in charge, and masters shall release Off-duty RAHS Mishap Reports in the format contained in this appendix by message to COMNAVSAFECEN within 30 calendar days of a reportable mishap. Paragraph 5 defines a reportable off-duty recreation, athletics, and home mishap. Reporting activities shall include their chain of command as information addressees on Class A and B mishaps.

c. Preliminary Message Reports. Make a preliminary, priority message report to COMNAVSAFECEN within 48 hours of notification of an off-duty mishap resulting in a fatality or the inpatient hospitalization of five or more Navy military personnel. An OPREP-3 or UNIT SITREP satisfies this requirement.

(1) For preliminary reports, use the format in this appendix to provide available information. As a minimum, include:

(a) Date, time, and location of the mishap

(b) Name and location of the personnel involved

(c) Extent of their injuries

(d) Description of the mishap shall be furnished.

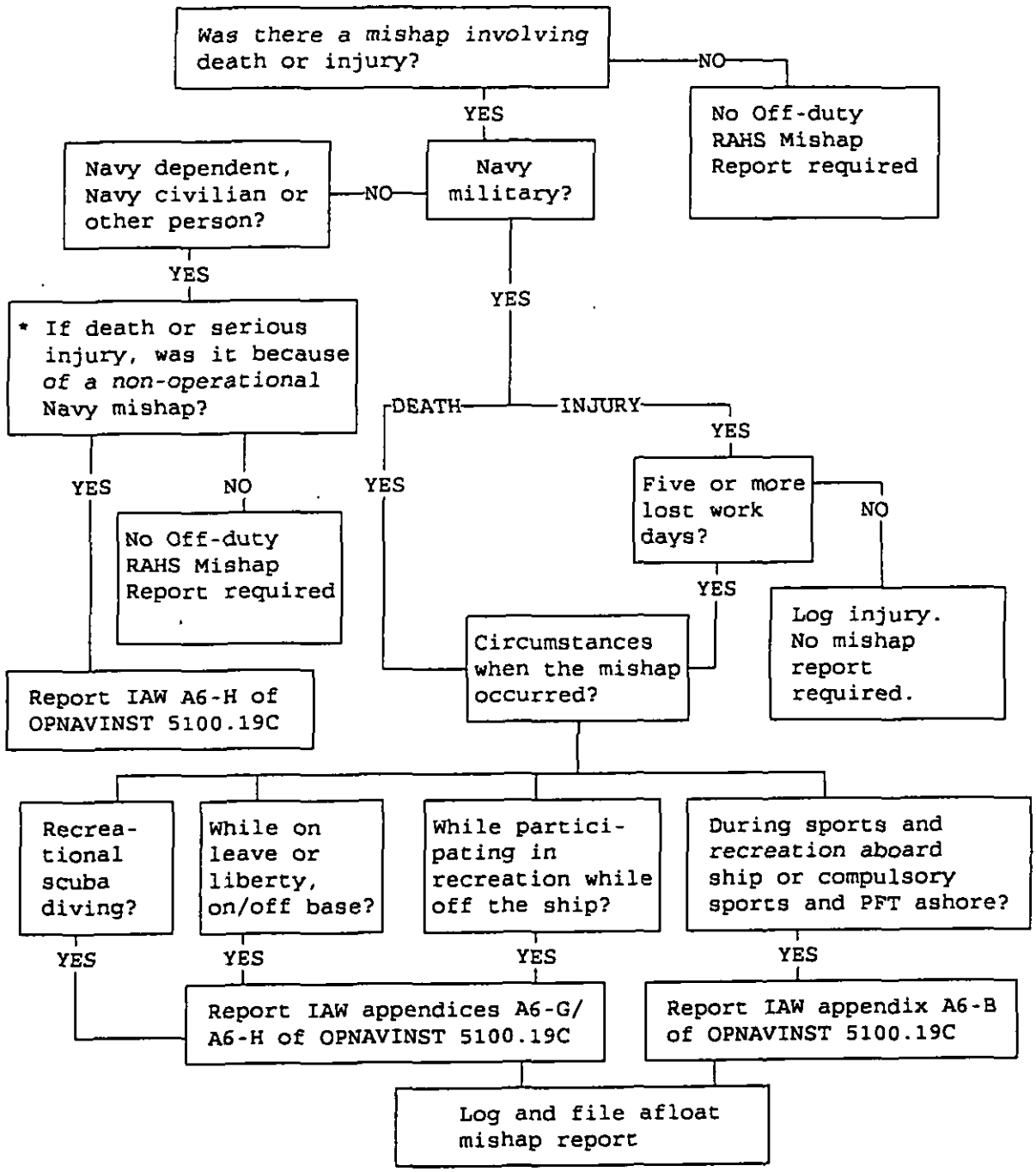
(2) Submitting a preliminary message or telephone report does not relieve the command from submitting a complete Off-duty RAHS Mishap Report per this appendix. Send information copies to the appropriate chain of command.

d. Additional Information. If additional information becomes available, or information originally submitted changes, submit a follow-up report. Give the LOCAL TIME and DATE of the mishap and the NAME(s) of injured or dead reported on the original Off-Duty RAHS Mishap Report. Then, give only those items to be added or changed. Mark the report, "Modified" and send it to the same addressees as the original report. COMNAVSAFECEN may also request additional information, when needed.

7. OFF-DUTY RECREATION, ATHLETICS, AND HOME MISHAP RECORDS. Keep a file of injury reports for all off-duty recreation, athletics, and home mishaps.

**Attachment A6-H-1**

**FLOW CHART FOR OFF-DUTY RECREATION, ATHLETICS, AND HOME SAFETY (RAHS) MISHAPS**




* Navy non-operational mishaps include Navy owned and managed pools, athletic fields, child centers, clubs and family housing.

**Attachment A6-H-2**

**SAMPLE MESSAGE FORMAT**
**OFF-DUTY RECREATION, ATHLETICS AND HOME SAFETY (RAHS) MISHAP REPORT**
**REPORT SYMBOL OPNAV 5102-10**

1. General

Use the format shown below for reporting off-duty recreation, athletic and home injuries and deaths. Submit as much of the information as you have available. Submit follow-up reports to provide the missing information. OMIT ITEMS THAT DO NOT APPLY OR ARE NOT RELEVANT TO THE MISHAP. Avoid using "unknown" unless you give the reason for not having the information.

2. Content and Format

(Precedence - normally ROUTINE)

FM REPORTING ACTIVITY

TO COMNAVSAFECEN NORFOLK VA//46/30B/70/054//

INFO As desired, directed, or requested by higher authority

UNCLAS FOUO //N05102// (Or appropriate classification as necessary)

MSGID/GENADMIN/MSG ORIG/SER NO./MONTH//

SUBJ/OFF-DUTY MISHAP REPORT (REPORT SYMBOL OPNAV 5102-10)//

REF/A/DOC/OPNAV/25SEP90//
REF/B/DOC/OPNAV/19JAN94//
REF/C//(If this is a follow-up message, include the DTG of previous reports)

NARR/REF A IS OPNAVINST 5100.25A, NAVY RECREATION, ATHLETICS, AND HOME SAFETY PROGRAM. REF B IS OPNAVINST 5100.19C, NAVOSH PROGRAM MANUAL FOR FORCES AFLOAT. THIS REPORT IS FOR OFFICIAL USE ONLY. THIS IS A GENERAL USE MISHAP REPORT TO BE USED ONLY FOR SAFETY PURPOSES PER CHAPTER A6 OF OPNAVINST 5100.19C//

POC/name/rank/primary phone/-/location/secondary phone//

RMKS/1. PER REFS A AND B, THE FOLLOWING INFORMATION IS SUBMITTED:

A. ALPHA:

(1) UIC OF REPORTING ACTIVITY

(2) LOCAL DTG OF MISHAP

(3) GEOGRAPHIC LOCATION (Include city and state and indicate if on- or off-base.)

(4) LOCATION WHERE MISHAP OCCURRED (For example, home, ball field, or lake. Indicate if MWR facility.)

B. BRAVO: REPORTABLE INJURIES

(1) NAME/SSN/AGE/SEX/RACE (If more than one person is injured, information in this section must be specific as to which individual is being described. Repeat items (1) through (8) for each individual.)

(2) UIC of injured person's command

(3) RANK and DESIGNATOR, or RATE and NEC, JOB and EMPLOYMENT STATUS (Examples of employment status include USN, USNR, USNR-R, Navy dependent, or other special case.)

(4) SPECIFIC ACTIVITY INDIVIDUAL ENGAGED IN AT TIME OF MISHAP (For example, woodworking, swimming, and engine tune-up)

(5) EXPERIENCE AT ACTIVITY

(A) NUMBER OF MONTHS EXPERIENCE

(B) QUALIFICATION/TRAINING (For a swimming mishap, include swimmer classification; for a diving mishap, include scuba diving certification, if applicable; for boating or hunting mishap, include completion of safe boating or hunting course.

(6) MEDICAL DIAGNOSIS (Include parts of body and type of injuries.)

(7) FATALITY OR EXTENT OF INJURIES (Specify fatality, missing, permanent total disability, permanent partial disability, or no disability likely.)

(8) ESTIMATE OF LOST TIME

(A) TOTAL LOST TIME (IN DAYS) AWAY FROM WORK (Include the actual number of regular workdays, including days hospitalized.)

(B) DAYS ACTUALLY HOSPITALIZED (Actual number of days spent in the hospital, including weekends.)

(C) DAYS OF LIGHT OR LIMITED DUTY

C. CHARLIE: CAUSE OF MISHAP

(1) Personnel error, material failure, environmental extremes, inadequate procedure/precaution.

(2) IMMEDIATE OR DIRECT CAUSE(S) OF MISHAP (For example, using defective/incorrect tools; working without safety guard; repairing equipment while energized; assuming unsafe posture; violating safe sport practices; equipment malfunction; unsafe walking or recreation surface; warnings inadequate or not posted; inadequate illumination or rough water. Cite safety standard or regulation violated, if appropriate.)

(3) IF PERSONNEL ERROR, STATE CONTRIBUTING CAUSE(S) (For example, distraction or inattention, fatigue, haste, improper attitude or motivation, inexperience, lack of skill, inadequate physical conditioning, alcohol or drugs. Indicate blood alcohol or drug content when available.)

(4) IF UNSAFE CONDITION, STATE CONTRIBUTING CAUSE(S) (For example, poor housekeeping, insufficient maintenance, defective design, overloaded boat, other - specify.)

(5) PERSONAL PROTECTIVE CLOTHING or EQUIPMENT (State if required. Specify if available, used, effective, or misused. For example, Type III personal flotation device, ANSI-approved bicycle helmet, and AARA-approved sports goggles.)

(6) 72-HOUR PRE-MISHAP PROFILE (Required for all Class A or B mishaps if the injured or dead off-duty military person had influence on the occurrence or outcome of the mishap (was not a passive victim).) Include the following information for that person:

(A) Leave or liberty status for the 72 hours immediately preceding the mishap.

(B) Type of work performed and work schedule (hours) for the 72 hours immediately preceding the mishap.

(C) Periods of rest and sleep for the 72 hours immediately preceding the mishap.

(D) Travel and recreational activities for the 72 hours immediately preceding the mishap.

(E) Medications prescribed and whether they were taken.

(F) Alcohol and other drugs (prescription, nonprescription, and illegal) taken during the 72 hours immediately preceding the mishap.

(G) General physical condition, including illnesses.

(H) Individual's mental, emotional, and physical state including perceived stress and behavior changes (based on supervisor, next-of-kin (if available), co-workers, and friends.

(I) Other comments the supervisor, next-of-kin, co-workers, and friends wish to make related to the individual's condition or pre-mishap activities.

(J) Other factors prior to the mishap that could have affected the mishap occurrence or its outcome.

(K) Non-judicial punishment (NJP)/Uniform Code of Military Justice (UCMJ) record (military only) or other behavior infraction for the past 3 years.

D. DELTA: NARRATIVE

(1) Chain of events leading up to, through, and subsequent to mishap. (Elaborate with remarks so the reader can determine the who, what, where, when and how of the mishap. Be specific. For swimming and boating mishaps, give the air and water temperature, wave height, wind speed, swimmer's qualification, and type of personal floatation device worn. For injuries associated with softball bases, state type (stationary, tie-down, or breakaway). For bicycle injuries, specify if bicycle helmet was worn or not. For basketball injuries, include type of shoes worn and if ankle tape or supports were used.)

(2) Corrective Actions/Lesson Learned or Recommendations
Specify actions taken to prevent similar mishaps from occurring in future.//

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## Appendix A6-I

## INJURY REPORT

From: Medical Officer/Medical Department Representative
To: Commanding Officer

Via: (1) _____ Division Officer
(2) _____ Department Head
(3) Executive Officer

Subj: Injury Report

NAME RANK SSN DIV

1. Identification of Injured: _____

2. Date/Time/Location of Injury: _____
DATE TIME LOCATION

3. First Seen By MDR: _____

4. Condition of Individual When First Seen: _____

_____

5. Alleged Injury Circumstances and Source of Information: _____

_____

6. Diagnosis: _____

_____

7. Prognosis: _____

_____

8. Treatment: _____

_____

9. The following finding is recommended: _____, In line of duty, not due to own misconduct; _____, Not in line of duty, due to own misconduct

_____
MDR Signature/Date

Copy to: Safety Officer
OOD - Action: Make "late entry" in ship's log
File

RETURN COMPLETED INJURY REPORT PLUS ENDORSEMENTS TO SAFETY OFFICER

## INSTRUCTIONS FOR FILLING OUT INJURY REPORT

1. The Division Officer of the injured individual shall evaluate the cause of the injury and recommend corrective action (if any) to prevent recurrence. The reverse side of the report or a separate sheet shall be used for this recommendation.

2. Condition of Patient When First Seen should use the following descriptions: unconscious, semi-conscious, alert, odor of alcohol, dilated pupils, truculent, cooperative, incoherent, coherent, uncoordinated, unsteady. If a clinical test was run on the individual, note if positive for drugs or percent of alcohol.

3. Alleged Injury Circumstances can be obtained from either the injured person or eyewitness(es). This should be as thorough as possible to identify potential hazards and the need for a mishap investigation.

4. The Prognosis should indicate the possibility of the injury causing a permanent total disability, a permanent partial disability or no disability. It should also estimate the loss of time from duty (if any) as a result of the injury or the date of return to duty.

5. Reviewing officers shall either note the report or provide comments, recommendations, or direction on the back of the report or on a separate sheet. The completed report will be returned to the safety officer for filing.

Appendix A6-J

## ADVICE TO WITNESSES

(A

THIS IS PART OF A LIMITED USE MISHAP INVESTIGATION REPORT.
LIMITED DISTRIBUTION AND SPECIAL HANDLING ARE REQUIRED
AS PROVIDED FOR IN OPNAVINST 5100.19C.

THIS STATEMENT IS PRIVILEGED AND IS EXEMPT FROM DISCLOSURE UNDER FOIA.

DO NOT FILE THIS STATEMENT IN A SYSTEM OF RECORDS SUBJECT TO THE PRIVACY ACT.
FOR EXAMPLE, THIS STATEMENT MUST NOT BE RETRIEVABLE BY NAME, SOCIAL SECURITY NUMBER, DATE OF BIRTH, OR OTHER UNIQUE IDENTIFIER ASSOCIATED WITH AN INDIVIDUAL.

Authority: 10 U.S.C. 5013, Departmental Regulations
Principal Purposes: To determine the cause of the mishap so the U.S. Navy can improve equipment design, safety and warning devices, operating and maintenance procedures and training, administrative and engineering controls, and personnel protective devices to prevent or reduce to a minimum the accidental loss of naval personnel and material.

Official Use(s): The information requested will be used by the mishap investigation board, officials and employees of the Naval Safety Center, and other Department of Defense officials to prevent mishaps and to promote and monitor safety and safety programs. Collective or individual MIRs form the basis for safety advisories to the fleet, material for safety publications, and for recommendations in human factors and equipment design to higher authority to prevent mishaps.

Mandatory or Voluntary Disclosure: The information being requested is voluntary. However, your failure to provide the requested information will diminish the overall understanding of the causes of the mishap.

*PLEASE READ THIS STATEMENT CAREFULLY.*
CERTIFY YOUR UNDERSTANDING BY SIGNING AT THE BOTTOM.

I understand:

a. I have been requested to provide truthful information to a mishap investigation board.
b. My statement will not be given under oath or affirmation and will not be written or signed by me.
c. Disclosure of information is voluntary; my election or refusal to provide such information will have no adverse effect upon me.
d. The mishap investigation board and the Department of Defense will use the information I provide solely to determine the cause(s) of the mishap and to make safety evaluations for future prevention of loss of life/material.
e. The information I provide shall not be used as evidence, or to obtain evidence, in any other administrative or judicial proceeding(s) to determine misconduct or line of duty status, or governmental liability.
f. Examples of situations where the information provided by me shall NOT be used include:
   (1) In any determination affecting me.
   (2) As evidence in determining misconduct or line of duty status of other personnel.
   (3) As evidence in any disciplinary proceedings.
   (4) To assert affirmative claims by the government or to defend the government against claims.
   (5) Before any administrative boards, such as officer evaluation boards (USN) or Field Performance Boards (USMC).
   (6) As evidence in any court, civilian or military

| 1. PRINTED NAME | | 2. SIGNATURE | |
|---|---|---|---|
| 3. DATE | 4. RANK/RATE | 5. SERVICE | 6. TELEPHONE NO. |
| 7. YOUR ADDRESS | | | |
| 8. PRINTED NAME OF BOARD MEMBER | | 9. SIGNATURE | |
| 10. RESULTS OF INTERVIEW (Continue on reverse or attach separate sheets) | | | |

Appendix A6-K

From: Commander, Naval Safety Center
To:

Subj: SAFETY RECOMMENDATION

Ref: (a)
(b)
(c)
(d) OPNAVINST 5100.19C

Encl: (1)
(2)
(3)

1. BACKGROUND

a.

b.

c.

2. RECOMMENDATIONS

a.

b.

c.

3. A *Safety Recommendation* (SAFEREC) number _____ has been assigned for accounting purposes. Based on a hazard severity category ____ and a mishap probability level _____, the Risk Assessment Code (RAC) is _____. Reference (d) defines the RAC system.

4. Request you provide COMNAVSAFECEN with a point of contact and keep us advised of progress and intended action on this recommendation. Our point of contact is: _____.

//signed//

Copy to:

# CHAPTER A7

# TRAINING

## A0701. DISCUSSION

a. Successful implementation and execution of the NAVOSH (Afloat) Program requires continuous, effective all hands training and participation. Progressive training in NAVOSH standards, practices, and procedures must be provided throughout an individual's naval service.

b. A continuing, effective on board training program must be developed and implemented to build on and expand the all hands basic NAVOSH (Afloat) Program training provided ashore. The safety officer and division safety petty officers (leading petty officers for submarines) shall implement the execution of the on board training program. The on board training effort will be supported by videotapes providing high quality, controlled training for all hands.

c. NAVOSH training policy and requirements of this manual are implemented by the Navy Occupational Safety and Health and Hazardous Material Control and Management Navy Training Plan (NTP S-40-8603B) (NOTAL). To ensure suitable participation in development of NAVOSH training, a NAVOSH Training Group, consisting of a steering committee and four working groups, has been established by the Deputy Chief of Naval Operation (Logistics)(N4). The objectives of the NAVOSH Training Working Group are: (R

(1) Assess the effectiveness of NAVOSH training.

(2) Define NAVOSH training requirements.

(3) Recommend priorities for NAVOSH training courses and support material development.

(4) Identify and recommend actions to solve NAVOSH training issues.

(5) Review Navy Training Plan (NTP) requirements. Monitor progress of required action. Recommend changes to the NTP.

Three of the working groups, air, submarine, and surface ship, are primarily concerned with NAVOSH afloat training. Fleet representatives participate in the steering committee and the working groups.

## A0702. NAVOSH TRAINING FOR SHIPBOARD DUTIES AND PROGRAMS (R

a. Training consists of detailed courses regarding specific duties involved with NAVOSH Programs. This training is given at a variety of facilities and sites. (R

R) b. The following training is available for ship and submarine safety officers and division safety petty officers:

R) (1) Afloat Safety Officer Course (A-4J-0020). This course is offered at Surface Warfare Officer School (SWOS), Newport, and is exported to major fleet centers. It is designed to train officers in safety duties aboard Navy surface ships. The course includes instruction in the procedures for establishing and maintaining an effective ship's safety organization.

R) (2) Safety Programs Afloat Course (J-493-2099). This course is offered at the Naval Safety School. This course is designed to train selected enlisted personnel (E-5 through E-9) on occupational safety and health hazards common to the shipboard work environment.

R) (3) Submarine Safety Officer Course (F-4J-0020). This is a 5-day course taught by the Submarine Training Facility, Norfolk and the Fleet Submarine Training Facility, Pearl Harbor. This course provides NAVOSH, submarine safety, mishap investigation and reporting, hazardous material, and environmental awareness training comparable to the training provided surface warfare officers in the Afloat Safety Officer Course.

A) c. Hazardous Material Control and Management Technician Course (J-322-2600). The Navy has established a Secondary Navy Enlisted Classification (SNEC) Code 9595 designated, "Hazardous Material Control and Management Technician." The SNEC 9595 is intended to enhance the implementation of the Hazardous Material (HM) Control Program aboard ship and ashore. Personnel earning the 9595 SNEC will assist the afloat hazardous material coordinator in the receipt, inventory, and transfer of HM and the turn in of used/excess HM. The SNEC 9595 will also assist in training personnel on the HM Control and Management Program. A 1-week course is taught by the Naval Safety School. Ship manning documents will be modified to specify the requirements for personnel holding this SNEC.

R) d. Appendix A7-A provides a list of Navy educational courses which are related to occupational safety and health. Appendix A7-B is a listing of occupational safety and health courses taught at Environmental and Preventive Medicine Units (NAVENPVNTMEDUs). The command's training officer should be consulted for course location, eligibility requirements, and schedules.

D) e. Selection of Training Courses

(1) Responsibility for the selection and mix of available training courses aboard ship is the result of a decision by the Planning Board for Training. As requirements and needs are different for each command, every detail of personnel qualifications, equipment operating requirements, ship operating needs, and program effectiveness must be analyzed.

(2) When analyzing training needs, the following procedures and considerations should be used:

(a) Refer to equipment technical manuals and personnel qualification standards (PQS).

(b) Contact the safety officer, Safety Council, and department heads of other ships of the same class or types whenever possible to enhance the exchange of information on safety problems and tips.

(c) Ensure that sufficient personnel assigned are trained on equipment and systems. This will eliminate any gaps in NAVOSH education as a result of personnel turnover.

(d) Provide supervisors with available supervisory instruction. Such instruction normally provides safety as a part of its curricula. Program safety at the supervisory level is not always the same as practical safety at the hands-on level.

**A0703. AFLOAT NAVOSH TRAINING**

a. Ship safety officers shall attend the formal Afloat Safety Officer course, and submarine safety officers shall attend the formal Submarine Safety Officer Course prior to or within 6 months of assuming their duties. Group and Squadron safety officers (surface ship or submarine) shall attend the Afloat Safety Officer Course or the Submarine Safety Officer Course, as appropriate. If operations or funding do not permit the prospective collateral duty safety officer to attend formal training prior to assuming the position, he/she shall be required to attend formal training at the first opportunity and, in the interim, shall be required to complete the Collateral Duty Safety Officer, Watchstation 305, of the Safety Programs Afloat Personnel Qualification Standard (PQS), NAVEDTRA 43460-4A. Afloat safety officers shall receive refresher training via courses offered in the annual Naval Occupational Safety and Health and Environmental Training Center (NAVOSHENVTRACEN) course schedule distributed by Commander Naval Education and Training (CNET) and conferences and workshops related to the elements required by the command's specific safety program. (R

b. All petty officers assigned as division safety petty officers aboard ship shall attend the Safety Programs Afloat Course. Division safety petty officers shall complete the Division Safety Petty Officer, Watchstation 301 of the Safety Programs Afloat PQS within 6 months of being assigned these duties and shall have at least 1 year remaining before projected rotation date (PRD). Division safety petty officers should be encouraged to complete the requirements for Navy Enlisted Code (NEC) 9571 during their assignment to this responsibility. It is strongly recommended that a chief petty officer (where possible, having the NEC 9571) be assigned as an assistant to the safety officer. (This paragraph is not applicable to submarines). (R

c. All hands occupational safety and health training will be conducted upon reporting aboard (i.e., I Division) and at least annually thereafter. For submarines, this training may be integrated into Phase I of submarine qualification. This training will concentrate on the practical aspects of the NAVOSH Program as implemented aboard ship and will include:

(1) Introduction of the NAVOSH Program and identification of key personnel, the chain of command, and mishap reporting.

(2) Hazard identification and known hazards (heat, noise, asbestos, hazardous material, and electrical shock, for example).

(3) Safety precautions and standards (Section C or D).

(4) First aid and survival training.

(5) Mishap prevention.

(6) Emergency procedures.

(7) Back injury prevention.

This training will be accomplished through the use of videotapes for general subject matter and by ship's instructors for command specific topics. Additionally, videotapes or films on occupational safety and health subjects should be obtained and shown, and periodic NAVOSH notes shall be published in the Plan of the Day as a part of the command's General Military Training Program.

R) d. Occupational safety and health training on safety precautions and potential hazards applicable to a division should be frequently conducted. For example, training may be conducted prior to scheduled evolutions (such as CONREP, VERTREP, aircraft operations, towing, anchoring, or engineering drills) or at scheduled divisional training periods. All ships, except submarines, shall conduct at least two safety briefs at quarters or muster each month. Submarines shall conduct safety training prior to infrequent evolutions or as specified by type commander's training directives. Division officers shall be responsible for ensuring assigned personnel receive mandatory training on safety programs such as heat stress, electrical safety, hazardous material control and management, the NAVOSH Program, and hearing conservation. Appendix A7-C is a consolidated list of training requirements directed by this manual.

e. On occasion, safety indicators, such as increasing numbers of identified hazards or deficiencies, increasing numbers of personnel injuries, severe mishaps or near-mishaps, or a lack of or decreased training due to operations may warn of significant future safety problems for the command. At these times, or whenever it is necessary to raise the level of awareness of personnel safety, the command should initiate a safety stand-down. During a safety stand-down, which usually lasts a day, normal ship's work is curtailed (except for emergency corrective repairs), and a concerted effort is made to correct safety deficiencies or train personnel on safety, particularly on matters pointed out in mishap/near-mishap investigations. Commands should consider safety stand-downs following a safety evaluation to train on or correct deficiencies identified during that evaluation. Commands shall conduct one safety stand-down per year as a minimum.

f. Training records for occupational safety and health will be maintained by each division or training group supervisor (TGS) per the requirements of Chapter 8 of reference A7-1. Divisional safety training shall be attended by the division officer and/or leading petty officer whenever possible, and such attendance should be indicated in the training record. Division safety petty officer training shall be documented and retained by the safety officer. (R

g. NAVOSH-related correspondence courses are available for use by afloat commands. A complete list of occupational safety and health-related correspondence courses can be found in Appendix A7-D.

h. Personnel Qualifications Standard (PQS) and submarine watchstation qualification cards are used to ensure personnel are properly trained to perform specific shipboard duties. Personnel shall not be assigned to these duties, when practical, until the appropriate qualification is completed. Personnel may be assigned as divisional safety petty officer prior to qualification, but must complete their PQS within 6 months. A complete list of NAVOSH related PQS can be found in Appendix A7-E. (R

i. Training films and videotapes on NAVOSH topics are available through the Naval Education and Training Support Centers, Atlantic and Pacific. In addition, NAVOSH videotapes are being produced and distributed to every surface ship and to submarines, where appropriate. Where possible, such training aids should be used to enhance on board training. A list of available films and videotapes on occupational safety and health topics can be found in Appendix A7-F. (R

j. There are a number of safety periodicals (safety magazines, bulletins, and newsletters) which are delivered to afloat commands. Articles from these periodicals can be used for general command safety training, for division safety training, and can be excerpted for Plan of the Day notes. The following periodicals are available to all commands:

(1) Ships Safety Bulletin - Issued monthly. Contains articles on shipboard safety problems, accident trends, and current technical information. Issued by COMNAVSAFECEN. (R

(2) Fathom Magazine - Issued bimonthly. Publicizes fleet-wide safety programs and provides information on nautical mishap prevention. Issued by COMNAVSAFECEN. (R

(3) Approach - Issued monthly. Aviation mishap prevention for naval aviators, flight officers, and aircrewmen. Issued by COMNAVSAFECEN. (R

(4) Mech - Issued bimonthly. Articles on hazards, policy, and equipment information pertinent to readiness and safety in aviation maintenance at all levels of responsibility. Issued by COMNAVSAFECEN. (R

R) (5) Aviation Biweekly Summary - Issued biweekly. A message for commanding officers about aviation mishaps, statistics, dollar costs of mishaps, number of fatalities, number of destroyed aircraft, and articles discussing timely information. Issued by COMNAVSAFECEN.

R) (6) Safetyline - Issued bimonthly. Contains shore hazard information and mishap statistics about occupational safety and health, fire, motor vehicles, weapons and explosives, and off-duty and recreational topics. Issued by COMNAVSAFECEN.

D) (7) Deck Plate Magazine - Issued bimonthly. Contains safety-related articles on maintenance of ship and weapon systems. Issued by COMNAVSEASYSCOM.

R) (8) FLASH (Factual Lines About Submarine Hazards) - Issued monthly. A mishap prevention bulletin containing a summary of research from selected reports of submarine hazards. It is intended to give advanced coverage of safety-related information while reducing reading time. Issued by COMNAVSAFECEN.

A) (9) Diving Safety Lines (DSL) - Issued quarterly. Summary of the results of research from selected reports of diving hazards. Issued by COMNAVSAFECEN.

(10) Type Commander Newsletters, Advisories and Safety Notes.

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## CHAPTER A7

## REFERENCES

R) A7-1. OPNAVINST 3120.32B, "Standard Organization and Regulations of the Navy".

## Appendix A7-A

## NAVOSH-Related Formal Navy Training Courses

The following is a listing of the major courses currently available, including the appropriate course numbers:

1. Gas Free Engineer (A-495-0051) (NTTC Treasure Island, Naval Damage Control Training Center, Philadelphia)

2. Heat Stress Orientation (K-652-2202) (FTC San Diego)

3. Asbestos Emergency Ripout Orientation for Shipboard Personnel (K-760-2166) (Naval Safety School) (D (R

4. Environmental Protection (A-4A-0036) (Naval School, Civil Engineer Corps Officers, Port Hueneme)

5. Cargo Handling and Deck Rigging (J-822-0039) (Naval Amphibious School, Coronado)

6. Radiation Safety Officer (S-4J-0016) (NAVSEA Detachment, Radiological Affairs Support Office, (RASO) Yorktown, VA)

7. X-Ray Radiation Safety Officer (S-491-0016) (NAVSEA Detachment, RASO, Yorktown, VA)

8. Senior Enlisted Damage Control (A-495-2055) (NTTC Treasure Island, Naval Damage Control Training Center, Philadelphia)

9. Engineering Steam Generating Plant Inspection Qualifications (K-651-2151) (FTC San Diego)

10. Hearing Conservation Techniques (B-300-0039) (NEHC, Norfolk and Naval Hospitals)

11. Preventive Medicine Technician (B-322-0012) (Naval Hospital, Oakland)

12. Radiation Health Indoctrination (B-5A-1050) (Naval Undersea Medical Institute, Health Science Detachment, Groton, CT)

13. Radiation Health Officer (B-5A-1000) (Naval Undersea Medical Institute, Health Science Detachment, Groton, CT)

14. Afloat Safety Officer Course (A-4J-0020) (SWOS Newport, RI) (R

15. Safety Programs Afloat (J-493-2099) (Naval Safety School)

R) 16. Laser Systems Safety Officer (A-493-0038) (Naval Safety School, Norfolk, VA)

R) 17. Forces Afloat Hazardous Material Coordinator Course (J-8B-0008), (Naval Safety School)

18. Hazardous Material Management, Transportation, and Storage - Ocean (A-8C-0035) (Naval Transportation Management School, Oakland, CA)

A) 19. Submarine Safety Officer Course (F-4J-0020), SUBTRAFAC, Norfolk, NAVSUBTRACENPAC, Pearl Harbor

A) 20. Hazardous Material Control and Management Technician Course (J-332-2600), (Naval Safety School)

A) 21. Afloat Hazardous Material for the Supervisor (A-332-0010), (Naval Safety School)

A) 22. Afloat Environmental Protection Coordinator (A-4J-0021), (Naval Safety School)

A) 23. Aviation Safety Petty Officer (A-493-0065), (Naval Safety School)

NOTE:

The courses and course numbers are subject to change and should be checked against the Catalogue of Navy Training Courses (CANTRAC) prior to requesting quotas. In addition to the above listed courses, the annual Naval Safety School course schedule distributed by CNET contains a list of various safety courses that are available by homeport and date, through CNET (commands should take advantage of these courses when they are conducted in their homeport area, if possible, to reduce costs and then only if the course supports the command safety program needs).

## Appendix A7-B

## NAVOSH-Related Courses Taught At Environmental and Preventive Medicine Units (NAVENPVNTMEDUs)

The following is a listing of Occupational Health and Preventive Medicine training courses including the appropriate course number and the NAVENPVNT-MEDUs (abbreviated EPMUs below for convenience) at which it is taught:

1. Health Aspects of Marine Sanitation Devices (B-322-2130) (EPMU-2, 5, 6, 7)

2. Hazardous Material Information System (B-322-2360) (EPMU-2, 5, 7)

3. Asbestos Hazards and Control (B-322-2331) (Hazard awareness and not asbestos ripout training) (EPMU-2, 5) (R

4. Health Effects/Control of Asbestos and Other Thermal Insulation (B-322-2330) (Hazard awareness and not asbestos ripout training) (EPMU-5, 6, 7) (R

5. Analysis of Airborne Asbestos Samples (B-322-2333) (EPMU-2, 5, 6) (R

6. Fundamentals of Respiratory Protection (B-322-2340) (EPMU-2, 5, 6, 7)

7. Managing a Respiratory Protection Program (B-322-2350) (EPMU-5, 6, 7) (D

8. Preventive Medicine for Line Officers (B-322-2601) (EPMU-2, 5)

9. Viral Hepatitis/Marine Sanitation Devices (B-322-2131) (EPMU-5)

10. Industrial Health Program Afloat (B-322-2301) (EPMU-2, 7) (R

11. Heat Stress Afloat (B-322-2320) (EPMU-2, 5, 6, 7)

12. Heat Stress and Hearing Conservation Afloat (B-322-2321) (EPMU-5)

13. Hearing Conservation Afloat (B-322-2310) (EPMU-2, 5, 6, 7)

14. Preventive Medicine Orientation for Medical Department Officers (B-322-2602) (EPMU-2, 5)

15. Analysis of Bulk Asbestos Samples (B-322-2334) (EPMU-2, 6) (R

16. Respiratory Protection Program Manager (RPPM) (unnumbered) (EPMU-2, 5, 6) (For Respiratory Protection Officers of CVs, CVNs, ADs, ASs, AOEs, LHDs, LHAs, and LPHs only) (A

NOTE

The courses titles and numbers are subject to change. Check with the appropriate NAVENPVNTMEDU or the CANTRAC for course name, content and convening date. NAVENPVNTMEDUs are at the following locations:

TWO Norfolk, Virginia

SEVEN Naples, Italy

FIVE San Diego, California

SIX Pearl Harbor, Hawaii

Similar training is available from local medical commands with industrial hygiene staff.

**Appendix A7-C**

**NAVOSH PROGRAM MANUAL TRAINING REQUIREMENTS**

The training requirements to support the NAVOSH Program are extensive. In order to assist commands in accomplishing these requirements, the following is a list of requirements with the manual reference:

| | Requirement | Paragraph | |
|---|---|---|---|
| 1. | Conduct back injury prevention training. This training shall include: the causes of back injury, exercise programs to prevent back injury, back injury prevention on and off the job, lifting techniques, and back injury care. This training shall be conducted as a part of all hands occupational safety and health training. | A0406b | |
| 2. | Ship safety officers shall attend the formal Afloat Safety Officer Course and submarine safety officers shall attend the formal Submarine Safety Officer Course prior to or within 6 months of assuming their duties. Group and squadron safety officers (surface ship and submarine) shall attend the Afloat Safety Officer Course or the Submarine Safety Officer Course, as appropriate. | A0703a | (R |
| 3. | If the collateral duty prospective safety officer cannot attend formal training prior to duty assumption, he/she shall be required to complete the Collateral Duty Safety Officer, Watchstation 305, in the Safety Programs Afloat PQS, NAVEDTRA 43460-4A, only as an interim measure until the Safety Officer Course can be attended. | A0703a | |
| 4. | Afloat safety officers shall receive refresher training by way of courses offered in the annual NAVOSHENVTRACEN course schedule distributed by CNET and conferences and meetings that support the command's specific safety program. | A0703a | (R |
| 5. | Afloat Industrial Hygiene Officers (IHOs) should receive annual continuing education at the Navy Occupational Health and Preventive Medicine Workshop. | A0703a | |
| 6. | All petty officers assigned as division safety petty officers aboard ship shall attend the Safety Programs Afloat Course (not applicable to submarines). | A0703b | (R |
| 7. | Division safety petty officers shall complete the Divisional Safety Petty Officer, Watchstation 301, of the Safety Programs Afloat PQS, NAVEDTRA 43460-4A, within 6 months of being assigned these duties (not applicable to submarines). | A0703b | |

| | Requirement | Paragraph |
|---|---|---|
| | 8. *Division safety petty officers* should be encouraged to complete the requirements for NEC 9571 during their assignment to this responsibility (not applicable to submarines). | A0703b |
| | 9. All hands occupational safety and health training shall be conducted upon reporting aboard (i.e., I Division) and annually thereafter. | A0703c |
| R) | 10. At least two 5-minute safety briefs shall be accomplished at quarters or muster each month. *Submarines shall conduct* safety training prior to infrequent evolutions and as required by type commander's training directives. | A0703d |
| | 11. Divisional safety training shall be attended by the division officer and/or leading petty officer whenever possible, and such attendance should be indicated in the training record. | A0703f |
| | 12. All personnel currently exposed or with the potential of being exposed to asbestos (emergency repair team), their division officer and work center supervisor shall receive detailed training annually. | B0109a |
| R) | 13. Shipboard emergency asbestos removal teams shall be trained through a formal course of instruction at the NAVOSHENVTRACEN. | B0109c |
| | 14. All hands who work in areas where asbestos insulation is present shall be trained to recognize and report damaged asbestos material. | B0109e |
| A) | 15. Tenders and other ships assigned IMA responsibilities shall maintain a team trained in asbestos removal, shall have at least two managers or supervisors trained in the Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), and shall have at least one individual trained to collect and analyze bulk and air samples. | B0109f |
| | 16. Appropriate personnel shall receive heat stress training upon reporting aboard and annually thereafter. Designated films shall be shown during training. | B0206a |
| | 17. Personnel performing heat stress monitoring shall be trained and qualified using the Heat Stress Monitor Watchstation 303 of the *Safety Programs* Afloat Personnel Qualification Standard (PQS), NAVEDTRA 43460-4A within 12 weeks of assignment. | B0206b |
| | 18. *Personnel who perform* preventive and corrective maintenance on equipment and machinery identified as causes of heat stress conditions shall receive annual training on proper maintenance *techniques*. | B0206c |

| | Requirement | Paragraph | |
|---|---|---|---|
| 19. | The hazardous material (HM) coordinator shall attend the Forces Afloat HM Coordinator Course (A-8B-0008) taught by the NAVOSHENVTRACEN prior to or within 6 months after being assigned this duty if not provided through SWOS Department Head or Prospective Executive Officer Course, Navy Supply Corps School Basic or Department Head Course, or the MSC Supply Officer Course. | B0310a | (R |
| 20. | The HM coordinator shall ensure that all supervisors (department heads, division officers and work center supervisors) are trained annually on proper handling, marking stowage, usage, spill response, and disposal procedures relative to HM/HW and in the use of material safety data sheets (MSDSs). | B0310b | (R |
| 21. | Workcenter supervisors shall attend the Afloat HM for Supervisors (A-322-0010) as specified by type commanders for each type of ship. | B0310b | (A |
| 22. | The supply officer shall ensure that all supply personnel and division supply petty officers involved in the requisitioning, receipt, transfer, and stowage of HM and in the collection and transfer of HW are trained on the proper procedures for handling this material prior to handling HM/HW and annually thereafter. | B0310c | (R |
| 23. | The supply officer shall ensure that all supply personnel involved in the requisitioning, receipt, transfer, and stowage of HM and in the transfer of HW shall be trained on the proper procedures for handling this material prior to handling HM/HW and annually thereafter. | B0310c | (R |
| 24. | All hands shall receive job-specific training on HM/HW from their work center supervisor upon reporting aboard and annually thereafter. | B0310d | (R |
| 25. | Damage control teams which may be required to combat an emergency involving HM/HW and the ship's fire department (if used aboard) shall receive training annually on HM/HW procedures. This training shall include at least one drill per year per team. | B0310e | (R |
| 26. | Assistants to the HM Coordinator, personnel who control and manage the day-to-day operation of the command's HMC&M program, and personnel who manage the HAZMINCEN (if implemented aboard) shall attend the Hazardous Material Control and Management Technician (SNEC 9595) Course (A-322-2600) taught by the NAVOSHENVTRACEN. | B0310g | (A |
| 27. | All personnel included in the hearing conservation program shall receive 1 hour of training relative to the program prior to working in noise hazardous areas or with noise hazardous equipment and annually thereafter. | B0408a | |

| | Requirement | Paragraph |
|---|---|---|
| 28. | Training on the need for and use of protective eyewear shall be provided to personnel working in eye hazardous areas or with eye hazardous equipment upon reporting aboard and annually thereafter. | B0509a |
| 29. | Proper use (of respirators) shall be ensured by training personnel required to wear respirators prior to use and annually thereafter in the selection, use, and maintenance of respirators. | B0612a |
| 30. | Respiratory protection officers (RPO) shall attend training at a NAVENPVNTMEDU prior to assignment or as soon thereafter as practical. | B0612b |
| 31. | Personnel assigned to issue respiratory protection equipment shall be trained by the RPO on respirator selection, care, and maintenance prior to assignment and annually thereafter. | B0612c |
| 32. | All personnel, when reporting aboard and annually thereafter, shall receive indoctrination on basic electrical safety. | B0705b |
| 33. | Each ship shall have a certified CPR instructor aboard. At least 50 percent of electrical/electronic associated ratings shall receive certified cardio-pulmonary resuscitation (CPR) training so that they are qualified to administer CPR in the event of an electrical shock incident. Refresher training shall be conducted as necessary to maintain current certification of trained personnel. | B0705c |
| 34. | Personnel who man the portable electrical tool issue room shall be trained annually on their responsibilities. They shall complete the Electrical Tool Issue Room Watchstation 302 in the Safety Programs Afloat PQS, NAVEDTRA 43460-4A, within 16 weeks of assignment. | B0705d |
| 35. | The assigned electrical safety officer shall complete Watch-station 304 of the Safety Programs Afloat PQS within 16 weeks of assignment. | B0705f |
| 36. | Division officers are responsible for ensuring that assigned personnel are trained on the gas free engineering program upon reporting aboard and annually thereafter. | B0804a |
| 37. | All gas free engineering personnel shall be trained in CPR and emergency and rescue procedures as well as their gas free engineering procedures annually. | B0804d |
| 38. | All hands shall be indoctrinated on the hazards of radiation upon reporting aboard and annually thereafter. | B0907a |

| | Requirement | Paragraph | |
|---|---|---|---|
| 39. | Training shall be provided to all personnel who work with radio-frequency radiation (RFR) sources, or work in an area where the potential may exist for exposure to RFR above the permissible exposure limit, prior to any assignment to an RFR area and annually thereafter. | B0907b | |
| 40. | Designated laser system safety officers shall receive formal classroom training in laser radiation hazards and control approved by SPAWAR (223-2) prior to assuming this duty. | B0907c | |
| 41. | All personnel who work in areas where the potential exists for lead exposure, at or above the Action Level, and their supervisor shall receive initial training prior to such assignment and at least annually thereafter. | B1008 | |
| 42. | All hands shall receive training on the tag-out program upon reporting aboard and annually thereafter. | B1104a | |
| 43. | Persons who affix, check, or remove tags or labels shall receive training on the Equipment Tag-out Bill prior to being assigned these duties and annually thereafter. | B1104a | |
| 44. | Persons being assigned to watchstations or billets designated as authorizing officers shall receive training on the requirements and the responsibilities and procedures of the Equipment Tag-out Bill prior to such assignment and annually thereafter. | B1104b | |
| 45. | All personnel who are required to wear or use personal protective clothing and equipment described in this chapter shall receive training prior to initial use and annually thereafter to ensure they properly wear and maintain this clothing and equipment. | B1205 | |
| 46. | Mercury hazard training shall be conducted for persons handling, storing, disposing of, or cleaning-up mercury or mercury compounds prior to carrying out these duties and annually thereafter. | B1309 | |
| 47. | Personnel who are required to perform work on known or suspected PCB-containing materials (including ventilation cleaning in systems known or suspected of employing PCB-containing gaskets) shall be trained prior to such work. | B1408a | (A |
| 48. | Personnel who work with man-made vitreous fibers (MMVF) material or who may be exposed to MMVF in excess of the action level shall receive training prior to, or at the time of, initial assignment and annually thereafter. | B1507a | |

| Requirement | Paragraph |
|---|---|
| 49. While most of the standards (Chapter C1) are covered in basic training and at specified training schools, a new crew member shall be given a copy of these standards and a brief orientation as to their intent and importance. | C0103a |
| 50. Every time a mishap occurs violating one of these standards, (Chapter C1) all hands should again have the standard brought to their attention by means of Plan of the Day (POD) notes or divisional training at quarters. | C0103b |

## Appendix A7-D

## NAVOSH-RELATED TRAINING MANUALS AND CORRESPONDENCE COURSES

The following Naval Education and Training (NAVEDTRA) manuals and correspondence courses contain information related to the NAVOSH (Afloat) Program:

| Title | NAVEDTRA NUMBER | |
|---|---|---|
| Unit Safety Supervisor | 12971 | (R |
| Heat Stress | 13128 | |
| Tools and Their Uses | 10085-B2 | (R |
| Investigations | 13081 | (R |
| Basic Military Requirements | 10054-F | (R |
| Military Requirements PO3 | 12044 | (R |
| Military Requirements PO2 | 12045 | (R |
| Military Requirements PO1 | 12046 | (R |
| Military Requirements CPO | 12047 | (R |
| Military Requirements Senior and Master CPO | 12048 | (R |
| Master-at-Arms 2,1 & C, Volumes 1 & 2 | 10255/10256 | |
| Standard Organization and Regulations of the Navy | 10427-C | (R |
| Catalogue of Occupational Safety and Health Training Courses | 10075-C | (R |
| Naval Orientation | 12966 | (R |
| NAVOSH Training Guide for Forces Afloat | 10074 | (A |

### NOTE

NAVEDTRA titles and numbers are subject to change. The List of Training Materials and Correspondence Courses should be checked prior to ordering any training manual or correspondence course.

## Appendix A7-E

## NAVOSH-RELATED PERSONNEL QUALIFICATION STANDARDS (PQS)

The following is a list of Personnel Qualification Standards that are NAVOSH-related:

| TITLE | NAVEDTRA NUMBER | |
|---|---|---|
| Conventional Weapons/Explosives Handling and Storage - Ammunition Onload/Offload Safety Observer | 43202-B | (R |
| Aviation Safety PO/NCO | 43218 | (R |
| Booms and Cranes - Safety Officer | 43310-B | (R |
| Safety Programs Afloat | 43460-4A | (R |
| GMLS Mk 10 (Safety Observer) | 43348A | |
| GMSL Mk 10-16 (Safety Observer) | 43348-1 | (A |
| GMLS Mk 11 (Safety Observer) | 43408A | (R |
| GMLS Mk 26 (Safety Observer) | 43322B | (R |
| GMLS Mk 13/22 (Safety Observer) | 43326B | (R |
| Shipboard Helicopter Operations, Air Capable Ships | 43219B | (R |
| Landing Signalman Enlisted (LSE) | 43436 | (A |
| LSD/LPD Well Deck Operations | 43416A | (R |
| MK 45 Mod 0 5"/54 (Deck Safety Watch) | 43168B | (R |
| Oil Spill Control/Removal Equipment | 43195A | (R |
| Oil Spill (Supervisor Qualification) | 43195-Q1 | |
| Small Boat Operations | 43152B | (R |
| Towing Specialist | 43500A | (R |
| Hazardous Material/Environmental Protection Program Afloat | 43528 | (D<br>(R |

**NOTE**

PQS titles and numbers are subject to change. The Personnel Qualifications Standards Catalogue, NAVEDTRA 43100-5, should be checked prior to ordering any PQS or standard answer book.

## Appendix A7-F

## NAVOSH TRAINING AIDS

The following is a list of training aids (films, videotapes, and Hazard Awareness Kits) which can be used as a part of the on board training program:

| TITLE | NUMBER | FORMAT | |
|---|---|---|---|
| A Breath in Time | 35346-DN | 16mm, 1/2" Beta videotape | |
| A-4 OBA (HAWKIT 39) | 80220-DN | 1/2" Beta videotape | |
| [1]Back to Basics | 805580-DN | VHS & Beta videotape | (A |
| Believing Is Seeing | 35183-DN | 16mm | |
| Below Decks Rigging | 801718-DN | 1/2" Beta videotape | |
| Cargo Boom Safety | 801707-DN | 1/2" Beta videotape | |
| Clothing and Equipment - Fleet Asbestos Control Program | 82230-DN | sound/slide | |
| Damage Control (HAWKIT 1) | 803056-DN | sound/slide | |
| Danger Zone - Your Hands | Commercial | 1/2" Beta videotape | |
| Danger Zone - Your Head | Commercial | 1/2" Beta videotape | |
| Deck Seamanship (HAWKIT 2) | 803057-DN | sound/slide | |
| Disposal of Hazardous Materials Afloat | 803495-DN | 1/2" Beta videotape | |
| Emergency Escape Breathing Devices | 800331-DN | 16mm, 1/2" Beta videotape | (D |
| Engineering Hazards (HAWKIT 3) | 803058-DN | sound/slide | |
| Eye Safety | Commercial | 1/2" Beta videotape | |
| Fire Pirate, The | 34415-DN | 16mm, 1/2" Beta videotape | |
| Firefighting on Hangar Decks | 25354-DN | 16mm, 1/2" Beta videotape | |
| Fleet Asbestos Control Program, Part II | 82231-DN | sound/slide | |
| [1]Flight Deck Safety | 803442-DN | VHS & Beta videotape | (A |

| | TITLE | NUMBER | FORMAT |
|---|---|---|---|
| | Fools Rush In (commercial) . . . . . | 801736-DN | sound/slide |
| | General Military Quality of Life Back Injury Prevention . . . . . | 803503-DN | 1/2" Beta videotape |
| | Ground Support Equipment (HAWKIT 12) | 82211-DN | sound/slide |
| | Halocarbons - Health and Safety Precautions . . . . . | 43146-DN | 1/2" Beta videotape |
| | Handling Hazardous Materials Afloat . | 803475-DN | 1/2" Beta videotape |
| | Hangar Deck Safety (HAWKIT 21) . . . | 82554-DN | sound/slide |
| | Have You Heard? . . . . . | 25773-DN | 16mm |
| | Hazardous Items (HAWKIT 5) . . . . . | 803060-DN | sound/slide |
| | Hazardous Material Labeling (NFPA) (HAWKIT 30) . . . . . | 800648-DN | sound/slide |
| | Hazardous Materials Control Afloat . | 804939-DN | VHS & Beta videotape |
| A) | [1]Hazardous Material Control Afloat for Supervisors . . . . . | 805545-DN | VHS & Beta videotape |
| A) | [1]Hazardous Material Control Afloat for Users . . . . . | 805544-DN | VHS & Beta videotape |
| A) | [1]Hazardous Material Offload . . . . . | 805569-DN | VHS & Beta videotape |
| A) | [1]Hazardous Material User's Guide . . | 805357-DN | VHS & Beta videotape |
| | Hearing Conservation - Flight Deck and Flight Line . . . . . | 43137-DN | 16mm, 1/2" Beta videotape |
| | Hearing Conservation - Shipboard and Workplace . . . . . | 43138-DN | 16mm, 1/2" Beta videotape |
| | Hearing Safety . . . . . | Commercial | 1/2" Beta videotape |
| D) | Hoisting and Lowering of Small Boats | 801717-DN | 16mm, 1/2" Beta videotape |
| | If You Can't Stand the Heat . . . . . | 35026-DN | 16mm, 1/2" Beta videotape |
| | Investigation of Shipboard Damage . . | 34670-DN | 16mm, 1/2" Beta videotape |
| A) | Laser Hazards and Control . . . . . | 804245-DN | 1/2" Beta videotape |

| TITLE | NUMBER | FORMAT |
|---|---|---|
| Laser Safety (commercial) | 34739-DN | 16mm |
| Man Overboard | 82971-DN | 1/2" Beta videotape |
| Man Overboard Recovery | 25545-DN | 16mm |
| Mk 2 Life Vest | 801176-DN | 1/2" Beta videotape |
| [1]NAVOSH, It's Protecting You | 804764-DN | VHS & Beta videotape |
| Navy Occupational Health Program | 801470-DN | 1/2" Beta videotape |
| Oxygen Breathing Apparatus, Type A-4 (HAWKIT 39) | 892006-DN | 1/2" Beta videotape |
| Oxygen Breathing Apparatus, Type A-4 (Revised) | 802995-DN | sound/slide |
| [1]Play It Cool: Heat Stress Prevention Afloat | 8055801-DN | VHS & Beta videotape (A |
| RF Burns | 24822-DN | 16mm |
| Safe Breathing | 35046-DN | 16mm |
| Safe Operation of Aircraft Electrical Servicing Systems | 802122-DN | 1/2" Beta videotape (R |
| Safe Submarine Escape | 801735-DN | 1/2" Beta videotape |
| Shipboard Cruise Safety | 82035-DN | 16mm, 1/2" Beta videotape |
| [1]Shipboard Electrical Safety | 805008-DN | VHS & Beta videotape (A |
| Shipboard Handling and Stowage of Ammunition Cargo | 25576-DN | 16mm |
| [1]The Shipboard Hazardous Material Coordinator | 805546-DN | VHS & Beta videotape (A |
| [1]Shipboard HVAC | 805570-DN | VHS & Beta videotape (A |
| [1]Shipboard Local Exhaust Ventilation | 805570-DN | VHS & Beta videotape (A |
| [1]Shipboard Respiratory Protection | 805009-DN | VHS & Beta videotape (A |

| | TITLE | NUMBER | FORMAT |
|---|---|---|---|
| A) | [1]Shipboard Tag-out Procedures . . . . | 805081-DN | VHS & Beta videotape |
| | Ship's Boats (HAWKIT 7) . . . . . | 803062-DN | sound/slide |
| | Standby to Receive - Shipboard Oil Spill Procedures . . . . . | 35009-DN | 16mm |
| | Storage of Hazardous Materials . . . | 803476-DN | 1/2" Beta videotape |
| | Straight Talk on Eye Safety (commercial) . . . . . | 22070-DN | 16mm |
| | Submarine Below Decks Watch (HAWKIT 31) . . . . . | 802362-DN | 1/2" Beta videotape |
| R) | Submarine Damage Control (HAWKIT 26) | 805234-DN | 1/2" Beta videotape |
| R) | Submarine Electrical Safety (HAWKIT 34) . . . . . | 805235-DN | 1/2" Beta videotape |
| | Submarine Fire Fighting (HAWKIT 36) . | 802361-DN | 1/2" Beta videotape |
| A) | Submarine Forces Afloat Introduction to the NAVOSH Program . . . . . | SOBT Video #16 | 1/2" Beta videotape |
| | Submarine Helicopter Transfer (HAWKIT 19) . . . . . | 82553-DN | sound/slide |
| | Submarine Line Handling (HAWKIT 23) . | 801122-DN | 1/2" Beta videotape |
| A) | Submarine Safety Video . . . . . | SOBT Video #7 | 1/2" Beta videotape |
| | Submarine Topside Safety (HAWKIT 28) | 802362-DN | 1/2" Beta videotape |
| | Synthetic Line Snapback . . . . . | 82971-DN | 16mm, 1/2" Beta videotape |
| | Tape 16 - Shipboard Safety During Industrial Availability . . . . . | 21854-DN | 16mm |
| | To Your Health . . . . . | 801737-DN | sound/slide |
| | Trial By Fire - A Carrier Fights For It's Life . . . . . | 25748-DN | 16mm, 1/2" Beta videotape |

| TITLE | NUMBER | FORMAT |
|---|---|---|
| Use and Care of the Heat Stress Meter | 35335-DN | 16mm, 1/2" Beta videotape |
| Working Over the Side (HAWKIT 17) . . | 801772-DN | 16mm, 1/2" Beta videotape |

NOTE: (A

[1] Videotapes are produced in support of the NAVOSH Training Plan (NTP S-40-8603B). Copies are distributed to all afloat commands and support staffs and activities upon production.

These training aids are available at and may be requested for a six week period from the following commands:

Commanding Officer
Naval Education and Training Support Center, Atlantic
Code N5
Naval Station, Norfolk, VA 23511
Phone (804) 444-4011/1468 (ATV 564-4011/1468)

Commanding Officer
Naval Education and Training Support Center, Pacific
Code N5
Fleet Station Post Office Building
San Diego, CA 92132
Phone (619) 532-1360 (ATV 522-1355)

NOTE:

Training aid titles and numbers are subject to change. Prior to ordering any training aids, OPNAV P-09B1-01-88, "Catalogue of Navy and Marine Corps Visual Information Productions," should be checked to ensure that the correct titles and/or numbers are requested.

## SECTION B

## MAJOR HAZARD-SPECIFIC PROGRAMS

This section outlines NAVOSH programs which address specific hazards such as asbestos control, heat stress, radiation protection, electrical safety, hazardous material control management, and gas free engineering as well as the tag-out program and personal protective equipment. The objective of this section is to reduce to a manageable degree, the basic NAVOSH management requirements applicable to shipboard personnel. This section is addressed to personnel who would assist the commanding officer in program management (e.g., safety officer, electrical safety officer, gas free engineer, HM coordinator, and medical department representative). (R

To execute these programs, it may be necessary to consult other Navy publications such as the Naval Ships Technical Manual (NSTM), General Specifications for Ships, technical/operating manuals, and equipment Planned Maintenance Systems (PMS) cards for complete safety precautions. (R

It must also be recognized that there may be conditions that are not covered in this manual. If a NAVOSH standard does not exist, the Type Commander shall be notified via the chain of command. The Type Commander will determine, considering the chain of command input, if there is an applicable OSHA standard and how the OSHA standard shall apply considering if there are military unique requirements/design configurations that prevent compliance with the OSHA standard. The Type Commander or other commanders in the chain of command, if sufficiently knowledgeable, shall provide guidance to all ships under their command as to the standards to be followed. (R

# CHAPTER B1

# ASBESTOS CONTROL

## B0101. CHAPTER ORGANIZATION

a. The chapter has been reorganized to clarify ships' requirements and responsibilities for control of asbestos exposure.

b. All U.S. Navy ships are required to have an asbestos control plan per B0102. The scope, requirement and responsibilities for each ship's plan are determined by the type of asbestos work that each ship's personnel are permitted to perform. The type of work performed, and therefore, the type of asbestos control plan required, is based on:

(1) The type of asbestos-containing materials (ACM) present aboard the ship (see B0103e(1) - (2))

(2) Whether the ship has a mission to provide asbestos repair and/or removal services to other afloat commands.

c. There are three categories of asbestos work that can be performed aboard ship (paragraph B0105). These categories are referred to in this chapter as asbestos work protocols. Individual asbestos work protocols, which detail plan work scope, plan responsibilities, and equipment and training requirements, are included for each type of asbestos work.

d. This chapter contains two types of information. Paragraphs B0101 through B0106 contain information that is general in nature, and is mandatory for all ships. Paragraphs B0107 through B0124 detail information that is applicable to ships relative to the asbestos work protocol under which the ship must operate (paragraph B0105).

## B0102. APPLICABILITY

Navy policy is that asbestos-contaminated insulating materials will not be used on U.S. ships. Naval Sea Systems Command (NAVSEASYSCOM) cannot definitively establish that a ship is free of ACM. Any previous guidance that may have exempted ships from establishing and maintaining an asbestos plan has been deleted from reference B1-1. Because of this, and the fact that all U.S. Navy ships contain some form of ACM, **all ships shall implement and maintain an asbestos control plan. Commanding officers shall ensure that all required resources and personnel are assigned to accomplish this plan.** Ships with qualified teams to perform asbestos repair or removal may do so. However, due to inconsistent State-to-State, and increasingly stringent Federal air emissions reporting requirements, each ship is required to contact their type commander (TYCOM) industrial hygiene officer (IHO) and/or Regional Environmental Coordinator (REC) to determine specific local emissions reporting guidance.

a. All ships shall implement, at a minimum, the protocol for ship's force

(paragraphs B0105a and B0107). A ship may be required to implement and maintain an additional protocol - either the protocol for Emergency Asbestos Response Team (EART) (paragraphs B0105b and B0112) or Intermediate Maintenance Activity (IMA) (paragraphs B0105c and B0118). No afloat command will be required to implement all three asbestos work protocols.

b. Any ship whose keel was laid prior to 1980 will be considered to contain friable asbestos thermal systems insulation (TSI), and shall therefore maintain an EART. Ships in this category shall implement and maintain both the ship's force (B0107 - B0111) and EART (B0112 through B0117) protocols.

c. Any ship whose keel was laid during or after 1980, per reference B1-2, was prohibited from being constructed with TSI. Therefore, these ships are not required to maintain an EART unless the ship has received repair work in a non-U.S. Navy operated facility at any time since its construction. See the note below for details.

NOTE:

Any ship that has had repair work performed in any non-U.S. Navy operated facility, should be handled as if the ship contains asbestos, unless supporting documentation, substantiated by laboratory analysis (see B0104a(3)), can document that no ACM was introduced onto the ship. **Any ship, having structural/engineering repairs in any non-U.S. Navy-operated facility, without supporting documentation to guarantee that no ACM was introduced onto the ship, regardless of the age of the ship, shall maintain an EART.** Therefore, it is strongly suggested that ships maintain, or have access to, adequate supplies of asbestos-free insulating materials for use in routine and emergency repair work conducted in non-U.S. Navy operated facilities to prevent the introduction of ACM.

d. Any ship designated as an afloat intermediate maintenance activity (IMA) and having an embarked IHO is authorized to have its qualified personnel remove unlimited amounts of ACM, onboard or aboard other ships for which it is responsible to provide maintenance support. Repair and removal operations conducted at sea, >3nm of shore, are not subject to Environmental Protection Agency (EPA) emission standards for asbestos. However, EPA standards for disposal of ACM apply upon return to port (B0104f). Any ship so designated shall implement and maintain both the ship's force (B0107 through B0111) and (B0118 through B1024) IMA asbestos control protocols.

B0103. DISCUSSION

a. Asbestos is a fibrous mineral that can be produced into a material that is fireproof, possesses high tensile strength, good heat and electrical insulating capabilities, and moderate to good chemical resistance. Because of these characteristics, asbestos has traditionally been used as thermal and acoustical insulation, pipe lagging, gaskets, brake and clutch linings, winch and capstan brakes, and roofing and flooring materials.

b. Asbestos fibers are a known health hazard. Inhalation of asbestos fibers has been demonstrated to cause at least two distinct disease states, asbestosis and cancer. Asbestosis is a progressively worsening disease of the lung and is recognized as a classic disabling or even fatal occupational disease. Asbestos has also been found as a causal factor in the development of lung cancer and of malignant pleural mesothelioma, and it is suspected of causing cancer of the gastrointestinal tract. When coupled with smoking tobacco products, the risk of developing lung cancer is increased dramatically. Mesothelioma is a rare malignant tumor of the membrane that lines the chest and abdominal cavity. It is rarely found except in those exposed to asbestos. Most symptoms of these asbestos-related diseases do not show up until 10-45 years after exposure.

c. Asbestos insulation and other asbestos-containing materials are normally not a health hazard when in good condition, secured in place, and unlikely to be disturbed. Bound asbestos materials, such as most gaskets, floor coverings, and cements are not generally health hazardous except when worked by punching, grinding, machining, or sanding or when the material is deteriorated. Of primary concern is asbestos that has the potential to become airborne through friability (able to be crushed under hand pressure). Gasket material that has been exposed to high heat over time, and damaged asbestos packing materials may also be friable.

d. There are no known acute (immediate) effects associated with exposure to asbestos. Therefore, avoid breathing asbestos dust even though it may not seem to produce any harmful effects at the time of exposure. There is only one way to completely prevent the possibility of asbestos-related illness, and that is to eliminate asbestos from the work environment. Since total removal is not possible, the Navy has instituted a plan to control the use of asbestos and to replace any removed asbestos with a non-asbestos substitute where technically acceptable substitutes have been identified.

e. Asbestos is normally found aboard ship in insulation and lagging for high temperature machinery, boilers and piping, in Garlock®-type gasket material, electrical wiring, certain deck tiles and decorative paneling, and some packing material. For purposes of this afloat instruction, ACM is characterized as one of two types:

(1) Friable. Friable ACM is defined as material that can be crumbled, pulverized or reduced to powder under hand pressure, thereby releasing airborne fibers. Friable ACM represents the most significant health hazard, because airborne fibers can be released during normal work operations. Typical examples are:

(a) Pipe lagging

(b) Acoustical insulation

(c) Sheet gasket material used in high temperature applications.

(2) Non-friable. This form of ACM, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure. The asbestos fibers in these materials cannot be readily released into the air under normal work conditions. Some examples are:

(a) Brake and clutch linings

(b) Gaskets and adhesives

(c) Floor tile and adhesives.

B0104. ASBESTOS CONTROL ELEMENTS

a. Identification of asbestos hazards

(1) Per Chapter A3, an industrial hygienist shall survey all work places as part of the industrial hygiene survey. During this survey, the industrial hygienist shall identify any hazards associated with asbestos and provide recommended actions to the ship to eliminate or minimize the asbestos hazard.

(2) It is necessary to determine if thermal insulation, due to be handled for repair or removal, contains asbestos, prior to the time each repair or removal is to be performed. In these cases, a sample of the insulation material shall be obtained following the procedures in Appendix B1-A, and submitted for analysis.

(3) It is not possible to identify asbestos based solely on a visual inspection. Therefore, thermal insulation, especially on ships that were built before 1980, should be handled as if it contains asbestos, unless the insulation material is shown to be asbestos-free by laboratory analysis. Ships having asbestos identification capability can provide this laboratory service, to positively identify suspected asbestos-containing materials. Shipyards, Navy Environmental Preventive Medicine Units (NAVENPVNTMEDUs), and medical treatment facilities (MTFs) also have the capability to test materials for the presence of asbestos. Identification by polarizing light microscopy or transfer electron microscopy (TEM) is acceptable.

(4) There are many means of marking asbestos-free thermal insulation. Do not rely on any such systems as positive identification of non-asbestos material.

b. Control of asbestos in the workplace

(1) Navy policy is to eliminate asbestos exposure hazards by substitution of ACM with asbestos-free materials, approved under the technical management of the NAVSEASYSCOM. The command shall not remove installed ACM, which are in good condition, for the sole purpose of eliminating asbestos. Where substitution is not possible, the command shall use engineering controls or and/or personal protective equipment. The command shall prohibit the use

of administrative controls, (e.g. personnel rotation) as a means of keeping the exposure below the permissible exposure limit (PEL).

(2) Specific procedures to control the accumulation of asbestos-laden waste, dust, and scrap materials are found in the individual work protocol standard operating procedures (SOPs) (Appendix B1-B for ship's force, Appendix B1-C for Emergency Asbestos Response Team, and Appendix B1-D for IMAs).

(3) Warning Signs and Labels

(a) The command shall provide and display warning signs, which comply with reference B1-3, at each location where asbestos work is performed. Post signs at a sufficient distance from the work area that personnel may read the signs and take necessary steps before entering the area. A listing of required protective equipment may be attached to, or be a part of the sign. The warning sign shall state:

**DANGER**

**ASBESTOS**

**CANCER AND LUNG DISEASE HAZARD**

**AUTHORIZED PERSONNEL ONLY**

**RESPIRATORS AND PROTECTIVE CLOTHING MAY BE REQUIRED IN THIS AREA**

This warning sign is available from standard stock under NSN 9905-01-345-4519.

(b) Affix warning signs to containers of raw materials, mixtures, scrap, waste, debris, samples and other products containing asbestos materials. Print the warning labels in letters of sufficient size and contrast as to be readily visible and legible. Include the following information:

**DANGER**

**CONTAINS ASBESTOS FIBERS**

**AVOID CREATING DUST**

**CANCER AND LUNG DISEASE HAZARD**

c. Adherence to prescribed work practices. The work processes for asbestos removal or repair are specific to the type of asbestos work protocol. See the appropriate appendix for SOPs for each work protocol:

(1) Appendix B1-B details SOPs for ship's force asbestos work

(2) Appendix B1-C is the SOPs for EART work processes

(3) Appendix B1-D covers operating procedures for the IMA processes.

d. Proper stowage and offloading of materials containing asbestos

(1) Stowage of unused asbestos-containing gasket materials and packing. Stow asbestos-containing gasket material and packing (i.e. Garlock sheets) in double, heavy-duty (6 mil thickness) plastic bags or other suitable impermeable containers. The storage material must be leak tight. All bags or containers must be provided with standard asbestos labels (paragraph B0104b(3)(b)). Exercise care in order to prevent bags and other containers from rupturing when being transported and stowed.

(2) Handling, packaging and offloading of removed ACM. Adequately wet ACM during removal and maintain wet through disposal. Dispose of the wet waste material in double, heavy-duty (6 mil thickness) plastic bags or other suitable impermeable containers. The waste container must be leak tight. Do not overfill the bags. Provide all bags or containers with standard warning labels per B0104b(3)(b). Distinctly color-code all asbestos waste containers red to ensure easy recognition. Exercise care in order to prevent bags and other containers from rupturing when being transported to a shore activity for disposal. Accomplish disposal per Chapter B3, Appendix B3-C.

e. Asbestos Medical Surveillance Program (AMSP). The medical department representative (MDR) will determine placement of personnel into the AMSP per reference B1-4. It is possible that all three asbestos protocols may require placement of personnel into an AMSP.

f. Environmental Protection

(1) Repair and removal operations conducted at sea, at a distance greater than 3nm from US shore, are not subject to Environmental Protection Agency (EPA) emissions and reporting standards for asbestos. However, EPA standards for disposal of ACM apply upon return to port. All ACM will be held on station and disposed of ashore per the appropriate EPA requirements.

(2) Ships with qualified teams to perform asbestos repair or removal may do so within 3nm of shore. However, due to inconsistent State-to-State, and increasingly stringent Federal air emissions reporting requirements, each ship is required to contact their TYCOM IHO or REC to determine specific local emissions reporting guidance.

g. Training

(1) Training requirements for personnel performing repair or removal work with ACM are specific to the type of work performed. Each protocol contains the specific requirements for training. The training matrices are as follows:

(a) Training matrix for ship's force is Appendix B1-E

(b) Training matrix for the EART is Appendix B1-F

(c) Training matrix for IMAs is Appendix B1-G

(2) In addition to the training requirements detailed in the specific protocols (B0109, B0114 and B0121), general training is required for all personnel currently exposed, or with the potential for being exposed to asbestos. All commands are responsible for asbestos training of their personnel. Training should be conducted by the workcenter supervisor upon assignment. General training shall include:

(a) The health effects/hazards of asbestos

(b) The association between the use of tobacco products, exposure to asbestos, and the increased risk of developing lung cancer

(c) Uses of asbestos which could result in an exposure

(d) Engineering controls and work practices associated with an individual's work assignment

(e) Purpose, proper use and limitations of protective equipment

(f) Purpose and description of medical surveillance program

(g) Description of emergency and clean-up procedures

(h) Overall review of this chapter and the command's/activity's control plan

(i) Posting signs and affixing labels.

(3) Recordkeeping. All shipboard asbestos records, including personal and environmental monitoring, quality control and quality assurance, and respirator fit testing, shall be transferred to a supporting shore medical activity for permanent retention as required by reference B1-4 following transfer, discharge or retirement of the individual to whom the records refer. The supporting shore medical activity shall establish a file for each ship. If a ship changes homeport, the file will be provided to the new supporting shore medical activity. Upon decommissioning, the supporting shore medical activity shall forward the asbestos record to BUMED. Each individual currently or previously working with asbestos or any other person he or she may designate, shall have access to all such records within 15 days of a written request.

(4) Training materials are available through NAVOSHENVTRACEN at www.norva.navy.mil/navosh.

**B0105. TYPES OF ASBESTOS WORK PERFORMED ABOARD NAVY SHIPS**

For the purposes of this chapter, all work involving ACM has been divided into three protocols. The protocols are:

a. Ship's Force Protocol. This protocol details the requirements and procedures for the repair and removal of materials that contain non-friable ACM (B0107). All afloat commands must comply with the requirements of this protocol.

b. Emergency Asbestos Response Team (EART) Protocol (Formerly the 3 Men Emergency Rip-Out Team). This protocol details the requirements and procedures for the minor repair and removal of friable ACM (i.e. asbestos work that can be accomplished using proper glove bag procedures (B0112)).

c. Intermediate Maintenance Activity Protocol. This protocol details the requirements and procedures for major asbestos removals and repairs by ships designated as IMAs and having an embarked IHO assigned. Major asbestos removals and repairs are defined as any asbestos work that cannot be accomplished using a single glove bag (B0118). An IMA, with an embarked IHO, will not be required to maintain an EART.

**B0106. WORKPLACE RELEASE CRITERIA**

a. Strict adherence to good housekeeping procedures, and dust control measures to minimize release of asbestos fibers during removal/repair of asbestos-containing materials are the most important and effective means of reducing downtime to reoccupy a workspace after asbestos repair or abatement operations.

b. Before a space, where asbestos work was performed, may be released for unrestricted access, the area must be thoroughly cleaned and inspected. Use the checklist found in Appendix B1-H for this purpose.

**B0107. PROTOCOL FOR SHIP'S FORCE PERFORMING NON-FRIABLE ASBESTOS MAINTENANCE**

All Navy ships have non-friable asbestos, therefore, all afloat commands shall comply with the specific requirements of this protocol. The SOPs for the work processes authorized for ship's force personnel to perform are found in Appendix B1-B. Additionally, all afloat commands are required to comply with the general requirements detailed in B0101 through B0106. Ship's force may perform:

a. Replacement of asbestos-containing gasket/packing material

b. Limited asbestos floor tile removal (9 $ft^2$ maximum)

c. Preventive maintenance of brake and clutch assemblies.

**B0108. SHIP'S FORCE PROTOCOL RESPONSIBILITIES**

a. The safety officer shall:

(1) Ensure that ship's force personnel performing work under this protocol are trained to accomplish the work described in Appendix B1-B.

(2) If applicable (see B0102c NOTE), ensure that documentation, substantiated by laboratory analysis (see B0104a(3)), is obtained for any repair work performed in non-U.S. Navy-operated facility to ensure that no ACM is introduced onto the ship.

b. The engineering/repair/aviation intermediate maintenance department heads (as appropriate) shall:

(1) Provide personnel who work with asbestos with the necessary equipment and protective clothing to perform work per this protocol. Appendix B1-I and Appendix B1-J detail the personal protective equipment (PPE) and authorized equipage list (AEL) required for this protocol.

(2) Identify all personnel involved in asbestos repair or removal operations that warrant AMSP consideration, per this protocol (see Appendix B1-B, Medical Surveillance Sections), and provide their names to the MDR for consideration for inclusion in the AMSP. Ensure personnel, placed in the AMSP by the MDR, report for medical examinations as required.

(3) Ensure that all asbestos-containing waste materials are collected as required per B0104d(2) and Appendix B1-B and properly stored while awaiting disposal ashore (B0104d(1) and (2)).

(4) Ensure that only work described in paragraph B0107 is performed by ship's force.

(5) Ensure that ship's force personnel performing work under this protocol are trained to accomplish the work described in Appendix B1-B.

c. The medical department representative shall implement, if applicable, an AMSP, per reference B1-4 for personnel performing preventive maintenance on brake assemblies.

d. Division officers shall:

(1) Notify the safety officer and engineer officer/repair officer prior to performing or authorizing any work that may include the repair or removal of ACM.

(2) Ensure that the workplace is properly cleaned and cleared prior to release for uncontrolled access per B0106 and Appendix B1-H. The department head or division officer may designate a leading petty officer (LPO) to accomplish the workplace release inspection.

(3) Ensure that all mandatory training for work covered in this protocol is conducted. Training requirements are detailed in B0109 and Appendix B1-E.

e. Workcenter supervisors shall train all hands who work in areas where asbestos-containing materials are present to recognize and report damaged ACM.

Training materials are available through NAVOSHENVTRACEN at www.norva.navy.mil/navosh.

f. **All hands shall:**

(1) Avoid areas posted with asbestos warning signs. Unless authorized, do not enter an asbestos-posted area.

(2) Inform appropriate supervisor of damage to materials covered under this protocol.

**B0109. TRAINING**

a. All personnel currently exposed or with the potential of being exposed to asbestos and their division officer and work center supervisor shall receive asbestos training prior to, or at the time of their initial assignment.

b. Training materials are available through NAVOSHENVTRACEN at www.norva.navy.mil/navosh.

**B0110. PERSONAL PROTECTIVE AND ENGINEERING EQUIPMENT**

A matrix containing a general list of PPE for work covered in this protocol is found in Appendix B1-I. A detailed list of all engineering equipment (AEL) is found in Appendix B1-J.

**B0111. DISPOSAL OF ASBESTOS WASTE**

Dispose of asbestos waste per B0104d(2), Appendix B1-B, and Chapter B3.

**B0112. PROTOCOL FOR EMERGENCY ASBESTOS RESPONSE TEAM (EART) (FORMERLY THE 3-MAN EMERGENCY RIP-OUT TEAM)**

All afloat commands meeting the following criteria shall have an EART to perform emergency repair or replacement of ACM. Each EART team shall consist of a supervisor, a cutter, and a cleaner. Per B0102, the following afloat commands shall maintain an EART:

a. Any ship whose keel was laid prior to 1980

b. Any ship whose keel was laid on or after 1980, not meeting the exemption for new ships detailed in B0102c NOTE

**NOTE:**

A ship that is designated as an IMA with asbestos removal capabilities, and an embarked IHO does not need to maintain an EART.

c. Ships requiring the EART shall comply with all of the general

requirements of this chapter (paragraphs B0101 through B0106), the requirements of the protocol for ship's force (paragraphs B0107 through B0111), and the specific requirements of this protocol (B0112 through B0117).

d. The EART may perform:

(1) All work described in the protocol for ship's force per B0107.

(2) Asbestos repair or removal, limited to small-scale, short-duration repair or maintenance actions. Small-scale, short-duration actions are such tasks as minor repairs of asbestos-containing insulation on pipes. The definition of a minor repair includes removal and reinstallation of less than 3 linear feet of pipe insulation or less than 1 square foot ($ft^2$) of insulation on surfaces other than pipe (an amount that can be done within a glove bag). The standard operating procedure for this action is found in Appendix B1-C and reference B1-1.

**B0113. EMERGENCY ASBESTOS RESPONSE TEAM (EART) RESPONSIBILITIES**

a. **The safety officer shall:**

(1) Inspect each repair operation involving friable asbestos.

(2) Ensure that the ship has the required equipment to accomplish work per this protocol as defined in reference B1-1 and Appendix B1-J.

(3) When asbestos removal or repair operations are completed, approve access to work area using the release criteria per B0106 and complete Appendix B1-H.

b. **The engineering/repair department head (as appropriate) shall:**

(1) Ensure that a qualified IMA (either afloat or shore) is scheduled to do the work, if asbestos work exceeds the scope of this protocol

(2) Provide personnel who work with asbestos, per this protocol, with the necessary equipment and protective clothing per reference B1-1 and Appendix B1-K.

(3) Identify and provide a list of all personnel involved in asbestos operations to the medical department representative for consideration for entry into the AMSP.

(4) Ensure that all asbestos-containing waste materials are collected, stowed and disposed of as required by paragraph B0104d(2) and Chapter B3.

(5) Ensure personnel are trained, and training is documented in the member's service record. Training requirements for this protocol are located in Appendix B1-F.

(6) If a repair or removal of ACM, involving an IMA is scheduled, interface with the IMA personnel and attend the pre-work brief per B0120.

c. The division officer of the workspace where asbestos work is being conducted shall attend the asbestos pre-work brief if required asbestos work exceeds the scope of this protocol (paragraph B0112d(2) and Appendix B1-L).

d. The MDR shall implement an AMSP, per reference B1-4.

**B0114. TRAINING**

a. All members of the EART shall be graduates of Shipboard Asbestos Response Course, CIN A-760-2166. (See Appendix B1-F).

b. This training shall be documented in the member's service record upon completion.

**B0115. PERSONAL PROTECTIVE EQUIPMENT**

Personnel engaged in work per this protocol, shall wear the protective clothing and equipment discussed in the Appendix B1-K. A list of equipment and tools can be found in Appendix B1-J.

**NOTE:**

Critical watchstanders, personnel who must remain in the immediate area, due to watchstanding requirements, where asbestos repair or removal is being conducted, are required to wear the same PPE as those personnel performing the asbestos work, and at least a half-mask, air purifying respirator with a filtering cartridge.

**B0116. DISPOSAL OF ASBESTOS WASTE**

Dispose of asbestos waste per Appendix B1-C and Chapter B3.

**B0117. MEDICAL SURVEILLANCE REQUIREMENTS**

Per references B1-1 and B1-4, a list of EART personnel shall be submitted to the medical department for consideration for entry into the command's AMSP.

**B0118. PROTOCOL FOR INTERMEDIATE MAINTENANCE ACTIVITY (IMA) ASBESTOS MAINTENANCE/REPAIR**

This protocol details the requirements and procedures for major asbestos removals and repairs. Major asbestos removals and repairs are defined as any asbestos work that cannot be accomplished using a single glove bag. Work under this protocol will be accomplished by afloat commands that have been designated as an IMA, with an embarked IHO. Shore IMA facilities, and in some situations, private contractors, may be used to conduct asbestos insulation removal.

**NOTE:**

Do not use this protocol for IMAs without an embarked IHO

Work under this protocol may include:

a. Any work described in the ship's force protocol (B0107)

b. The removal and repair of unlimited quantities of ACM

c. Work under this protocol will be performed using the provisions in Appendix B1-D.

**B0119. ASBESTOS CONTROL PLAN RESPONSIBILITIES**

a. **The IHO shall:**

(1) Inspect each area where a repair or replacement operation involving friable asbestos is scheduled.

(2) When asbestos removal or repair operations are completed, approve access to work area using Appendix B1-H.

(3) If asbestos work is scheduled to be provided to another afloat command, initiate, organize and participate in the pre-work brief, per B0120. The pre-work brief, located in Appendix B1-L, may be used for this purpose.

(4) Provide area clearance air sampling and analysis, as well as asbestos identification for the ship and tended units per reference B1-1.

(5) Ensure that individual(s) trained to analyze bulk and air samples participate and are rated "proficient" in the NIOSH Proficiency Analytical Testing (PAT) program for asbestos air samples and the Navy's Research Triangle Institute (RTI) program for asbestos bulk identification.

(6) Maintain records and appropriate logs of asbestos air sampling, asbestos identification, equipment calibration and analysis per reference B1-5.

(7) Follow the guidance of Appendix B1-D for defining personal protective equipment (PPE) and engineering controls during asbestos removal operations. A summary of PPE required is provided in Appendix B1-M. A detailed list of all equipment can be found in Appendix B1-J.

b. **The engineering/repair department head (as appropriate) shall:**

(1) Provide personnel who work with asbestos, per this protocol, with the necessary equipment and protective clothing, per Appendices B1-D and B1-M.

(2) Identify and provide a list of all personnel involved in asbestos operations to the MDR for consideration for entry into the AMSP. Ensure personnel report for medical examinations as required.

(3) Ensure that all asbestos-containing waste materials are collected, stowed and disposed of as required by paragraph B0104d(2) and Appendix B1-D and Chapter B3.

(4) Ensure personnel are trained, and training is properly documented in the member's service record. Detailed training requirements for this protocol can be found in Appendix B1-G.

c. **The MDR shall:**

(1) Implement an AMSP, per reference B1-4.

(2) Provide training on the health and medical effects of asbestos, upon request. Training materials are available through NAVOSHENVTRACEN at www.norva.navy.mil/navosh.

**B0120. ASBESTOS PRE-WORK BRIEF**

a. Except for the afloat IMA, all other afloat commands are prohibited from conducting the removal and/or repair of unlimited quantities of ACM. Therefore, it is necessary that the afloat IMA provide services to other afloat commands who, under operational emergencies, require immediate repair or removal of ACM that is beyond the scope of their specific asbestos work protocol.

b. Afloat commands that have been designated as IMAs, with an embarked IHO, will, from time-to-time, be asked to provide asbestos repair and/or removal services to other afloat commands. Prior to conducting asbestos operations onboard another ship, the IMA will conduct an asbestos pre-work brief with the receiving ship's engineering officer, safety officer, medical officer, division officer and the LPO of the space where the work will take place.

c. A sample pre-work brief appears in Appendix B1-L. The pre-work brief shall be signed the engineer officer/repair department head from the ship receiving asbestos services, as well as the IMA IHO. The completed and signed form shall be retained at the IMA.

**B0121. TRAINING**

a. All members of the IMA asbestos removal team shall be graduates of Asbestos Supervisor/Worker (CIN A-493-0069) prior to or at the time of their initial assignment. They shall attend Asbestos Supervisor/Worker Refresher (CIN A-493-0070) annually thereafter (See Appendix B1-G).

b. This training shall be documented in the member's service record.

B0122. PERSONAL PROTECTIVE EQUIPMENT

Personnel engaged in handling asbestos-containing material, shall wear the provided protective clothing discussed in Appendices B1-D and B1-M. A detailed list of all equipment and tools for work under this protocol can be found in Appendix B1-J.

B0123. DISPOSAL OF ASBESTOS WASTE

Dispose of asbestos waste per B0104d(2), Appendix B1-D, and Chapter B3.

B0124. MEDICAL SURVEILLANCE REQUIREMENTS

All designated IMA personnel will be enrolled in the command's AMSP per reference B1-4.

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## CHAPTER B1

## REFERENCES

B1-1 Naval Ship's Technical Manual, Chapter 635, Thermal Insulation (NOTAL)

B1-2 Title 29 Code of Federal Regulations (CFR), section 1915.1001, Asbestos Exposure in all Shipyard Employment Work (NOTAL)

B1-3 Title 29 Code of Federal Regulations (CFR) section 1910.1001 (As amended), NOTAL (Not required on board ship, but a pertinent reference) (NOTAL)

B1-4 NEHC Technical Manual, Medical Surveillance Procedures Manual and Medical Matrix (NOTAL)

B1-5 NEHC Technical Manual, Industrial Hygiene Field Operations Manual (NOTAL)

**Appendix B1-A**

**ASBESTOS INSULATION BULK SAMPLE COLLECTION AND SUBMISSION PROCEDURE**

To determine if the thermal insulation to be handled for repair or rip-out is indeed asbestos, a sample of the material must be submitted to the Industrial Hygiene Department of any NAVENPVNTMEDU, Naval Hospital or Naval Medical Clinic, or to the IHO/safety officer aboard a tender or repair ship for immediate analysis. Following are procedures for collecting a sample suspect asbestos material:

a. Restrict access within 10 feet of the area in which sampling is to be done to only personnel wearing a National Institute for Occupational Safety and Health (NIOSH) approved half-mask air purifying respirator equipped with high efficiency filtering cartridges/filters. Respiratory protection shall be worn by personnel collecting bulk samples of insulation.

b. Secure supply and exhaust ventilation systems in the area.

c. Lightly moisten the cut area with water using a plastic water spray bottle to control asbestos dust while cutting out bulk insulation samples. Adjust the spray to produce a mist, not a straight stream.

d. While cutting into the lagging, hold a disposable plastic bag under the area for collection of any debris.

e. Only a small sample is required for analysis. Carefully cut an approximate 1/2-inch (or quarter size) diameter core through the outer lagging cloth/paste and through the underlying insulation down to the covered metal surface. For soft insulation material, a knife may be appropriate. For hard preformed insulation, a chisel or sharpened screwdriver may be used. A knife is not safe for use with hard preformed insulation since the increased force necessary to penetrate the insulation makes accidental hand contact with the exposed blade a real probability. The ideal coring device is a sharpened steel punch that can be driven into the preformed insulation. Some Navy shipyards have locally fabricated stainless steel borers, modeled after cork borers but substantially strengthened, for this purpose. Whatever device is used for sampling, it must be cleaned after each sample to prevent cross-contamination of samples. For boring tools, cleaning with a wire bore-brush followed by a water wash is recommended. A sample should be submitted for every 10 feet of lagging provided that the material appears to be the same. If there are breaks, seams, or changes in the direction of the lagging, a sample for each section is required. A sample for each type of tile and type of gasket or packing should also be submitted.

f. Using forceps, a spatula, some other instrument or a gloved hand, place the insulation in a 4 by 4-inch polyethylene interlocking seal bag. Label the exterior of the bag as required in paragraph B0104b(3)(b). The bag shall be marked as to location of the sample, command, sampler's name, date of sample and any sample number, if applicable. Fold and place the labeled bag inside another 4 by 4-inch polyethylene interlocking seal bag.

g. After collecting the sample, cover the exposed insulation with duct tape, place respirator in a plastic bag. Respirators should be cleaned per Chapter B6. Cartridges and all rags or material used to wipe down the respirator and/or tools should be immediately disposed of as asbestos waste per B0104d(2). Wash hands, tools and sprayer.

h. The collected sample(s) should be submitted by mail or hand-delivered using the Navy Environmental Health Center Industrial Hygiene sample submission form. This form is found in reference B1-5.

i. Upon receipt, the sample will be analyzed using polarizing light and dispersion staining microscopy, results recorded on the DD 1222 and returned to the requesting command. A return phone call of results may also be arranged.

**Appendix B1-B**

**STANDARD OPERATING PROCEDURES FOR SHIP'S FORCE PROTOCOL**

**Replacement of Asbestos-Containing Gasket/Packing Material**

1. Scope. This standard operating procedure covers the repair and/or replacement of asbestos-containing gaskets or packing in pumps or valves and the replacement of asbestos-containing gaskets in pipes.

2. Stowage. Store all quantities of asbestos-containing materials (ACM) in sealed impermeable containers and label as asbestos-containing material until needed for repair/replacement per B0104d(1). Similarly stow waste asbestos-containing materials for shore offload. Post storage areas with asbestos warning signs to advise personnel of asbestos presence per B0104b(3)(b).

3. Personal Protective Equipment. No personal protective equipment is required for this standard operating procedure.

4. Procedures

**NOTE:**

Do not consume food or beverages, chew gum or tobacco, smoke, or apply cosmetics during asbestos-containing gasket/packing maintenance operations.

a. Use an impermeable drop cloth below the work area.

b. Thoroughly wet the gasket or packing material with water prior to removing. For gaskets, wetting should be accomplished after the joint is loosened.

c. Avoid cutting, abrading, or breaking the gasket or packing material. Remove the gasket or packing material intact, if possible.

d. Place wet gasket or packing material into a disposal container and keep it wet until transferred to a closed receptacle.

**NOTE:**

A sealable, suitably sized plastic bag may be used for temporary stowage until transferred to an appropriately labeled container.

e. Remove any residue by scraping using wet methods.

**NOTE:**

Do not use power tools to remove gasket or packing residue.

f. Dispose of gasket or packing material and drop cloth as ACM.

g. Replace all asbestos-containing materials with approved asbestos-free material, if available. If replacement material contains asbestos, prior to cutting new gasket or packing, thoroughly wet gasket or packing material; then cut. Once cut gasket or packing is in place, dispose of residual debris, continuing to use wet methods. Wipe up debris with damp rags. Gasket or packing material that is still useable shall be placed in asbestos-labeled container/bag and properly secured.

**NOTE:**

Wire-wound (flexitallic) gaskets with asbestos between rings need not be wetted prior to installation.

h. At the conclusion of work, either use a cleaner with a high efficiency, particulate air (HEPA) filter to vacuum all dusty surfaces or wet and wipe them down with a damp rag. Dispose of damp rag(s) as ACM.

i. Clean and decontaminate all tools with damp rags. Dispose of rags as ACM.

j. Personnel shall wash their hands upon completion of gasket or packing repairs/replacements and before eating and drinking, chewing gum or tobacco, or applying cosmetics.

5. Offload. Offload the replaced gasket or packing material and any scrap materials as ACM. Handle all rags as asbestos waste. Handle drop cloths as ACM. Once asbestos waste is collected, place in red asbestos labeled bag and thoroughly wet all wastes. Tape off the bag and place in second approved and appropriately-labeled bag (double bag). Seal up the second bag with tape and place in ACM-marked barrel/container for offload. Seal all bags with a " J" or goose-neck seal. Properly label the waste bag per all local requirements.

6. Medical Surveillance. Medical surveillance is not required for this operation.

7. Training. All personnel performing replacement of asbestos-containing gasket/packing material shall be trained on this standard operating procedure prior to performing any asbestos work. Accomplish training per paragraph B0109 and Appendix B1-E. Training shall be accomplished as follows:

**For ships with no Emergency Asbestos Response Team (EART) or Intermediate Maintenance Activity (IMA)**, this training shall be accomplished by the safety officer or engineering officer as on-the-job training using the Standard Operating Procedures in this appendix.

**For ships with an EART**, this training shall be accomplished by the safety officer or engineer officer, or a member of the EART that has successfully

completed "Shipboard Asbestos Response" (A-760-2166), or Asbestos Supervisor/ Worker (A-493-0069) as on-the-job training using the SOPs in this appendix.

**For ships with an IMA**, this training shall be accomplished by the safety officer or engineering officer, or a member of the IMA that has successfully completed "Asbestos Supervisor/Worker", A-493-0069. This will be on-the-job training using the SOPs in this appendix.

This training shall be documented in the member's service record upon completion.

**Appendix B1-B**

**STANDARD OPERATING PROCEDURES FOR SHIP'S FORCE PROTOCOL**

**Limited Asbestos Floor Tile Removal**

1. **Scope**. This standard operating procedure (SOP) covers removal of a limited amount of asbestos-containing floor tile. Limited amount is defined as nine square feet of tile (approximately nine tiles). The intent of this SOP is operational; not to improve the aesthetics of a space.

2 **Stowage**. Store all quantities of asbestos-containing materials (ACM) in sealed impermeable containers and label as asbestos-containing material until needed for repair/replacement (see B0104d(1)). Post storage areas with asbestos warning signs to advise personnel of the presence of asbestos per B0104b(3)(b).

3. **Personal Protective Equipment**

a. **Respiratory Protection**. No respiratory protective equipment is required for this standard operating procedure.

b. **Gloves**. Wear disposable gloves for this action. Surgical gloves are prohibited.

4. **Procedures**

a. Cordon off an area around the floor tile to be removed using rope or tape and appropriate signs.

**NOTE:**

Do not consume food or beverages, chew gum or tobacco, smoke, or apply cosmetics in the work area during maintenance operations.

b. Remove the floor tiles from the deck using a putty knife, spatula, or other manual, hand-operated tool. Do not use power tools to remove floor tiles or mastic. Heat guns may be used to remove tiles. Avoid breaking the tiles, if possible.

c. Place removed floor tiles into a suitably colored and marked container.

d. If mastic will be removed from the deck, remove by scraping using wet methods. Mastic remover may be required to remove all mastic. Ensure mastic remover is authorized by checking the Ships Hazardous Material List (SHML) or through written commanding officer authorization.

e. Offload tile and mastic as ACM.

f. Use non-asbestos-containing replacement tiles. If replacement tiles contain asbestos, dispose of tile residue and debris as ACM. Wipe up debris with damp rags. Tile material that is still useable shall be replaced in asbestos-labeled container/bag and properly secured (see B0104d(1)).

g. At the conclusion of work, either HEPA vacuum all dusty surfaces or wet and wipe them down with a damp rag. Dispose of damp rag(s) as ACM.

h. Remove gloves and dispose of as ACM.

i. Clean all tools and decontaminate with damp rags. Dispose of rags as ACM.

j. Personnel shall wash their hands upon completion of tile/mastic removal action and before eating and drinking, chewing gum or tobacco, or applying cosmetics.

5. Offload. Dispose of removed tile and mastic material and any scrap materials as ACM. Handle all rags, disposable clothing, and respirator cartridges as ACM. Once all asbestos waste is collected, place in an impermeable ACM-labeled bag and thoroughly wet waste. Tape off the bag and place in second approved and appropriately-labeled bag (double bag). Seal up the second bag with tape and place in ACM-marked barrel/container for offload. Seal all bags with a " J" or goose-neck seal. Properly label the waste bag per B0104b(3)(b).

6. Medical Surveillance. Medical surveillance is not required for this type of operation.

7. Training. All personnel performing replacement of limited amounts of asbestos-containing floor tile shall be trained on this standard operating procedure prior to performing the operation. Accomplish training as follows:

**For ships with no EART or IMA**, this training shall be accomplished by the safety officer or engineer officer as on-the-job training using the Standard Operating Procedures in this appendix.

**For ships with an EART**, this training shall be accomplished by the safety officer or engineer officer, or a member of the EART that has successfully completed "Shipboard Asbestos Response" (A-760-2166) or Asbestos Supervisor/ Worker (A-493-0069), as on-the-job training using the SOPs in this appendix.

**For ships with an IMA**, this training shall be accomplished by the safety officer or engineering officer, or a member of the IMA that has successfully completed "Asbestos Supervisor/Worker", A-493-0069. This will be on-the-job training using the SOPs in this appendix.

This training shall be documented in the member's service record upon completion.

**Appendix B1-B**

**STANDARD OPERATING PROCEDURES FOR SHIP'S FORCE PROTOCOL**

**Preventive Maintenance on Brake Assemblies**

1. Scope. This standard operating procedure covers brake planned maintenance system (PMS) on anchor windlass, capstan, and weight handling equipment (hoist, cranes, conveyors, elevators, winches, chainfalls, and come-a-longs) in which brakes are made of asbestos-containing materials.

2. Stowage. Store all quantities of ACM in impermeable, sealed containers and label as ACM until needed for repair/replacement. Post storage areas with asbestos warning signs to advise personnel of the presence of asbestos.

3. Personal Protective Equipment

a. Respiratory Protection. Wear a half-mask air purifying respirator equipped with high efficiency filtering cartridges for this operation. Do not wear single-use disposable respirators. Ensure that the Respiratory Protection Manager (RPM) is fully involved in the selection and fit testing of all respirators.

**NOTE:**

The command shall train, fit test and ensure that all personnel have been medically cleared to wear a respirator before allowing any personnel to don a respirator.

b. Wear disposable impermeable coveralls (Tyvek® Type II or equivalent) for this action. Seal the coveralls at the wrists, ankles, and neck. Wear disposable gloves to handle asbestos brake assemblies and tape gloves at the wrists.

4. Procedures

a. Cordon off the area and hang appropriate signs identifying the asbestos hazard.

**NOTE:**

Do not consume food or beverages, chew gum or tobacco, smoke, or apply cosmetics in the work area during maintenance operations.

b. During brake maintenance activities, control access to the space in which maintenance is being performed. This may require posting a Sailor at each entrance/exit to the space.

c. Use an impermeable drop cloth in the work area to assist in clean-up.

d. Do not use any equipment or perform any operation that liberates fibers or creates dust, (e.g., dry sweeping or using an air hose in the work area).

e. Before commencing work, either wet the area in which the brake assembly is located or vacuum the area or both, whichever will be required to eliminate asbestos fibers or dust in the area. Use a high efficiency particulate air (HEPA) filter vacuum to ensure the area is thoroughly clean and good housekeeping is maintained.

**CAUTION:**

Do not use low pressure air to blow dust out of the brake assembly area.

f. Commence preventive maintenance in brake assembly area including repair/replacement of asbestos-containing components. During maintenance, take care not to use power tools that may generate dust. If a power tool must be used, consult either the shipboard assistant safety officer (if aboard)/industrial hygiene officer for further guidance.

g. At the conclusion of work, either HEPA vacuum all dusty surfaces or wet and wipe them down with a damp rag. Dispose of damp rag(s) as ACM.

h. Place all clothing removed in the reverse order it was applied. Dispose of coveralls as ACM.

i. Remove respirator last. Treat cartridges as ACM. The respirator facepiece shall be decontaminated and returned to proper storage.

j. Ensure all tools are cleaned and decontaminated with damp rags. Dispose of rags as ACM.

k. Personnel shall wash their hands upon completion of maintenance action and before eating and drinking, chewing gum or tobacco, or applying cosmetics.

l. Upon completion of all work, the safety officer shall inspect the area using Appendix B3-H prior to allowing general access to the space.

5. **Offload**. Offload the old brake pads and any scrap materials as ACM. Handle all rags, disposable clothing, respirator cartridges, and drop cloths as asbestos waste. Once all asbestos waste is collected, place in impermeable, appropriately-labeled bag and wet thoroughly. Tape off the bag and place in second approved and appropriately-labeled bag (double bag). Seal up the second bag with tape and place in ACM-marked barrel/container for offload. Seal all bags with a " J" or goose-neck seal. Properly label the waste bag.

6. **Medical Surveillance**. Medical surveillance may be required for this asbestos operation. Placement of personnel into the asbestos medical surveillance program (AMSP) is based on past history and/or current exposure

or potential exposure to asbestos. Placement into the AMSP is dependent upon industrial hygiene sampling data, and the determination of the Medical Department Representative (MDR).

7. Training. All personnel performing brake assembly preventive maintenance shall be trained on this standard operating procedure prior to performing the operation. Accomplish training as follows:

**For ships with no EART or IMA**, this training shall be accomplished by the safety officer or engineering officer as on-the-job training using the Standard Operating Procedures in this appendix.

**For ships with an EART**, this training shall be accomplished by the safety officer or engineer officer, or a member of the EART that has successfully completed "Shipboard Asbestos Response" (A-760-2166), or Asbestos Supervisor/ Worker (A-493-0069), as on-the-job training using the SOPs in this appendix.

**For ships with an IMA**, this training shall be accomplished by the safety officer or engineering officer, or a member of the IMA that has successfully completed "Asbestos Supervisor/Worker", A-493-0069. This will be on-the-job training using the SOPs in this appendix.

This training shall be documented in the member's service record upon completion.

**Appendix B1-C**

**STANDARD OPERATING PROCEDURES FOR EMERGENCY ASBESTOS RESPONSE TEAM (EART) PROTOCOL**

1. **General**

This SOP covers the emergency repair of asbestos-containing lagging. The intent of this SOP is for emergency asbestos lagging repair work, and is not for general maintenance or normal repair of asbestos lagging which must be conducted by an Intermediate Maintenance Activity (IMA) or contractor personnel.

2. **Personal Protective Equipment**

a. **Respiratory Protection.** A half face piece, continuous flow supplied air respirator shall be used.

**NOTE**

All personnel wearing respiratory protective equipment shall be trained, fit tested, and medically cleared before donning a respirator.

b. **Gloves.** Wear disposable gloves for this action. Surgical gloves are prohibited as an outer glove. Surgical or patient exam latex gloves may be worn as an inner glove during removal operations.

c. **Disposable Sacksuits.** Wear impermeable coveralls (e.g., Tyvek® or equivalent disposable sacksuits) with integral booties and hood.

d. **Boots.** Wear rubber slip-resistant booties over the Tyvek® booties.

e. **Tape.** Duct tape shall be applied to wrists, ankles, and around the respirator and hood opening. While other tapes may work, duct tape is recommended due to its superior adhesive properties.

3. **Procedures**

a. Obtain the commanding officer's permission to remove asbestos for emergency repair.

b. Brief the EART.

c. Secure or redirect ventilation as necessary.

d. Cordon off the area around the asbestos lagging to be removed using rope or tape and appropriate signs.

e. Suit up team in required PPE ensuring that all openings are taped shut.

**NOTE:**

Do not consume food or beverages, chew gum or tobacco, smoke, or apply cosmetics during asbestos emergency repairs.

f. Use an impermeable drop cloth (polyethylene) below the work area.

g. Glove bag procedure

(1) Place any tools, encapsulant, etc. into glove bag before beginning securing operations.

(2) Attach glove bag to area being worked. Be sure to securely close all seams on and around the glove bag with duct tape.

(3) The glove bag should be tested for leaks using smoke tubes. Smoke tubes used in respiratory fit test procedures are ideal for this function. If leaks are found, secure with additional duct tape.

(4) Ensure HEPA vacuum and amended water sprayer are attached to appropriate points on the glove bag and taped to prevent leaks. When using HEPA vacuum to obtain negative pressure in a glove bag, it will be extremely difficult to maintain a negative pressure and accomplish work simultaneously. It is recommended that negative pressure be used only upon the completion of the job, and when the glove bag is being removed from the repair site.

h. Thoroughly wet lagging with the amended water prior to and during the removal operation.

i. Remove the lagging as intact as possible.

j. Clean bare pipe and seal off exposed insulation using approved encapsulation methods.

k. Wash and wipe down inside of glove bag from top to bottom to remove potential fiber contamination.

l. Remove any recoverable tools by holding onto them and pulling them out. The glove should now be inside out. Twist the glove and seal with duct tape. Cut glove from glove bag with scissors or sharp knife, and hold for later decontamination.

m. Turn on HEPA vacuum and twist glove bag in the middle below the vacuum hose. Seal with duct tape and cut in two, cutting in the middle of the tape. Place this into an approved and appropriately labeled disposal bag.

n. Disconnect rest of glove bag and place into asbestos disposal bag.

o. Replace all asbestos-containing lagging with non-asbestos containing lagging.

p. Either HEPA vacuum and/or wet and wipe any dusty or potentially contaminated surfaces with a damp rag. Dispose of rags as ACM.

q. Clean and decontaminate all tools with damp rags. Dispose of rags as ACM.

r. Pick up drop cloth and dispose of as ACM.

s. Remove rubber booties and decontaminate with wet rags. Dispose of rags as ACM.

t. Remove the coveralls and dispose of as ACM. It is recommended that the arms be turned inside out, then roll the suit down the body, and pull the legs inside out. This keeps contamination on the suit and away from the body.

u. Remove gloves by turning them inside out, and dispose of as ACM.

v. Remove respirator and decontaminate using warm soapy water.

w. Personnel shall shower upon completion of asbestos removal action and before eating and drinking, chewing gum or applying cosmetics.

4. Disposal. Dispose of glove bag, PPE, any scrap materials, all rags, and drop cloths as ACM. Once ACM is collected, place in an impermeable bag and thoroughly wet all wastes. Tape off the bag and place in a second approved and appropriately labeled bag (double bag). Seal up the second bag with tape and place in asbestos waste barrel/container for offload. Seal all bags with a "J" or goose neck seal.

5. Medical Surveillance. Medical surveillance is required for the EART.

6. Training. Personnel designated to be on the EART shall be trained through the 2-day Shipboard Asbestos Response (A-760-2166) or Asbestos Supervisor/ Worker (A-493-0069) offered through the Naval Occupational Safety and Health, and Environmental Training Center (NAVOSHENVTRACEN).

7. Conflicts. Application of asbestos-control requirements shall not be allowed to compromise the requirements for control of radioactive contamination in naval nuclear-powered ships as contained in NAVSEA 0389-LP-028-8000, Radiological Controls for Shipyards. Should conflicts be discovered, submit a proposed resolution to COMNAVSEASYSCOM (SEA 08).

**Appendix B1-D**

**STANDARD OPERATING PROCEDURES FOR THE IMTERMEDIATE MAINTENANCE ACTIVITY ASBESTOS WORK PROTOCOL**

This standard operating procedure (SOP) for the IMA is generated from the Asbestos Supervisor/Worker Course (CIN: A-493-0069).

1. General

This SOP covers large-scale repair and removal of Thermal System Insulation (TSI), surfacing Asbestos Containing Materials (ACM), or Presumed Asbestos Containing Materials (PACM) inside a negative pressure enclosure (NPE).

2. Tools, Equipment and Materials

a. Personal Protective Equipment (PPE):

(1) Disposable impermeable coveralls (Tyvek® 1422A or equivalent), with integral head and foot coverings

(2) Rubber outer gloves and inner cotton gloves

(3) Cloth work coveralls may be worn under disposable coveralls during operations conducted in low temperatures

(4) Non-slip rubber overshoes.

(5) Respirator requirements shall be determined by the Respiratory Protection Manager (RPM). Minimum required respiratory protection shall consist of a half mask, negative pressure respirator equipped with HEPA (P100) cartridges.

**NOTE:**

The new OSHA Respiratory Protection Standard designates HEPA-equivalent cartridges as P100.

Detailed information regarding PPE required for this work is found in Appendix B1-J.

b. Ventilation. HEPA filtered exhaust (local or general area) sufficient to place the NPE under at least - 0.02 inches of water (as measured on a magnehelic gauge) and at least four air changes per hour. The number of negative air machines required to meet this requirement is dependent upon the volume of the NPE.

c. **Tools and Equipment**:

(1) Spray bottle and/or other dispensing devices with amended water

(2) Smoke generator or smoke tubes for small enclosures, to test the integrity of the NPE

(3) Asbestos warning signs

(4) Asbestos labels

(5) Approved, HEPA filtered vacuum cleaners labeled " Asbestos Use Only"

(5) Impermeable asbestos waste bags at least 6 mil thick

(6) Duct tape or equivalent

(7) Varying amounts of 6-mil sheet poly material.

d. **Forms**:

(1) Asbestos Regulated Area Sign -In/Out Log

(2) Qualified persons training certificate

(3) Supervisors Certification of Cleanup Following Work

(4) Bridging encapsulant, if necessary.

3. **Prerequisite Tasks**. Prior to beginning the work covered by this SOP, consideration must be given to lockout/tagout requirements, confined space entry requirements and the provision of a safe work area.

a. Critical Watchstanders, personnel who must remain in the immediate area, due to watchstanding requirements, where asbestos repair or removal is being conducted, are required to wear the same PPE as those personnel performing the asbestos work. Prior to donning the PPE, personnel must be trained per B0121 and Appendix B-G.

**NOTE**

All personnel wearing respiratory protective equipment shall be trained, fit tested, and medically cleared before donning a respirator.

b. Secure all ventilation in the space. If ventilation cannot be secured, redirect it away from the NPE.

c. A minimum of Grade D breathing air is required when supplied air respirators are used.

4. Employee Briefing. Prior to beginning the work covered by this SOP, all personnel must be briefed on the following safety consideration:

a. Heat stress

b. Buddy System

5. IMA Asbestos Removal Work Procedures

a. Obtain Background Samples. An industrial hygienist, or other person qualified to perform asbestos sampling, shall take background air samples prior to starting set-up operations. If sample analysis is greater than 0.01 f/cc (fibers per cubic centimeter), then the space shall be isolated and placed under asbestos controls.

b. Establish a Regulated Area. (The regulated area does not need to be established until just prior to commencement of asbestos removal operations.).

(1) Isolate the work area by erecting a Negative Pressure Enclosure (NPE):

(a) Configure NPE in a manner to accommodate the material, equipment, and personnel needed for the removal project.

(b) Construct enclosure of 6-mil poly material.

(c) Lock out/tagout HVAC systems within the regulated area. Isolate HVAC systems and openings (duct, diffusers, etc.) within the regulated area by sealing with two layers of 6 mil poly or equivalent material. Cover other critical barriers with at least one (1) layer of 6 mil poly material.

(d) Lock out/tagout electrical systems within the NPE.

(e) Install all necessary services such as water, vacuum hose, negative air machine, staging, ventilation, breathing air, and exterior/ interior lights. All electrical equipment used in the NPE shall be connected to a ground fault circuit interrupter (GFCI).

(f) Post the regulated area, the entrance to the vestibule and the entrances to the decon area/buffer zone with asbestos warning signs, as well as other areas of potential access.

(2) Post a copy of the qualified persons training certificate at the regulated area.

(3) The qualified person shall supervise the construction of the NPE. Additionally, the qualified person shall be present for the entire time the boundary is established, associated services are established, during operation of the NPE, and during cleanup and disestablishment of the regulated area.

(4) Wrap all equipment and any object that cannot be readily removed from the NPE (e.g., all HVAC systems) in 2 layers of 6-mil poly material. Pre-clean with wet methods.

(5) Establish the asbestos decontamination area:

(a) Construct decontamination area of poly material adjacent to and connected to the NPE.

(b) The decontamination area shall consist of an equipment room, shower area, and clean room.

**NOTE:**

Showers may be omitted if demonstrated not to be feasible. However, every effort should be taken to establish an alternate location for showers.

(c) Provide impermeable, labeled bags and containers in the equipment room for the containment and disposal of contaminated clothing and other equipment.

c. Asbestos work operations cannot begin until demonstrated negative pressure has been established.

(1) HEPA filtered exhaust ventilation (local or general area) sufficient to place the area under negative pressure of at least - 0.02 inches of water (as measured on a magnehelic gauge) shall be maintained.

(2) The NPE shall be kept under negative pressure throughout the period of its use.

(3) The NPE will be smoke tested prior to operations and at the beginning of each work shift to ensure negative pressure is sustained during work.

(4) Air movement shall be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or a collection device.

(5) Maintain air movement at a minimum of four air changes per hour.

d. Initiate the Hazardous Area Sign-In/Out Log and ensure that personnel sign in and out.

e. The IHO shall monitor the work operation upon completion of setting up the regulated area. General area air sampling shall be collected at the boundary of the regulated area. Personal air sampling is also required.

5. Work Practices Within the Regulated Area

a. Install a drop cloth on the floor of the enclosure under the material to be removed. Secure with duct tape or equivalent.

b. Wet all asbestos material with amended water during all phases of the removal process. Ensure that power tools are not used during the removal process.

c. Personnel should start removal operations close to the decontamination area, and work toward the source of exhaust ventilation.

d. The qualified person shall inspect the job site at least once per work shift.

e. Encapsulate any exposed asbestos material prior to removal of NPE.

6. Regulated Area Disestablishment

a. Remove gross contamination from wall coverings or remove the inner contaminated layer of poly material.

b. Remove gross contamination from equipment in the work area. This includes the negative air machine, scaffolding, ladders, extension cords, hoses, and other equipment inside the work area. This can be accomplished using a combination of HEPA vacuuming and wet methods.

c. Remove the top layer of 6-mil poly material used to cover the floor area after appropriate cleaning. Carefully fold it inward into compact bundles for bagging and disposal.

d. Conduct a visual inspection of all surfaces and reclean if necessary. Flashlights and inspection mirrors are good for this process.

e. Perform a final wipe-down of equipment and remove from the work area.

f. HEPA vacuum any remaining hard-to-reach places such as crevices around doors and shelves.

g. Detach the poly material floor covering from the wall and carefully fold inward into a compact bundle for bagging and disposal.

h. After the floor is uncovered, clean corners and crevices with a HEPA vacuum.

i. Wet-wipe and/or vacuum the walls. Begin cleaning the areas farthest from the negative air machine, and work toward it using amended water to wet wipe all exposed surfaces.

j. Wet mop floors using amended water. Be sure to change water frequently.

k. The asbestos removal supervisor shall re-inspect the NPE to verify there is no visible asbestos debris present. If the area is clean, obtain supervisor's signature per Appendix B1-H, Workplace Release Checklist.

l. Conduct final clearance monitoring prior to disestablishment of the NPE. Ensure the HEPA-filtered exhaust ventilation is operational during this process.

m. If samples pass final clearance, remove outer layer of poly material and all critical barriers, disconnect negative air machine(s), and allow for reoccupancy.

n. Clean up, decontaminate, and disassemble the decontamination unit.

o. Place all ACM, containment materials, scrap, debris, bags, containers, equipment which cannot be decontaminated, rags, and asbestos contaminated clothing into approved and appropriately labeled impermeable bags and " J" seal. Prior to placing in bag, wet the asbestos waste to reduce airborne concentrations. Prior to sealing the bags, evacuate all air from the disposal bag using a HEPA vacuum.

p. Upon receiving the sample results, complete Appendix B1-H, Workplace Release Checklist. Forward this form along with the Hazardous Area Sign-In/Out Log to the Industrial Hygiene Officer.

## Appendix B1-E

## TRAINING REQUIREMENTS FOR SHIP'S FORCE PROTOCOL

| Navy Personnel Training Requirement | Citation | Course Title/Training Required | Requirement | Formality | Resource for Training | Length of Training | Periodicity |
|---|---|---|---|---|---|---|---|
| All personnel performing non-friable asbestos work:<br>• Limited asbestos-containing floor tile removal<br>• Asbestos-containing gasket replacement<br>• Asbestos-containing brake assembly maintenance | B0104g | Asbestos removal procedures detailed in Appendix B1-B | Mandatory | Informal | For ships with no EART or IMA (See NOTE [1])<br><br>For ships with an EART (See NOTE [2])<br><br>For ships with an IMA (See NOTE [3]) | TBD | On-the-job training |
| All personnel performing preventive maintenance on brake assemblies | Appendix B1-B, Chapter B6 | Respirator fit-testing, selection, and maintenance | Mandatory | Informal | RPM | TBD | Prior to donning a respirator, and annually thereafter |

Detailed information regarding class schedules, quotas, etc. can be found on the NAVOSH ETC website at http://www.norva.navy.mil/navosh

NOTE [1] **For ships with no Emergency Asbestos Response Team (EART) or Intermediate Maintenance Activity (IMA)**, this training shall be accomplished by the safety officer or engineering officer as on-the-job training using the Standard Operating Procedures in Appendix B1-B.

NOTE [2] **For ships with an EART**, this training shall be accomplished by the safety officer or engineering officer, or a member of the EART that has successfully completed " Shipboard Asbestos Response" A-760-2166, or Asbestos Supervisor/Worker (A-493-0069) as on-the-job training using the Standard Operating Procedures in Appendix B1-B.

NOTE [3] **For ships with an Intermediate Maintenance Activity (IMA)**, this training shall be accomplished by the safety officer or engineer officer, or a member of the IMA that has successfully " Asbestos Supervisor/Worker" , A-493-0069, as on-the-job training using the Standard Operating Procedures in Appendix B1-B.

Appendix B1-F

TRAINING REQUIREMENT FOR ASBESTOS-RELATED WORK

Emergency Asbestos Response Team

| Navy Personnel Training Requirement | Citation | Course Title/Training Required | Requirement | Formality | Resource for Training | Length of Training | Periodicity |
|---|---|---|---|---|---|---|---|
| EART Personnel performing glove bag asbestos removal | B0114 | "Shipboard Asbestos Response" A-760-2166 | Mandatory | Formal Classroom | NAVOSHENVTRACEN | 2 days | Initially. No refresher required. |
| EART Personnel performing glove bag asbestos removal | Appendix B1-C Chapter B6 | Respirator fit-testing, selection, and maintenance | Mandatory | Informal | RPM | TBD | Prior to donning a respirator, and annually thereafter |

Detailed information regarding class schedules, quotas, etc. can be found on the NAVOSH ETC website at http://www.norva.navy.mil/navosh

## Appendix B1-G

## TRAINING REQUIREMENT FOR ASBESTOS-RELATED WORK

### Intermediate Maintenance Activity Personnel

| Navy Personnel Training Requirement | Citation | Course Title/Training Required | Requirement | Formality | Resource for Training | Length of Training | Periodicity |
|---|---|---|---|---|---|---|---|
| Engineering/Repair IMA Personnel performing unlimited asbestos repair/removal | B0121a | Asbestos Supervisor/Worker, A-493-0069 | Mandatory | Classroom | NAVOSHENVTRACEN | 5 days | Prior to performing any asbestos repair/removal operations. |
| Engineering/Repair IMA Personnel performing unlimited asbestos repair/removal | B0121a | Asbestos Supervisor/Worker Refresher, A-493-0070 | Mandatory | Classroom | NAVOSHENVTRACEN | 1 day | Annually (1 year from the successful completion of A-493-0069) for as long as personnel perform work under this protocol. |
| Engineering/Repair IMA Personnel performing unlimited asbestos repair/removal | Appendix B1-D, Chapter B6 | Respirator fit-testing, selection, and maintenance | Mandatory | Informal | RPM | TBD | Prior to donning a respirator, and annually thereafter |
| **Other Related Training** | | | | | | | |
| IHO | B0119a(4) | Analysis of Bulk ID Samples B-322-2334 or Equivalent | Mandatory | Classroom or Equivalent | EPMU or Equivalent | 5 days | No refresher required. However, required to successfully participate in Proficiency Analytical Testing Program/RTI Program |
| IHO | B0119a(4) | Analysis of Airborne Asbestos Samples (B-322-2333) or 582 equivalent | Mandatory | Classroom or 582 equivalent | EPMU or Equivalent | 5 days | No refresher required, However, required to successfully participate in Proficiency Analytical Testing Program |

This training shall be documented in the service member's service record upon completion

Detailed information regarding class schedules, quotas, etc. can be found on the NAVOSH ETC website at http://www.norva.navy.mil/navosh

**Appendix B1-H**

**WORKPLACE RELEASE CHECKLIST**

Upon completion of an asbestos repair or removal, use this checklist to inspect the asbestos work area. This inspection is a critical part of the asbestos removal operation. Failure to satisfactorily complete the inspection, which includes correction of all deficiencies observed, may result in asbestos exposure long after the project is completed. Complete this inspection prior to disestablishment of the asbestos work area. The department performing the asbestos work must retain a copy of the checklist with other records of the removal.

Provide the inspector with a standard flashlight equipped with fresh batteries, a complete set of personal protective equipment, including respirator (where applicable), required for entry into the asbestos work area. Do not begin the inspection until all surfaces within the regulated area are dry and visibly cleared of dust and debris to ensure that any contamination can be observed.

Inspector: _____ Last 4: (SSN) _____

Asbestos Removal Team Supervisor: _____

Date: _____ Time: _____

Area Inspected: _____

Ship's Name: _____ Hull No.: _____

| | | SAT | UNSAT |
|---|---|---|---|
| 1 | All surfaces within the regulated area are free of visible dust and debris. Use mirrors, flashlights, and other tools to accomplish this inspection. Inspect cable ways to the extent possible without disturbing the wires. | | |
| 2 | Asbestos work area is still secured and properly posted. | | |
| 3 | All asbestos waste is properly sealed in leak tight containers that are labeled with proper warning label (paragraph B0104b(3)(b). | | |
| 4 | All asbestos containing material that was to have been removed has been removed. | | |
| 5 | Surfaces exposed by the asbestos removal operation are free of all visible contaminants, rust, and scale. If rust and scale are present and can not be removed they must be encapsulated. This inspection requires that the exposed surface be | | |

| | | SAT | UNSAT |
|---|---|---|---|
| | disturbed to see if there is any residue. This may be accomplished with a screw driver, scratch awl, or other pointed device. | | |
| 6 | IMA protocol only - The project is considered complete if samples collected are no greater than 0.01 f/cc or background, whichever is greater, as measured prior to starting the non-emergency asbestos abatement, but never greater than 0.1 f/cc. | | |

I certify that the inspection is satisfactory and the regulated area may be released from asbestos controls for unrestricted access.

Signature: _____ Date/Time: _____

Signature Authority:

**IMA Protocol:** Safety Officer or IHO signature required
**EART Protocol:** Safety Officer signature required
**Ship's Force Protocol:** Department Head or Division Officer

## Appendix B1-I

## PERSONAL PROTECTIVE AND SPECIAL EQUIPMENT

### Ship's Force Performing Non-Friable Asbestos Repair and Removal

| Operation | Required Personal Protective Equipment | | | | Special Equipment |
|---|---|---|---|---|---|
| | Hood | Respirator | Gloves | Tyvek® (or equivalent) Coveralls | HEPA Vacuum |
| Limited Floor Tile/Mastic Removal | | | √ | | √ |
| Brakes/Clutch Assemblies | √ | √* | √ | √ | √ |
| Replacement of Gaskets/Packing materials | | | | | √ |

* For work covered by this protocol, the worker will wear a half face, air-purifying respirator with high efficiency filtering cartridge. The RPM will determine the type of respirator required for each work process.

Type, quantity, specific ordering information for this PPE is found in Appendix B1-J

Gloves: Use medium weight rubber gloves with a thin cotton "under glove" to absorb perspiration.

See Appendix B1-J for Navy Stock Numbers (NSNs) for this and all associated PPE and equipment.

**NOTE:**

Critical watchstanders, personnel who must remain in the immediate area, due to watchstanding requirements, where asbestos repair or removal is being conducted, are required to wear the same PPE as those persons performing the asbestos work.

Appendix B1-J

AUTHORIZED EQUIPPAGE LIST FOR ASBESTOS WORK PROTOCOLS

AEL 2-330024045

| NOMENCLATURE | NSN | U/I | SHIP'S FORCE | EART | IMA |
|---|---|---|---|---|---|
| Bag, Disposal Red Plastic 55 GAL Cap | 8105-01-086-5053 | BX | 1 | 1 | 5 |
| Cooling Assembly | 4240-01-083-3399 | KT | 0 | 3 | 6 |
| Ambient Air Breathing Apparatus, Electric | 4320-01-106-4121 | EA | 0 | 0 | 2 |
| Warning Signs | 9905-01-345-4519 | EA | OAR* | OAR* | OAR* |
| Coveralls, Disposable, sacksuit w/shoes and hood, Large | 8415-01-092-7531 | BX | 0 | 1 | 2 |
| Coveralls, Disposable, sacksuit w/shoes and hood, X-Large | 8415-01-092-7532 | BX | 0 | 1 | 2 |
| Glove Inserts, Surgeons | 6515-01-354-3157 | PG | 10 | 20 | 100 |
| Gloves, Clean Room, Medium | 8415-01-399-0704 | PG | 10 | 20 | 100 |
| Gloves, Clean Room, Large | 8415-01-399-0702 | PG | 10 | 20 | 100 |
| Overshoes, Rubber Medium | 8430-00-421-7487 | PR | 0 | 6 | 18 |
| Overshoes, Rubber Large | 8430-00-421-7488 | PR | 0 | 6 | 18 |
| Overshoes, Rubber X-Large | 8430-00-421-7489 | PR | 0 | 6 | 18 |
| Sprayer, Insecticide | 3740-00-191-3677 | EA | 0 | 1 | 3 |
| Spray Bottle, Plastic | 8125-00-488-7952 | EA | 4 | 4 | 24 |
| Duct Tape | 5640-00-103-2254 | RO | 0 | 20 | 100 |

| NOMENCLATURE | NSN | U/I | SHIP'S FORCE | EART | IMA |
|---|---|---|---|---|---|
| Plastic Sheeting, 6 mil | 8135-00-579-6486 | RO | 0 | 2 | 10 |
| Paper Towels, Absorbent | 7920-00-823-9772 | BX | 1 | 2 | 5 |
| Finger Grip Saw | 5110-00-570-6896 | EA | 0 | 2 | 4 |
| Keyhole Saw | 5110-00-142-5010 | EA | 0 | 2 | 4 |
| Nylon Brush | 7920-00-324-2746 | EA | 0 | 2 | 4 |
| Scouring Pad | 7920-00-753-5242 | EA | 0 | 3 | 10 |
| EAB Modification Kit for Submarines | 4240-01-077-5994 | EA | 0 | 6 | 0 |
| Ventilation Smoke Tube Kit (for glovebags) | MSA 458481 | EA | 0 | 1 | 2 |
| Glass Smoke Tubes (10/PKG) | MSA 5645 | PG | 0 | 2 | 6 |
| Negative Air Unit, Abatement Technologies, HEPA-Aire 1000, Part Number H1000V<br><br>Replacement Parts:<br>H1001 Primary Filter Pads, 30/cs.<br>H1002-12 Pleated Secondary Filters, 12/cs.<br>H1010E Wood Frame 99.97% HEPA, 1/cs. | Open Purchase:<br>Abatement Technologies<br>3305 Breckenridge Blvd.<br>#118<br>Duluth, GA 30136<br>1-800-634-9091 | EA | 0 | 0 | 2 |
| Magnehelic Gauge | 6685-00-910-6964 | EA | 0 | 0 | 1 |
| HEPA Vacuum: Hako Minuteman Wet/Dry, 15-gallon capacity; C83985-05/-16.<br><br>Replacement parts:<br>*800317 Crush-proof Hose<br>*800015 Wand (Operator's Handle)<br>*800070 Gulper Tool<br>*800024 Round Dust Brush<br>*800116 Swivel Connector<br>*110121PKG Impact Filters (12/Pkg.) | GSA Contract Number:<br>GS-07F-8158B | EA | 0 | 0 | 1 |

| NOMENCLATURE | NSN | U/I | SHIP'S FORCE | EART | IMA |
|---|---|---|---|---|---|
| *805037PKG Plastic Bags (12/Pkg.)<br>*805038PKG Filter Protectors (12/Pkg.)<br>110010 HEPA Filter Replacement (85" Water Lift) Lid Assembly<br>110001 HEPA Filter Replacement (105"/130" Water Lift) Filter Replacement<br>*Note: Items with an asterisk (*) are included as part of No. 800109, Wet/Dry Tool Kit 30B.<br>**OR** | | | | | |
| HEPA Vacuum: Nilfisk VT60 Wet/Dry, 5 to 15-gallon capacity; *01799350/375101<br><br>Replacement Parts:<br>*01722601 Impact Filter (washable)<br>*017383 Main Filter Finger Tubes (washable)<br>*616821 Microfilter<br>*017840 Trolley Assembly<br>*01727631 HEPA Cartridge<br>*017196 10-foot Plastic Hose (1.5")<br>*017193 Double-Curved Aluminum Wand<br>*017192 14-inch Wheeled Floor Nozzle<br>*0171941 3-inch Aluminum Dust Brush<br>*017195 11-inch Plastic Crevice Nozzle<br>*017191 Container Polyliners (25/Pkg.)<br><br>*Note: Items with an asterisk (*) are included as part of item number 01799350/375101. | GSA Contract Number: GS-07F-8356C | EA | 0 | 0 | 1 |
| HEPA Vacuum: Nilfisk GM80 HEPA-Filtered Vacuum System, 3-gallon capacity; *01790133/375102<br><br>Replacement Parts:<br>*118274 Power Cord for Grounded Motor<br>*115470 Detachable Trolley for GM80 Canister<br>*01709600 Positive-Twist Safety Latches<br>*120975 78-inch Tapered Plastic Hose with Curved | GSA Contract Number: GS-07F-8356C | EA | 1 | 1 | 1 |

| NOMENCLATURE | NSN | U/I | SHIP'S FORCE | EART | IMA |
|---|---|---|---|---|---|
| Tube<br>*111124 Straight Steel Wands<br>*120410 Combination Floor Nozzle<br>*11276901 3-inch Round Dust Brush<br>*811409 6-inch Crevice Nozzle<br>*320437 5-inch Upholstery Nozzle<br>*816200 2-Ply Disposable Paper Bags (5/Pkg.)<br>*616821 Microfilter<br>*01710440 HEPA Filter Assembly<br>*017190 Container Poly Liners (25/Pkg.)<br>**01702425 Variable Speed Control<br><br>*Note: Items with an asterisk (*) are included as part of item number 01790133/375102.<br>**Note: This item is optional, and is not included as part of item number 01790133/375102. However, it is recommended when performing glove bag operations. | | | | | |

**NOTE: See Appendices B1-I for PPE requirements for Ship's Force Protocol, B1-K for requirements for PPE requirements for Emergency Asbestos Response Team Protocol, and B1-M for PPE requirements for Intermediate Maintenance Activity Protocol.**

***OAR – Order As Required**

**Appendix B1-K**

**PERSONAL PROTECTIVE AND SPECIAL EQUIPMENT**

Emergency Asbestos Response Team Performing Glove Bag ACM Removal

| Operation | Required Personal Protective Equipment | | | | | | Special Equipment | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Tyvek® or Equivalent | | | | | | | | | |
| | Coveralls | Hood | Booties | Z-87 Safety Goggles | Respirator | Gloves | HEPA Vacuum | Cooling Assembly | Finger Grip Saw | Keyhole Saw |
| **Glove Bag Procedures ONLY** | | | | | | | | | | |
| <3 linear feet of pipe insulation or 1 square foot of insulation on surfaces other than pipes | √ | √** | √** | √ | √* | √ | √ | √ | √ | √ |

* The RPM will determine the type of respirator required for each work process. If the concentration of airborne asbestos is unknown, use a full-face, continuous flow supplied air respirator. The Self Contained Breathing Apparatus (SCBA) respirator meets this requirement.

** Type II Tyvek® (or equivalent) coveralls have hood and booties attached, therefore, separate hoods and shoe coverings are not required with this PPE.

Type, quantity, specific ordering information (NSN information) is found in Appendix B1-J. Information contained in Appendix B1-J is taken from AEL 2-330024045.

Gloves: Use medium weight rubber gloves with a thin cotton "under glove" to absorb perspiration.

See Appendix B1-J for the National Stock Numbers (NSNs) for this and all associated PPE and equipment.

**Appendix B1-L**

**ASBESTOS REPAIR OR REMOVAL PREWORK BRIEF**

To be conducted jointly between the IMA and the vessel receiving asbestos repair or removal support.

Prior to conducting asbestos repair or removal operations on a ship, the IMA will conduct a pre-work briefing with the engineer officer, safety officer, division officer and/or workcenter supervisor of the department of the ship receiving the asbestos work.

The briefing will include at least the following:

1. A listing of all spaces that will be affected by the asbestos work. These will include the spaces used for shower facilities if they are required.

2. A discussion of the asbestos controls that will be used to accomplish the work. This will include:

   a. The exact location of the asbestos regulated area boundaries

   b. The requirement to secure ship's ventilation in the area of the removal operation and its effect on the ship and personnel

   c. Disposal of any waste generated and who will be responsible for its disposal. Normally this will be the receiving ship

   d. Air monitoring that will be accomplished and how the results of the general area monitoring will be conveyed to the receiving ship.

3. A discussion of any vital watchstanders the receiving ship may require to remain in the asbestos regulated area. The IMA and the receiving ship will mutually agree to the need for these watchstanders.

4. The planned times that the asbestos area will be isolated and entry restricted.

5. Any additional aspects of the planned work that either party feels should be discussed.

**Appendix B1-M**

**PERSONAL PROTECTIVE AND SPECIAL EQUIPMENT**

**Intermediate Maintenance Activity Performing Extensive Removal and Repair of ACM**

| Operation | Required Personal Protective Equipment | | | | | | Special Equipment | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tyvek® or Equivalent | | | | | | | | | | | |
| | Coveralls | Hood | Booties | Z-87 Safety Goggles | Respirator | Gloves | HEPA Vacuum | Cooling Assembly | Finger Grip Saw | Keyhole Saw | Negative Air Unit | Magnehelic Gauge |
| Removal or repair of unlimited quantities of ACM | √ | √** | √** | √ | √* | √ | √ | √ | √ | √ | √ | √ |

* The RPM will determine the type of respirator required for each work process. If the concentration of airborne asbestos is unknown, use a full-face, continuous flow supplied air respirator. The Self Contained Breathing Apparatus (SCBA) respirator meets this requirement.

** Type II Tyvek® (or equivalent) coveralls have hood and booties attached, therefore, separate hoods and shoe coverings are not required with this PPE.

Type, quantity, specific ordering information is found in Appendix B1-J. Information contained in Appendix B1-J is taken from AEL 2-330024045.

See Appendix B1-J for the National Stock Numbers (NSNs) for this and all associated PPE and equipment.

Gloves: Use medium weight rubber gloves with a thin cotton "under glove" to absorb perspiration.

**NOTE:**

The proper use of protective clothing requires that all openings be closed and that garments fit snugly about the neck, wrists, and ankles. Accordingly, tape the wrist and ankle junctions, as well as the collar opening on the outer disposable coveralls to prevent contamination of skin and underclothing without restricting physical movement.

**NOTE:**

Critical watchstanders, personnel who must remain in the immediate area, due to watchstanding requirements, where asbestos repair or removal is being conducted, are required to wear the same *PPE as* those personnel performing the asbestos work, and at least a half-mask, air *purifying respirator* with a high efficiency filtering cartridge.

**FOR SUBMARINES**

Personnel performing asbestos work shall wear an emergency air breathing *(system) (EAB) modified* to replace the demand regulator (see AELs 2-330023-47, 2-33034070, and 2-330024045 for EAB kit information). Watchstanders in the same compartment as the work being performed may wear an unmodified EAB mask.

# CHAPTER B2

# HEAT STRESS

## B0201. DISCUSSION

a. Heat stress is any combination of air temperature, thermal radiation, humidity, airflow, and workload that may stress the body as it attempts to regulate body temperature. Ships can determine maximum exposure limits for various environmental conditions and individual work rates. Adherence to these maximal heat exposure guidelines can prevent or reduce the adverse physiological effects of heat stress. Additionally, sufficient recovery time in a cool environment will help reverse the harmful effects of heat stress. Heat stress becomes excessive when the body's ability to adjust is exceeded, resulting in increased deep body temperature. This condition can produce fatigue, rash, cramps (particularly in the extremities and abdomen), profuse sweating, dehydration, tingling in the extremities, pallor, rapid heartbeat, severe headache, nausea, vomiting, and poor physical and mental performance in affected personnel. As body temperature continues to rise (due to prolonged exposure), heat injuries (e.g., heat exhaustion or heat stroke) may occur resulting in severe impairment of the body's temperature regulating ability and possible death. Recognizing personnel heat-stress symptoms and obtaining prompt medical attention for affected persons is an all hands responsibility.

b. In order to obtain accurate and reliable data on heat-stress conditions, ships shall conduct heat-stress surveys to record dry-bulb (DB), wet-bulb (WB), and globe temperature (GT) readings. They must take DB and WB temperature with both thermometers shielded from radiant heat and the WB must also be properly ventilated to determine the effects of airflow. Measurement is accomplished by means of a globe thermometer that provides a value representing radiant and convection heat transfers to or from the body. The Navy uses either a wet-bulb-globe temperature (WBGT) meter or an automated WBGT data acquisition system to measure each of the above temperatures. Ships use dry bulb, wet-bulb, and globe temperature readings to calculate a single number, the WBGT index. They use the WBGT index, along with the individual's physical exertion level to calculate an individual's permissible heat exposure limit. Appendix B2-A presents this information in a columnar format by means of the Physiological Heat Exposure Limits (PHEL) tables.

c. While heat-stress conditions can occur in practically any space or area on board a ship, machinery spaces, laundries, sculleries, galleys, incinerator rooms, flight decks, and steam catapult rooms are the most likely to have the conditions that may cause heat stress. Causes of heat-stress conditions include operations in hot and humid climates, arduous physical tasks, steam and water leaks, boiler air casing leaks, missing or deteriorated thermal insulation, and ventilation system deficiencies.

In addition, other factors that reduce physical stamina and enhance susceptibility to heat-stress illness are dehydration, lack of sleep, illness, use of medication, drugs, alcohol, and the presence of atmospheric contaminants such as combustion gases or fuel vapors.

d. Heat Acclimatization. In most individuals, appropriate repeated exposure to heat stress causes a series of physiologic adaptations called acclimatization, whereby the body becomes more efficient in coping with the heat stress. An acclimatized individual can tolerate a greater heat stress before harmful level of heat strain occurs. Personnel acquire heat acclimatization only gradually, being fully achieved over a three to four week level of sustained physical activity. Therefore, unacclimated individuals may increase their risk of incurring acute adverse health effects from exposure to harmful levels of heat stress.

e. This chapter establishes Navy policy and procedures for the control of personnel exposure to heat stress and applies to all ships, including submarines. Ships shall not expose personnel to excessive heat stress and shall provide a shipboard work environment that minimizes the probability of such exposure.

f. This chapter applies to heat-stress control and personnel protection for most shipboard operating conditions. It does not apply for the determination of heat exposure limits specifically for personnel wearing layered or impermeable clothing such as chemical/biological warfare clothing, fire fighting protective clothing or ensemble, or chemical protective clothing (worn for use during clean-up of hazardous material spills) or any type of body cooling garment or device.

## B0202. RESPONSIBILITIES

a. The commanding officer shall:

(1) Establish and enforce an effective heat-stress policy that ensures personnel heat exposures are limited per this chapter except in an operational emergency.

(2) Review and initial daily, heat-stress surveys that result in reduced stay times.

(3) Conduct an inquiry into the circumstances surrounding all heat injuries that result in unconsciousness as prescribed in reference B2-1.

(4) Report to the Immediate Superior in Command (ISIC) those material deficiencies, beyond ship's force capability to correct, which contribute to heat-stress conditions aboard the ship.

(5) Report heat-stress related cases as specified in paragraph B0204f.

b. The medical department representative (MDR) shall:

(1) Conduct heat-stress surveys of all non-engineering spaces as requested or as required by paragraph B0204c(4) and (5). For submarines, the MDR conducts heat-stress surveys in engineering spaces. If an automated WBGT system is installed, the ship shall maintain and calibrate at least one portable WBGT for use in the event that the automated system should fail.

(2) Review all engineering and non-engineering heat-stress surveys to determine obvious inaccuracies, reduced PHEL stay times, and any personnel protective actions being taken. Submit heat-stress surveys that result in reduced stay times to the commanding officer daily for review.

(3) Provide training to divisions on heat-stress health hazards, symptoms, prevention, and first aid procedures, upon request.

(4) Prepare reports of heat-stress related cases as specified in paragraph B0204f.

c. The engineer officer/reactor officer shall:

(1) Ensure dry-bulb thermometers are installed per paragraph B0204b(1) and temperatures are monitored and recorded per paragraph B0204b(3) and (4).

(2) Assign and qualify engineering department personnel to perform heat-stress surveys in engineering spaces.

(3) If an automated WBGT system is installed, ensure at least one portable WBGT meter is maintained and calibrated for use in the event that the automated system should fail.

(4) Review heat-stress surveys and ensure stay times for engineering/reactor personnel are being properly determined as specified in paragraph B0205. Limit personnel heat exposures accordingly, except as approved by the commanding officer in an operational emergency.

(5) Record all heat-stress related deficiencies on Current Ship's Maintenance Project (CSMP). Appendix B2-B provides heat-stress trouble-shooting and recommended repair actions.

d. The supply officer, air boss, and other department heads shall:

(1) Ensure dry-bulb thermometers are installed per paragraph B0204b(1) and temperatures are monitored and recorded per paragraph B0204b(3) and (4).

(2) Ensure the MDR conducts heat-stress surveys when required by paragraphs B0204c(4) and (5).

(3) Review heat-stress surveys and ensure stay times for personnel are being properly determined as specified in paragraph B0205. Limit personnel heat exposures accordingly, except as approved by the commanding officer in an operational emergency.

(4) Record all heat-stress related deficiencies on CSMP. Appendix B2-B provides heat-stress trouble-shooting and recommended repair actions.

e. **Division officers shall**:

(1) Limit personnel heat exposures per established stay times, except as approved by the commanding officer in an operational emergency.

(2) Record all heat-stress related deficiencies on Current Ship's Maintenance Project (CSMP) for their respective division.

f. **Heat-stress surveyors shall**:

(1) Be qualified per paragraph B0206b

(2) Perform heat stress surveys as required by paragraph B0204.

g. **All hands shall**:

(1) Obtain prompt medical attention for personnel who exhibit heat-stress symptoms.

(2) Follow recommended work practices and procedures for controlling heat-stress hazards.

## B0203. HEAT-STRESS ELEMENTS

a. Monitoring and surveying of heat-stress conditions. (Paragraph B0204).

b. Establishing safe work schedules in heat-stress environments. (Paragraph B0205).

c. Investigating and reporting personnel heat injuries. (Paragraph B0204f and Chapter A6).

d. Training. (Paragraph B0206).

e. Recordkeeping.

## B0204. HEAT-STRESS MONITORING AND SURVEYING

a. **Definitions**:

(1) Monitoring. Observing and recording temperatures of DB thermometers at specified watch and/or workstations.

(2) Surveys. Use of a WBGT meter or automated WBGT data acquisition system to measure DB, WB, and GT, and compute the WBGT index to determine the amount of time it is safe to work in a given space. Personnel conducting a survey can calibrate the WBGT index using the following formula:

$$WBGT = (0.1 \times DB) + (0.7 \times WB) + (0.2 \times GT).$$

(3) Heat-stress Surveyor. A trained person assigned to conduct required surveys.

b. Heat-stress Monitoring:

(1) Dry-Bulb Thermometer Positioning. A hanging DB thermometer (alcohol in glass - NSN 9G-6685-00-243-9964) shall be permanently mounted at watch and workstations throughout the ship where heat-stress conditions may exist. A DB thermometer shall also be mounted in non-air conditioned spaces, not normally manned, in which personnel may have to periodically work or conduct maintenance, such as storerooms. These thermometers shall be mounted in a position so they indicate the most accurate representative temperature for the area where workers/watchstanders spend the majority of their time. Placement of the DB thermometers may be in or out of the ventilation air stream but must be hung at least 2 feet from any supply ventilation terminal/opening. The temperature being measured must be representative of the heat-stress environment workers/watchstanders experience. Thermometers shall be hung with a non-heat conducting material such as plastic or string (never hang with metal wire) and positioned to minimize the influence of any adjacent or local heat or cold sources (avoid direct contact between thermometer and hot/cold structural surfaces). If the difference between the hanging DB thermometer and the DB temperature measured with the WBGT meter, during a survey, is 5°F or greater at any watch or workstation, then the DB thermometer is not representative of the temperature at the workstation. The hanging DB must be relocated, replaced, or validated by aligning the etch mark with the freezing point (32°F). A DB thermometer shall be temporarily mounted to monitor conditions where repairs or maintenance are being performed in a heat-stress area. The ship shall install DB thermometers, at a minimum, in main machinery spaces, (firerooms and enginerooms), auxiliary machinery spaces, emergency diesel spaces and other engineering spaces containing heat sources, as well as in laundries, dry cleaning plants, sculleries, galleys, bake shops, and steam catapult spaces.

**NOTE:**

"No Calibration Required" (NCR) stickers are not required to be placed on DB thermometers.

(2) Automated Monitoring System. These automated meters shall be mounted in a position so they indicate the most accurate representative temperature for the area where workers/watchstanders spend the majority of their time. Automated meters shall be positioned so as to avoid interference with space activity. If ventilation is present at the workstation where an automated sensor will be installed, then the sensor should be located in relation to the ventilation duct such that airflow to the sensor does not exceed 350 fpm.

(3) Dry-Bulb Temperature Readings. The ship shall take DB temperature readings when the ship is underway or when potential heat-stress conditions exist while in port. The ship shall monitor the following compartments when

manned: main machinery spaces, (firerooms and engine rooms) ,auxiliary machinery spaces, emergency diesel spaces, laundry spaces, sculleries, galleys, bake shops, and steam catapult spaces. Assigned personnel shall monitor compartments as follows:

(a) Every 4 hours for manned spaces if DB temperatures do not exceed 85° F

(b) Every hour for manned spaces if DB temperatures exceed 85° F

(c) Every hour at temporary installations for repairs or maintenance conditions.

(4) Dry-Bulb Temperature Recording

(a) DB temperatures shall be recorded on a prepared log and reviewed by the space supervisor (e.g. machinist mate of the watch (MMOW), galley captain). If a DB temperature exceeds the temperature per paragraph B0204c(4)(a), the space supervisor shall circle (in red) the DB reading and immediately notify the watch supervisor (i.e. engineering officer of-the-watch (EOOW), division officer, etc). The watch supervisor shall direct heat-stress surveys to be conducted and enforce the resulting stay times.

(b) The space supervisor (e.g. MMOW, galley captain) shall record and review the DB temperatures for the automated system either as part of the centralized data acquisition system, or as printed copies. The space supervisor shall initial in the appropriate box and check the appropriate notation in the computer log. If a DB temperature exceeds the temperature per paragraph B0204c(4)(a), the space supervisor shall immediately notify the watch supervisor (e.g. engineering officer of-the-watch (EOOW), division officer). The watch supervisor shall direct heat-stress surveys to be conducted and enforce the resulting stay times.

c. Heat-stress Surveys - WBGT Meter

(1) The heat-stress surveyor determines environmental heat-stress conditions using the WBGT meter (Model RSS 220, NSN 7G-6685-01-055-5298 or Heat-Stress Monitor - Model 960, NSN 3H-6665-01-333-2590), or an automated WBGT system that provides a direct readout to a centralized data acquisition system. Each method measures dry-bulb, wet-bulb, and globe temperature and integrates them into a single heat-stress value, the WBGT index. Appendix B2-C, Use of the WBGT Meter, provides detailed information and procedures regarding the proper use and care of the WBGT meter. The surveyor uses the WBGT index, along with the individual's physical exertion level, to determine the permissible heat exposure limits referred to as the Physiological Heat Exposure Limits or PHEL stay times.

**NOTE:**

WBGT meter values are not accurate below 65°F.

(2) Measurement Techniques

(a) When surveying a work or watch station using the WBGT meter, the surveyor shall position the meter where the worker/watchstander would normally stand or where the intended work is to be performed, with ventilation arranged to provide normal ventilation at that location. For specific operating instructions see Appendix B2-C paragraph 3.

(b) The heat-stress surveyor shall conduct the first WBGT measurement in the workspace after the meter has been in the space 5 minutes to enable it to equilibrate to the surrounding area. The heat-stress surveyor will wait 3 minutes at each subsequent watch or workstation to allow the meter to equilibrate before taking the reading.

(c) Where automated WBGT sensors are used, watchstanders should take care not to shield the automated WBGT sensor from airflow or heat sources so that readings reflect an accurate watchstander stay time.

(3) Recording and Reporting Survey Results:

(a) The heat-stress surveyor shall record all non-automated survey readings to the nearest 0.1°F on a Heat-Stress Survey Sheet similar to the ones found in Appendix B2-D. The surveyor shall use the WBGT index reading to determine the PHEL stay time per section B0205. The surveyor shall record the PHEL curve used and the corresponding exposure time on the survey sheet. Upon completion of the survey and determination of PHEL stay times, the heat-stress surveyor shall note any stay times for manned watch or workstations that, under routine conditions, are less than the watch or work period. The surveyor shall circle these readings on the sheet in red. The surveyor shall notify space supervisors and responsible department heads immediately of the reduced exposure times. If a survey results in a PHEL stay time which is less than the work or watch period, the department head responsible for the space shall promptly notify the commanding officer of the condition, indicating action being taken to protect personnel and/or to reduce the excessive heat-stress situation.

(b) The heat-stress surveyor shall print all automated survey readings on a pre-formatted Heat-Stress Survey Sheet. The surveyor shall circle in red, on the Heat-Stress Survey Sheet, any PHEL stay times for manned watch or workstations that, under routine conditions, are less than the watch or work period. The heat-stress surveyor shall notify workspace supervisors and responsible department heads immediately of the reduced exposure times. The department head shall promptly notify the commanding officer of the condition, indicating personnel protective action being taken, and action, if any, to reduce the excessive heat-stress situation.

(c) Ships shall use a Heat-Stress Survey Sheet in a format similar to the one found in Appendix B2-D to record heat-stress information. Ships using a database or fitted with an automated system and installed WBGT sensors, may use a computer printout for the Heat-Stress Survey Sheet. The sur-

veyor shall record the following heat-stress information on the Heat-Stress Survey Sheet manual or computer printout.

1. Date and time of survey

2. In the follow-on survey required block identify either a time, a DB, and/or WB temperature or use the term DB temperatures below survey requirements.

3. Stations surveyed, including the following information for each station:

a. Time WBGT measurement was taken at the location

b. Hanging DB temperature. Not required for the automated system

c. WBGT meter readings for DB, WB, GT and WBGT

d. PHEL curve for the station and the corresponding exposure time.

**NOTE:**

Only the column that pertains to the current watch/work situation needs to be completed (e.g. all four columns do not need to be filled in).

4. WBGT Validation. The heat-stress surveyor shall manually calculate the highest WBGT index obtained using the formula:

$$WBGT = (0.1 \times DB) + (0.7 \times WB) + (0.2 \times GT)$$

The surveyor shall compare calculated WBGT to the meter WBGT and the two readings shall be within 0.2°F. The automated system does not require WBGT validation.

(d) The heat-stress surveyor shall note any material deficiencies that may be contributing to adverse heat-stress conditions and record them on the survey sheet. Additionally, personnel shall comment on the availability of drinking water on the survey sheet.

(e) The surveyor shall record the hanging DB temperatures on the Heat-Stress Survey Sheet. If the difference between the hanging DB thermometer and the DB temperature measured with the WBGT meter, during a survey, is 5°F or greater at any watch or workstation, the DB thermometer is not representative of the temperature at the workstation. Relocate, replace or validate the hanging DB by aligning the etch mark with the freezing point (32°F). This is not required with the automated system.

(f) Following the department head's review, all Heat-Stress Survey Sheets, including engineering, shall be delivered to the MDR. The MDR shall review all engineering and non-engineering heat-stress surveys to determine obvious inaccuracies, reduced PHEL stay times, and any personnel protective actions being taken and submit Heat-Stress Survey Sheets daily to the commanding officer. The commanding officer shall initial the survey sheets, and return the sheets to the appropriate department.

(4) Space Surveys. Ships shall conduct the survey of spaces for heat stress using the WBGT meter:

(a) At all manned watch/workstations within the space whenever the temperature from a permanently mounted hanging DB thermometer reaches or exceeds the following temperature requirements:

PHEL I through III

| | |
|---|---|
| Watch/Work length 4 hours or less | DB = 100°F |
| Watch/Work length greater than 4 hours | DB = 90°F |
| PHEL IV through VI | DB = 85°F. |

**NOTES:**

1. Daily WBGT Space Surveys at the hottest time of the day are no longer required.

2. Shipboard conditions cannot be adequately addressed by a single dry bulb value. For watches longer than 4 hours or activity levels greater than PHEL III, a 100°F temperature would miss potentially serious heat-stress conditions. The values listed above take into consideration likely levels of relative humidity, watch duration's, and levels of activity. Under normal operations, routine watches in engineering spaces are expected to be 4 hours at a PHEL III or lower. PHEL IV through VI apply to above average work rates.

(b) In any space when a heat injury (heat exhaustion or heat stroke) occurs.

(c) Prior to conducting Engineering Casualty Control (ECC) drills:

1. If the drill-set exceeds 3 hours (not required in spaces not affected by the drill or in areas that are unmanned)

2. If already in a reduced stay time, the surveyor shall use the most current heat-stress survey and calculate stay times for ECC watch standers using the ECC PHEL values in Appendix B2-A.

The length of the exercises cannot exceed the watch PHEL stay times.

**NOTE:**

Not applicable to submarines, which have air-conditioned engineering spaces.

(d) In any space when the commanding officer determines that a heat-stress situation may occur.

(e) As required for follow-on surveys (see paragraph B0204.c(5)).

(5) Follow-on Surveys. Ships shall accomplish follow-on surveys, of heat-stress spaces, using the WBGT meter as follows:

(a) For engineering spaces on nuclear, gas turbine and diesel powered ships

1. If the survey resulted in a PHEL stay time greater than the duration of the normal watch or work period and did not require a change from the normal watch/work time. No further follow-on surveys are required unless the hanging DB temperature increases by more than 5°F from the hanging dry bulb temperature in the previous survey.

2. If the survey resulted in a PHEL stay time less than the duration of the manned watch or workstation then the watch/work times shall be adjusted to reflect the new PHEL stay times indicated by the WBGT. A follow-on survey is only required if the DB temperature increases by 5°F or more from the hanging DB temperature in the previous survey. If the hanging DB temperature drops below the value in paragraph B0204c(4) and return to a normal watch/work time is desired, a survey shall be conducted to ensure conditions allowing a return to normal watch/work periods have been reestablished.

(b) Two options are provided for follow-on surveys for engineering spaces on non-nuclear, steam-powered ships and for laundries, sculleries, galleys, steam catapult spaces and arresting gear spaces.

1. Follow-on surveys where WB and DB temperatures are not monitored and recorded each hour. Follow-on surveys shall be conducted prior to the end if the current manned watch or work period as indicated in the previous survey. Follow-on surveys shall continue to be conducted each watch/work period until the conditions specified in paragraph B0204c(4) no longer exist.

2. Follow-on surveys where WB and DB temperatures are monitored and recorded each hour at manned workstations.

a. If the WBGT survey resulted in a PHEL stay time greater than the duration of the normal watch or work period, a change from the normal watch/work time is not required. Follow-on surveys are not required unless the DB temperature increases by 5°F or more and/or WB temperature increases by 3°F or more from the DB and WB temperatures recorded from the previous survey. The DB and WB temperature must be measured each time us-

ing the same instrument/device. The WBGT meter, motorized psychrometer, or commercially available hygrometer may be used to measure DB and WB temperature. If the DB temperature drops below the value in paragraph B0204c(4) and return to a normal watch/work time is desired, then a survey shall be conducted to ensure conditions allowing a return to normal watch/work periods have been reestablished.

b. If the WBGT survey resulted in a PHEL stay time less than the duration of the manned watch, or work period, the watch/work time shall be adjusted to reflect the new stay times indicated by the WBGT. Follow-on surveys are not required unless the DB temperature increases by 5°F or more and/or WB temperature increases by 3°F or more from the DB and WB temperatures recorded from the previous survey. The DB and WB temperature must be measured each time using the same instrument/device. The WBGT meter, motorized psychrometer, or commercially available hygrometer may be used to measure DB and WB temperature. If the DB temperature drops below the value in paragraph B0204c(4) and return to a normal watch/work time is desired, then a survey shall be conducted to ensure conditions allowing a return to normal watch/work periods have been reestablished.

**NOTE:**

The department head may elect to have more than one stay time rotation in a workspace. This would allow the majority of personnel to take advantage of a longer stay time instead of limiting all personnel to the most restrictive stay time. If more than one watch time rotation is implemented for a space it shall be indicated on the Heat-Stress Survey Sheet.

For example: A steam-powered ship in the Indian Ocean has obtained the following readings from an auxiliary space during the latest heat-stress survey conducted at 1400:

| | | | |
|---|---|---|---|
| Top Watch | WBGT = 92 | PHEL = II, | Stay time = 4:10 |
| Evap Watch | WBGT = 93 | PHEL = II, | Stay time = 3:50 |
| Air Comp Watch | WBGT = 92 | PHEL = II, | Stay time = 4:10 |
| SSTG Watch | WBGT = 92 | PHEL = II, | Stay time = 4:10 |
| Messenger | WBGT = 92 | PHEL = III, | Stay time = 3:30 |

The engineer officer assigns a 3 X 6 watch (3 hours watch in the space and 6 hours outside the space) for the evap watch and the messenger. The engineer officer assigns everyone else in the space to a 4 X 8 watch (4 hours watch in the space and 8 hours outside the space). The time outside the space must be in a cooler environment.

(c) ECC. A heat-stress survey to restore the normal watch is not required at the end of the ECC drill set unless a DB temperature at any manned watch station exceeds the appropriate value identified in paragraph B0204c(4)(a).

Appendix B2-E provides heat-stress survey decision diagrams that outline heat-stress survey and follow-on requirements.

(6) Time Weighted Mean (TWM) WBGT Values. The TWM WBGT is for use in especially hot environments where reduced stay times have been imposed on watch/work standers. The TWM WBGT is an optional, not mandatory provision, for use if an air-conditioned booth or cooler space is available for personnel to spend time in the cool climate and afford them some relief from the heat in the space. When implemented, the TWM changes the WBGT value for that individual and increases the length of time they can now spend at their watch/work station. Appendix B2-F provides ships that have this ability with a way of properly calculating the new WBGT value.

d. Recovery Time For Personnel Reaching Exposure Limits.

(1) Supervisors shall direct personnel standing watch or working in spaces in reduced stay times (except in operational emergencies) to leave the heat-stress environment prior to the expiration of the PHEL stay time. These personnel shall move to a cool, dry area conducive to rapid physiological recovery (an area with an optimum DB temperature of less than or equal to 80°F).

(2) Preferred recovery environments are those that are air conditioned within the standards of reference B2-2. Provided there is no evidence of accumulated fatigue, the length of recovery time shall be equal to twice the exposure time or 4 hours whichever is less. After completing the necessary recovery period in preferred environmental conditions, an individual who nonetheless remains tired, unable to carry out normal work requirements, or has an increased incidence of health disorders shall be referred to the MDR for evaluation.

(3) Supervisors shall direct personnel experiencing heat-stress symptoms while standing watch or working in the workspace, to report immediately to the MDR for evaluation.

e. Recommendations for Working in Heat-stress Environments.

(1) Drink more water than satisfies thirst. Do not wait until you are thirsty to start drinking (scuttlebutts must be readily available and in working order). It is important that personnel stay hydrated. A device that has proved very effective in helping personnel to stay hydrated on flight decks, steam catapult spaces, engineering spaces, laundry and in other hot locations on ship is the Camelbak® (or equivalent) drinking system. It holds 1.8 liters of water and is worn like a backpack with a straw mechanism that allows the person to drink anytime or anywhere. The Camelbak® has proved very effective in helping to keep personnel hydrated especially in areas such as the Persian Gulf. It is available in the stock system under NSN 9Q-8465-01-396-9855.

(2) Eat three well-balanced meals daily.

(3) Get adequate rest. At least 6 hours of continuous sleep per 24 hours is recommended.

(4) Except where fire retardant or fire-fighting clothing is required, wear clean clothing composed of at least 35 percent cotton (more natural fiber content allows more effective evaporation of water from clothing).

(5) Do not take salt tablets.

(6) Limit intake of caffeinated drinks.

(7) Do not drink commercially prepared electrolyte supplements in place of water.

(8) The fleet has used several cooling vests in the stock system in a limited capacity. Initial research on one of these vests shows that if properly used in a heat-stress environment it can reduce thermal strain. However, when using cooling vests, personnel shall adhere to PHEL stay times as described in this chapter until revised PHEL curves are established for the cooling vest.

**NOTE:**

The use of using cooling vests that contain paraffin based phase change material is not recommended. This material may be flammable and must be stored per the requirements for flammable material in Chapter C23.

f. Reports and Forms

(1) Personnel exposed to excessive heat stress may require the professional judgment of a trained MDR to determine the presence or absence of a heat-related disorder. If the result of the evaluation indicates a heat-related case the MDR shall prepare a Heat/Cold Case form (NAVMED 6500/1). Appendix B2-G is an example of this form. The senior MDR must sign the form and the commanding officer shall forward the form to: Commanding Officer, Navy Environmental Health Center (NAVENVIRHLTHCEN). This form is available under stock number 0105-LF-015-0800. Submission of this form to NAVENVIRHLTHCEN will assist BUMED in identifying both personnel and material areas that require assistance in achieving better heat-stress control.

**NOTE:**

If a heat-stress case results in 5 or more lost workdays, a Mishap Report shall be submitted per Chapter A-6 in addition to the submission of the Heat/Cold Case form.

(2) NAVENVIRHLTHCEN shall provide a fiscal year-end of summary of shipboard heat-stress cases from their database by type of operation, and ship class to CNO (N454), COMNAVSEASYSCOM (SEA 03L5), and the Fleet Commanders in Chief.

**B0205. PHEL DETERMINATION**

a. The WBGT index provides a measure of environmental conditions. In order to determine the permissible exposure limit in these conditions, an additional piece of information is required the degree of effort entailed by the particular job. The more strenuous the job, the shorter the allowable exposure limit. The Navy has developed six physiological heat exposure limit (PHEL) curves, each applying to a different work rate, ranging from light work (PHEL Curve I) to heavy work (PHEL Curve VI). The PHEL Curve General Applicability table (table B2-A-1) in Appendix B2-A provides the applicable stay times allowed for a specific WBGT reading. For types of work not presented in table B2-A-1, the MDR should consult reference B2-2, Articles 3-12 and 3-13. For comparison, examples of light work include sweeping down, painting, adjusting automatic combustion controls, changing and cleaning lube oil strainers, and bleeding hydraulic oil. Examples of heavy work include manually chipping and wire brushing in preparation for painting, handling cargo and supplies, replacing large valves, cleaning lube oil sumps, and disassembly or reassembly of large or heavy equipment. The PHEL curves were developed and are accurate for normal, healthy personnel who have had adequate rest, (6 hours continuous sleep in the last 24 hours), adequate water intake, and adequate recovery time from previous heat-stress exposure (2 hours recover for every 1 hour exposure or 4 hours maximum). Personnel are assumed to be wearing clothing consisting of a least 35 percent cotton fiber, not containing starch, and readily permeable to water transfer. Table B2-A-2 presents the PHEL Chart in a tabular format. Table B2-A-3 presents the PHEL values in a tabular format for the presence of fuel combustion gases.

b. Procedures

(1) Curve Selection

(a) Routine Operations. Applicable PHEL curves should be determined by selecting the appropriate curve listed in table B2-A-1.

(b) Non-routine Operations. Non-routine operations, such as performing operations in out-of-normal plant configurations, increases in normal watchstander work rate, and minor equipment casualties require the use of the next higher number curve above that specified in table B2-A-1 for routine operations. For example, if the stay time for a particular watchstander is determined to be PHEL Curve I during normal operations, then the exposure limit for the watchstander should be determined using PHEL Curve II during difficult or more active than normal watches.

(c) Engineering Casualty Control Exercises. Watchstanders shall have their stay times determined by selecting the appropriate curve listed in table B2-A-1.

(d) Heavy Work. Personnel conducting heavy repairs or other strenuous work shall have their stay time determined by using PHEL Curve VI.

(2) Effects of Personnel Health Status on curve Selection. As indicated, the PHEL curves and the assignment in table B2-A-1 are based on normal, healthy personnel who have adequate rest and recovery from previous heat-stress exposures. Personnel having repetitive exposures to heat stress without sufficient recovery may experience cumulative fatigue. Additionally, personnel with a respiratory system cold and/or infection, lacking sufficient sleep (less than 6 hours in the past 24 hours), experiencing dehydration, having clinically confirmed hypertension or taking medication which adversely effects body temperature are much more prone to systemic heat injuries. Maximum exposure limits for these personnel cannot be reliably predicted using the PHEL Chart in table B2-A-1. The senior MDR on a case-by-case basis shall determine appropriate exposure limits for these personnel.

(3) Curve Selection if Personnel Heat Injuries Occur. If, after determining personnel stay times per this section, a heat exhaustion or heat stroke occurs, then the stay times for all other personnel in the space shall immediately be reduced by recalculating stay times using the next numerically higher PHEL curve than specified by table B2-A-1. The work and health status of the individual suffering the injury shall be reviewed. When the cause of the injury has been reasonably resolved, the stay times for personnel in the space shall be determined using the latest WBGT index and the normally appropriate curves as indicated in table B2-A-1.

(4) WBGT/PHEL Determination. The heat-stress surveyor shall use the PHEL table (table B2-A-2). To use the PHEL table, the heat-stress surveyor must first round the recorded WBGT index to the next higher whole number value. This can be done easily as the WBGT index is recorded in tenths of a degree F. For example: 85.1°F would be rounded to 86°F and 89.9°F would be rounded to 90°F; but 92.0°F would remain 92°F. Using the whole number value of the WBGT index, the heat-stress surveyor would obtain the permissible stay time in hours and minutes under the column for the PHEL curve determined using table B2-A-2. Hence, for a recorded WBGT index of 85.1°F or 85.8°F the stay time for PHEL Curve III is 5 hours and 55 minutes.

(5) The current WBGT/PHEL index for each watch stander can be read from any of the ICAS or PC connected stations.

(6) Impact of Personal Status Change on Exposure Limits. If a person's status changes during the period of a watch, e.g., the person assumes a watch in a different location or works at a different exertion level, stay times shall be computed using the procedures for Remaining Safe Stay Times provided in reference B2-2, article 3-13(5)(b).

(7) Impact of Fuel Combustion Gases (Stack Gas) and Fuel Vapors on Exposure Limits

(a) Fuel combustion gases (stack gas) and fuel vapors can have severe physiological impact on personnel. The effects of these environmental

factors are intensified by heat stress. Prolonged exposure to relatively low concentrations can impact the ability of personnel to work safely. If someone entering a workspace or area for the first time in approximately 4 hours or more can smell the odor of stack gas and/or fuel vapors, then a harmful concentration may be present. Personnel should be checked for the following symptoms:

1. Eyes watering and/or burning

2. Difficulty in breathing normally

3. Tingling or numbness of the tip of the tongue, tip of the nose, finger tips and/or toes

4. Generalized sensation of mild alcoholic intoxication without alcohol consumption within the past 24 hours.

(b) If two or more of the above symptoms are exhibited, then exposure limits must be reduced as follows:

1. Using the latest WBGT index values, determine the PHEL stay time by using table B2-A-3; or

2. Calculate the PHEL stay time for existing heat-stress conditions per paragraph B0205b(4), and divide that stay time by three to obtain the new stay time. For example, if the exposure limit due to heat stress is 4 hours, then the exposure limit with stack gas and or fuel vapors present would be reduced to 1 hour and 20 minutes. Prompt removal of affected personnel to fresh air is essential. Article 3-11 of reference B2-2 discusses the physiological effects to personnel exposed to stack gas and fuel vapors in detail.

**B0206. TRAINING**

a. All hands shall receive heat-stress training upon reporting aboard. This training may be conducted by showing the heat-stress videotape Play it Cool: Heat-Stress Prevention Afloat (8055801-DN), or by using the heat stress Lesson Training Guide available through the Navy Occupational Safety and Health and Environmental Training Center (NAVOSHENVTRACEN) website at http://www.norva.navy.mil/navosh At a minimum this training must include:

(1) Heat-stress health hazards

(2) Symptoms of excessive heat-stress exposure

(3) Heat-stress first aid procedures

(4) Heat-stress monitoring

(5) Causes of heat-stress conditions.

b. Heat-stress surveyors assigned to perform WBGT surveys shall be trained and qualified using the Heat-Stress Surveyor Watchstation 303 (formally Heat-Stress Monitor Watchstation 303)of the Safety Programs Afloat Personnel Qualifications Standard (PQS), NAVEDTRA 43460-4B within 12 weeks of assignment.

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## CHAPTER B2

## REFERENCES

B2-1 Manual of the Judge Advocate General (JAG Manual)

B2-2 NAVMED P-5010-3, Manual of Naval Preventive Medicine, Chapter 3: Ventilation and Thermal Stress Ashore and Afloat (NOTAL)

**Appendix B2-A**

**Table B2-A-1**

**PHEL CURVE GENERAL APPLICABILITY SELECTION**

| PERSONNEL | PHEL CURVE | |
|---|---|---|
| | Routine Watch | Casualty Control Drills |
| I. Steam Propelled Ships | | |
| A. Propulsion Spaces | | |
| 1. BTOW | II | III |
| 2. Console Operator | I | I |
| 3. Upper Levelman (checkman) | II | III |
| 4. Lower Levelman | II | III |
| 5. MFP Watch | II | III |
| 6. Burnerman | II | III |
| 7. EOOW | I | I |
| 8. MMOW | II | III |
| 9. Throttleman | I | I |
| 10. EMOW | I | I |
| 11. Upper Levelman(SSTG) | II | III |
| 12. Lower Levelman (Lube Oil/Condensate) | II | III |
| 13. Evaporator Watch | I | II |
| 14. Messenger (See Note Below) | III | IV |
| B. Auxiliary Spaces | | |
| 1. All Watches | II | II |
| II. Diesel Propelled Ships | | |
| A. EOOW | I | I |
| B. POOW | II | III |
| C. EMOW | I | I |
| D. Throttleman | I | I |
| E. Repair Electrician | I | I |

**NOTE**

Messenger stay times should be determined by taking the average of all WBGT Index values for the space not including the console booth. In most cases this will give a longer stay time than using PHEL Curve values listed for the messenger above.

| | | | |
|---|---|---|---|
| F. | SSDG Watch | I | I |
| G. | Boiler Watch | I | I |
| H. | Evaporator Watch | II | II |
| I. | Oiler/Messenger | III | IV |

III. Gas Turbine Propelled Ships

| | | | |
|---|---|---|---|
| A. | FFG-7, DD-963, and CG 47 Class Ships | | |
| | 1. All Engineering Watch Personnel | I | II |
| B. | DDG-51 Class Ships | | |
| | 1. ERO | II | II |
| | 2. PSM/ERM | II | III |
| | 3. ASM | II | III |
| | 4. AS/VCDO | II | III |
| | 5. Sounding and Security Watch | III | III |
| | 6. OD Box Watch | NA | *II |

* Includes restricted maneuvering and casualty control drills

| | | | |
|---|---|---|---|
| C. | AOE Class Ships | | |
| | 1. PSM | II | II |
| | 2. ASM | II | III |
| | 3. Auxiliary Rover | III | III |

IV. Steam Catapult Spaces

| | | | |
|---|---|---|---|
| A. | All Watches | II | II |

V. All Other Surface Ship Spaces

| | | | |
|---|---|---|---|
| A. | ECC Monitors/Inspectors | I | II |
| B. | Laundry Personnel | III | NA |
| C. | Scullery Personnel | V | NA |
| D. | Galley & Food Service Line Personnel | II | NA |

VI. Submarines

| | | | |
|---|---|---|---|
| A. | Engine Room | | |
| | 1. EOOW | I | I |
| | 2. EWS | II | III |
| | 3. Throttleman | I | I |

| | | |
|---|---|---|
| 4. Reactor Operator | I | I |
| 5. Electrical Operator | I | I |
| 6. Upper Level | II | III |
| 7. Lower Level | II | III |
| 8. Evaporator Watch | I | II |
| 9. Engineering Drill Monitors | NA | II |
| B. Auxiliary Spaces | | |
| 1. All Watches | II | II |
| C. Other Spaces | | |
| 1. Food Service Personnel | II | NA |

FIGURE B2-A-1

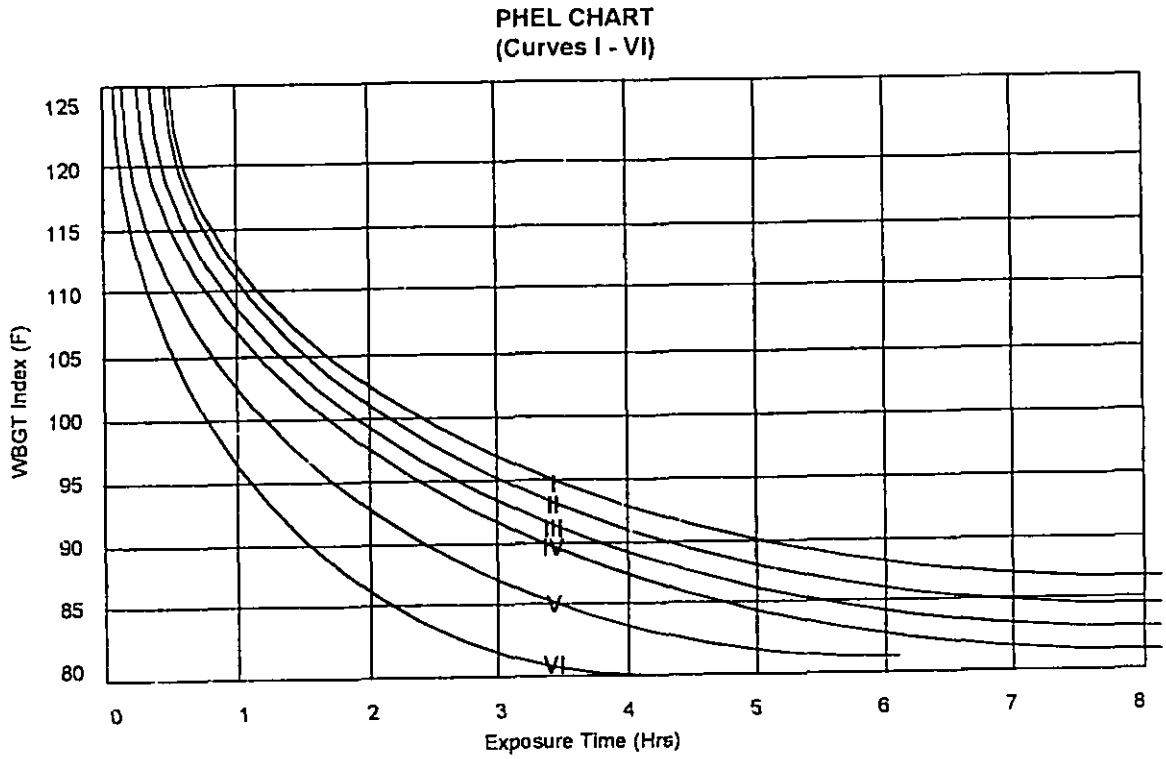
PHEL CHART
(Curves I - VI)
WBGT Index (F)
125
120
115
110
105
100
95
90
85
80
0
1
2
3
4
5
6
7
8
Exposure Time (Hrs)
I
II
III
IV
V
VI

**Table B2-A-2**

**PHYSIOLOGICAL HEAT EXPOSURE LIMITS (PHEL) TIME TABLE**
(Without the presence of fuel combustion gases/fuel vapors)

Six PHEL Curves (Total Exposure Time in Hours:Minutes)

| WBGT Index (F) | I | II | III | IV | V | VI |
|---|---|---|---|---|---|---|
| 80.0 | >8:00 | >8:00 | >8:00 | 8:00 | 6:35 | 4:30 |
| 81.0 | >8:00 | >8:00 | >8:00 | 7:45 | 6:00 | 4:05 |
| 82.0 | >8:00 | >8:00 | 8:00 | 7:05 | 5:25 | 3:40 |
| 83.0 | >8:00 | 8:00 | 7:45 | 6:25 | 4:55 | 3:20 |
| 84.0 | >8:00 | 8:00 | 7:05 | 5:55 | 4:30 | 3:05 |
| 85.0 | 8:00 | 7:45 | 6:30 | 5:20 | 4:05 | 2:50 |
| 86.0 | 8:00 | 7:05 | 5:55 | 4:55 | 3:45 | 2:35 |
| 87.0 | 7:25 | 6:30 | 5:25 | 4:30 | 3:25 | 2:20 |
| 88.0 | 6:45 | 5:55 | 4:55 | 4:05 | 3:10 | 2:10 |
| 89.0 | 6:10 | 5:25 | 4:30 | 3:45 | 2:50 | 2:00 |
| 90.0 | 5:40 | 5:00 | 4:10 | 3:25 | 2:40 | 1:50 |
| 91.0 | 5:15 | 4:35 | 3:50 | 3:10 | 2:25 | 1:40 |
| 92.0 | 4:50 | 4:10 | 3:30 | 2:55 | 2:15 | 1:30 |
| 93.0 | 4:25 | 3:50 | 3:15 | 2:40 | 2:00 | 1:25 |
| 94.0 | 4:05 | 3:35 | 3:00 | 2:25 | 1:50 | 1:15 |
| 95.0 | 3:45 | 3:15 | 2:45 | 2:15 | 1:45 | 1:10 |
| 96.0 | 3:25 | 3:00 | 2:30 | 2:05 | 1:35 | 1:05 |
| 97.0 | 3:10 | 2:45 | 2:20 | 1:55 | 1:25 | 1:00 |
| 98.0 | 2:55 | 2:35 | 2:10 | 1:45 | 1:20 | 0:55 |
| 99.0 | 2:40 | 2:20 | 2:00 | 1:40 | 1:15 | 0:50 |
| 100.0 | 2:30 | 2:10 | 1:50 | 1:30 | 1:10 | 0:45 |
| 101.0 | 2:20 | 2:00 | 1:40 | 1:25 | 1:05 | 0:45 |
| 102.0 | 2:10 | 1:50 | 1:35 | 1:15 | 1:00 | 0:40 |
| 103.0 | 2:00 | 1:45 | 1:25 | 1:10 | 0:55 | 0:35 |
| 104.0 | 1:50 | 1:35 | 1:20 | 1:05 | 0:50 | 0:35 |
| 105.0 | 1:40 | 1:30 | 1:15 | 1:00 | 0:45 | 0:30 |
| 106.0 | 1:35 | 1:25 | 1:10 | 0:55 | 0:45 | 0:30 |
| 107.0 | 1:30 | 1:15 | 1:05 | 0:50 | 0:40 | 0:25 |
| 108.0 | 1:20 | 1:10 | 1:00 | 0:50 | 0:35 | 0:25 |
| 109.0 | 1:15 | 1:05 | 0:55 | 0:45 | 0:35 | 0:25 |
| 110.0 | 1:10 | 1:00 | 0:50 | 0:40 | 0:30 | 0:20 |
| 111.0 | 1:05 | 1:00 | 0:50 | 0:40 | 0:30 | 0:20 |
| 112.0 | 1:00 | 0:55 | 0:45 | 0:35 | 0:25 | 0:20 |
| 113.0 | 0:55 | 0:50 | 0:40 | 0:35 | 0:25 | 0:15 |
| 114.0 | 0:55 | 0:45 | 0:40 | 0:30 | 0:25 | 0:15 |
| 115.0 | 0:50 | 0:45 | 0:35 | 0:30 | 0:20 | 0:15 |
| 116.0 | 0:45 | 0:40 | 0:35 | 0:25 | 0:20 | 0:15 |
| 117.0 | 0:45 | 0:40 | 0:30 | 0:25 | 0:20 | 0:10 |
| 118.0 | 0:40 | 0:35 | 0:30 | 0:25 | 0:15 | 0:10 |
| 119.0 | 0:35 | 0:35 | 0:25 | 0:20 | 0:15 | 0:10 |
| 120.0 | 0:35 | 0:30 | 0:25 | 0:20 | 0:15 | 0:10 |
| 121.0 | 0:35 | 0:30 | 0:25 | 0:20 | 0:15 | 0:10 |
| 122.0 | 0:30 | 0:25 | 0:20 | 0:15 | 0:15 | 0:10 |
| 123.0 | 0:30 | 0:25 | 0:20 | 0:15 | 0:10 | 0:10 |
| 124.0 | 0:25 | 0:25 | 0:20 | 0:15 | 0:10 | 0:05 |

**TABLE B2-A-3**

(With the presence of fuel combustion gases/fuel vapors)

| WBGT Index (F) | Six PHEL Curves (Total Exposure Time in Hours:Minutes) | | | | | |
|---|---|---|---|---|---|---|
| | I | II | III | IV | V | VI |
| 80.0 | 4:50 | 4:15 | 3:30 | 2:55 | 2:15 | 1:30 |
| 81.0 | 4:25 | 3:50 | 3:10 | 2:40 | 2:00 | 1:20 |
| 82.0 | 4:00 | 3:30 | 2:55 | 2:25 | 1:50 | 1:15 |
| 83.0 | 3:40 | 3:10 | 2:40 | 2:10 | 1:40 | 1:10 |
| 84.0 | 3:20 | 2:55 | 2:25 | 2:00 | 1:30 | 1:00 |
| 85.0 | 3:00 | 2:40 | 2:10 | 1:50 | 1:25 | 0:55 |
| 86.0 | 2:45 | 2:25 | 2:00 | 1:40 | 1:15 | 0:50 |
| 87.0 | 2:30 | 2:10 | 1:50 | 1:30 | 1:10 | 0:45 |
| 88.0 | 2:20 | 2:00 | 1:40 | 1:25 | 1:05 | 0:40 |
| 89.0 | 2:05 | 1:50 | 1:30 | 1:15 | 1:00 | 0:40 |
| 90.0 | 1:55 | 1:40 | 1:25 | 1:10 | 0:55 | 0:35 |
| 91.0 | 1:45 | 1:30 | 1:15 | 1:05 | 0:50 | 0:30 |
| 92.0 | 1:35 | 1:25 | 1:10 | 1:00 | 0:45 | 0:30 |
| 93.0 | 1:30 | 1:20 | 1:05 | 0:55 | 0:40 | 0:25 |
| 94.0 | 1:20 | 1:10 | 1:00 | 0:50 | 0:35 | 0:25 |
| 95.0 | 1:15 | 1:05 | 0:55 | 0:45 | 0:35 | 0:20 |
| 96.0 | 1:10 | 1:00 | 0:50 | 0:40 | 0:30 | 0:20 |
| 97.0 | 1:10 | 0:55 | 0:45 | 0:40 | 0:30 | 0:20 |
| 98.0 | 1:05 | 0:50 | 0:40 | 0:35 | 0:25 | 0:15 |
| 99.0 | 0:55 | 0:45 | 0:40 | 0:30 | 0:25 | 0:15 |
| 100.0 | 0:50 | 0:45 | 0:35 | 0:30 | 0:20 | 0:15 |
| 101.0 | 0:45 | 0:40 | 0:35 | 0:25 | 0:20 | 0:15 |
| 102.0 | 0:40 | 0:35 | 0:30 | 0:25 | 0:20 | 0:10 |
| 103.0 | 0:40 | 0:35 | 0:30 | 0:25 | 0:15 | 0:10 |
| 104.0 | 0:35 | 0:30 | 0:25 | 0:20 | 0:15 | 0:10 |
| 105.0 | 0:35 | 0:30 | 0:25 | 0:20 | 0:15 | 0:10 |
| 106.0 | 0:30 | 0:25 | 0:20 | 0:20 | 0:15 | 0:10 |
| 107.0 | 0:30 | 0:25 | 0:20 | 0:15 | 0:10 | 0:10 |
| 108.0 | 0:25 | 0:25 | 0:20 | 0:15 | 0:10 | 0:05 |
| 109.0 | 0:25 | 0:20 | 0:15 | 0:15 | 0:10 | 0:05 |
| 110.0 | 0:25 | 0:20 | 0:15 | 0:15 | 0:10 | 0:05 |
| 111.0 | 0:20 | 0:20 | 0:15 | 0:10 | 0:10 | 0:05 |
| 112.0 | 0:20 | 0:15 | 0:15 | 0:10 | 0:10 | 0:05 |
| 113.0 | 0:20 | 0:15 | 0:15 | 0:10 | 0:05 | 0:05 |
| 114.0 | 0:15 | 0:15 | 0:10 | 0:10 | 0:05 | 0:05 |
| 115.0 | 0:15 | 0:15 | 0:10 | 0:10 | 0:05 | 0:05 |
| 116.0 | 0:15 | 0:10 | 0:10 | 0:10 | 0:05 | 0:05 |
| 117.0 | 0:15 | 0:10 | 0:10 | 0:05 | 0:05 | 0:05 |

## Appendix B2-B

## HEAT STRESS TROUBLE-SHOOTING AND REPAIR ACTIONS

VENTILATION: If a ventilation problem is suspected, the WBGT meter should be positioned at the supply terminal/opening discharge such that the airflow is blowing into the left side of the WBGT meter. If the discharge air DB temperature is greater than 10°F over the outside DB temperature, then a ventilation supply problem may be indicated. A reading of 2 terminals/openings per ventilation supply system serving the space is required. The below information may assist in determining the cause of the problem.

| STANDARDS | HOW TO MEASURE DISCREPANCIES | CAUSES | RECOMMENDED ACTION |
|---|---|---|---|
| 1. VENTILATION<br>NSTM 510 Heating, Ventilation and Air Conditioning systems for Surface Ships | | | |
| a. Supply | | | |
| (1) Flow | | | |
| Duct velocity 2500 to 3500 fpm | Anemometer | Inlet obstructed | Remove obstructions |
| | | Dirty screens | Clean Screens |
| Velocity of airflow at watchstander (NAVMED P-5010-3) about 250 fpm minimum | | Wrong screen mesh (1-1/2 inches required | Replace with proper size mesh |
| | | Toxic Gas Vent Dampers closed | Open and repair dampers |
| | | Vent duct pressure losses due to dirty ductwork, leaks, unauthorized openings or missing access covers | Clean, repair or replace |

| STANDARDS | HOW TO MEASURE DISCREPANCIES | CAUSES | RECOMMENDED ACTION |
|---|---|---|---|
| (2) Flow (continued) | | Supply terminal obstructed | Clean the terminal |
| | | Terminal inoperable or missing | Replace terminal |
| | | Supply fan not working properly: | Repair |
| | | -Motor speed low (single phase or miswired) | Repair |
| | | -Controller defective | Repair/Replace |
| | | -Improper speed with exhaust fan | Repair fan interlock |
| | | -Failed motor bearings | |
| | | Supply air short circuited by exhaust terminal | Repair |
| | | | Relocate supply or exhaust terminal |
| At least one supply terminal at each watch-stander station without damper, which can be pointed at the watch-stander | Visual | Incorrect terminal type (should be corrosion resistant steel) | Replace terminal |
| | | Terminal damper is not removed | Remove damper |
| High Efficiency Filters (HEPA) are dirty. (Ships equipped with a Collective Protection System) | HEPA filter differential pressure gauge. (See PMS) | Continuous use in a dirty environment such as an industrial availability or sand storm) | Replace filters |

| STANDARDS | HOW TO MEASURE DISCREPANCIES | CAUSES | RECOMMENDED ACTION |
|---|---|---|---|
| b. Exhaust | | | |
| Refer to specific HVAC Design Criteria Manual (DCM) for ship class. If no specific DCM exist for the ship class in question, refer to NAVSEA 0938-018-0010 (A/C & Ventilation DCM for Surface Ships). Exhaust ventilation is to be:<br>-125% of supply ventilation for 1200 psi steam ships.<br>-115% of supply ventilation for other ships except CPS ships<br>-equal to supply ventilation on CPS ships plus sweep air from Type II airlocks | Anemometer | Exhaust fan not working properly:<br>-Motor speed low (single phase or miswired)<br>-Controller defective<br>-Improper speed with exhaust fan<br>-Failed motor bearings | <br>Repair<br>Repair<br>Repair fan interlock<br>Repair |
| Space pressure negative at ¼ to ½ inch of water is mandatory with supply and exhaust fans at the same speed (airflow should be into space when access is opened) | U-Tube Manometer | Exhaust inlet or outlet obstructed.<br>Dirty screens.<br>Wrong screen mesh (1-1/2 inches required. | Remove obstructions.<br>Clean Screens.<br>Replace with proper size mesh. |
| | Feel/visual | Vent duct pressure losses due to dirty ductwork, leaks, unauthorized openings or missing access covers. | Clean, repair or replace |
| | | Toxic Gas Vent Dampers closed | Open and repair dampers |

| STANDARDS | HOW TO MEASURE DISCREPANCIES | CAUSES | RECOMMENDED ACTION |
|---|---|---|---|
| Exhaust terminals in hot spots | Feel/Visual | | Relocate terminal |
| 2. INSULATION | | | |
| a. Piping & Machinery NSTM 635 Thermal, Fire and | Visual Check | | |
| b. Acoustic Insulation Insulate all surfaces with temp.>125°F. Material/thickness IAW MIL-STD-769 | Deteriorated cracked, worn, damaged | High traffic, walkway, standing, use of chain falls, etc. | Replace and install metal lagging/shielding |
| | Wet (water, oil, etc.) | Frequently occurring external leak | Replace and cover with metal lagging/shielding |
| | | Internal/ external one-time leak | Replace |
| | Missing insulation | Removed for access | Replace |
| | | Replaceable pad missing Valve bonnets, etc | Install replaceable pad |
| c. After insulation is installed, surface temperature should not exceed 125°F. ***Note 1, 2** | Infrared hand-gun/ pyrometer-Note 1 Surface temp too high. | Insulation deteriorated/ compacted. | Increase insulation thickness. |
| | | Insulation too thin. | Paint surface with aluminum paint. |

| STANDARDS | HOW TO MEASURE DISCREPANCIES | CAUSES | RECOMMENDED ACTION |
|---|---|---|---|
| 3. STEAM/WATER LEAKS | | | |
| a. Turbine Shaft Seals | | | |
| NSTM 231Propulsion and SSTG Steam Turbines | | | |
| Excessive shaft seal leakage, slight leakage is required to lubricate the shaft seals. | Visual | Shaft alignment | Align shaft |
| | | Worn bearings | Replace bearings |
| | | Improper or worn packing | Replace packing installation |
| Excessive shaft gland seal leakage, some turbine shaftseals are vented to a gland leak off system | Visual | Seal leaks beyond capacity of leak-off system | Repair Seal |
| | | High exhaust steam Pressure | Rework exhaust dump Value |
| | | Low vacuum in gland leak off system (less than 1/2 inch vacuum) | Secure unneeded auxiliary machinery. |
| | | | Check loop seals. Isolate idle equipment. Ensure gland exhaust fan operating |
| b. Mechanical Pump Seals | | | |
| NSTM 503 Pumps | Visual | Shaft alignment | Align shafting |
| | | Worn bearings | Replace bearings |
| | | Improper or worn package installation | Replace when leakage forms a stream |

| STANDARDS | HOW TO MEASURE DISCREPANCIES | CAUSES | RECOMMENDED ACTION |
|---|---|---|---|
| c. Pump Stuffing Boxes | | | |
| NSTM 503 Pumps | Visual | Packing not sufficiently tight | Tighten packing |
| Check for leakage for greater than 32 oz./ min | Measure | Gland bottomed out | Add packing |
| | | Shaft alignment | Align shaft |
| | | Worn bearings | Replace bearings |
| | | Improper or worn packaging | Replace packing |
| d. Casing Joints | | | |
| NSTM 221 Boilers<br>Check all areas of boiler casings for leakage | Visual<br>Feel<br>Soap Suds | Dirt on matting surfaces<br>Improper bolt tightening<br>Warped doors/access | Clean Surfaces<br>Retighten bolts<br>Replace doors/panels |
| | | Cracked seams, fasteners missing or defective, faulty gaskets | Caulk seams, renew fasteners, replace/renew gaskets use tadpole gaskets |
| e. Piping | | | |
| NSTM 505 Piping<br>Check for stained and wet lagging ***Notes 3, 4** | Visual | Pipe, valve or flange leaking<br>Pipe broken | Repair or replace as necessary<br>Replace |
| f. Drains, Funnel | | | |
| No overflow | Visual | Check valve jammed<br>Drain funnel fouled | Repair check valve<br>Clean drain funnel |

| STANDARDS | HOW TO MEASURE DISCREPANCIES | CAUSES | RECOMMENDED ACTION |
|---|---|---|---|
| 4. BILGE | | | |
| a. Dry Bilge Ships | | | |
| No water | Visual | Leaks<br>Machinery<br>Piping | Repair leaks |
| b. Wet Bilge Ships | | | |
| Minimize water (no quantitative standard) | Visual | Leaks<br>Machinery<br>Piping | Pump bilge water and/ or repair leaks |

***Note 1** For ships designed to MIL-STD 769D or earlier revisions, the surface temperature after installing insulation was limited to 105°F.

***Note 2** Infrared Heat Gun Survey: Infrared heat guns may be borrowed from IMA or IMA requested to perform. (Heat gun should be used to detect hot spots. This equipment does not provide accurate temperatures.)

***Note 3** Use extreme caution when inspecting pressurized or high temperature piping systems. Do not attempt repairs while system is pressurized.

***Note 4** Prior to removing lagging ensure that it does not contain asbestos

**Appendix B2-C**

**USE OF THE WBGT METER**

1. The basic instrument for assessing heat stress is the WBGT meter - a small, lightweight, portable instrument. The WBGT meter measures dry-bulb, wet-bulb, and globe temperature and electronically integrates these values into the WBGT Index. There are currently two meters available in the fleet: the RSS-220 meter and the Model 960. Each meter is assembled and operated per its technical manual, either NAVSEA SN000-AA-MMO-0010 for the RSS 220 meter, or NAVSEA S9491-AJ-MMO-010/0910/LP-464-1300 for the Model 960 meter, and the guidance contained within this instruction. Specific instructions for requisitioning and turn-in of units are available from Type Commanders. The Allowance Equipage List (AEL) for the meter is AEL 2-870003051. Experience has shown that the meter globe assembly may be damaged before the meter itself is damaged. Replacing the globe assembly, in the event of meter malfunction, may often eliminate the need to return the entire meter for repair. Similarly, the rechargeable batteries should also be checked before returning the entire meter for repair.

Supply information for the meter and accessories is:

a. Model RSS-220

(1) WBGT Meter. NSN 7G-6685-01-055-5298

(2) Globe Assembly. NSN 9G-6685-01-149-8635

(3) Standard Nickel Cadmium Rechargeable Size AA Batteries. NSN 9G-6140-00-449-6001

(4) WBGT Meter Accessories Allowance Parts List (APL) 100110001

b. Model 960

(1) Heat Stress Monitor. NSN 3H 6665-01-333-2590

(2) Globe Assembly. Unavailable from SPCC at this time.

(3) Standard Nickel Cadmium Rechargeable Size AA Batteries. NSN 9G-6140-00-449-6001

(4) Heat Stress Monitor Allowance Parts List (APL) 469990172

2. WBGT Index. Environmental data displayed by the WBGT meter (heat stress monitor) are:

a. Shielded, ventilated dry-bulb temperature (DB)

b. Shielded, ventilated wet-bulb temperature (WB)

c. Globe temperature (GT). This temperature is an integration of radiant and convective (the heating or cooling effects of air movement) heat transfer (heat gained or lost).

d. WBGT Index. The meter calculates this value using the following mathematical equation:

$$WBGT = (0.1 \times DB) + (0.7 \times WB) + (0.2 \times GT)$$

e. Exposure Limit (Model 960 only). The calculated exposure limit can be read off the display for each of the PHEL curves (P1 through P6 positions). The heat stress monitor uses the data of Appendix B2-A to perform this calculation.

3. Use of the WBGT Meter (RSS-220)

a. The procedure for turning on the WBGT meter readies it for operation. The turn-on procedure is:

(1) Install the globe sensor by pushing the phone jack on the base of the sensor into the receptacle on top of the meter. Hold the globe sensor by its phone jack end, not by the black sphere. The globe can easily be damaged by squeezing, bumping, or dropping.

(2) Fill the wet-bulb water reservoir. The reservoir is accessible through the end of the tunnel marked WATER FILL. When filled, water should completely cover the sponge and be well below the level of the tunnel. Excess water can be poured out of the tunnel end. Be careful to keep the dry-bulb sensor dry. If it becomes wet, dry it with tissue or a soft cloth before operating the meter.

(3) Turn the power switch to CHECK. Listen for the sound of the aspirating fan and see digits on the display.

(4) Turn the measurement function switch to DB, WB, GT, and WBGT. Wait 5 minutes for the initial reading (DB). Wait 3 minutes for subsequent readings. Each position will give a display reading of 100.0 $\pm$ 0.2°F, if the meter is operating properly. If the proper reading cannot be obtained, do not use the meter.

(5) Turn the power switch to ON.

b. When taking measurements, the order in which the temperatures and WBGT Index are presented in paragraph 3a (DB, WB, GT, and WBGT Index) is the order in which data must be collected to ensure optimum reliability. This is the same order in which the meter will display data as the Parameter Selection Switch is rotated clockwise from the DB position and is the order in which the individual sensors will stabilize (most to least quickly). As each value is obtained, it shall be recorded to the nearest 0.1°F on a Heat Stress Monitoring Sheet (see paragraph B0204c(3)(a) for recording procedures). As the meter is moved from one site to another, the meter should be at each site for 5 minutes to allow for stabilization of the first reading (DB) in the series to be taken. To determine when each sensor has stabilized, the monitor should watch the 0.1°F digit of the display. When the 0.1°F digit stops changing or when it oscillates between a larger or smaller value, the sensor has stabilized and the value can be recorded. (If oscillating, always record the higher of the two values.)

c. While taking readings, hold the meter about chest high, 1 foot away from the body. If there is airflow at the reading location, the meter should be positioned to allow the airflow to enter the left side of the meter.

4. Use of the Heat Stress Monitor (Model 960)

a. The procedure for readying the heat stress monitor for operation is as follows:

(1) Fill the wet bulb reservoir. Flip up the top of the reservoir filler cap. Using the supplied filler bottle, fill the reservoir to the full mark. Push the cap cover down until it snaps in place.

(2) Install the globe assembly by removing it from the carrying case and inserting the globe plug into the receptacle on the top of the monitor. Be careful not to get skin oils on the globe.

(3) Turn the monitor ON. Turn the TEST switch to TEST. The display will show either EE.E or 88.8. The EE.E means that the monitor has failed the test. The 88.8 means that the electronic portion of the unit is ready for use. If the monitor fails the test, check the battery charge level. If the level is low, charge the batteries. If the batteries are not low or the monitor fails the test after charging, the meter must be repaired.

(4) Turn the TEST switch to RUN. Check top of the bar in the Battery Charge Level window. If the top of the bar is in the green section, the batteries are well charged. If the top of the bar is in the yellow section, the batteries will need recharging soon. If the top of the bar is in the red section, the batteries must be recharged before use.

b. While taking readings, hold the meter about chest high, 18 inches away from the body. If there is airflow at the reading location, the monitor should be positioned to allow the airflow to enter the left side of the unit. When taking a measurement, the order in which the temperatures and WBGT index are taken are DB, WB, GT, and WBGT. Wait 5 minutes after turning the monitor on until taking the initial reading. Allow the temperature to stabilize before taking the subsequent readings. Following temperature readings, position the function switch to the PHEL curve (P position) from Appendix B2-A which corresponds to the routine limit, the non-routine limit, the heavy work limit, and the drills limit. The exposure limits should be checked against table B2-B-2.

5. Periodic WBGT Meter Validation

a. Each series of WBGT meter readings shall be validated by manually calculating the highest WBGT Index obtained using the equation of paragraph 2d above. This calculation shall be performed in the remarks section of the Heat Stress Monitoring Sheet. The reported WBGT Index value from the meter reading should agree within plus or minus 0.2°F of the calculated WBGT Index value. If such agreement is not obtained, the following causes of error shall be considered:

(1) The operator may have rushed through the measurement procedures not allowing the sensors to stabilize.

(2) The operator may have misread or recorded the values incorrectly.

(3) The meter may not be functioning properly.

If agreement is not obtained, the operator shall conduct a meter check per the appropriate Technical Manual. If the meter check is satisfactory, the operator shall retake the meter readings, ensuring that the meter is allowed to stabilize properly prior to obtaining readings and ensuring that values are recorded properly. If the meter check is unsatisfactory, the operator shall obtain another WBGT meter and retake the readings.

b. During reviews of Heat Stress Monitoring Sheets by the MDR, the department head, and other supervisors, the temperature and WBGT Index values should be spot-checked to determine obvious errors. The following rules of thumb should be applied:

(1) WB temperatures must be less than DB temperatures (WB < DB)

**NOTE:**

If the WB temperature equals the DB temperature, the wick over the WB sensor is probably dried out. Check that there is water in the WB reservoir.

(2) GT for each set of readings should be greater than or equal to DB temperature for the same set of readings (GT $\geq$ DB)

(3) WBGT Index must be greater than WB temperature and less than the GT (WB <WBGT < GT).

(4) The higher the overall heat stress, the more important it is to periodically check the meter's WBGT Index value by manually calculating the WBGT Index. It is the reliability of the individual data and WBGT Index which determines the reliability of the exposure limit from the PHEL Chart or Table.

6. Emergency Environmental Monitoring Equipment Method. The emergency environmental monitoring equipment method discussed here will almost always significantly underestimate the level of heat stress; this shortfall will result in an increased risk of personnel suffering heat injury. When there are no operable WBGT meters aboard ship, there are two alternative monitoring methods that may be used while the ship is underway. Motorized psychrometers (NSN 1H-6685-00-936-1389), carried aboard ships for meteorological purposes or commercially available hygrometers. These psychrometers only measure DB and WB temperatures. They do not have a globe thermometer and therefore cannot account for radiant and convective heating or cooling. Hence all of the components in the WBGT Index equation are not available to calculate the WBGT Index. If using the motorized psychrometric DB and WB temperatures must be measured with the psychrometer shield in its proper position (the flared-open end of the shield must be facing away from the psychrometer). GT can be approximated by taking the difference ($\Delta$T) between the DB temperature and the GT under similar plant operating conditions (power level, number of operating boilers, and approximately the same load on the propulsion plant) when a full set of WBGT meter measurements were obtained. This difference ($\Delta$T) should be added to the DB temperature measured with the psychrometer. For example:

| Previous DB | - | Previous GT | = | $\Delta$T |
|---|---|---|---|---|
| 98.3 | - | 110.4 | = | 12.1 |

| Psychrometer DB | - | Psychrometer WB | = | Estimated GT(DB+ $\Delta$T) |
|---|---|---|---|---|
| 99.1 | - | 83.6 | = | 99.1 + 12.1 = 111.2 |

WBGT = (0.1 x 99.1) + (0.7 x 83.6) + (0.2 x 111.2)

WBGT = 90.7

The WBGT Index values obtained by this strictly emergency monitoring method should be used with the PHEL Chart (figure B2-B-1) or Tables (tables B2-B-2 and B2-B-3). The resultant exposure limits will be approximations only.

Records should indicate whenever the emergency environmental monitoring equipment method was used. A casualty report shall be submitted. When reporting meter failure, give the serial and model numbers and describe the problems encountered.

**Appendix B2-D**

## HEAT STRESS SURVEY SHEET

DATE: _____

| STATION | TIME | DB HANGING | DB. | WB | GT | WBGT | ROUTINE [2] CURVE/LIMIT | NON-ROUTINE CURVE/LIMIT | DRILLS CURVE/LIMIT | HEAVY WORK CURVE/LIMIT |
|---|---|---|---|---|---|---|---|---|---|---|
| BTOW | | | | | | | II = | III = | III = | VI = |
| Upper Level (Checks) | | | | | | | II = | III = | III = | VI = |
| Lower Level | | | | | | | II = | III = | II = | VI = |
| MFP Watch | | | | | | | II = | III = | III = | VI = |
| Burnerman | | | | | | | II = | III = | III = | VI = |
| Messenger [1] | | | | | | | III = | IV = | IV = | VI = |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Engineroom Console Booth | | | | | | | I = | I = | 1 = | VI = |
| Throttle | | | | | | | I = | I = | I = | VI = |
| EMOW | | | | | | | I = | I = | I = | VI |
| Evaporators | | | | | | | I = | II = | II = | VI = |
| Upper Level | | | | | | | II = | III = | III = | VI = |
| Lower Level | | | | | | | II = | III = | III = | VI = |
| Messenger (1) | | | | | | | III = | IV = | IV = | VI = |
| | | | | | | | | | | |
| 3) | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Laundry Press Area | | | | | | | III = | NA = | NA | VI = |
| Driers | | | | | | | III = | NA = | NA | VI = |
| Scullery | | | | | | | V = | NA = | NA | VI = |
| Galley | | | | | | | II = | NA = | NA | VI = |
| Serving Line | | | | | | | II = | NA = | NA | VI = |

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NOTE: (1) Messenger stay times should be determined by taking the average of all WBGT Index values for the space not including the console booth.

NOTE: (2) Only the column that pertains to the current watch/work situation needs to be completed (e.g. all four columns do not need to be filled in).

NEXT REPORTING:

REQUIRED TIME: _____ LOCATION: _____ WATCH DURATION: _____

SURVEY COMPLETE: _____ MONITORING DB AND/OR WB: _____

MANUAL WBGT CALCULATION:

WBGT = (0.1 X _____) + (0.7 X _____) + (0.2 X _____) LOCATION: _____
DB WB GT

WBGT (CALCULATED): _____ METER READING: _____ SAT/UNSAT (Standard of comparison 0.2°F)

COOL DRINKING WATER AVAILABLE AT WATCH/WORK STATIONS? YES / NO

DISCREPANCIES NOTED:

_____
SURVEYOR'S SIGNATURE

REVIEWED: _____ TIME/DATE _____
(SPACE SUPERVISOR/EOOW)

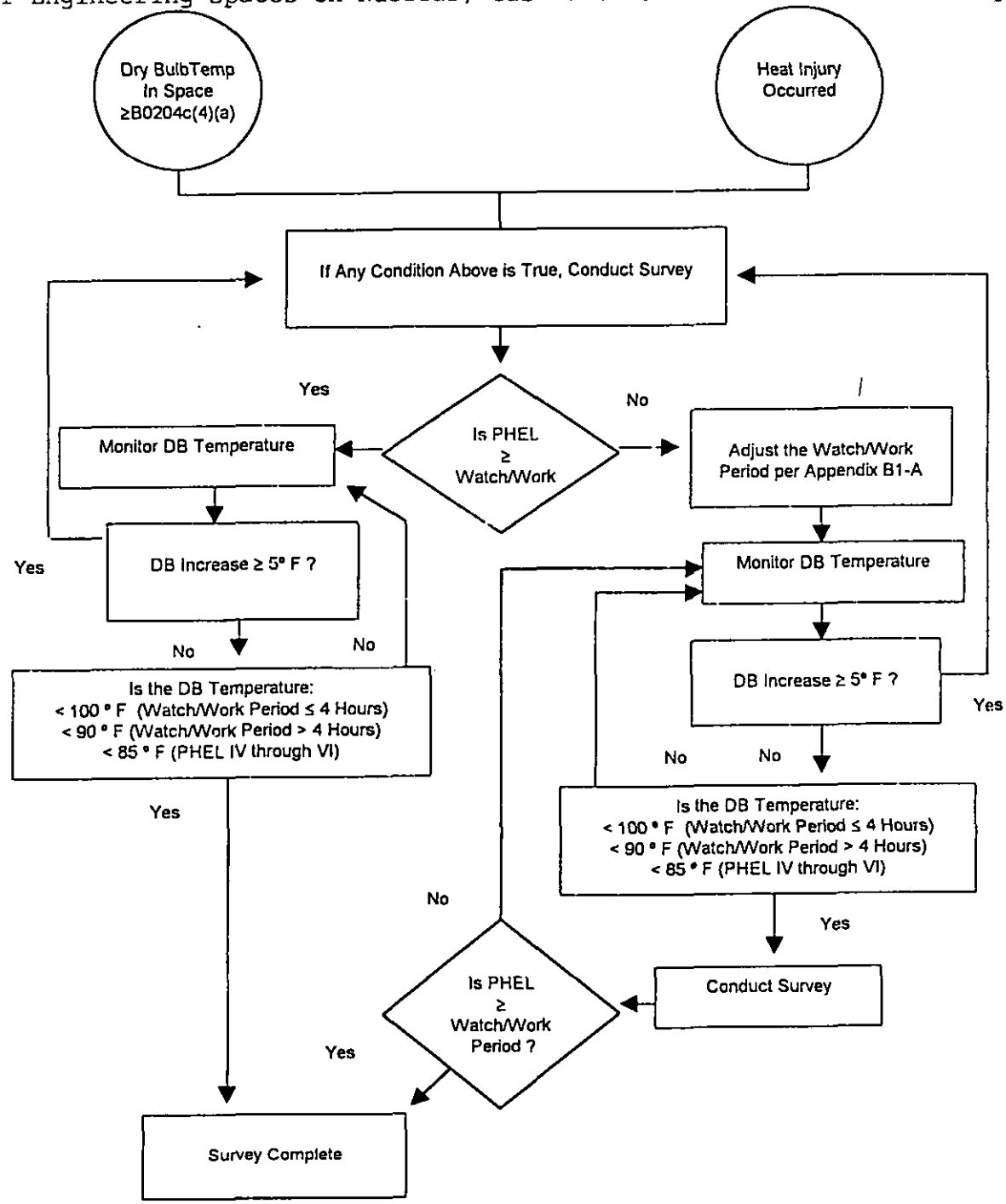
DEPT HEAD: _____ MDR: _____ XO: _____ CO: _____

COMMENTS:

## Appendix B2-E

## HEAT STRESS DECISION DIAGRAM

For Engineering Spaces on Nuclear, Gas Turbine and Diesel Powered Ships

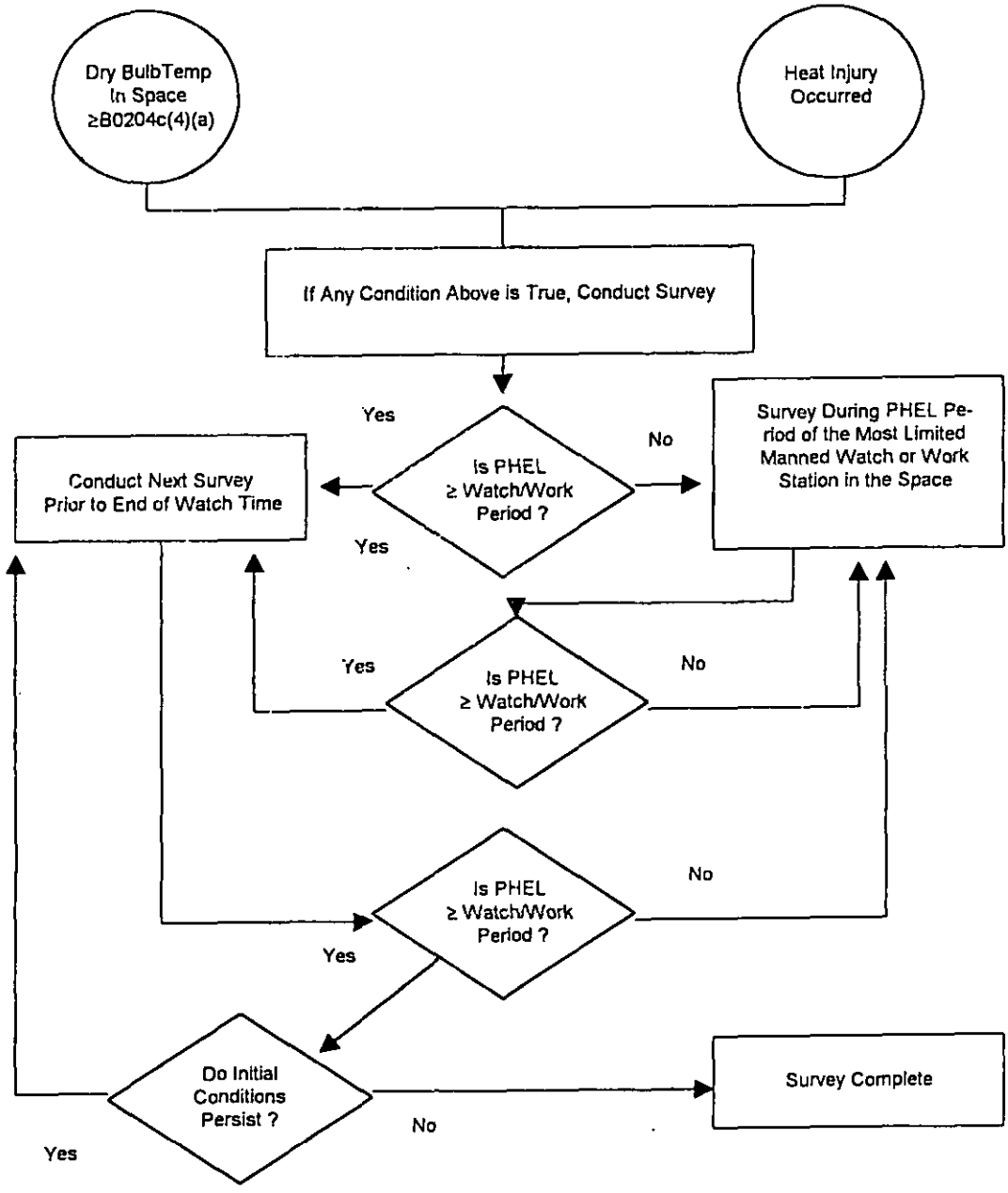


## Appendix B2-E

## HEAT STRESS SURVEY DECISION DIAGRAM

For Engineering Spaces on Steam Powered Ships and for Laundries, Sculleries, Galleys, Steam Catapult Spaces and Arresting Gear Spaces

**NOTE:** Follow-on surveys where WB and DB temperatures are **NOT** monitored and recorded each hour

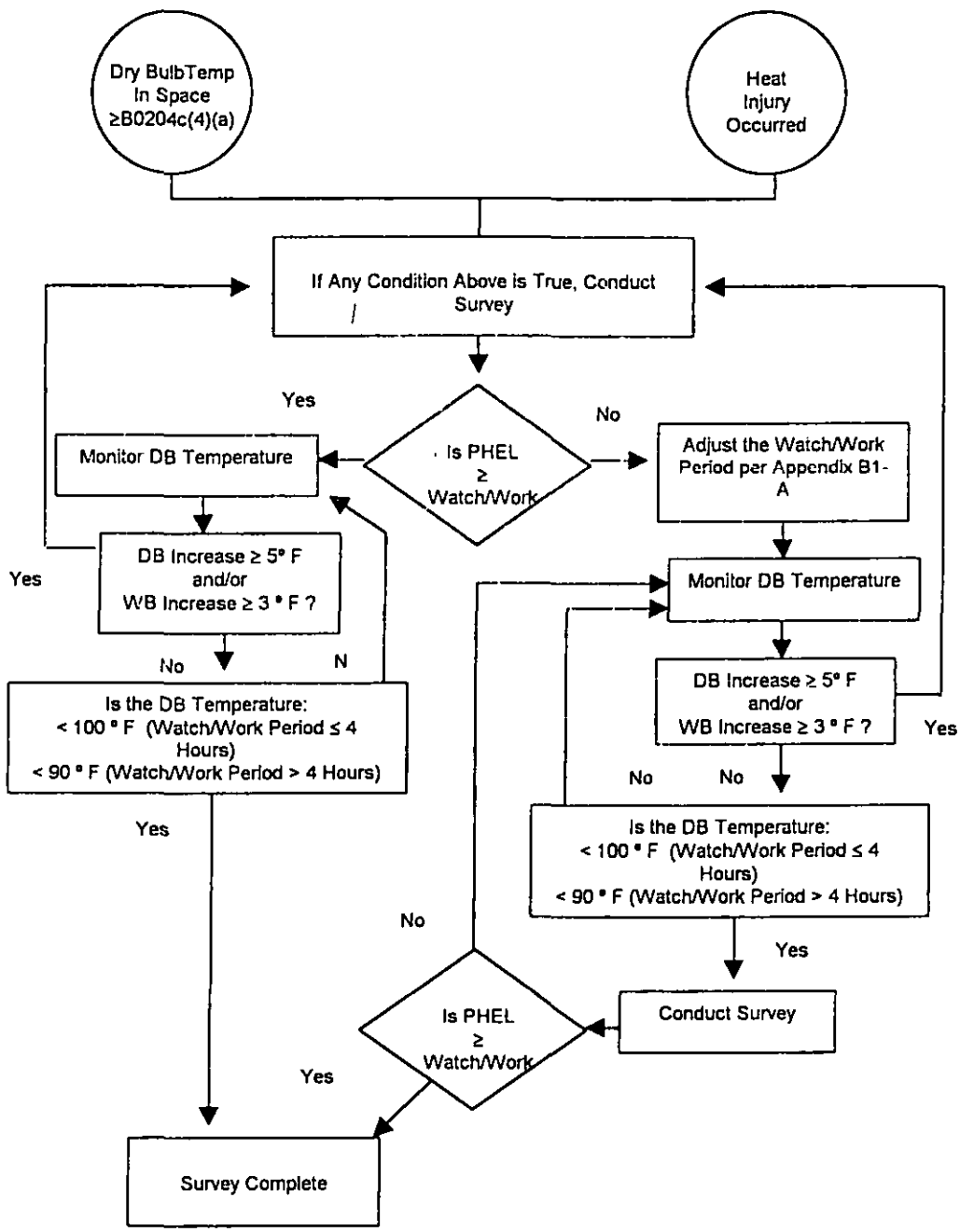


## Appendix B2-E

## HEAT STRESS SURVEY DECISION DIAGRAM

For Engineering Spaces on Steam Powered Ships and for Laundries, Sculleries, Galleys, Steam Catapult Spaces, Arresting Gear Spaces

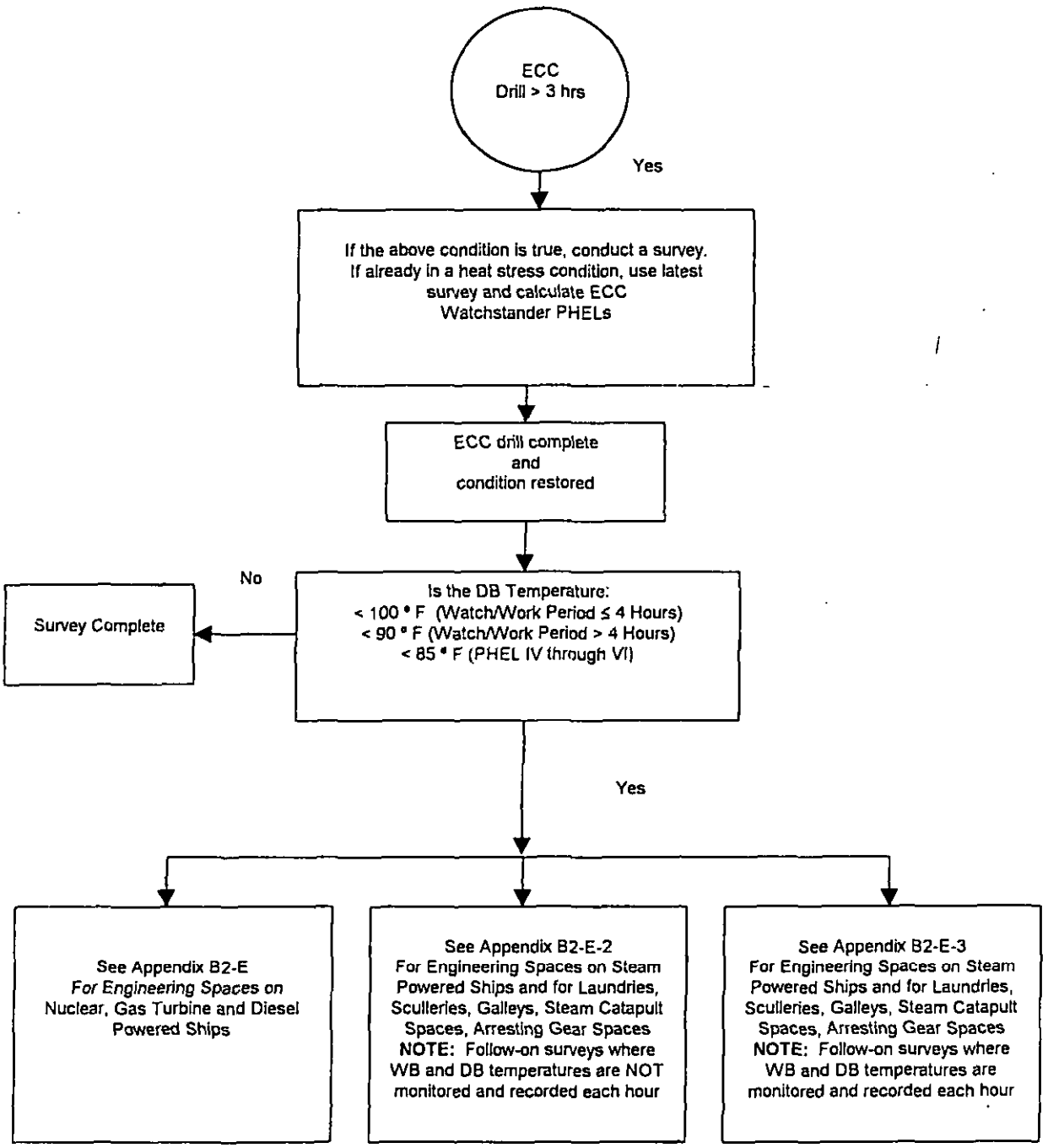
**NOTE:** Follow-on surveys where WB & DB temperatures are monitored and recorded each hour



## Appendix B2-E

## HEAT STRESS SURVEY DECISION DIAGRAM FOR ECC DRILLS

**NOTE:** Not required in spaces not affected by the drill or in areas that are unmanned



**Appendix B2-F**

**TIME WEIGHTED MEAN (TWM) WBGT VALUES**

Time Weighted Mean (TWM) WBGT Values. The TWM WBGT is intended for use in especially hot environments where reduced stay times have been imposed on watch standers. The TWM WBGT is an optional provision, for use if an air-conditioned booth or cooler space is available for personnel to spend time in the cooler climate and afford some relief from the heat in the space. When the TWM is used it changes the WBGT value for that individual and increases the length of time spent at watch station. Ships that have this ability may properly calculate the new WBGT value using the following equation:

$$\text{Time (booth)} = \frac{[\text{WBGT (WATCH STATION)} - [\text{WBGT (desired)}] \times 60}{[\text{WBGT (watch station)} - \text{WBGT (booth)}]}$$

For example: Engineering spaces on a steam-powered ship in the Indian Ocean are on a 4-hour watch rotation. The temperature on a hanging DB thermometer in a main space measured 101°F during the latest heat-stress survey:

| | | |
|---|---|---|
| Burnerman | WBGT = 92, PHEL = II, | Stay time = 4:10 |
| Lower Levelman | WBGT = 92; PHEL = III; | Stay time = 3:30 |
| Console Booth | WBGT = 80; PHEL = I; | Stay time = 8:00 |

The lower levelman has a stay time less than 4 hours while other watch stations have stay times that are equal to greater than 4 hours. The engineer office decides to incorporate a TWM WBGT for the lower levelman to maintain a 4-hour watch for all watchspace personnel. He/she looks up the WBGT value (in the PHEL Time Table in Appendix B2-A) to achieve a 4-hour stay time (90 WBGT = stay time of 4 hours) and does the calculation. The time that the lower levelman must spend in the cool booth each hour to achieve a 4-hour watch would be calculated as follows:

For the Lower Levelman:

$$\text{Time (booth)} = \frac{[\text{WBGT (watch station)} - [\text{WBGT (desired)}] \times 60}{[\text{WBGT (watch station)} - \text{WBGT (booth)}]}$$

The 90 WBGT value is from the PHEL Table in Appendix B2-A

$$\text{Time (booth)} = \frac{92 - 90 \times 60}{92-80} = 10 \text{ minutes}$$

TWM WBGT information shall be documented on the heat-stress survey sheet.

## Appendix B2-G

## HEAT/COLD CASE

HEAT/COLD CASE

FROM: (Reporting Activity)_____ DATE_____

TO
Navy Environmental Health Center
NEHC-OEM Directorate
2510 Walmer Avenue
Norfolk, VA 23513-2617

NAME

SSN

| GRADE | RATE | RACE | SEX | AGE |
|---|---|---|---|---|
| | | | | |

BIRTHPLACE

DATE AND TIME OF EXAMINATION

UNIT TO WHICH ATTACHED

DATE REPORTED TO PRESENT STATION

PRESENT ILLNESS (Onset Date and Time)

WBGT

DIAGNOSIS (check one)
- ☐ HEAT CRAMPS
- ☐ HEAT EXHAUSTION
- ☐ HEAT STROKE
- ☐ DEHYDRATION
- ☐ CHILBLAIN
- ☐ FROSTBITE
- ☐ HYPOTHERMIA

TIME ON ACTIVE DUTY (Months)

DESCRIBE BRIEFLY WHAT PATIENT WAS DOING AT TIME OF INJURY. INCLUDE DESCRIPTION OF CLOTHING

NOTE:
(1) ALL HEAT-STRESS INJURIES SHOULD HAVE RECTAL TEMPERATURES.
(2) ALL HEAT-STRESS INJURIES WITH RECTAL TEMPERATURES GREATER THAN 104°F SHOULD HAVE SERUM SGOT DRAWN 24 HOURS AFTER THE INJURY

LAB FINDINGS

SYMPTOMS (Check all applicable)
- ☐ UNCONSCIOUSNESS
- ☐ DIZZY
- ☐ CONFUSED
- ☐ NUMBNESS
- ☐ VISUAL DISTURBANCES (Specify)
- ☐ WEAK
- ☐ NAUSEA
- ☐ CRAMPS
- ☐ VOMITING
- (Specify)
- ☐ OTHER
- ☐ PALE
- ☐ IV REQUIRED
- ☐ DRY
- ☐ RASH
- ☐ RED
- ☐ OTHER
- ☐ WET
- ☐ NORMAL

TEMP (R) | RESP.

PULSE

HEIGHT

WEIGHT

HOURS OF SLEEP (Last 24 Hours)

LAST MEAL. (Date and time)

AMOUNT ☐ LIGHT ☐ MODERATE ☐ HEAVY

BLOOD PRESSURE
SYSTOLIC_____ DIASTOLIC_____

AMOUNT OF WATER IN QTS. (Last 12 Hours)

SWEATING (Check one)
☐ EXCESS ☐ MODERATE ☐ NONE ☐ SLIGHT

LAST HISTORY OF HEAT/COLD ILLNESS (Specify type)

DATE (MONTH AND DAY) DIAGNOSIS NONE

RECENT ILLNESS OR IMMUNIZATION

DATE DIAGNOSIS NONE

DISPOSITION PRESENT ILLNESS
☐ CLINIC ☐ HOSPITAL (Admitted)

☐ BINNACLE LIST/SIQ (NUMBER OF DAYS) _____

☐ LIGHT DUTY (NUMBER OF DAYS) _____

REMARKS (Initial treatment, long-term treatment potential, extent of injury, remission)

SIGNATURE

PREPARED

SUBMITTED COMMANDING OFFICER

NAVMED 6500/1 (REV.5-99) S/N0105-LF-015-080

# CHAPTER B3

## HAZARDOUS MATERIAL CONTROL AND MANAGEMENT (HMC&M)

### B0301. DISCUSSION

a. To attain and maintain operational effectiveness, Navy ships require specified types and quantities of hazardous material (HM). Great care must be taken in handling, using, and storing HM to prevent injury to personnel, damage to equipment, or harm to the environment. Risks associated with HM are greater aboard ship than ashore because of the limited number, confined nature, and "at sea" environment of shipboard spaces. Consequently, special precautions and an effective program to manage HM are both needed. The maintenance of safe and healthful working conditions for HM is a chain of command responsibility. Implementation begins with the commanding officer and extends to the individual sailor.

b. This chapter addresses general management requirements for HM. **Chapters C23 for surface ships and D15 for submarines contain specific management guidance and safety precautions** for the HM subcategories contained in the definition that follows. Commands having dental facilities shall refer to BUMEDINST 6260.30 for direction in implementing mercury control in affected spaces.

c. For submarines. This chapter and Chapter D15 provide guidance for all HM, including HM that contains atmosphere contaminants per reference B3-1. Some of these contaminants may be released to the submarine atmosphere during operations involving the use of the HM. When a HM is a source of submarine atmospheric contamination, Chapter D15 provides additional controls on the storage and use of this material.

d. The following definitions apply to Navy HMC&M:

(1) Hazardous Material (HM). Any material that, because of its quantity, concentration, or physical or chemical characteristics, may pose a substantial hazard to human health or the environment when incorrectly used, purposefully released, or accidentally spilled. Subcategories of HM, per reference B3-3 (Hazardous Material Users' Guide), include:

(a) Acids

(b) Adhesives

(c) Alkalis/Bases/Caustics

(d) Cleaning compounds

(e) Compressed gases

(f) Corrosion preventive compounds

(g) Detergents/Soaps

(h) Greases

(i) Hydraulic fluids

(j) Inspection penetrants

(k) Lubricants/oils

(l) Paints

(m) Photo chemicals

(n) Polish/Wax compounds

(o) Solvents (Hydrocarbons)

(p) Thermal insulation

(q) Water treatment chemicals

(r) Oxidizers

(s) Fuels

(t) Heavy metals

(u) Batteries

(v) Pesticides

Not included in this definition are ammunition, weapons, explosives, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, pharmaceutical supplies (if not considered hazardous based on composition, physical form, and review of procedures which may involve the handling/dispensing of the materials), medical waste and infectious materials, bulk fuels, and radioactive materials. Even though the above items may not be considered HM, submarine atmosphere control requirements in chapter D15 may apply. Asbestos and lead require special guidance for handling and control, which are addressed in Chapter B1 and B10 respectively.

(2) Hazardous Waste (HW). Any discarded material (liquid, solid, or gas) which meets the definition of HM and/or is designated as a hazardous waste by the Environmental Protection Agency or a State authority.

**NOTE:**

The Federal Facilities Compliance Act of 1992 states that any HW aboard an operational Navy ship is not subject to the storage, manifest, inspection, or recordkeeping requirements of the Resource Conservation and Recovery Act unless such waste is transferred to the ship within territorial waters of the U.S. and is stored on that ship for more than 90 days.

(3) **Used or Excess Hazardous Material (Used/Excess HM)**. HM for which there is no further, immediate use on board the ship possessing the material. Used HM is material that has been used in a shipboard process. Excess HM is unused material in full, properly sealed containers. Such material may ultimately be used on another ship, within the shore establishment, for a purpose other than that for which it was initially manufactured, or by commercial industry. Ships are required to transfer used or excess HM to a Navy shore activity for determination of suitability for further use. Navy shore activities possess trained personnel who can determine, working with ship's personnel, whether shipboard HM is usable, reusable, or should be disposed of as HW. The shore activity will act as the HW generator if it determines that the material has no further use and dispose of it as required by Federal, state, and local regulations.

**B0302. SURFACE SHIP HMC&M**

a. **Responsibilities**

(1) **The commanding officer shall**:

(a) Report to the Fleet Commanders by message, information to the chain of command, any conditions or system/equipment malfunctions that results in an overboard discharge of HM within restricted waters per reference B3-1 and applicable Operations Orders (OPORDs).

(b) Appoint a commissioned officer within the Supply Department as HM coordinator. On surface ships smaller than a frigate, appoint a commissioned officer as HM coordinator. Ships and afloat activities specifically designated by the type commander in which the number of assigned officers is limited and appointment would pose an excessive burden to the ship may assign a chief or leading petty officer as HM coordinator.

(2) **Division officers shall**:

(a) Ensure that NAVSEA-approved, in-space storage lockers are used.

(b) Ensure that HM retained within their workcenters is specific to the operations and maintenance of assigned equipment. If a HAZMINCEN is in operation, no more than a 7-day supply of common-use HM may be retained in workcenter spaces.

(c) Ensure used or excess HM is properly returned to the HM supervisor/HAZMINCEN.

(d) Ensure that approved personal protective clothing and equipment are available for HM operations or incidents and personnel are trained in their proper use and maintenance.

(e) Make personnel available to receive required HM training as detailed in section B0302e.

(f) Mark any PCB-containing electrical or electronic components per reference B3-3 and associated NAVSEASYSCOM-issued PCB advisories.

(3) The safety officer shall report all HM mishaps as required by Chapter A6.

(4) The afloat environmental protection coordinator (AEPC) shall perform the functions described in reference B3-2.

(5) The damage control assistant shall:

(a) Implement a spill contingency plan (SCP) per paragraph B0302c.

(b) Train and supervise ship's damage control teams (and fire department, if used aboard) in combating spills of HM.

(c) Provide training to divisions regarding reporting, initial handling, and cleanup of HM spills, as requested.

(d) Maintain the Hazardous Material Spill Response Kits (AEL 2-550024007).

(e) Ensure that HM spills are handled per appendix B3-A.

(6) The supply officer/HM coordinator shall:

(a) Ensure a Material Safety Data Sheet (MSDS) is on file (either hard copy or on CD-ROM) for all types and brands of HM taken aboard. Ensure that hard-copy MSDSs are readily accessible to personnel and their supervisors.

(b) If an O-4 or below, obtain commanding officer's (or designated O-5's) written authorization prior to open purchasing any HM.

(7) The HM supervisor shall:

(a) Provide control and inventory management of designated ship's HM. For ships FFG and larger, manage the operation of the ship's HM minimization center (HAZMINCEN).

(b) Maintain the Hazardous Material Information System (HMIS) which contains MSDS information (see paragraph B0302d(2)). Retain hard copy MSDSs for locally purchased material and for materials not covered in the HMIS. Forward copies of MSDSs which are not on this system to: Commanding Officer, Navy Environmental Health Center, Attn: HMIS (Code 341), 2510 Walmer Avenue, Norfolk, VA 23513-2617.

(c) Ensure receipt and consolidation (as appropriate) of all used HM. Supervise document preparation for offload of used/excess HM. Prior to the ship getting underway, ensure that no HM remains on the pier.

(d) Ensure personnel assigned to the HAZMINCEN (HAZMINCEN operator(s)) are trained on duties and responsibilities prior to assuming these duties.

(e) Ensure that when HM is transferred into other containers, the new containers are properly marked with the information specified in paragraph C2302e. The requirement to transfer HM into other containers shall be limited to HM which is specific to the division. Where possible, HM shall be obtained from the HAZMINCEN in containers sized to the user's need.

(8) The MDR shall:

(a) Assist the HM supervisor and work center supervisors in training personnel regarding health information and personal protective equipment requirements for the HM they are using.

(b) Maintain a complete MSDS file. This may be HMIS on CD-ROM or hardcopy.

(9) Division supply petty officers (when there is no HAZMINCEN aboard or for HM specific to the division) shall order only authorized material. / Standard stock HM shall be used whenever possible to avoid procurement of open purchased HM.

(10) Workcenter supervisors shall:

(a) Ensure that approved personal protective clothing and equipment are maintained and used.

(b) Ensure that prior to initial use or handling any HM, workcenter personnel have been trained on the hazards associated with that material and are familiar with what an MSDS is, what it contains, and where a copy is available for review. Learning resources for this training are available at http://www.norva.navy.mil/navosh.

(11) All hands shall:

(a) Return HM to approved stowage or the HAZMINCEN upon completion of use or at the end of the workday.

(b) Properly use and handle HM.

(c) Collect and segregate any residue resulting from use of HM for turn-in to the supply department/HAZMINCEN.

(d) Report any spills of HM to the officer of the deck, and/or Damage Control Central/Central Control Station.

(e) Properly stow or return to the HAZMINCEN/supply department any HM found improperly stowed in work or berthing spaces.

(f) Report any violation of HM use, storage, and handling precautions to the supervisor.

(g) Ensure that when HM is transferred into other containers, the new containers are properly marked with the information specified in paragraph C2302e. The requirement to transfer HM into other containers shall be limited to HM specific to the division. Where possible, HM shall be obtained from the HAZMINCEN in containers sized to the user's need.

b. Hazardous Material Control and Management Elements. The following elements are essential for effective surface ship HM control and management:

(1) Designation of adequate storage for HM (see chapter C23)

(2) Controlling HM purchase (including type and quantity of material required), receipt, and issue to avoid accumulation of excessive HM (see chapter C23)

(3) Following approved safety standards for the use of HM (see chapters B1, B8, B10, and C23 for specific HM use requirements)

(4) Reutilization of HM to reduce the amount of used HM generated (see chapter C23)

(5) Collecting, segregating, and disposing of used or excess HM (see chapter C23)

(6) Responding to HM emergencies (see B0302c)

(7) Obtaining and providing MSDSs for on board HM (see chapter C23)

(8) Training (see B0302e)

(9) Proper labeling of HM (see chapter C23).

c. HM Emergency Response. The DCA shall use Appendices B3-A and B3-B as HM spill response procedures in preparation for possible HM spills or releases to the environment. These plans include information on spill response team makeup, spill cleanup equipment location, internal and external spill reporting criteria, as well as procedures that are unique to the ship. Reporting requirements for a HM spill which goes over the side are found in reference B3-2, Chapter 19. Appendix B3-B is specific to mercury.

d. HM Information

(1) MSDS. MSDSs are technical bulletins containing information about materials, such as composition, chemical, and physical characteristics, health and safety hazards, and precautions for safe handling and use. MSDSs shall be maintained for every item of HM aboard either through the HMIS (see paragraph B0302d(2)) or by hard copy for open purchased items. They shall be readily accessible to supervisors and personnel who actually use or handle HM. Supervisors are required to provide instruction in MSDS understanding and use. All

personnel using HM shall be trained on the dangers and precautions contained within the MSDS before they actually use those materials.

(2) Hazardous Material Control and Management (HMC&M) Compact Disc-Read Only Memory (CD-ROM). The HMC&M CD-ROM is a Navy data application which contains the HMIS, Hazardous Material User's Guide (HMUG), Ships' Hazardous Material List (SHML), and the Shipboard Safety Equipment Shopping Guide. The HMIS is a compilation of MSDS data applicable to DOD. If a MSDS is not available for material provided to the ship for use, the HMIS shall be scanned to determine if such data are resident within it. Chapter C23 contains storage requirements and coding found on some items listed in HMIS. The HM supervisor shall maintain the HMIS. Ensure that only the most current version is used.

(3) Hazardous Material User's Guide (OPNAV Publication P-45-110-91, NSN (0420-LP-181-6600). The Hazardous Material Users' Guide (HMUG) is a publication which provides the fleet with easily understandable safety and health information to supplement the technical data found in MSDSs. The information in this guide is designed to assist HM users in protecting themselves and the environment. The contents of the guide include control measures, precautions, health hazards, spill control guidance, and disposal guidelines for 22 HM groups. It also provides a personal protective equipment shopping guide. The guide should be readily available and used in every workcenter. Applicable sections can be copied and posted in areas where specific HM groups are frequently handled or stored.

(4) Shipboard Safety Equipment Shopping Guide (NAVSAFECEN Publication). This publication consolidates standard stock numbers for safety equipment and personal protective equipment.

(5) Federal Logistics Data on Compact Disc (FEDLOG). This disc contains the Management List, Navy (MLN), which includes additional information on HM. The Special Material Content Code (SMCC) for NSNs used by the Navy can be found in the Management Control (MGT CTL) field. The SMCC Code is in the seventh position of that field.

(6) Hazardous Material Inventory Control System (HICS). HICS is a menu-driven inventory control system. It assists the operator in the systematic, positive control and issue of hazardous material. It has the following capabilities:

(a) Prints bar-code control numbers for each item of HM issued.

(b) Lists master HM inventory by type and location for use in determining HM on hand.

(c) Tracks HM usage and containers issued to the department, division, workcenter, or individual level.

(d) Produces receipts, inventory reports, and other customized reports.

(e) Tracks inventory high and low stock level limits.

(f) In conjunction with a scanner, allows remote site recording/tracking of returned containers or site inventory.

(7) CNO Policy Guide for Shipboard Hazardous Material Container Disposal (OPNAV Publication P-45-114-95). This publication provides guidance on the disposal of containers that formerly held HM. The guidance document provides a simple decision flow chart to assist the user in rapidly determining whether a HM container is an "empty container" and if it is, whether it may be disposed of as trash or as used HM.

e. HM Training

(1) The HM coordinator shall normally receive en route training at the Navy Supply Corps School Basic and Department Head Courses. HM coordinators who are not Supply Corps officers shall attend the Afloat HM Coordinator Course (A-8B-0008) taught by the Naval Occupational Safety and Health and Environmental Training Center (NAVOSHENVTRACEN). The course shall be completed prior to, or within 6 months of, being assigned this duty.

(2) The HM supervisor shall be a graduate of the HMC&M Technician (SNEC 9595) course (A-322-2600). If the ship has a HAZMINCEN, at a minimum the HM supervisor shall also be a graduate of the CHRIMP/HICS Technician course. Both courses are taught by the NAVOSHENVTRACEN.

(3) Damage control teams required to combat an emergency involving HM, and the ship's fire department (if used aboard) shall receive training on HM emergency procedures. The damage control assistant shall ensure that at least one spill response drill is conducted every 18 months.

(4) Audiovisual materials applicable to HM can be found in appendix A7-F.

B0303. SUBMARINE HMC&M

a. Responsibilities

(1) The commanding officer shall:

(a) Report all HM mishaps as required by Chapter A6.

(b) Report to the Fleet Commanders by message, information to the chain of command, any conditions or system/equipment malfunctions that results in an overboard discharge of HM within restricted waters per reference B3-2 and applicable Operations Orders (OPORDs).

(c) Ensure that spills of HM are handled per the Ships System Manual (SSM) Toxic Gas Bill.

(2) The executive officer shall:

(a) Grant written permission to carry or use on board any restricted HM during an underway period. Refer to chapter D15 and reference B3-1 for definitions of submarine material control usage categories.

(b) Ensure assigned personnel follow the conditions under which restricted or limited HM are stored or used on board to minimize the release (off-gassing, mists, or vapors) of potential atmospheric contaminants into the submarine.

(c) Review the Submarine Material Control Log prior to each underway operation of 24 hours or greater, conducted in the recirculation mode, to ensure that restricted (R) items have been removed from the submarine.

(3) **Department heads shall**:

(a) Ensure that HM retained within their work centers is unique to the operations and maintenance of assigned equipment and does not exceed the quantity needed to satisfy operational requirements.

(b) Ensure used or excess HM is properly returned to the supply officer for turn over to the shore activity.

(c) Report items found with a restricted, limited, or prohibited (X) use code (not in the Submarine Material Control Log) to the supply officer for logging, labeling, assignment of approved storage location, or disposal.

(d) Obtain written permission from the executive officer to retain on board or use restricted items during underway operations.

(e) Ensure that restricted items authorized for in port use only are removed from the submarine as soon as the need for them no longer exists. Inform the Supply Officer of their removal to allow documentation in the Submarine Material Control Log.

(f) Ensure that all HM in their custody are used, handled, and stowed per the requirements of Chapter D15.

(4) **The supply officer/HM coordinator shall**:

(a) Ensure that management of shipboard HM follows procedures outlined in this chapter and Chapter D15.

(b) Ensure an MSDS is on file (either hard copy or on CD-ROM) for all types and brands of HM taken aboard. Ensure that hard-copy MSDSs are readily accessible to personnel and their supervisors. Maintain the HMIS and SMCL which contains MSDS information (see paragraph B0303d(1)).

(c) Ensure no prohibited HM is brought on board.

(d) Maintain the Submarine Material Control Log per paragraph D1502d.

(e) Ensure all HM brought on board is authorized for storage and use onboard by the Submarine Material Control List (SMCL). Affix an Atmosphere Contaminant Label for any material that is a restricted or limited HM.

(f) Initiate an investigation of any item suspected of being an atmosphere contaminant per the procedures of reference B3-1 and submit a SMCL feedback report per chapter D-15.

(g) Ensure that all restricted (R) and limited (L) items are inventoried every six months or prior to a change of command.

(h) Review the Submarine Material Control Log weekly in port and monthly underway.

(i) Obtain commanding officer's written authorization prior to open purchasing any HM.

(5) **The MDR shall**:

(a) Assist work center supervisors in training personnel regarding health information and personal protective equipment requirements for the HM they are using.

(b) Provide medical assistance in the event of a HM spill or mishap involving HM. Use MSDS information in SMCL provided by supply officer.

(6) **Division officers shall**:

(a) Ensure when HM is transferred into other containers the new containers are properly marked with the information specified in paragraph D1502d.

(b) Ensure approved personal protective clothing and equipment are available for HM operations or incidents and personnel are trained in their proper use and maintenance.

(c) Ensure personnel are made available to receive required HM training as detailed in section B0303e.

(d) Mark any PCB-containing electrical or electronic components per chapter D15.

(7) **The damage control assistant shall**:

(a) Train and supervise ship's damage control efforts to combat HM spills. Conduct HM spill response drills as necessary.

(b) Provide training to divisions regarding reporting, initial handling, and cleanup of HM spills, as requested.

(c) Maintain an OTTO FUEL spill kit (AEL A006350027) to respond to HM emergencies.

(8) Repair parts petty officers shall ensure before HM is ordered, that a valid requirement (specifically required by a maintenance procedure or other shipboard operation) exists. Standard stock HM shall be used whenever possible to avoid procurement of open purchased HM.

(9) Workcenter supervisors shall:

(a) Ensure that approved personal protective clothing and equipment are maintained and utilized.

(b) Ensure that prior to using or handling any HM, workcenter personnel have been trained on the hazards associated with that material and are familiar with what an MSDS is, what it contains, and where a copy is available for review.

(c) Ensure that a valid maintenance requirement exists for any HM item not listed in the SMCL and initiate a SMCL feedback report.

(10) All hands shall:

(a) Ensure that HM is returned to appropriate stowage upon completion of use or at the end of the workday, whichever is earlier.

(b) Follow instructions provided for the proper use of HM.

(c) Collect and segregate any used HM for proper offload per chapter D15.

(d) Report any spills of HM to the duty officer (in port) or the chief of the watch (underway).

(e) Report any violation of HM use, storage, and handling precautions to the supervisor for resolution/correction.

(f) Be alert to prevent the onboard storage and use of restricted material during underway operations without prior approval/authorization from XO. Ensure limited material is being used per SMCL guidance.

b. Hazardous Material Control and Management Elements. The following elements are essential for effective submarine HM control and management:

(1) Proper use of HM per SMCL guidance (see chapter D15)

(2) Designation of adequate storage for HM (see chapter D15)

(3) Controlling HM purchase (including type and quantity of material required), receipt, and issue to avoid accumulation of excessive HM (see chapter D15)

(4) Avoiding open purchases of HM (see chapter D15)

(5) Following approved safety standards for the use of HM (see chapters B1, B8, and D15 for specific requirements on use of HM)

(6) Reutilization of HM to reduce the amount of used HM generated (see chapter D15)

(7) Collection, segregation, and disposal of used or excess HM (see chapter D15)

(8) Responding to HM emergencies (see B0303c)

(9) Obtaining and providing MSDSs for on board HM (see chapter D15)

(10) Training (see B0303e)

(11) Proper HM labeling (see chapter D15)

c. HM Emergency Response. Hazardous material emergency response shall be conducted per the Toxic Gas Bill. The DCA shall follow the Toxic Gas Bill in preparation for possible HM spills or releases to the environment. Reporting requirements for a HM spill which goes over the side are found in reference B3-2, Chapter 19.

d. HM Information

(1) MSDS. MSDSs are technical bulletins containing information about materials, such as composition, chemical, and physical characteristics, health and safety hazards, and precautions for safe handling and use. MSDSs shall be maintained for every HM item aboard either through the SMCL (see paragraph B0303d(4)) or by hard copy for open purchased items. They shall be readily accessible to supervisors and personnel who actually use or handle HM. Supervisors are required to provide instruction in MSDS understanding and use. All personnel using HM shall be trained on the dangers and precautions contained within the MSDS before they actually use those materials.

(2) Hazardous Material Control and Management (HMC&M) Compact Disc-Read Only Memory (CD-ROM). The HMC&M CD-ROM is a Navy data application which contains the HMIS, Hazardous Material User's Guide (HMUG), SHML, and the Shipboard Safety Equipment Shopping Guide. The HMIS is a compilation of MSDS data applicable to DOD. If a MSDS is not available for material provided to the ship for use, the HMIS shall be scanned to determine if such data are resident within it. The supply officer shall maintain the HMIS. Ensure that only the most current version is used.

(3) Hazardous Material User's Guide (OPNAV Publication P-45-110-91, NSN (0420-LP-181-6600). The HMUG is a publication that provides the ships with understandable safety and health information to supplement the technical data found in MSDSs. The information in this guide is designed to assist HM users in protecting themselves and the environment. The contents of the guide include control measures, precautions, health hazards, spill control guidance, and disposal guidelines for 22 HM groups. It also provides a personal protective equipment shopping guide. The guide should be readily available and used

in every workcenter. Applicable sections can be copied and posted in areas where specific HM groups are frequently handled or stored.

(4) CNO Policy Guide for Shipboard Hazardous Material Container Disposal (OPNAV Publication P-45-114-95). This publication provides guidance on the disposal of containers that formerly held HM. The guidance document provides a simple decision flow chart to assist the user in rapidly determining whether a HM container is an "empty container" and if it is, whether it may be disposed of as trash or as used HM.

(5) The Submarine Material Control List (SMCL). The SMCL is a Navy data application that lists the authorized HM for use on submarines as established by reference B3-1.

e. Training

(1) The HM coordinator receives en route training at the Navy Supply Corps School Basic Course.

(2) The leading SK shall be a graduate of the HMC&M Technician (SNEC 9595) course (A-322-2600).

(3) Personnel expected to combat an emergency involving HM shall receive training on HM emergency procedures.

(4) Audiovisual materials applicable to HM can be found in appendix A7-F.

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## CHAPTER B3

## REFERENCES

B3-1 NAVSEA Manual S9510-AB-ATM-010(U), Nuclear Submarine Atmosphere Control Manual (NOTAL)

B3-2 OPNAVINST 5090.1B, Environmental and Natural Resources Program Manual (NOTAL)

B3-3 NAVSEA S593-A1-MAN-010, Shipboard Management Guide to PCBs (NOTAL)

## Appendix B3-A

## HAZARDOUS MATERIAL SPILL RESPONSE PROCEDURES (SURFACE SHIPS ONLY)

1. Introduction. Because of the extremely hazardous nature of many materials used aboard ships, only trained personnel shall respond to a hazardous material (HM) spill. Personnel shall be trained by division officers or supervisory personnel to clean up small spills of HM. Appropriate Material Safety Data Sheets (MSDSs) shall be used to conduct training.

Response procedures for many specific situations are provided in other documents. See Naval Warfare Publication (NWP) 62-1, Surface Ship Survivability for repair party responsibilities. See Naval Ships Technical Manual (NSTM) 555 for shipboard HM fire fighting procedures; NSTM Chapter 079, Volume 2 for HM damage control procedures; and NSTM Chapter 077 for personal protective equipment guidance. See NAVAIR 00-80-R-14 for aircraft HM fire fighting procedures. These spill procedures apply to on board HM spills. Response for HM and oil spills over-the-side is contained in reference B3-2.

For descriptive purposes, the spill response procedures have been divided into nine phases:

a. Discovery and Notification.

b. Initiation of Action.

c. Evaluation.

d. Containment and Damage Control.

e. Dispersion of Gases/Vapors.

f. Cleanup and Decontamination.

g. Disposal of Contaminated Materials.

h. Certification for Re-entry.

i. Follow-up Reports.

Each response phase is not a separate response action entirely independent of all other phases. Several phases may occur simultaneously and may involve common elements in their operation. For example, containment and damage control may also involve cleanup and disposal techniques.

2. Spill Discovery and Notification

a. Spills or potential spills of HM may be discovered by regularly scheduled inspections of storerooms and workshops, by detection devices such as fire alarms and oxygen deficiency detectors, and during routine opera-

tions. All discoveries of spills or situations that may lead to a spill must be verbally reported **immediately** to supervisory personnel and the officer of the deck (OOD)/command duty officer (CDO). Crewmembers are **not** to remain in the area to investigate the spill. Whenever possible, however, the discoverer /initial response team shall report the following information:

(1) Time of spill discovery.

(2) Location of spill.

(3) Identification of spilled material.

(4) Behavior of material (reactions observed).

(5) Source of spill (e.g., tank or container).

(6) Personnel in vicinity of spill (list by name and department).

(7) Volume of spill.

(8) Anticipated movement of spill (e.g., leakage to lower deck passage from amidships toward galley).

(9) Labeling or placarding information (copy data from spilled container only after exposure to spill is eliminated).

b. Overboard spills of reportable quantities of HM shall be reported per reference B3-2.

3. **Initiation of Action**. Coordination and direction of spill response efforts at the scene of an HM spill shall be accomplished by the ship's OOD, CDO, fire chief, damage control party leader, or senior person at the scene, as appropriate, who shall initiate the following actions:

a. Evacuate all personnel from areas that may be exposed to the spilled material.

b. Cordon off the affected area.

c. Arrange first aid for injured personnel.

**CAUTION:**

**Do not enter the contaminated area until the necessary protective clothing and equipment have been determined.**

d. Establish a command post and communications network.

e. Prevent spills from entering other compartments by any means that do not involve personnel exposure to the spill, such as closing drains, ventilation ducts, doors, and hatches.

f. Disperse gases or vapors to weather using blow-out (forced exhaust) ventilation or by natural ventilation such as opening doors or hatches. If atmosphere is suspected to be flammable or explosive, only explosion-proof fans shall be used for blow-out ventilation.

g. Eliminate any fire or explosion hazards such as electrical equipment, incompatible materials, and open flames.

4. Evaluation. Proper evaluation of a spill can prevent fires, explosions, personal injury, or permit steps to lessen their impact. This evaluation consists of the following three steps:

a. Obtain as much of the following information as possible from container labels and MSDS before starting response actions:

(1) Type and concentration of the spilled material.

(2) Hazardous characteristics of the spilled material, such as:

(a) Flash Point

(b) Toxicity

(c) Corrosiveness

(d) Potentially incompatible substances

(e) Effects resulting from exposure (fainting, dizziness, skin or eye irritation, nausea)

(f) First aid measures for exposure

b. Determine dangerous conditions or potential consequences of the spill, including:

(1) Fire or explosion.

(2) Presence of oxygen-deficient atmosphere in compartment.

(3) Presence of toxic or explosive gases.

(4) Possibility of dangerous vapors being drawn into ship's ventilating system.

(5) Other HM in the compartment that would play a role in a fire or explosion or is incompatible with the spilled material.

c. Determine from the MSDS the appropriate spill response equipment and protective clothing necessary for safe and effective response.

5. Containment and Damage Control. Actions taken during this phase are directed toward controlling the immediate spread of the spill and minimizing the impact to the ship and crew. Depending on the type of spill, some or all of the following procedures may be employed:

a. Fight fire (if any), being careful to use fire fighting methods compatible with the material involved. Fire fighting procedures are provided in NSTM Chapter 555, "Fire Fighting, Ships."

b. Shut off or otherwise stem the spill at its source, whenever feasible, by:

(1) Replacing leaking containers.

(2) Plugging leaks in tanks.

(3) Emptying tank of remaining contents.

(4) Encapsulating a leaking container into a larger, liquid-tight container.

(5) Segregating leaking containers.

c. Predict spill movement and take further action to prevent the spill from possibly entering other compartments by closing scuppers, drains, ventilation ducts, doors, or hatches.

d. Contain liquid material using barriers, such as sand, upholstery, sorbents, or other equipment suitable to dam the flow.

6. Dispersion of Gas/Vapor. If a flammable gas or vapor is released as a result of the spill, the gas/vapor shall be dispersed or diluted as soon as possible. The gas/vapor shall not be allowed to enter other compartments. In some cases, the explosive atmosphere shall be contained and diluted to lower its concentration below the Lower Explosive Limit (LEL). Have the gas free engineer check the spill area for LEL and toxicity. The atmosphere can then be dispersed by one of the following methods:

a. Normal exhaust ventilation (explosion-proof only).

b. Blow-out ventilation (powerful exhaust ventilation provided in some HM storerooms--explosion-proof only).

c. Doors and hatches open to the weather.

d. Portable fans (explosion-proof only).

7. Cleanup and Decontamination. During this response phase, personnel, as directed by the person in charge, shall employ the spill cleanup methods recommended on the MSDS or, in the case of a mercury spill, those outlined in Appendix B3-B. All surfaces shall be thoroughly cleaned of the spilled material. After the spill cleanup, the compartment shall be thoroughly ventilated. Reusable protective clothing shall be thoroughly decontaminated and otherwise maintained before it is returned to its proper storage location.

**NOTE:**

Identification of specific requirements for respiratory protection and proper use of this equipment is a critical aspect of all cleanup and decontamination operations.

8. Disposal of Contaminated Materials. All non-reusable cleanup materials are to be placed in impermeable containers, stored and disposed of as hazardous waste per appendix L of reference B3-2. These materials include unrecoverable protective clothing, sorbents, rags, brooms, and containers.

9. Certification for Safe Re-Entry. The spaces affected by the spill shall be certified safe by the OOD/CDO before normal shipboard operations are resumed in that space. The OOD/CDO shall ascertain the following before allowing re-entry:

a. All surfaces--deck, counters, bulkheads, and overheads--have been thoroughly cleaned of the spilled material.

b. All compartments have been adequately ventilated as determined from analysis by the gas free engineer.

c. All contaminated cleanup materials, including protective clothing, have been packaged, marked and handled as used HM.

10. Follow-up Reports. The OOD/CDO shall submit to the HM coordinator a spill report for all on board spills. A copy of this report shall be filed by the safety officer and shall contain the following information:

a. Date spill occurred.

b. Spill location.

c. Identity of spilled material.

d. Cause(s) of spill.

e. Damage or injuries resulting from the spill.

f. Response and cleanup measures taken.

g. Any problems encountered.

h. Method of disposing of contaminated material.

i. Action taken to prevent the repeat of a similar spill.

**Appendix B3-B**

**MERCURY SPILL RESPONSE AND CLEANUP PROCEDURES (SURFACE SHIPS ONLY)**

1. Mercury Spill Cleanup Procedures. Procedures shall vary according to the size and complexity of the spill.

a. Broken Fluorescent Bulbs

(1) Set up local exhaust ventilation.

(2) Carefully sweep up bulb debris and double bag for disposal as HM.

(3) Clean the area with a solution of HgX decontaminant from mercury spill kit.

b. Small Spills: Clean mercury spills with 50 grams (3/4 teaspoon or quarter size) or less immediately as follows:

(1) If spill is in a confined area, set up local exhaust ventilation. If ventilation cannot be provided, a suitable respirator should be worn.

(2) Spill cleanup personnel shall not eat, drink, smoke or apply cosmetics in spill area. They shall wash thoroughly with soap and water after cleanup.

(3) Apply absorbent material from mercury spill kit to spilled mercury and dispose as HM.

(4) Wipe down spill area with HgX solution from spill kit.

(5) Discard any contaminated materials and protective clothing and dispose as HM.

c. Large Spills: Clean mercury spills of more than 50 grams (3/4 teaspoon or quarter size) immediately as follows:

(1) Stop work operations in the area.

(2) Warn personnel of the spill and its location, evacuate the area and establish safe boundaries.

(3) Call the mercury spill team.

(4) Use a mercury vapor meter to determine mercury vapor and degree of hazard, if possible.

(5) Apply absorbent material from mercury spill kit to spilled mercury and dispose as HM.

(6) Wipe down spill area with HgX solution from spill kit.

(7) Discard any contaminated materials and protective clothing and dispose as HM.

(8) Use a mercury vapor meter to detect any residual mercury. Reclean with HgX if mercury vapor concentration exceeds 0.05 mg/m3.

(9) Use the mercury vapor meter after 24 hours to determine mercury vapor concentration. An allowable concentration of <0.01 mg/m3 must be attained in any space to be continually occupied by an individual for 8 or more hours daily.

2. **Mercury Waste Disposal**. Mercury is an environmental pollutant and must not be discharged into any body of water or released into any ship's waste disposal system. Disposal should be coordinated with the HM Coordinator and shore facility.

# CHAPTER B4

## HEARING CONSERVATION

### B0401. DISCUSSION

The goal of Hearing Conservation (HC) is to prevent occupational hearing loss and assure auditory fitness for duty of all Navy personnel.

Noise-induced hearing loss is the Fleet's number one occupational health hazard. High intensity noise exposure results from a wide variety of shipboard operations, including gun or missile fire, aircraft noise, and ship's propulsion systems. Operational risk assessment has shown that Fleet costs in terms of man hours, personal hearing protector purchases, and noise abatement operations are readily offset by the preservation of effective communication, maintained quality of life, and reduction in disability expense which accompany an effective HC process. As such, it is incumbent upon leadership to set the right example in their personal protective practices, to enforce compliance, and to ensure HC receives their full support.

### B0402. HEARING CONSERVATION RESPONSIBILITIES

a. The commanding officer shall ensure that HC is established and maintained within the command.

b. The safety officer shall:

(1) Request assistance from an industrial hygienist or occupational audiologist to conduct noise measurement and exposure analysis (survey) of areas and equipment per paragraph B0404.

(2) Maintain a record of noise hazardous areas and equipment. The baseline or subsequent industrial hygiene surveys, where available, shall serve as documentation. Ensure that noise hazardous spaces/equipment are posted and labeled accordingly.

(3) Ensure that all permanent threshold shifts reported by medical are reported to the Naval Safety Center as a Special Case Mishap per A0603b(4).

c. Industrial hygiene officers shall:

(1) Maintain and ensure proper calibration of sound level measuring equipment.

(2) Annually, certify audiometric testing booths installed aboard the ships.

d. Division officers shall:

(1) Ensure personnel exposed to hazardous noise have and properly use hearing protection devices.

(2) Ensure, that a space or piece of equipment that is designated as noise hazardous is properly posted and labeled.

(3) Ensure all personnel required to wear personal hearing protection are trained in the use and maintenance of that protective equipment, regardless of whether they require enrollment in HC.

(4) Ensure personnel report for scheduled audiometric testing and training.

(5) Ensure that personnel who require hearing retests are excluded from hazardous noise for at least 14 hours before the scheduled test date/time. Per Appendix B4-A, hearing protective devices may not be used to meet this requirement.

(6) Coordinate with the medical department representative to identify personnel routinely exposed to hazardous levels of occupational noise.

e. The Medical Department Representative (MDR) shall:

(1) Coordinate with division officers to identify and maintain a current roster of personnel routinely exposed to hazardous levels of occupational noise, as guided by the baseline or other industrial hygiene surveys. In the absence of an appropriate industrial hygiene survey, or when it is clear that personnel have some level of exposure to hazardous noise, but on an infrequent or short-term basis, consult an industrial hygienist, occupational audiologist, or occupational medicine physician to determine the need for enrollment. The consultation may be informal (example, by email) as long as a printed record of the request and reply are available for retention by both parties. Convenience shall not be a criteria to determine inclusion in HC.

(2) Conduct orientation to HC and personal hearing protection for all hands during indoctrination.

(3) Ensure annual refresher training, per B0408b for the HC-enrolled personnel is performed. Reference B4-1 identifies suitable training materials and provides additional guidance.

(4) Consult the command industrial hygiene survey, or an occupational health professional to determine the type of required hearing protective devices required for personnel. Maintain an adequate stock and fit all sized, non-disposable hearing protective devices.

(5) Schedule personnel in HC for annual audiometric testing. Ensure that monitoring results have been entered into each individual's health record, and that any necessary follow-up actions are completed.

(6) Ensure supervisors are notified that personnel who require hearing re-tests are excluded from hazardous noise duties for at least 14 hours prior to the scheduled test date/time. Hearing protective devices may not be used to meet this requirement.

(7) If audiometric testing is performed within the MDR's command, ensure calibration of audiometers, certification of the test chamber, and training of audiometric technicians.

**NOTE:**

Reference B4-1 is available for additional information.

(8) Report all permanent threshold shifts toward deteriorated hearing, which have been determined to be consistent with occupational origin, to the safety officer.

f. All hands shall:

(1) Comply with hazardous noise labels wherever they appear, either in spaces or on equipment, and properly wear assigned hearing protective devices.

(2) Undergo hearing testing when designated.

**B0403. HEARING CONSERVATION ELEMENTS**

Hearing conservation includes the following elements:

a. Noise measurement and exposure analysis to identify hazardous noise areas or sources and the personnel exposed

b. Application of engineering controls to reduce hazardous noise to the maximum extent feasible

c. Use of hearing protective devices as an interim measure where engineering controls are not feasible (paragraph B0406)

d. Periodic hearing testing of all personnel at risk to monitor the effectiveness of the process, and timely audiologic and medical evaluation of those personnel who demonstrate significant hearing loss or threshold shift (paragraph B0407)

e. Training regarding potentially hazardous noise areas and sources, use and care of hearing protective devices, the effects of noise on hearing, and the command's HC process (paragraph B0408).

**B0404. NOISE MEASUREMENT AND EXPOSURE ASSESSMENT**

To effectively control noise, it is necessary that the noise be accurately measured according to standard procedures and that the measurements be properly evaluated against accepted criteria.

a. Noise Measurements. Noise measurements shall be taken as part of the industrial hygiene survey described in Chapter A3 of this instruction. A noise survey is required if one has not been performed, if the ship has completed a repair availability with significant work done on engineering systems, or if new equipment has been installed. These measurements shall be

taken by an industrial hygienist, occupational audiologist or by other trained personnel under the supervision of an industrial hygienist or occupational audiologist. Detailed information on noise measurements may be found in Appendix B4-A. The safety officer shall retain a copy of noise measurement data per B0409.

b. Exposure Assessment

(1) The analysis of noise measurements to assess the hazard potential is a complex task that shall be performed by an industrial hygienist or occupational audiologist. The exposure assessment shall be accomplished per reference B4-2.

(2) The criteria outlined in Appendices B4-A and B4-B shall also be used to determine the degree of compliance with applicable standards.

(3) In the absence of an industrial hygienist's or occupational audiologist's assessment to the contrary, personnel who routinely work in noise hazardous areas or with equipment that produces hazardous noise as defined in Appendix B4-A, shall be included in HC. Implementation of all available measures may not be necessary in every case. For example, visitors to a noise hazardous area should be required to wear hearing protective equipment, but would not be required to have their hearing tested or be included on a roster of noise exposed personnel. See Appendix B4-A for additional information.

(4) Information regarding removal of personnel from HC is provided in Appendix B4-A.

c. Labeling of Hazardous Noise Areas and Equipment

(1) Designated hazardous noise areas and equipments that produce hazardous sound levels (see Appendix B4-A) shall be appropriately labeled. NAVMED 6260/2, Hazardous Noise Warning Decal (8" x 10") NSN 0105-LF-004-7200 and the NAVMED 6260/2A, Hazardous Noise Labels (2" x 2") NSN 0105-LF-004-7800, are the approved decals and labels for marking hazardous noise areas and equipment.

(2) Normally the outside of doors/hatches leading into a noise hazardous area shall be posted. However, weather surfaces of a ship shall not be posted. In the event that a particular area is a noise hazardous area and has an entrance from a weather deck, the inside of the weather deck door/hatch shall be posted.

(3) Exteriors of military combatant equipment are excluded from this labeling requirement. However, personnel operating and maintaining combat equipment must be made fully aware of hazardous noise exposure conditions.

B0405. NOISE ABATEMENT

a. Reduction of noise at the source is in the best interests of the Navy and its personnel. Areas and equipment that contain or produce potentially hazardous noise should be modified to reduce noise levels to within acceptable limits wherever it is technologically and operationally feasible.

b. Noise abatement actions will normally be accomplished during ship or equipment design, construction or testing. Hazardous noise areas/equipment not identified during construction or post overhaul noise surveys are most likely due to malfunctioning equipment. Noise abatement actions recommended by the industrial hygienist or resulting from Board of Inspection and Survey (INSURV) inspections shall be documented as required in Chapter A4 of this instruction, and implemented as soon as possible.

c. Additional information on noise abatement is available in Appendix B4-C.

B0406. PERSONAL HEARING PROTECTIVE DEVICES

a. Personnel working in or entering designated hazardous noise areas or utilizing noise hazardous tools or equipment shall have hearing protective devices available at all times, and wear them without consideration of the duration of the exposure. Exceptions to this requirement must be documented by a qualified professional.

b. A combination of insert type and circumaural (muff) type hearing protective devices (double protection) shall be worn:

(1) In all areas where sound levels exceed 104 dB(A), unless an occupational audiologist, industrial hygienist, or occupational medicine physician has determined that single protection is adequate for the anticipated duration of the exposure.

(2) When a medical officer or audiologist determines that double protection is required.

c. All personnel exposed to gunfire in a training situation or to noise from large caliber gun or missile firing, under any circumstances, shall wear sufficient hearing protective devices to reduce noise at the ear to safe exposure levels.

d. Assistance in the determination of which hearing protective device, or combination of devices, suitable for use in each situation is available from an occupational audiologist, industrial hygienist, or occupational medicine physician. Every effort shall be made to issue personal hearing protective devices suited to the location and duration of usage following the guidance contained in Appendix B4-D. Appendix B4-D identifies standard stock hearing protective devices. Alternative hearing protective devices that have been evaluated and approved by one of the Military Services are identified on the Navy Environmental Health Center (NEHC) homepage at http://www.nehc.med.navy.mil.

e. For situations requiring unique hearing protection devices, guidance and approval shall be requested from Chief, Bureau of Medicine and Surgery (BUMED).

f. In cases where an industrial hygienist, occupational medicine physician or occupational audiologist determines that hearing protective devices do not provide sufficient attenuation to reduce the individual's effective exposure level to below 84 dB(A), administrative controls as discussed in Appendices B4-B and B4-C will be required.

**B0407. HEARING TESTING AND MEDICAL EVALUATION**

Personnel who are routinely required to work in designated noise hazardous areas or with labeled noise hazardous equipment shall be entered into HC. Appendix B4-A provides detailed information on hearing testing.

a. **Reference (Baseline) Hearing Tests**. All personnel shall receive a baseline hearing test upon entry into naval service recorded on a Reference Audiogram (DD Form 2215). Hearing tests performed at Military Entrance Processing Stations (MEPS) shall not be used as a baseline hearing test.

b. **Monitoring Hearing Tests**. All personnel assigned to duties in designated noise hazardous areas or operating noise hazardous equipment shall be included in HC. These persons shall receive a hearing test annually, unless their exposure has been found to be of insufficient intensity and/or duration to require enrollment, based on a noise survey or the written opinion of an appropriate occupational health professional. Test results shall be recorded on a Hearing Conservation Data Form (DD Form 2216). Placement in HC and annual hearing tests shall continue for as long as the person remains in a noise hazardous environment.

c. **Termination Hearing Tests**. Personnel shall receive a hearing test upon termination of service.

d. **Other Hearing Tests**. Hearing tests performed for reasons other than hearing conservation or routine physicals, such as complaints of hearing difficulties, difficulty understanding conversational speech or a sensation of ringing or fullness in the ear(s), shall be performed as indicated by a Medical Provider. The results of these tests should be recorded on a Standard Form (SF 600) and maintained in the health record.

**B0408. TRAINING**

a. All personnel included in HC shall receive training relative to HC prior to working in noise hazardous areas or with noise hazardous equipment and annually thereafter. Initial training topics shall include:

(1) The elements and rationale for HC including the effects of noise on hearing

(2) Designated noise hazardous areas and equipment

(3) Proper use and maintenance of hearing protective devices, including the advantages and disadvantages of each type of device

(4) The necessity for periodic hearing testing, and a description of test procedures

(5) Mandatory requirement to wear assigned protective equipment, and administrative actions that may result from failure to comply

(6) Off-duty hearing health hazards

(7) The effects of hearing loss on career longevity, promotion and retention.

b. Refresher training for the HC-enrolled personnel will be performed in conjunction with the annual audiogram. Reference B4-1 identifies suitable training materials and provides additional guidance.

B0409. RECORDKEEPING

a. Results of hearing tests performed for hearing conservation purposes and the results of exposure assessments shall be permanently recorded and retained in the member's health record. Baseline and reference audiograms which have been superceded as a result of the follow-up process shall be retained in the individual's health record along with relevant evaluation, disposition and referral notations.

b. Activities using the Defense Occupational Health Readiness System-Hearing Conservation (DOHRS-HC) will upload their data to the warehouse as directed by the regional occupational audiologist. Activities that do not use DOHRS-HC should contact NAVENVIRHLTHCEN for guidance in including test data in the Hearing Conservation Database.

c. The MDR shall maintain a current roster of personnel who routinely work in designated noise hazardous areas and shall update this roster semi-annually. The MDR shall maintain a "tickler file" for scheduling annual audiometric examinations of these personnel. The MDR shall update the "tickler file" monthly with the results of the audiometric exams.

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## CHAPTER B4

## REFERENCES

B4-1 NEHC Technical Manual, TM-6260.51.99-1, Navy Medical Department Hearing Conservation Program Procedures (NOTAL)

B4-2 NEHC Technical Manual, TM-6290.91-2, Rev. B (1999), Industrial Hygiene Field Operations Manual (NOTAL)

B4-3 American National Standard Specification for Sound Level Meters, S1.4A-1985, American National Standards Institute (NOTAL -- Should be held by commands with sound level meters).

B4-4 American National Standard Specification for Personal Noise Dosimeters, S1.25-1991, American National Standards Institute (NOTAL -- Should be held by commands with personal noise dosimeters).

B4-5 DODINST 6055.12 of 22 April 1996, "DOD Hearing Conservation Program (HCP)" (NOTAL)

B4-6 American National Standard Specification for Audiometers, S3.6-1989, American National Standards Institute (NOTAL -- Should be held by commands with audiometers).

B4-7 OPNAVINST 4720.2G, "Fleet Modernization Program Policy".

**Appendix B4-A**

**HEARING CONSERVATION DETAILED INFORMATION**

This appendix provides detailed information regarding hearing conservation that will be of value to the ship's Medical and Safety Departments.

1. Navy Occupational Exposure Level (NOEL). The NOEL for occupational exposure to noise is listed below:

a. For an 8-hour time-weighted average (TWA) in any 24-hour period: 84 dB(A)

b. For periods of less than 16 hours in any 24-hour period, the NOEL can be determined from the following equation:

$$T = 16/2\ [(L - 80)/4]$$

Where: T = time in hours (decimal)

L = effective sound level in dB(A)

*NOTE:*

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect must be considered. If the sum of the following expression exceeds unity, then the mixed exposure exceeds the NOEL:

$$C1/T1 + C2/T2 + \ldots Cn/Tn$$

Where C indicates the total time of exposure at a specified noise level and T represents the time of exposure permitted at that level.

c. For impact or impulse noise - 140 dB(A) peak sound pressure level.

d. When TWA exposures are likely to exceed 84 dB(A), then personnel shall be included in Hearing Conservation.

2. Noise Measurements and Exposure Assessments. To effectively control noise it is necessary to accurately measure noise according to standard procedures and properly evaluate the measurements against accepted criteria.

a. Noise Measurements. Noise measurements shall be taken as a part of the industrial hygiene survey described in Chapter A3.

(1) Sound level meters shall conform, at a minimum, to the Type II requirements cited in reference B4-3. An acoustical calibrator, accurate to within plus or minus one decibel, shall be used to calibrate the instrument

before each survey and to revalidate the calibration at the conclusion of the survey. The sound level meter and acoustical calibrator will be electroacoustically calibrated annually. Contact NAVENVIRHLTHCEN Norfolk to schedule the calibration of this equipment.

(a) Continuous or intermittent steady state noise shall be measured in dB(A) with a sound level meter set for slow response. Whenever levels in excess of 84 dB(A) are recorded, C-weighted measurements, dB(C) shall also be taken to permit more accurate determination of hearing protector attenuation requirements.

(b) Impact or impulse noise shall be measured as dB peak sound pressure level (reference: 20 µPa) with an instrument capable of accurate impact noise measurement. Reference B4-3 provides specific details.

(2) In cases where high worker mobility, significant variations in sound levels, or a significant component of impulse noise make area monitoring generally inappropriate, personal dosimetry shall be conducted. Personal noise dosimeters shall meet the class 2A-84/80-4 requirements of reference B4-4 and have an operating range of at least 80 dB(A) to 130 dB(A).

(3) Work environments found to have noise levels greater than 84 dB(A) (continuous or intermittent), or 140 dB peak sound pressure level for impact or impulse noise shall be analyzed to determine the potential hazard and shall be resurveyed within 30 days of any significant modifications or changes in work routine which could impact/alter the noise intensity/exposure level.

(4) All noise measurements taken to determine an individual's exposure shall be conducted with the microphone of the measuring instrument placed at a height which most closely approximates the position/location of the worker's ear during normal working conditions. Repeated measurements may be required during a single day and/or on different days of the week to account for the variations in noise levels produced by changes in operational schedules and procedures.

(5) The record of noise measurements shall be kept by the measuring activity for a period of 50 years. If measurements are made by a ship's IHO, the records shall be turned over to a supporting shore medical activity for retention. The shore activity will establish a file for each ship. Records shall include, as a minimum the number, type, and location of the noise sources; number and identification of personnel in the work area and their daily noise exposure and duration; type, model, serial number of test equipment, and calibration data; location, date, and time of noise measurements; noise levels measured and hazard radius; and the name and signature of the person(s) who made the survey. Noise survey data may be recorded on NEHC 5100/17 and 5100/18 or DD 2214 as applicable.

b. **Exposure Assessment**. The specialized equipment to be used by an industrial hygienist or occupational audiologist may include octave band analyzers, recorders and personal noise dosimeters.

(1) The criteria outlined in paragraph 1, Navy Occupational Exposure Limits (NOEL) shall be used to determine the degree of compliance with applicable standards.

(2) A noise hazardous area is defined as:

(a) Any work area where the A-weighted sound level (continuous or intermittent) is routinely greater than 84 dB(A).

(b) Any work area where the peak sound pressure level (impulse or impact noise) routinely exceeds 140 dB.

**NOTE:**

Routinely is defined as those areas/equipment where the noise is of sufficient intensity and duration that it can reasonably be expected exposure will result in a loss of hearing sensitivity.

(3) Noise hazardous equipment is that which produces sound levels greater than 84 dB(A) or 140 dB peak sound pressure level.

(4) Per reference B4-5, 8-hr time-weighted average (TWA) noise levels shall be determined for all personnel working in noise hazardous areas at least once during assignment and within 30 days of any change in operations affecting noise levels.

(5) A risk assessment code (RAC) shall be assigned to all potentially hazardous noise areas and operations (see chapter A4). This will normally be accomplished as part of the Industrial Hygiene Surveys described in chapter A3.

(6) Since there are a wide variety of noise measuring instruments in use, any one of the following methods should be used. In each case, it is necessary to take a sufficient number of measurements to achieve a representative noise sample.

(a) When using a dosimeter that is capable of C-weighted measurements:

1. Obtain the C-weighted dose for the entire workshift, and convert to TWA sound level (see dosimeter instruction manual for conversion table).

2. Subtract the NRR from the C-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(b) When using a dosimeter that is not capable of C-weighted measurements, the following method may be used:

1. Convert the A-weighted dose to TWA (see dosimeter instruction manual).

2. Subtract 7 dB from the NRR value.

3. Subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(c) When using a sound level meter set to the A-weighting network:

1. Obtain the A-weighted TWA.

2. Subtract 7 dB from the NRR and subtract the remainder from the A-weighted TWA to obtain the estimated A-weighted TWA under the ear protector.

(d) When using a sound level meter set on the C-weighting network:

1. Obtain a representative sample of the C-weighted sound levels in the environment.

2. Subtract the NRR from the C-weighted average sound level to obtain the estimated A-weighted TWA under the ear protector.

The effective reduction of any combination of insert plugs with circumaural muffs (double protection) is considered to be approximately 30 dB. If the result of subtracting the estimated reduction value of a particular device or combination of devices from the measured workplace sound level is determined to be below 84 dB(A) or 140 dB peak, the protection is considered to be adequate. However, should the 8-hour (protected) TWA exceed 84 dB(A), administrative controls shall be instituted to reduce personnel exposure to acceptable levels.

c. Removal of Personnel from Hearing Conservation. A conservative approach will be taken in making a decision to remove personnel from hearing conservation.

(1) Judgments shall be based on repeated and representative measurements that indicate that the individual is exposed to less than 70 percent noise dose or has an 8-hour time-weighted average (TWA) of less than 82 dB(A). This ensures, with an approximate 95 percent confidence level, that individuals will not be overexposed.

(2) Recommendations for removal of individuals who are already included in the hearing conservation will be made only by professionals qualified to perform or evaluate noise exposure assessments. In no case will individuals already included in hearing conservation be disenrolled based upon ex-

posure assessment alone without concurrence from an audiologist or qualified physician. Such concurrence is necessary to avoid exclusion of personnel who are noise susceptible or at exceptional risk due to pre-existing hearing loss. See paragraph 4d for hearing tests for personnel being removed from hearing conservation.

3. **Personal Hearing Protective Devices**. In cases where personal hearing protection devices do not sufficiently reduce personnel effective exposure levels to less than 84 dB(A) administrative control of exposure time will be necessary. A table of noise exposure limits is found in Appendix B4-B.

4. **Hearing Testing and Medical Evaluation**

a. **Hearing Test**. Audiometers used in the performance of hearing tests shall conform to the standards defined in the most current edition of reference B4-6. Hearing tests shall be pure tone, air conduction hearing threshold examinations to include, as a minimum, test frequencies of 500, 1,000, 2,000, 3,000, 4,000 and 6,000 Hz and shall be taken separately for each ear. Tests shall be performed by an audiologist, otolaryngologist, qualified physician or by a person certified by the NAVENVIRHLTHCEN Norfolk or the equivalent organization of another US military service. Hearing tests shall be conducted in an audiometric chamber with internal ambient sound levels not exceeding those prescribed in reference B4-5.

(1) Audiometric booths must be certified annually by an industrial hygienist, audiologist or other qualified personnel under their direct supervision.

(2) The use of noise excluding audiometric earphones is not permitted to augment the performance of a deficient (e.g., non-certifiable) audiometric test room. Their use for minimizing ambient noise masking effects during testing is allowed within a certified room.

b. **Reference (Baseline) Hearing Tests**

(1) All personnel included in hearing conservation shall have a reference hearing test (form DD 2215) in their medical record.

(2) All reference hearing tests shall be preceded by at least 14 hours without exposure to workplace noise. This requirement may not be met by wearing hearing protective devices. Reference (baseline) hearing tests will not be conducted if there is evidence of a transient medical condition that would affect hearing threshold.

(3) Personnel who do not have a reference audiogram filed in their health record shall not be assigned to duty in a designated hazardous noise area involving exposure to hazardous noise until a reference hearing test has been performed. In these cases, hearing threshold levels in either ear in the excess of an average of 25 dB for the frequencies of 500 - 3000Hz or 45dB at any frequency greater than 4000Hz must be evaluated by an audiologist.

c. Monitoring Hearing Test. All personnel included in hearing conservation will receive annual monitoring hearing tests for as long as they remain enrolled, unless otherwise indicated in the following paragraphs. Additional hearing tests may also be conducted when there are individual complaints of hearing difficulties, i.e., difficulty in understanding speech or a sensation of ringing or fullness in the ear(s). At the discretion of an audiologist or medical officer, evaluation and medical record entries will be necessary to discover and document the existence of occupational versus non-occupational etiology.

**NOTE:**
All personnel shall bring their personal hearing protective devices with them when they report for monitoring audiometry.

(1) Consult reference B4-1 for detailed Medical Department guidance for the provision of monitoring audiometry, follow-up testing, and case management of personnel with noise-induced hearing loss.

(2) The monitoring audiogram shall be compared to the most current reference audiogram to determine if a significant threshold shift (STS) has occurred.

(a) Significant threshold shift (STS) is defined as a change of 15 dB or greater at any test frequency from 1000 to 4000 Hz in either ear or a change in hearing averaging 10 dB or more at 2000, 3000 and 4000 Hz in either ear.

(b) When an STS is identified, additional monitoring hearing tests shall be performed to determine if the threshold shift is temporary or permanent in nature. The member's division officer or MDR will be informed of the time and place for follow-up testing.

(c) A significant threshold shift will be considered permanent when so determined by an audiologist or appropriately trained physician. Individuals will be informed in writing within 21 days of any permanent threshold shift toward deteriorated hearing. When the permanent threshold shift results from exposure to hazardous noise levels, the hearing loss shall be reported to the safety officer and department head by memo that a possible breach in the Hearing Conservation control procedures has occurred, resulting in a hearing loss.

(3) Any individual who has hearing loss in both ears in which the sum of thresholds at the frequencies of 3000, 4000 and 6000 Hz exceeds a total of 270 dB or has their reference hearing test (form DD 2215) re-established three times will not be assigned to duties involving exposure to hazardous noise until evaluated and waived by an audiologist, otologist, or occupational medicine physician.

d. **Removal Hearing Tests**. Individuals who are removed from hearing conservation will be given a hearing test to document auditory status at the time of removal from noise hazardous duties. Results of this test will be recorded on DD 2216.

e. ***Disposition Following Monitoring Hearing Tests***. Pure tone air conduction monitoring hearing tests are designed to detect small changes in hearing and identify problems before the individual suffers hearing loss that interferes with verbal communications. Detection is made by comparing the current monitoring audiogram with the reference audiogram to determine STS.

(1) Annual

(a) If the annual audiogram shows no significant threshold shift, the individual shall be returned to duty and recalled for hearing testing in 1 year.

(b) If the annual audiogram shows STS toward improved hearing, then the individual should be re-tested immediately to determine if the baseline/reference test was in error, hearing has actually improved, or the annual test was invalid. If the repeat audiogram continues to show STS and is plus or minus 5dB from the annual test, re-establish the reference based on the first follow-up test and repeat the test in 1 year. Nothing else is required.

(c) If the annual audiogram shows a significant threshold shift toward deteriorated hearing, then the individual must be re-tested following at least 14 hours of exclusion from noise levels in excess of 80 dB(A). Because the presence of a STS implies that hearing protective equipment used may be inadequate, physical exclusion from noise may not be accomplished by the use of hearing protective equipment. The physical exclusion period is referred to as "auditory rest." The required 14 hours of "auditory rest" is usually sufficient to allow a temporary STS to return to pre-exposure levels.

(2) Follow-up No. 1

(a) If the first follow-up audiogram shows no significant threshold shift relative to the reference audiogram (ie. STS has resolved), personnel shall have their hearing protective devices refitted, be re-indoctrinated in their use, and returned to duty to be recalled for a hearing test in 1 year.

(b) If the first follow-up supports the existence of STS, then a possible conductive or mechanical basis for the shift must be ruled out before proceeding with follow-up. The preferred method to rule out conductive hearing loss is through screening tympanometry and otoscopy, provided by the audiometric technician or MDR. Subjects who demonstrate normal otoscopy and tympanometry should have that fact noted on a SF 600, and may then immediately receive their second follow-up hearing test. If tympanometry is unavailable, then any health care provider can provide examination and clearance to continue the audiometric test sequence. Otoscopic/tympanometric anomaly requires

medical evaluation prior to resuming the test sequence. Again, the second follow-up may be given on the same day as the first follow-up if middle ear function is normal.

(c) At any point in the monitoring process, a health care provider has the option of discontinuing the sequence and referring the patient to an audiologist for further evaluation, if results appear invalid or a severe condition is suspected.

(3) Follow-up No. 2

(a) If the second follow-up test shows no STS relative to the reference audiogram, personnel shall have their hearing protective devices refitted, be re-trained in their use, and be returned to duty.

(b) If the second follow-up test continues to show STS relative to the reference audiogram, the health care provider will refer the individual for diagnostic evaluation or consultation with an audiologist. However, for personnel who continue to demonstrate essentially normal hearing sensitivity despite their threshold shift, the audiologist or suitably trained physician who would otherwise receive the referral may elect to provide a written protocol for case management. The protocol may include the option of shipboard counseling and revision of the reference audiogram without additional testing or review.

f. **Termination Hearing Tests**. Personnel shall receive a hearing test upon termination of service.

## Appendix B4-B

## ADMINISTRATIVE CONTROL OF NOISE EXPOSURE WITH HEARING PROTECTIVE DEVICES (STAY TIME)

| Sound level | Limiting time (hr:min per 24 hour day) Hearing protector noise reduction (dB) | | | |
|---|---|---|---|---|
| dB(A) | 10 | 20 | 30 | 40 |
| 90 | 16 | -- | -- | -- |
| 94 | 8 | -- | -- | -- |
| 98 | 4 | -- | -- | -- |
| 102 | 2 | 11:18 | -- | -- |
| 106 | 1 | 5:39 | -- | -- |
| 110 | 0:30 | 2:49 | 16 | -- |
| 114 | 0:15 | 1:25 | 8 | -- |
| 118 | -- | 0:42 | 4 | -- |
| 122 | -- | 0:21 | 2 | 11:18 |
| 126 | -- | -- | 1 | 5:39 |
| 130 | -- | -- | 0:30 | 2:49 |
| 134 | -- | -- | 0:15 | 1:25 |
| 138 | -- | -- | -- | 0:42 |

NOTE: Values other than those given above may be calculated using the formula:

$$T = 16/2\ [(L-80)/4]$$

Where: T = Time in hours (decimal)
L = Effective sound level, (dB(A))

Intermediate values may be interpolated by adding or subtracting the decibel difference to the appropriate column.

## Appendix B4-C

## ADDITIONAL NOISE ABATEMENT INFORMATION

1. **Introduction**. The primary means of protecting Navy personnel from hazardous noise levels shall be through the application of engineering controls. Administrative controls (e.g., the adjustment of work schedules to limit exposure) are also effective but often result in some loss in productivity. Personal protective equipment (earplugs or muffs) shall be the permanent solution only when engineering or administrative controls are considered to be infeasible or cost prohibitive. General hazard (including noise) control techniques are discussed in more detail in Chapter A3; therefore, this chapter will address only specific concepts.

2. **Preventive Measures**. It is much less costly to eliminate potential noise problems in the design or procurement stage for new processes, equipment, and facilities than it is to make retrofits or modifications after the fact. The following guidance is provided to meet this objective.

a. **Procurement specifications** for all new machinery and equipment to be located in spaces where personnel are required to perform work shall prescribe the lowest noise emission level that is technologically and economically feasible. The objective is to ensure, if feasible, an A-weighted sound level of 84 dB or less at all locations in which personnel are required to work.

b. **New ship design**

(1) Low noise emitting equipment and accustical treatment shall be incorporated during the various design stages for all new construction ships so that the equivalent noise level at watchstander stations is less than 84 dB(A) under full power operating conditions where economically and technologically feasible. In any case, watchstander stations will not exceed a maximum, equivalent noise level of 90 dB(A) at the sustained speed operating conditions.

(2) Procurement specifications for all new machinery and equipment to be located in spaces where personnel are required to perform work shall prescribe the lowest noise emission level that is technologically and economically feasible. The objective is to ensure, if feasible, an A-weighted sound level of less than 84 dB at all locations in which personnel are required to work.

c. **Repeat ship design**. The policy cited above shall apply and incorporate the noise control technology learned from previous ship designs.

d. **Ship alteration**. Ship alteration prioritization policy established in reference B4-7 shall form the basis of selecting ships for noise control. All watchstander stations in machinery spaces will not exceed a maximum, equivalent noise level of 90 dB(A) under full power operation conditions where economically and technologically feasible. In any case, watchstander stations

will not exceed a maximum, equivalent noise level of 90 dB(A) at sustained speed operating conditions.

e. The policy stated in paragraphs 2b, c, and d does not apply to high performance ships, experimental ships or special purpose ships for which noise reduction technology application is not feasible. In these uniquely military situations, COMNAVSEASYSCOM, in conjunction with BUMED, will study and develop suitable noise requirements, engineering controls, and hearing protective devices to protect personnel from hazardous noise levels based on ship operating requirements and personnel rest-duty cycles.

3. Abatement of Existing Noise Hazards

a. Abatement of hazardous noise levels shall be undertaken, to the extent possible or practicable, by one or more of the following methods:

(1) By engineering design to eliminate or reduce the noise level of machinery, equipment, and other operating devices/facilities to acceptable levels

(2) By damping the noise by means of lamination, mufflers, mountings, couplings, supports, insulation or application of acoustic materials

(3) By acoustical enclosure of the noise producer

(4) By isolation of the noise producer to a point where the noise will affect fewer personnel

(5) By substitution of less noisy operations (e.g., welding in lieu of riveting)

(6) By administrative controls which limit exposure (e.g., control of work schedules).

**Appendix B4-D**

**HEARING PROTECTIVE DEVICES**

| | Manufacturers Nomenclature/NSN | Type of Protector | Federal Nomenclature |
|---|---|---|---|
| 1 | Ear Defender V-51R<br>6515-00-442-4765 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (X-Small) (White) |
| 2 | Ear Defender V-51R<br>6515-00-467-0085 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (Small) (Green) |
| 3 | Ear Defender V-51R<br>6515-00-467-0089 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (Medium) (Intl. Orange) |
| 4 | Ear Defender V-51R<br>6515-00-442-4807 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (Large) (Blue) |
| 5 | Ear Defender V-51R<br>6515-00-442-4813 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (X-Large) (Red) |
| 6 | Comfit, Triple Flange<br>6515-00-442-4821 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (Small) (Green) |
| 7 | Comfit, Triple Flange<br>6515-00-442-4818 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (Medium) (Intl. Orange) |
| 8 | Comfit, Triple Flange<br>6515-00-467-0092 | Insert Earplug (sized) | Plug, Ear, Noise Protection 24's (Large) (Blue) |
| 9 | Silaflex (Blister Pack)<br>6515-00-133-5416 | Non-Hardening Silicone | Plug, Ear, Noise Protection, Cylindrical, Disposable 200's |
| 10 | EAR or Deci-Damp<br>6515-00-137-6345 | Foam Plastic Insert | Plug, Ear, Noise Universal Size, Yellow 200 pr |
| 11 | Sound-Ban<br>6515-00-392-0726<br>6515-00-181-8058 | Headband, Earcaps | Plug, Ear, Hearing Protection Universal Size |

| | Manufacturers Nomenclature/NSN | Type of Protector | Federal Nomenclature |
|---|---|---|---|
| 12 | Straightaway Muffs<br>4240-00-759-3290<br>4240-00-674-5379<br>4240-00-979-4040 | High Performance Circumaural Muffs<br>For 9 AN/2<br>For 9 AN/2 | Aural Protector Sound 372-9 AN/2<br>Replacement Filler, Dome<br>Replacement Seal, Dome |
| 13 | Ear Plug Cases<br>6515-01-100-1674 | -- | Case, Earplug |
| 14 | Circumaural Muff<br>4240-00-22-2946 | Type II Headband/Napeband | Aural Protector, Sound |

**POSITIVE AND NEGATIVE FEATURES OF HEARING PROTECTIVE DEVICES**

| Type Wear | Positive | Negative | Length of Wear |
|---|---|---|---|
| Earplug (V-51R or Triple Flange) | After adaptation can be used for long periods. Relatively inexpensive | Individual fitting by medical personnel. May cause initial soreness/irritation | Long term (3-4 hours) |
| Headband Ear Caps (Sound-Ban) | Quickly fitted without touching | Uncomfortable after 1 hour | Short term. Easily carried |
| Disposable Plugs (Silaflex, E.A.R., or Decidamp) | Comfortable. Universal fit. Effective if properly used | Easily soiled. Relatively expensive. Often poorly inserted, reducing effectiveness | Typically short term, but comfortable for extended wear |
| Circumaural Muffs | Comfortable. May be worn over plugs. Most universal fit for most users | Expensive. Heavy. Difficult to carry. Fit may be compromised by long hair or eyeglasses | Long or short-term |

One single type of hearing protective device will not meet the needs of all noise-exposed personnel. The appropriate type of hearing protective device should be selected based upon a consideration of the factors listed above in addition to the degree of attenuation required in a particular situation. The most convenient method of making this determination is the Noise Reduction Rating (NRR) developed by the Environmental Protection Agency (EPA). The NRR is usually shown on the hearing protector package. The NRR is then related to an individual worker's noise environment in order to assess the adequacy of the attenuation of a given hearing protector.

# CHAPTER B5

## SIGHT CONSERVATION PROGRAM

### B0501. DISCUSSION

a. Navy policy requires that personnel working in eye-hazardous areas or operations be provided adequate eye protection at government expense. Crew members must wear appropriate eye protection when performing eye hazardous operations such as: pouring or handling molten metals or corrosive liquids and solids, cutting and welding, drilling, grinding, milling, chipping, sand blasting, or other dust and particle producing operations. Any personnel in the immediate vicinity of such operations or entering a posted eye hazard area, including visitors, shall also wear eye protective equipment. (R

b. Devices for eye protection, such as safety glasses, chipper's goggles, welder's goggles, chemical goggles, and face shields, shall be selected using the guidance provided in Appendix B5-B. This appendix complies with references B5-1, B5-2, and B5-3. As a minimum, the protective devices provided shall be adequate for the hazards specified, be reasonably comfortable, and fit snugly without unnecessarily interfering with movement. The protective devices must be durable, easy to clean, and capable of being disinfected. Eye wear shall be properly fitted at the point of issue by trained personnel.

c. Refer to Chapter B9, "Radiation Protection Program," for sight protection requirements associated with repair or operation of lasers.

### B0502. PROGRAM RESPONSIBILITIES

a. The commanding officer shall:

(1) Ensure that an effective sight conservation program is established within his or her command.

(2) Place emphasis on leadership by example regarding wearing of sight protection equipment.

b. The safety officer shall:

(1) Evaluate areas, processes and equipment not previously evaluated or where modifications have been made for sight hazards and determine the requirement to wear sight protective equipment when engineering controls are technologically or economically impractical, including determining whether other personnel in the work place vicinity also require eye protective equipment. Assistance should be requested of an industrial hygienist if difficulty in making such a determination is experienced.

(2) Maintain a listing of areas, processes and operations which require eye protection and those areas which require eye wash or deluge shower facilities.

(3) Retain eye injury records and review them as an additional check on the identification of areas, processes, and operations where potential eye hazards exist.

R) (4) Ensure that this program is evaluated annually for compliance and effectiveness. This shall include spot checks of sight hazardous spaces or operations to ensure that prescribed sight protective equipment is needed, is adequate, and is being properly worn. The checklist of Appendix B5-A may be used for this purpose.

c. Department heads and division officers shall:

(1) Ensure that areas identified as sight hazardous are properly marked and labeled.

(2) Ensure that proper eye protective devices are available for use by personnel in identified eye hazardous areas and for eye hazardous processes and evolutions, are in a fully operational condition, and are properly used.

(3) Ensure that personnel are trained on the need for and proper use of protective eye wear and on the use of eyewash facilities.

(4) Ensure that prescribed PMS is performed on eyewash facilities.

d. The medical department representative shall schedule sight screening examinations and refractive services outlined in paragraphs B0505 and B0506.

e. All hands shall:

(1) Comply with eye hazardous warning labels wherever they appear.

(2) Properly wear assigned sight protective equipment when in eye hazardous areas or performing eye hazardous evolutions.

R) (3) Undergo vision testing when designated.

B0503. PROGRAM ELEMENTS

Each command shall implement a sight conservation program which shall include, as a minimum, the following elements:

a. Determination and designation of eye-hazardous areas, processes, and operations (based on zone inspection and industrial hygiene survey results) (Paragraph B0504);

b. Implementation of a ship's vision screening program using shore based medical facilities (Paragraph B0505);

NOTE:

Some ships, such as aircraft carriers have a vision screening capability. These facilities should be used in lieu of shore medical activity facilities.

c. Issue and maintenance of sight protection equipment (Paragraph B0506);

d. Procedures for the use and application of temporary eye wear (Paragraph B0507);

e. Establishment of emergency eyewash facilities (Paragraph B0508);

f. Following approved safety standards requiring the use of protective eye wear (Section C);

g. Training (Paragraph B0509); and

h. Effective program enforcement procedures.

B0504. DETERMINATION AND DESIGNATION OF EYE-HAZARDOUS AREAS, PROCESSES, AND OPERATIONS

a. Survey. A complete survey of all work areas, processes, and operations shall be conducted by the ship's safety officer to determine which are eye-hazardous, which personnel require eye protection, and the type of eye protection required. In addition to flying objects resulting from certain cutting or drilling operations, the survey shall also consider the eye hazards associated with liquid chemical splash and various forms of electromagnetic radiation (laser, ultraviolet, infrared, and microwave). This survey shall be part of the workplace inspection and industrial hygiene survey effort described in Chapter A3. A listing of all areas, processes, and operations requiring eye protection shall be maintained by the safety officer. (R

b. Posting. Mark each eye-hazardous area with 3-inch deck striping and a CAUTION sign. The deck around an immediate eye hazard shall be marked with a 3-inch black and yellow striped or checkerboard tape. This tape is available under NSN 9Q/9905-01-342-5934 (checkerboard) or 9Q/9905-01-342-5933 (striped). Mount the sign directly above the hazard, component, machinery, boundary bulkhead, or door in a conspicuous location. The CAUTION sign shall conform to NSN 9Q/9905-01-100-8203, "CAUTION, Eye Protection Required In This Area". Smaller, self-adhesive eye hazard signs or labels are available open purchase from commercial safety sign companies. (R

B0505. SIGHT SCREENING EXAMINATION

R) a. Evaluation. The usual physical examination cycle includes vision testing for all personnel and shall be used in the baseline eyesight screening examination. All personnel, prior to the onset of exposure to eye-hazardous processes or operations (excluding those individuals who have recently had a sight screening examination and have previously been issued proper eye protective equipment for processes such as grinding, sanding, woodworking, etc.) or those exposed as a result of an emergency shall be referred for sight screening examination at a shore medical facility by the MDR, unless such service is available aboard ship. Screening examination results will be assessed by a physician in coordination with the MDR. Slit lamp examinations are required for some exposures. The documentation of these examinations shall be a part of the person's medical record. Individuals whose visual acuity is insufficient to meet the requirement of the job shall be referred for refractive lenses in the protective eyewear to be issued.

b. Fitting. Eye wear shall be properly fitted at the point of issue by trained personnel.

B0506. ISSUE AND MAINTENANCE OF SIGHT PROTECTION EQUIPMENT

a. Normally, prescription protective eye wear shall be obtained through medical support activities; however, open purchase procedures may be used to obtain refractive services and prescription safety lenses. The Eyewear Prescription Form, DD 771, will be used in all services and equipment procurement. The prescription and procurement forms shall be entered into the crew member's medical record.

b. The performance of all refractive services shall be under the direction of the cognizant regional medical command physician regardless of who performs the service.

c. In instances where a person with corrective lens protective eyewear transfers from one command to another, the individual shall retain custody of the eyewear during transfer. The copy of the prescription, fitting information and accountability data shall be forwarded with the individual's medical record.

d. Corrective lens protective eyewear prepared for one person is not medically appropriate for reissuance to another. Reclamation of such eyewear is not economically practical; therefore, corrective lens protective eyewear is considered an expendable item.

e. The individual and his/her supervisor shall ensure that personal protective eyewear is maintained in a clean and fully operational condition, and that it is properly used while performing eye hazardous operations. Eyewear furnished under the sight conservation program is the property of the

Department of the Navy and shall be repaired or replaced if damaged. Damage to protective eyewear shall be immediately reported to the work center supervisor.

f. If replacement of prescription lenses is required, replacements shall be handled in a manner similar to that established for acquiring new corrective lens protective eyewear. If the original prescription is more than 1 year old, a new eye examination shall be scheduled.

g. If repairs do not include new lenses, adjustment and fitting after repair will be done by the MDR. Repair parts such as temples, screws, side-shields, and temple tubing should be stocked through local purchase. Repair kits containing the necessary items are available from the supplier.

h. All eye and face protection including safety glasses (frames), chemical splash goggles, welding and chipping goggles, welding helmets, and face shields shall be checked on receipt to determine that they are labeled "Z87," indicating compliance with American National Standards Institute (ANSI) Z87.1-1989. Such eye and face protection equipment is available through the supply system. Appendix B5-B contains information that describes the types of protective eyewear appropriate for use.

i. Before issue to another individual, non-corrective eye protection which previously has been used shall be sanitized with hot, soapy water and rinsed of all traces of soap or detergent. Eye protection equipment should then be immersed for 10 minutes in a dilute solution of Wescodyne (2 milliliters Wescodyne to 1 liter of water), rinsed, and air dried.

B0507. TEMPORARY PROTECTIVE EYEWEAR

a. Planos, goggles or face shields shall be provided to personnel while awaiting delivery of corrective lens-protective eyewear.

b. Prevention of eye accidents requires that all personnel who may be in eye hazardous areas wear protective eyewear. This includes crew members, visitors, supervisors, or any personnel passing through an eye hazardous area. To provide protection for these personnel, commands shall procure a sufficient quantity of heavy duty goggles and/or plastic eye protectors. Individuals who wear prescription glasses shall be provided with eye protection that can be worn over the prescription glasses.

B0508. EMERGENCY EYEWASH FACILITIES

a. The ship shall have an adequate number of properly maintained and inspected eyewash facilities, installed in appropriate locations, and properly posted with signs identifying their locations. Eyewash deficiencies shall be identified and corrected as specified in Chapters A3 and A4.

b. As specified in reference B5-1, a combination of emergency shower and eyewash or eye/face wash unit with drain and stay-open valve shall be avail- (R

able in all areas where the eyes of crew members may be exposed to corrosive materials. These locations include the oxygen-nitrogen producer room, battery shop, battery locker, boiler repair shop, rubber and plastic shop, composite material repair shop, non-destructive test and inspection shop, and other non-weapon spaces on tenders and ships that utilize highly corrosive chemicals. An eye/face wash unit alone shall be installed in main and auxiliary machinery spaces, medical, dental, and chemical laboratories, darkrooms, flammable material storerooms, issue rooms, paint lockers, and other areas confirmed as using or storing corrosive materials. Adjacent spaces may share a single emergency shower or eye/face wash unit. All units shall be available in easily accessible, unobstructed locations situated as close as possible to the corrosive hazard. In no instance shall the unit be located in an area that requires more than 10 seconds to reach or is more than 100 travel feet from the hazard. For those spaces that require an emergency shower, eyewash, or eye/face wash, but where potable water and drainage cannot be provided, a self-contained eyewash with a dedicated storage rack of pressure or gravity-fed potable water shall be made available. This eyewash may be ordered under NSNs 4240-01-258-1245, 4240-01-234-1796, and 6640-01-236-6424. For submarines: As an interim measure, until sufficient numbers of plumbed or self-contained eyewashes can be installed, a personal eyewash bottle may be used while proceeding to the installed or self contained eyewash unit.

R) c. Plumbed and self-contained emergency eyewash equipment shall be capable of flushing the eyes with potable water at a minimum flow rate of 0.4 gallons per minute for 15 continuous minutes. The velocity of the water shall be low enough not to be injurious to the user's eyes. All eyewash and deluge shower equipment must be maintained through the Planned Maintenance System (PMS).

R) d. Clearly mark eyewash stations with a green sign with white lettering. These signs are available standard stock under NSN 9905-01-345-4521 or can be made of engraved plastic by an IMA. Post signs in a visible location close to the eyewash unit. These signs shall identify the unit as an emergency eyewash station.

R) e. Crew members shall be examined in sick bay following the emergency use of an eyewash unit or deluge shower.

f. Permanently plumbed emergency showers, eyewashes, and eye/face washes located in remote or minimally manned areas shall be provided with a visual and audible alarm interlocking with the activation device of the unit. The alarm shall be located in one of the following appropriate areas: outside of the protected area or shop, in the associated Enclosed Operating Station (EOS), in a nearby manned space or in Damage Control Central. A label plate shall be placed at eye level in the immediate vicinity of the visual alarm and shall be inscribed:

**WARNING**

**WHEN THE EMERGENCY SHOWER (EYEWASH, EYE/FACE WASH) IN (SHOP OR SPACE LOCATION) HAS BEEN ACTIVATED, PROVIDE IMMEDIATE PERSONNEL ASSISTANCE AND NOTIFY SICK BAY.**

B0509. TRAINING

a. Training on the need for and use of protective eyewear shall be provided to personnel working in eye hazardous areas or with eye hazardous equipment upon reporting aboard and annually thereafter. Topics to be covered in the training program shall include:

(1) Types of eye hazards

(2) Types of eye protection

(3) Work center supervisor's and crew members' responsibilities

(4) Eyewash location and proper use (particularly personnel working with hazardous chemicals)

(5) Simple first aid measures: No attempt should be made to remove a particle lodged in the eyeball, or wash an eye that has been cut in any way. A clean dressing can be placed lightly over the eye until the victim gets medical help. Cold compresses should be applied to bruised eyes. Chemical burns call for immediate flushing with tepid potable water.

b. Sight conservation training course and training aid information can be found in Chapter A7.

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## CHAPTER B5

## REFERENCES

B5-1. General Specification 644c.

B5-2 Military Specification DOD-G-51510: "Goggles, Industrial, Eyecup and Lenses; Goggles, Industrial (Metric)".

B5-3. Military Standard 1434: "Goggles, Industrial, Safety".

**Appendix B5-A**

## SIGHT CONSERVATION PROGRAM CHECKLIST

Indicate by an X, the answer to each of the questions below. If a question is not applicable to the command, indicate by NA in the YES block. Explain or describe the condition warranting any NO answer on the space provided at the end of the checklist or on additional sheets, if necessary.

The location of the NAVOSH Manual reference for any question is provided at the end of the question.

| | | YES | NO |
|---|---|---|---|
| **PROGRAM RESPONSIBILITIES** | | | |
| 1. | Does the command place emphasis on leadership by example with regard to wearing sight protection equipment? (B0502a(2)) | | |
| 2. | Has the safety officer performed annual inspections and reevaluations including evaluating areas and processes not previously evaluated for sight hazards and determined the need to wear sight protective equipment? (B0502b(1)) | | |
| 3. | Does the safety officer maintain a listing of areas, processes, and operations which require eye protection? (B0502b(2)) | | |
| 4. | Does the safety officer retain eye injury records and review them as an additional check on the areas, processes and operations requiring eye protection? (B0502b(3)) | | |
| 5. | Do division officers ensure that proper eye protective devices are available for use by personnel in identified eye hazardous areas and for eye hazardous processes and operations, are in a fully operational condition and are properly used? (B0502c(2)) | | |

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| | | YES | NO |
|---|---|---|---|
| | **DETERMINATION AND DESIGNATION OF EYE HAZARD AREAS, PROCESSES, OPERATIONS** | | |
| | 6. Have all recommendations made regarding the posting of new potential eye hazards been implemented? (B0504a) | | |
| | 7. Are eye hazardous areas properly marked with both deck striping and caution signs? (B0504b) | | |
| | **SIGHT SCREENING EXAMINATION** | | |
| | 8. Does the MDR schedule a sight screening examination for personnel prior to their being exposed to eye hazardous processes or operations? (B0505a) | | |
| | **ISSUE AND MAINTENANCE OF SIGHT PROTECTION EQUIPMENT** | | |
| | 9. CHECK the medical records of five persons who have been issued corrective lens protective eyewear. Has the prescription information been entered into the crew member's medical record? (B0506a) | | |
| | 10. Do persons keep their corrective lens protective eyewear when being transferred to another command? (B0506c) | | |
| | 11. Does the command policy ensure that all corrective lens protective eyewear is issued only to the primary user intended and not recycled or used over again for other personnel? (B0506d) | | |
| | 12. Is all protective eyewear, either corrective or non-corrective lens, being worn in good condition (clean and undamaged)? (B0506e) | | |
| | 13. Are new examinations scheduled for crew members replacing corrective-protective eyewear that have prescriptions more than 1 year old? (B0506g) | | |
| | 14. Does the MDR have a repair kit to repair prescription type safety glasses? (B0506g) | | |
| | 15. Are all eye and face protective equipment labeled "Z87"? (B0506h) | | |
| A) | 16. Is the proper eyewear issued according to Appendix B5-B and other directives? (B0506h) | | |

| | | YES | NO |
|---|---|---|---|
| 17. | Is previously used, non-corrective eye protection equipment sanitized in hot, soapy water and diluted Wescodyne solution prior to reissue? (B0506f) | | |
| | TEMPORARY PROTECTIVE EYEWEAR | | |
| 18. | Are planos, goggles or face shields provided to persons while awaiting delivery of corrective lens-protective eyewear? (B0507a) | | |
| 19. | Are visitors to eye hazardous areas or observing eye hazardous processes or operations provided with protective eyewear? (B0507b) | | |
| | EMERGENCY EYEWASH FACILITIES | | |
| 20. | Are there eyewash facilities (fixed or portable) located in the boiler shop, main and auxiliary machinery spaces, darkroom, flammable materials issue room, medical, dental and chemical laboratories and any other areas where corrosive materials are present? (B0508b) | | |
| 21. | Are eyewash facilities easily accessible, unobstructed locations that require no more than 10 seconds or 100 travel feet to reach from the hazard? For submarines: Personal eyewash bottles may be used, while proceeding to the installed eyewash unit, as an interim measure until suitable plumbed or self-contained eyewashes are installed. (B0508b) | | |
| 22. | Are self-contained eyewashes provided in those areas where drainage or portable water cannot be provided (eyewashes should meet minimum flow rate of 0.4 gal/min for 15 minutes)? (B0508b) | | |
| 23. | Review eyewash PMS records. Is eyewash equipment being tested at the required frequency? (B0508c) | | |
| 24. | Are isolated, permanently plumbed eyewashes provided with a properly located and labeled visual and audible alarm that interlocks with actuation device? (B0508f) | | |
| 25. | If the eyewash facility has an audible alarm, have the eyewash activating alarm tripped by a qualified maintenance person. Does the alarm work? (B0508f) | | |

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| | | YES | NO |
|---|---|---|---|
| 26. | Do responsible personnel understand their actions when an alarmed eyewash is activated? (B0508f) | | |
| 27. | Spot check three eyewash alarms. Are they properly labeled in visible areas? (B0508f) | | |
| **TRAINING** | | | |
| 28. | Is training on the need for and use of sight protective equipment provided to personnel working in eye hazardous areas or with eye hazardous equipment upon reporting aboard and annually thereafter? (B0509a) | | |

## Appendix B5-B

## TYPES OF PROTECTIVE EYEWEAR

Appropriate eye and face protection is required in all areas that are designated as eye hazardous. A selection chart for eye and face protection for different work operations, and a welding filter shade protection chart, are shown in Tables B5-B-1 and -2. Stock numbers that can be used to order equipment are listed in Table B5-B-3. The following is a short description of the various types of protective eyewear:

a. Safety Glasses/Spectacles. Safety glasses are to be worn in those areas where there is a possibility of flying objects, particulates, mists, or vapors entering the eye. Those spectacles with suitable filter lenses are permitted for use with gas welding operations on light work and for inspections. Spectacle-type goggles are made both with and without metal side-shields and may have either a rigid nonadjustable or adjustable metallic bridge.

b. Chemical Goggles. Chemical goggles provide the eyes and eye area with protection from liquids, splashes, mists, and spray. Goggles may consist of a flexible frame or a rigid frame with a separate, cushioned fitting surface, and are held in place with a supporting band. Chemical goggles with ventilation must be splash resistant.

c. Welding Goggles. Welding goggles provide protection against glare and injurious radiation, as well as from flying objects, chips, and metal splashes. Eyecup-type goggles are designed to be worn alone, while cover-type goggles are designed to fit over corrective spectacles. The lens filter of welding goggles is shaded to protect the eyes from ultraviolet, infrared, and visible rays generated by the work operations.

d. Chipping Goggles. Chipping goggles protect the eyes from relatively large flying objects generated by such operations as chipping, lathing, grinding, and chiseling. Eyecup-type goggles may be worn alone, or cover-type goggles may be fitted over corrective spectacles.

e. Welding Helmets. Welding helmets are made up of a bowl-shaped or modified bowl-shaped device equipped with a Shade 14 or greater filter. These helmets are designed for use during various kinds of arc welding and heavy gas cutting and provide the welder's eyes, face, ears, and neck with protection against intense radiation and weld spatter.

f. Face Shields. Face shields provide protection to the face and neck from flying particles, liquids, or sprays. Face shields alone do not provide adequate protection against these hazards and must be worn with protective eyewear.

**TABLE B5-B-1. EYE AND FACE PROTECTION SELECTION CHART**

| APPLICATIONS | | |
|---|---|---|
| **OPERATION** | **HAZARDS** | **PROTECTORS (Numbers refer to Table B5-B-3)** |
| ACETYLENE-BURNING<br>ACETYLENE-CUTTING<br>ACETYLENE-WELDING | SPARKS, HARMFUL RAYS, MOLTEN METAL, FLYING PARTICLES | 7, 8, 9 |
| CHEMICAL HANDLING | SPLASH, ACID BURNS, FUMES | 2 (For severe exposure add 10) |
| CHIPPING | FLYING PARTICLES | 1, 3, 4, 5, 6, 7A, 8A |
| ELECTRIC (ARC) WELDING | SPARKS, INTENSE RAYS, MOLTEN METAL | 11 (In combination with 4, 5, 6, in tinted lenses, advisable) |
| FURNACE OPERATIONS | GLARE, HEAT, MOLTEN METAL | 7, 8, 9, (For severe exposure add 10) |
| GRINDING-LIGHT | FLYING PARTICLES | 1, 3, 5, 6 (For severe exposure add 10) |
| LABORATORY | CHEMICAL SPLASH, GLASS BREAKAGE | 2 (10 when in combination with 5, 6) |
| MACHINING | FLYING PARTICLES | 1, 3, 5, 6 (For severe exposure add 10) |
| MOLTEN METALS | HEAT, GLARE, SPARKS | 7, 8, (10 in combination with 5, 6, in tinted lenses) |
| SPOT WELDING | FLYING PARTICLES, SPARKS | 1, 3, 4, 5, 6 (Tinted lenses advisable, for severe exposure add 10) |

TABLE B5-B-2. WELDING FILTER SHADE PROTECTION CHART

| WELDING OPERATION | SUGGESTED SHADE NUMBER* |
|---|---|
| Shielded Metal-Arc Welding, up to 5/32 in (4 mm) electrodes | 10 |
| Shielded Metal-Arc Welding, 3/16 to 1/4 in (4.8 to 6.4 mm) electrodes | 12 |
| Shielded Metal-Arc Welding, over 1/4 in (6.4 mm) electrodes | 14 |
| Gas Metal-Arc Welding (Nonferrous) | 11 |
| Gas Metal-Arc Welding (Ferrous) | 12 |
| Gas Tungsten-Arc Welding | 12 |
| Atomic Hydrogen Welding | 12 |
| Carbon Arc Welding | 14 |
| Torch Soldering | 2 |
| Torch Brazing | 3 or 4 |
| Light Cutting, up to 1 in (25 mm) | 3 or 4 |
| Medium Cutting, 1 to 6 in (25 to 150 mm) | 4 or 5 |
| Heavy Cutting, over 6 in (150 mm) | 5 or 6 |
| Gas Welding (Light) up to 1/8 in (3.2 mm) | 4 or 5 |
| Gas Welding (Medium) 1/8 to 1/2 in (3.2 to 12.7 mm) | 5 or 6 |
| Gas Welding (Heavy) over 1/2 in (12.7 mm) | 6 or 8 |
| Fire Watch For Any Welding or Cutting Operation | 6 (minimum)(A |

*The choice of a filter shade may be made on the basis of visual acuity and may therefore vary widely from one individual to another, particularly under different current densities, materials, and welding processes. However, the degree of protection from radiant energy afforded by the filter plate or lens when chosen to allow visual acuity will still remain in excess of the needs of eye filter protection. Filter plate shades as low as shade 8 have proven suitably radiation-absorbent for protection from the arc-welding processes.

NOTE

In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the operation (spectrum).

TABLE B5-B-3. EYE AND FACE PROTECTORS - SUPPLY INFORMATION

| KEY (from Table B5-B-1) | DESCRIPTION | NATIONAL STOCK NUMBER Type I (for persons who do not wear eyeglasses) | Type II (for use over eyeglasses) |
|---|---|---|---|
| 1. | GOGGLES, Flexible Fitting, Regular Ventilation | 4240-00-616-0060 | 4240-00-052-3776 |
| 2. | GOGGLES, Flexible Fitting, Hooded Ventilation | open purchase | open purchase |
| | GOGGLES, Chemical | 4240-00-190-6432 | |
| 3. | GOGGLES, Cushioned Fitting, Rigid Body | open purchase | open purchase |
| 4. | SPECTACLES, Without Sideshields | not recommended | not recommended |
| 5. | SPECTACLES, Eyecup Type Sideshields<br><br>[NOTE: Consult Afloat Shopping Guide for sizes] | 4240-00-516-4728<br>4240-00-516-4683<br>4240-00-516-4531<br>4240-00-516-4529<br>4240-00-516-4517<br>4240-00-516-4527<br>4240-00-516-4523<br>4240-00-516-4483<br>4240-00-269-9460 | not available, use goggles over eye glasses |
| 6. | SPECTACLES, Semi/Flat Fold Sideshields | 4240-01-193-4000 (American Optical®) | open purchase |
| 7. | WELDING GOGGLES, Eyecup Type, Tinted Lenses | open purchase | See # 8 |
| 7A. | CHIPPING GOGGLES, Eyecup Type, Clear Safety Lenses | open purchase | See # 8A |
| 8. | WELDING GOGGLES, Coverspec Type, Tinted Lenses, | | |
| | Shade No. 5 | Type II only | 4240-00-998-4418 |
| | Shade No. 6 | Type II only | 4240-00-203-3804 |

**TABLE B5-B-3. EYE AND FACE PROTECTORS - SUPPLY INFORMATION (Continued)**

| KEY (from Table B5-B-1) | DESCRIPTION | NATIONAL STOCK NUMBER Type I (for persons who do not wear eyeglasses) | Type II (for use over eyeglasses) |
|---|---|---|---|
| 8A. | CHIPPING GOGGLES, Coverspec Type, Clear Safety Lenses | Type II only | 4240-00-269-7912 |
| 9. | WELDING GOGGLES, Coverspec Type, Tinted Plate Lenses | Type II only | open purchase |
| 10. | FACE SHIELD, Plastic or Mesh Window | same as Type II | 4240-00-202-9473<br>4240-00-542-2048 |
| 11. | WELDING HELMET | same as Type II | 4240-00-540-0623 |
| | REPLACEMENT LENSES | | |
| | Chipper's Type (for # 8A) | 4240-00-262-7091 | |
| | Welder's Type | | |
| | Clear plate glass (used as cover lens for # 8) | 4240-00-262-7092 | |
| | Clear plastic cover lens (for # 11) | 4240-00-203-7764 | |
| | Lens shades, glass (for #11) | | |
| | Shade No. 8 | 4240-00-276-8939 | |
| | Shade No. 9 | 4240-00-540-2422 | |
| | Shade No. 10 | 4240-00-276-8940 | |
| | Shade No. 11 | 4240-00-540-2421 | |
| | Shade No. 12 | 4240-00-276-8941 | |

# CHAPTER B6

## RESPIRATORY PROTECTION

### B0601. DISCUSSION

a. Many repair and maintenance operations generate air contaminants that are dangerous if inhaled. Engineering controls (e.g., local exhaust ventilation) are the most effective methods of protecting personnel against such contaminants. However, when engineering controls are not practical or feasible, respirators are necessary to assure the protection of personnel.

b. This chapter establishes respiratory protection requirements and applies to all personnel and visitors who enter an area where respiratory protective equipment is necessary. Many of the procedures contained herein are derived from or are similar to the ones detailed in reference B6-1. This chapter does not address damage control, gas free engineering, or underwater protection.

c. For submarines. Responsibilities and procedures for respiratory protection aboard submarines are contained in paragraph B0615.

### B0602. RESPONSIBILITIES

a. The commanding officer shall appoint a respiratory protection manager (RPM).

b. The respiratory protection manager shall:

(1) Qualify per B0612 within 3 months of assuming the position.

(2) Ensure a sufficient supply of NIOSH or NIOSH/MSHA approved respirators, spare parts, and expendable supplies (e.g. cartridges and filters) is maintained to conduct routine and emergency operations. There should be at least three sizes of elastomeric face pieces and associated supplies of at least two manufacturers.

*NOTE:*

Respirator parts and filters are not interchangeable. Ensure that all components are of the same manufacturer (e.g. Brand X facepieces must have Brand X filters).

(3) Base the selection of the class of respirators on the type and degree of hazards to which workers are exposed.

(4) Maintain a roster of personnel enrolled in Respiratory Protection.

(5) Conduct respirator fit testing per paragraph B0608.

(6) Establish central control points for issuing and maintaining respiratory protection equipment. Divisions that frequently use respirators and personnel who are assigned individual respirators may maintain custody of their own respiratory protection equipment and are responsible for its proper case and storage.

(7) Inspect, clean, disinfect, store, maintain and repair respirators per paragraph B0609.

(8) Ensure breathing air meets the requirements of paragraph B0611.

c. **Division officers shall**:

(1) Ensure that personnel performing work requiring respirators are assigned and qualified prior to use of respiratory protective equipment. Use the form in Appendix B6-A to request medical qualification.

(2) Ensure that personnel have a current fit test and training prior to donning a respirator.

(3) Provide personnel with the required respiratory protective equipment.

d. **The medical department representative (MDR) shall**:

(1) Conduct or schedule necessary preplacement and periodic medical evaluation of personnel identified by the RPM as respirator users per paragraph B0614.

(2) Certify to the cognizant division officer and the RPM whether an individual is medically qualified to use a particular respirator. Use the form in Appendix B6-A for this purpose.

(3) Enter results of all respirator user medical evaluations into the individual's medical records.

(4) Assist the RPM in identifying and evaluating hazards and selecting appropriate respirators.

e. **Personnel issuing respiratory protective equipment shall** issue respirators only to personnel who are trained, medically qualified and successfully fit-tested for the respirator(s) requested.

f. **All hands shall**:

(1) Inspect the respirator before and after each use per paragraph B0609a.

(2) Perform a positive and negative respirator facepiece seal check prior to each use per paragraph B0607b.

(3) Report any malfunction of the respirator to their immediate supervisor.

(4) Prevent damage to or loss of respiratory protective equipment.

B0603. RESPIRATORY PROTECTION ELEMENTS

a. Respiratory protection management

b. The industrial hygiene survey

c. Respirator selection

d. Respirator availability

e. Personnel roster

f. Medical evaluations

g. Initial and annual fit testing and training

h. Respirator issue

i. Respirator maintenance

j. Breathing air requirements

B0604. TYPES OF RESPIRATORS AND THEIR APPLICATIONS

The two basic types of respirators are air-purifying and atmosphere-supplying. Illustrations of typical respirators are provided in Appendix B6-B.

a. Air-purifying respirators remove air contaminants by filtering, or absorbing them as the air passes through the cartridge. In all cases when using air-purifying respirators, adequate oxygen (19.5 percent by volume) must be present. They are available with quarter-, half-, and full-facepieces with the full-facepiece respirator providing a higher degree of protection than either of the others. Air-purifying respirators are available as single-use (e.g., disposable) respirators, with the filter or cartridge built-in as an integral part of the respirator, or as reusable facepieces with replaceable cartridges, filters, and pre-filters of many types. They are effective only when used with the appropriate cartridges, filters, and pre-filters for the air contaminants present. Air-purifying respirators may be either non-powered or powered. The non-powered type depends on the user's lungs to draw air through the purifying element during inhalation; therefore, the non-powered type has the greatest breathing resistance. The powered type is equipped with a battery-powered fan that forces air through the purifying element, thus reducing the breathing resistance and ensuring a positive pressure inside the facepiece. Whether powered or non-powered, air-purifying respirators may be subdivided by the type of contaminant they protect against as described below.

(1) Particulate air-purifying respirators use cartridges, filters, and pre-filters designed to protect against inhalation of aerosols, i.e., solid or liquid particles dispersed in air. The cartridges, filters, and pre-filters remove nuisance (e.g. non-toxic) and toxic dusts, fogs, fumes, mists, smokes and sprays either singly or in combination. Their construction varies according to the intended use that is specified in each device's approval. SURGICAL MASKS (blue or green) do not provide protection against air contaminants. They are for **MEDICAL/DENTAL USE ONLY** and must **NEVER** be used as an air-purifying respirator.

(2) Gas and vapor air-purifying respirators use cartridges and canisters that remove contaminants through absorption and adsorption. Typically, a cartridge removes a specific type of gas or vapor, i.e., organic vapors or acid gases.

(3) Combination cartridges and canisters are available which combine the removal capabilities of two or more type cartridges in a single cartridge, i.e., organic vapor and particulate removal, acid gas and organic vapor removal, or acid gas, ammonia, and organic vapor removal. Some manufacturers allow users to create their own combination cartridges by screwing two cartridges together; however, always follow the manufacturer's recommendations when doing this since there may be some limitations.

(4) **Prefilters**. All manufacturers allow the user to combine different degrees of particulate removal with any cartridge by attaching a pre-filter to the cartridge by means of a retainer ring. Such systems are commonly used to protect against an aerosol containing a volatile organic solvent.

(5) **Color Coding**. By federal regulation, each type of respirator cartridge/canister is color coded to identify its intended use. The color-coding may be achieved by coloring all or part of the cartridge/canister case or by affixing a colored label.

(6) **Labeling**. Each cartridge/canister is labeled with the contaminant(s) it protects against and the NIOSH/MSHA approval number. Some labels may provide more information about the cartridge's capabilities and limitations.

(7) Military gas masks (e.g., Mark V, M17) are military-unique air-purifying respirators that are only to be used for chemical-biological-radiological (CBR) warfare. MILITARY GAS MASKS MUST NEVER BE USED IN PLACE OF AN AIR-PURIFYING RESPIRATOR. This chapter does not apply to the use and maintenance of military gas masks.

b. Atmosphere-supplying respirators are used when the contaminant has no warning property (e.g., no odor), the contaminant's concentration is too high to use an air-purifying respirator, or the environment is immediately dangerous to life or health (IDLH). The two types are supplied-air respirators and self-contained breathing apparatuses.

(1) Supplied-air respirators are further subdivided into hose mask and air-line respirators.

(a) Hose mask respirators consist of a facepiece, breathing tube, harness, and large-diameter, thick-wall, non-kinking, air-supply hose. The air may be supplied by a blower, either motor or hand driven, or the user, unaided, may simply draw the air into the hose with each breath. This respirator offers no advantages over the air-line respirator and is being removed from the fleet.

(b) Air-line respirators consist of a facepiece, hood, helmet, or suit; breathing tube; regulator; and small-diameter hose provided with some means to attach the hose to the user. Air is provided by a compressor, ambient air breathing apparatus (AABA), or compressed air cylinder(s). The maximum length of hose allowed from a compressor or air fitting to the respirator shall be 300 feet unless a shorter maximum length is specified on the NIOSH/MSHA approval. The NIOSH/MSHA approval for each air-line respirator applies to the combination of the respirator and air supply hose as a unit and specifically to the part numbers listed on the approval. Any use of another manufacturer's respirator or hose automatically invalidates the approval. Air-line respirators can be subdivided into three types as follows:

1. Demand. Available only with a facepiece, it supplies air to the user on demand (inhalation) which creates a negative pressure within the facepiece. Leakage into the facepiece may occur if there is a poor seal between the respirator and the user's face.

2. Pressure Demand. Available only with a facepiece, it maintains a continuous positive pressure within the facepiece, thus preventing contaminant leakage into the facepiece.

3. Continuous Flow. Available with a facepiece, hood, helmet, or suit, it provides a continuous positive pressure and flow of air within any of the breathing zone containments, thus preventing contaminant leakage into the containment.

(2) Self-contained breathing apparatuses (SCBAs) consist of a facepiece, helmet, or hood; a breathing tube; and a source of air or oxygen, all of which is carried by the wearer. They may be subdivided into two categories.

(a) **Closed-circuit (Rebreathing) SCBAs**. There are two types of this respirator. In both types carbon dioxide ($CO_2$) in the exhaled breath is removed by a chemical canister prior to rebreathing. The difference between the two is the source of oxygen. In one type, the oxygen is provided by either high-pressure gaseous oxygen or gaseous oxygen converted from liquid oxygen. In the other type, of which the Navy "oxygen breathing apparatus" (OBA) is an example, the water vapor in the exhaled breath reacts with a chemical in the canister to release oxygen. The OBA is not approved by NIOSH/MSHA for commercial use, and its only authorized uses aboard ship are for damage control, fire-fighting operations, and fixed flooding systems PMS. Even in emer-

gencies, OBAs must not be used in flammable atmospheres due to the heat generated by the canister.

(b) Open-circuit SCBAs. In this type of SCBA, the exhaled air is expelled to the atmosphere and air is provided to the user from a compressed air cylinder. This type of respirator is available in either a demand (negative facepiece pressure) or pressure-demand (positive facepiece pressure) model.

(c) Emergency Escape Breathing Device (EEBD). This is a special type of SCBA developed for the Navy specifically for emergency escape from shipboard fires. They have a very short duration air supply. **THEY MUST NEVER BE USED FOR ENTRY INTO A HAZARDOUS ATMOSPHERE; THEY ARE FOR ESCAPE ONLY!** This chapter does not apply to the use and maintenance of the EEBD.

(d) Supplemental Emergency Escape Device (SEED). This is another special type of SCBA developed for main propulsion space watch standers ONLY. They have a very short duration air supply. ***THEY MUST NEVER BE USED FOR ENTRY INTO A HAZARDOUS ATMOSPHERE; THEY ARE FOR ESCAPE ONLY!***

B0605. RESPIRATOR SELECTION

a. Approval. *Only respirators which are approved by NIOSH shall be used.* If there is any doubt as to the respirator required to protect against a particular contaminant, an industrial hygienist should be consulted.

b. Hazard Assessment. Determining the type of contaminant and its concentration is the most important consideration in the selection of respirators. This determination shall be provided as part of the most current industrial hygiene survey or by an industrial hygienist upon request. The industrial hygiene survey report of the industrial hygienist shall identify and evaluate the respiratory hazard(s) in the workplace; this evaluation shall include a reasonable estimate or employee exposures to respiratory hazard(s). Where the employee's exposure to respiratory hazard(s) cannot be identified or reasonable estimated by the industrial hygienist, the atmosphere shall be considered IDLH. The following are some chemical, physical and toxicological properties that should be considered in the selection of a respirator:

(1) Warning properties of the contaminant gas or vapor (smell, eye irritation or respiratory irritation). Some contaminants lack sufficient warning properties to alert the wearer of respirator failure. Vapor- and gas-removing respirators are not approved for these contaminants, which include carbon monoxide, hydrogen cyanide, isocyanates and methyl alcohol.

(2) Whether the contaminant is absorbed through the skin.

(3) Whether any of the contaminants are "Immediately Dangerous to Life or Health" (IDLH) or whether injurious effects would be produced after prolonged exposure.

(4) Concentration of the contaminant in the atmosphere.

(5) NAVOSH standard for the contaminant(s). See Chapters B1 and B10 for standards for lead and asbestos.

(6) Whether an oxygen-deficient or oxygen-rich atmosphere exists or may be created.

(7) The nature, extent and frequency of the duties to be performed by personnel (e.g., welding or painting) in the work area.

(8) Degree of protection provided by the particular respirator.

**B0606. LIMITATIONS OF RESPIRATORS**

Some general limitations have been mentioned in sections B0604 and B0605; however, the following provides more specific information.

a. **Protection Factor**. Each type of respirator provides protection against a contaminant up to a concentration that is a multiple (e.g., 10 times, 50 times, etc.) of that contaminant's permissible exposure limit or action level (see chapters B1 and B10 for some examples). Protection factors are described in detail in reference B6-2, but certain federal standards may assign a lower protection factor for use against a specific contaminant. Since a full-facepiece is less likely to have its facepiece seal broken due to movement, talking, etc., a full-facepiece respirator usually has a higher protection factor than a quarter- or half-facepiece respirator.

b. **Oxygen-deficient Atmospheres**. All air-purifying respirators require that sufficient oxygen be present in the atmosphere where they will be used. Sufficient oxygen is defined as at least 19.5 percent oxygen for use at essentially sea level.

c. **Hose Length/Configuration and Air Pressure Requirements for Air-line Respirators**. The approval specifies the maximum length of air supply hose that may be used with each respirator and this is a function of the pressure of the supplied air.

**NOTE:**

The allowed hose length for supplied-air respirators is specified on the NIOSH approval certificate, but in no case shall the length exceed 300 feet maximum. Supplied-air respirators shall be operated at the conditions of pressure and hose length specified in the NIOSH approval. Only those hoses supplied by the respirator manufacturer shall be used. Air-line couplings shall be incompatible with outlet couplings for other gas systems to prevent inadvertent servicing with non-respirable gases or oxygen.

d. Environmental Temperature Operating Ranges. Atmosphere-supplying respirators have specific temperature ranges for which they are approved. Consult the manufacturer's specifications before use in extreme temperatures.

e. Maximum Use Concentrations. Regardless of the protection factor, some air-purifying cartridges and canisters are limited to use at or below a specific contaminant concentration. This is generally due to the capacity (e.g., size or removal efficiency) of the cartridge or canister to remove certain contaminants. The approval certificate should always be consulted before use to determine what additional use restrictions apply.

B0607. USE OF RESPIRATORS

a. Prior to using a respirator to perform work that requires respiratory protection, the following requirements shall be met:

(1) The user shall be certified by the MDR as medically qualified to use each type of respirator required per Section B0614, unless the user is to wear a SCBA. SCBAs are exempt from the requirement for medical qualification.

(2) The user shall pass a fit-test with each type of respirator to be used per Section B0608, unless the user is to wear a SCBA. SCBAs are exempt from the requirement to fit test.

(3) The user shall be trained per Section B0612.

(4) Gas permeable and soft contact lenses are permitted to be worn with all respiratory protection.

(5) Tight fitting respirators shall not be worn when conditions such as facial hair, facial scars, or prescription eyeglasses prevent a good respirator seal.

b. User Seal Checks. Prior to each use, perform a positive and negative user seal check prior to each use.

(1) Positive Pressure User Seal Check. Place your palm or thumb over the exhalation valve and press lightly. Exhale gently. The respirator is properly sealed if no air leaks around the edges and a slight positive pressure is felt inside the facepiece.

(2) Negative Pressure User Seal Check. Place your palm(s) over the cartridge(s) or canister inlet. Inhale gently. The respirator is properly sealed if no air leaks around the edges and a slight negative pressure is felt inside the facepiece as it collapses slightly towards the face.

c. Warning Signs of Respirator Failure

(1) Particulate Air-purifying Respirator. When breathing difficulty is encountered with a particulate air-purifying respirator (increased resistance due to partial clogging), the filter(s) must be replaced. If the respi-

rator is a single-use (e.g., disposable) respirator then the respirator must be discarded.

(2) Vapor or Gas Air-purifying Respirator. When using a vapor or gas air-purifying respirator, if the user notices any of the warning properties, (e.g., odor, taste, eye irritation (with a full facepiece respirator)), or respiratory irritation, he/she should promptly leave the area and replace the cartridge or canister before returning.

(3) Service Life of Air-purifying Respirator Filters, Canisters, and Cartridges. Filters, canisters, and cartridges for air-purifying respirators are intended to be used until filter resistance precludes further use, or the chemical sorbent is expended as signaled by a specific warning property, (e.g., odor, taste, and/or irritation). Change end-of-service-life indicator cartridges and canisters when indicated by the appropriate color change. End-of-service-life indicator cartridges and canisters must be worn belt mounted or chest mounted, respectively, so that the end-of-service-life indicator can be seen. New filters, canisters or cartridges shall always be provided when a respirator is reissued. When in doubt about the previous use of the respirator, replace the filter, canister, or cartridge.

(4) Air-line Respirator. Leave the area immediately when the compressor failure alarm is activated or if an air pressure drop is sensed.

(5) Self-contained Breathing Apparatus. Leave the area as soon as the air pressure alarm activates.

*B0608.* RESPIRATOR FIT TESTING

Each individual who is required to use a respirator shall be qualitatively or quantitatively fit tested before being issued a respirator and annually thereafter unless the user is to wear a SCBA. SCBAs are exempt from the requirement to fit test. When conditions, such as facial hair, can reasonably be expected to interfere with the proper fit of respiratory protective equipment, the user shall not be permitted to do work requiring a respirator until satisfactory fit testing can be accomplished. An industrial hygienist must be consulted for guidance when these contaminants are involved. Fit testing for all ships can be performed by anyone trained to fit test via training detailed in B0612. Fit testing can also be obtained via the supporting tender, local NEPMUs, the cognizant MTF, or other sources.

a. Qualitative Fit Testing. Qualitative fit testing may be performed using irritant smoke, isoamyl acetate (banana oil), saccharin mist, or the Bitrex method. Fit testing shall conform to the procedures in Appendix B6-C

b. Quantitative Fit Testing. Personnel using respirators to protect against asbestos and lead exposure may require quantitative fit testing, per Federal regulations. This type of fit testing can only be performed by, and shall be requested from, shore activities.

**B0609. INSPECTION, CLEANING, STORAGE AND MAINTENANCE OF RESPIRATORS**

To ensure adequate performance and proper sanitation, respirators shall be maintained as follows:

a. Inspections. All respirators shall be inspected routinely before and after each use. Emergency use respirators shall be inspected after each use and at least monthly. SCBAs shall be inspected periodically to ensure proper function during an emergency response and after each use and at least monthly. Inspect the following items for at least the listed defects:

(1) Head straps or head harness. Breaks, loss of elasticity, broken or malfunctioning buckles and attachments (full-facepiece only), excessively worn serrations on the head harness which might permit slippage.

(2) Facepiece. Excessive dirt; cracks, tears, holes, or distortion from improper storage; inflexibility (stretch and massage to restore flexibility); cracked or badly scratched lenses in full-facepieces; incorrectly mounted full-facepiece lens or broken or missing mounting clips; cracked or broken air-purifying element holder(s), badly worn threads, or missing gasket(s) (if required).

(3) Inhalation and exhalation valves. Foreign material, such as detergent residue, dust particles, or human hair under the valve seat; cracks, tears, or distortion in the valve material; improper insertion of the valve body in the facepiece; cracks, breaks, or chips in the valve body, particularly in the sealing surface; missing or defective exhalation valve cover; improper installation of the valve in the valve body.

(4) Cartridge, canister, or filter. Incorrect cartridge, canister, or filter for the hazard; incorrect installation, loose connections, missing or worn gaskets, or cross-threading in holder; expired shelf-life date on cartridge or canister; evidence of prior use of sorbent cartridge or canister, indicated by absence of sealing material, tape, foil, etc., over inlet.

(5) Corrugated breathing tubes. Broken or missing end connectors; missing or loose hose clamps; deterioration, determined by stretching the tube and looking for cracks.

(6) Harness of a front- or back-mounted gas mask. Damage or wear to the canister holder which may prevent its being held securely in place; broken harness straps or fastening.

(7) Hoods, helmets, blouses, or full suits. Examine for rips and tears and seam integrity; examine the protective headgear, if required, for general condition, with emphasis on the suspension inside the headgear; examine the protective faceshield, if any, for cracks or breaks or impaired vision due to rebounding abrasive particles; ensure the protective screen is intact and secured correctly over the faceshield of abrasive blasting hoods and blouses.

(8) Air supply systems. Examine for integrity and good condition of the air supply lines and hoses, including attachments and end fittings; correct operation and condition of all regulators, valves, or other air-flow regulators.

b. Cleaning, Sanitizing, and Storage. Respirators shall be cleaned and sanitized according to manufacturer's instructions or as follows:

(1) Remove and discard all used cartridges and filters.

(2) Disassemble and hand wash the facepiece and parts in a warm water and mild dishwashing detergent solution. Strong cleaning agents can damage respirator parts. Temperatures above 43°C (110°F) and vigorous mechanical agitation shall be avoided. Solvents (e.g., paint removers), that can affect rubber and other parts, shall not be used. Ultrasonic or other suitable washers may be used per manufacturer's instructions.

(3) Sanitize the facepiece using one of the following methods:

(a) Immerse the facepiece for 2 minutes in a warm water (43° C or 110° F) solution of hypochlorite solution (approximately one milliliter of liquid laundry bleach to one liter of water); or

(b) Immerse the facepiece for 2 minutes in a warm water (43° C or 110° F) solution of iodine (add 0.8 milliliters of tincture of iodine to one liter of water); or

(c) Immerse the facepiece for 2 minutes in a warm water (43 °C or 110° F) solution of other ship's hazardous materials list (SHML) approved commercially available cleansers of equivalent disinfectant quality when used as directed, it their use is recommended or approved by the respirator manufacturer.

(4) Rinse in clean warm water at a temperature of about 110°F. Do not exceed 122°F (50°C).

(5) Air-dry in a clean uncontaminated area in such a way as to prevent distortion of the facepiece. If drying cabinets are used, the drying temperature shall not exceed 122°F (50°C).

(6) Reassemble and reinspect respirator. If replacement parts are necessary, they shall be obtained and installed or the respirator shall be removed from service until the unserviceable parts are replaced. If parts are not available and cannot be replaced, discard the entire facepiece as it cannot be used without all parts in place. Interchange of parts is prohibited.

(7) Place respirator in a clean plastic bag or other container and seal. Zip-lock plastic bags are preferred. Ensure the respirator is completely dry before sealing to prevent mildew.

(8) Store flat in a clean, dry, uncontaminated area without crowding which may distort the respirator facepiece.

c. Repair and Maintenance

(1) Personnel shall not service/repair any respirators for which they have not been specifically trained.

(2) No work shall be performed on reducing valves, regulators or alarms of atmosphere-supplying respirators (e.g., air-line respirators and SCBAs). These items shall be returned to the manufacturer for all repairs and adjustments.

B0610. ENTRY INTO IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH) ATMOSPHERES

a. Respirators. Should it become necessary to enter an IDLH atmosphere, only the following two types of respirators shall be used:

(1) A full facepiece, self-contained breathing apparatus (SCBA) operated in the pressure-demand mode.

(2) A full facepiece air-line respirator (operated in the pressure demand mode) equipped with an auxiliary self-contained air supply having a minimum rated service life of 15 minutes. The self-contained air supply of 15 minutes must be sufficient to ensure escape from the IDLH area. These may only be used to enter an IDLH atmosphere when connected to the supplied air source (air-line). The auxiliary self-contained air supply may only be used for egress purposes. If the self-contained air supply (15-minute supply) is insufficient to ensure escape, then a SCBA must be used.

NOTE:

Although specified by Chapter 074, Volume 3 of the Naval Ships Technical Manual, Gas Free Engineering, the equipment required in paragraphs B0610a(1) and (2) is not on the allowance lists of many ships. If the respirators required are not carried aboard ship, an Oxygen Breathing Apparatus (OBA) may be used for entry into atmospheres which are or are potentially IDLH if the following three conditions are met: underway, required by an emergency or for operational readiness reasons, and approved by the commanding officer. For situations which are not an emergency or operational readiness, entry shall be delayed until the ship returns to port and the entry may be made by an activity which has proper respiratory protection equipment. The above requirements do not apply to use of an OBA for damage control or fire fighting.

b. Standby Personnel. At least one trained standby person, with a suitable respirator per paragraph B0610a, shall be present in the nearest uncontaminated area. If the standby person enters the IDLH atmosphere, there shall be a second standby person with a suitable respirator in the uncontaminated area.

c. Communications. The standby person and those persons working in the IDLH atmosphere shall be able to communicate continuously with each other, i.e., visually, by telephone or radio or signal line.

d. Rescue Equipment. Persons who enter any IDLH atmosphere shall also be equipped with safety harnesses and lines that can be used to rescue them should they lose consciousness. A hoist shall be present for removing personnel from the IDLH atmosphere. For more information on rescue operations and gas free engineering, refer to Chapter B8.

**CAUTION**

Tanks, voids, compartments and other confined spaces may contain atmospheres that are hazardous to life or health. This may be due to the presence of flammable or toxic air contaminants or the absence of sufficient oxygen to sustain life. No one shall be permitted to enter any such area until tests of the atmosphere are completed by a qualified gas free engineer and entry by personnel is authorized by competent authority.

**CAUTION**

Eductors located in remote spaces, if activated, can remove all breathing air. Ensure sufficient make-up air is provided and the space has adequate oxygen prior to entry in all eductor equipped remote spaces.

## B0611. BREATHING AIR REQUIREMENTS

a. Air Quality. Breathing air or the air output of pumps or compressors which are sources of breathing air for air-line respirators or SCBAs shall meet at least the minimum requirements for Grade D breathing air per reference B6-3.

b. Ship's Low Pressure (LP) Air Compressors. Ship's LP air is not suitable for use as breathing air unless specifically tested and certified to meet the purity standards in paragraph B0611a.

c. Ambient Air Breathing Apparatus (AABA). Air intakes for portable pumps such as the AABA shall be placed in an area free of contaminants. Periodic testing of the air quality from an AABA is not required. AABAs shall not be used for entry into IDLH atmospheres.

d. Frequency of Testing. The air output of compressors used by breathing air shall be tested quarterly. Quarterly testing of breathing air does not apply to the Navy Diving Program. Reference B6-4 addresses diving air requirements.

**B0612. RESPIRATORY PROTECTION TRAINING**

a. Proper respirator training is essential for personnel required to wear respirators and for supervisors of those wearing respirators. Documented training shall be given prior to respirator use and annually thereafter, and shall include the following topics:

(1) Proper fitting and wearing of the respirator, including how to perform user seal checks. Each person shall demonstrate the capability to don and wear each type of respirator to be worn in the performance of normal and emergency duties including situations in which the respirator malfunctions.

(2) Respirator capabilities and limitations

(3) Nature and degree of respiratory hazards and the effects from exposure to the hazardous atmosphere

(4) Proper respirator selection according to intended use

(5) Respirator care, cleaning, maintenance and storage

(6) Prohibition against facial hair and the proper use of contact lenses when wearing respirators

(7) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

b. Respiratory protection managers (RPM) on submarine tenders (AS), aircraft carriers (CV and CVN), amphibious assault ships (LPH, LHA, and LHD), and selected combat logistics ships (AOE) shall attend Respiratory Protection Program Manager's course (CIN A-4J-493-5-0072 or the latest course identification number). All other RPMs shall attend RPM course (CIN A-4J-00482). Courses are available from the Navy Occupational Safety and Health Environmental Training Center.

c. Personnel assigned to issue respiratory protective equipment shall be trained on respirator selection, and care and maintenance prior to assignment and annually thereafter. The training should be given by the facility Respiratory Protection Manager (RPM).

d. See chapter A7 for training aids to assist in respiratory protection training.

**B0613. RESPIRATORY PROTECTION EVALUATION**

The need for the use of respirators shall be evaluated during an industrial hygiene survey.

B0614. MEDICAL EVALUATIONS

a. **Frequency**. The frequency of the evaluation shall be at least every 5 years below age 35, every 2 years from age 35 to 45, and changing to annually starting at age 45. Special evaluations shall be performed after prolonged absences from work for medical reasons or whenever a functional disability has been identified.

b. **Examiner**. A physician or a registered/occupational health nurse, physician's assistant, preventive medicine technician, or a hospital corpsman (independent duty technician, NEC 8425 or submarine medical technician, NEC 8402 only) under the supervision of a physician may conduct the medical evaluation. If all answers to the medical history questionnaire in Appendix B6-D are negative and the examiner's consideration of the respirator to be used, frequency of respirator use, and type of work performed by the individual raises no other concerns, the examiner may certify that the individual is medically qualified to use that respirator. A "Yes" answer to any of these questions requires a referral to a physician if the condition is not stable and has not been previously evaluated. If the examiner's consideration of the respirator to be used, frequency of respirator use, and type of work performed by the individual raises other concerns, the individual must be referred to a physician for examination and disposition. Medical evaluation reports that restrict or do not permit respirator use should be signed by a physician. If the examiner's supervisory physician is not on site, the examiner's consultation with the supervising physician shall be annotated in the medical record. All examiners shall be guided by the information in this section when evaluating an individual for respirator use.

c. **Medical History**. A medical history shall be obtained initially and the information should be reviewed and updated during subsequent examinations. A medical history questionnaire should be used to identify the following:

(1) Previously diagnosed disease, particularly stressing cardiovascular, respiratory, or neurological diseases

(2) Physiological problems or symptoms including claustrophobia

(3) Problems associated with breathing during normal work activities

(4) Past problems with respirator use

(5) Past and current usage of medication

(6) Any known physical deformities or abnormalities, including those that may interfere with respirator use

(7) Previous occupations

(8) Tolerance to tachycardia produced by inhalation of heated air.

As a minimum, the medical history questionnaire shall collect all the information requested in the model questionnaire in Appendix B6-D Respirator User's Request Form, which may be adapted onto a SF-600 for medical record entry.

d. Medical Examination

(1) General Considerations. The examiner's evaluation of suitability of the individual for respirator use shall be based on his/her perception of the individual's work ability and not specifically on a diagnosis.

(2) Specific Disqualifying Conditions. Disqualifying conditions for respirator use are found in Appendix B6-E.

(3) Work Restrictions. To ensure the safety of the service member, the examiner shall designate work restrictions that are based on the person's medical history or current health condition and are not related specifically to respirator use. Conditions that might require special restrictions or replacement shall include history of heat stroke or heat exhaustion and skin conditions in cases where occlusive materials may result in symptoms or aggravation of the preexisting dermatitis.

(4) Spirometry. When properly performed by trained personnel on calibrated equipment, spirometry may be indicated for individuals when the examiner needs additional information as a result of medical history or clinical examination.

B0615. SUBMARINE RESPIRATORY PROTECTION

Respiratory protection is applicable to submarine operations in port. When respiratory protection is required at sea, the installed Emergency Air Breathing (EAB) System is the primary protection. Nuclear system welders may use metal fume respirators with their welding goggles.

a. Responsibilities

(1) The commanding officer shall appoint a respiratory protection manager(RPM).

(2) The RPM shall:

(a) Ensure that up-to-date command guidance exists on respiratory protection. Such guidance will normally be issued in this chapter; however, information unique to the command may be written into a command directive.

(b) Develop and maintain a roster of personnel in the respiratory protection.

(c) For respirators needed while underway (e.g., nuclear welders), provide guidance to the supply officer on the selection of proper types and stock levels of respiratory protective equipment. Sufficient respirators,

spare parts, and expendable supplies (e.g., cartridges and filters) shall be stocked to conduct all operations.

(d) Ensure all respirators retained on board are properly maintained and stored.

(e) Ensure respirator users and supervisors of those wearing respirators are trained on respiratory protection requirements. This training shall be repeated annually. Recordkeeping for respirator fit-testing shall include type of respirator, brand name and model, method of test, test results, test date, and name of the instructor/tester and of the individual tested.

(f) Ensure appropriate fit testing is performed by the supporting IMA.

(g) Receive refresher respiratory protection instructor training every 2 years.

(h) Issue respirator user cards that will contain as a minimum:

1. Name/Social Security Number
2. Last respirator training date
3. Date medically qualified
4. Respirator successfully fit tested (brand, model, size)
5. Signature of fit tester/date/command.

This card will be needed for the supporting submarine Intermediate Maintenance Activity (IMA) to issue respirators. Submarine tenders or IMAs will print respirator user cards upon receipt of a work request.

(i) Coordinate with the supporting submarine IMA to determine what respirators (brand, model, and size) are available for issue.

(3) Division officers shall:

(a) Ensure that personnel performing work requiring respirators are assigned and qualified prior to use of respiratory protective equipment. Use the form in Appendix B6-A to request medical qualification.

(b) Ensure that personnel have a current fit test and training prior to donning a respirator.

(c) For respirators needed while in port, ensure personnel obtain required respirator from the supporting submarine IMA.

(d) Ensure non-disposable respirators are returned to supporting submarine IMA when work is completed.

(e) Provide respirators needed while underway (e.g., nuclear systems welders).

(4) The MDR shall:

(a) Conduct or schedule the necessary preplacement medical clearance screening and periodic medical examinations of personnel required to use respirators (see paragraph B0614; the MDR is qualified to do these screening and medical evaluations.)

(b) Ensure that all exposure records and the results of all respirator user medical evaluations are entered into the individual's medical record

(c) Assist department heads/division officers in identifying in port work requiring respiratory protection.

(5) Supporting submarine IMAs shall:

(a) Upon request, schedule/provide initial or refresher training for the submarine RPM.

(b) Provide a standard submarine respiratory protection lesson plan to submarine RPMs for use in training their crews.

(c) Provide appropriate respirator fit-testing for the submarine respirator users while in port.

(d) Provide only the respirators needed by submarines in port. Respirators will only be issued to personnel with respirator user cards described in paragraph B0615a(2)(h).

(6) Personnel required to wear a respirator to perform in-port work shall:

(a) Wear the provided respirator when required and in a proper manner.

(b) Inspect the respirator before and after each use per paragraph B0609a.

(c) Perform a positive and negative respirator facepiece seal check prior to each use per paragraph B0607b.

(d) Report any malfunction of the respirator to their immediate supervisor.

(e) Prevent damage or loss of respiratory protective equipment.

b. **Procedures**

(1) Upon determination that planned work will require respiratory protection, supervisors shall assign personnel to perform the work. Those personnel who have not been previously assigned to work requiring respirator use shall be sent to the MDR for medical clearance qualification.

(2) The MDR shall complete the medical qualification using Appendix B6-A or shall send the individual to the squadron medical officer for such qualification. Appendix B6-A and B6-D can be adapted onto a SF-600 for inclusion in the health record.

(3) Medically qualified personnel shall report to the tender/ submarine base for respirator issue. Those personnel who do not have a current (within 1 year) record of fit testing/training shall be fit-tested and trained by the respirator issuing facility according to the guidelines of paragraph B0612, prior to such issue. All personnel shall receive the following training prior to each issue:

(a) Respirator inspection procedures

(b) Positive and negative facepiece seal checks

(c) Respirator/cartridge service life

(d) Warning signs of respirator failure.

Respirators/cartridges shall be issued for the duration of the job.

(4) Upon completion of work, disposable respirators shall be disposed of; non-disposable respirators shall be returned to the supplying activity.

c. Training. Department heads, division officers, leading petty officers, and the MDR shall be trained annually on the recognition of work requiring respirators, respiratory protection procedures, and the proper use of respirators.

---

## CHAPTER B6

## REFERENCES

B6-1 29 Code of Federal regulations (CFR) 1910.134, Respiratory Protection (NOTAL)

B6-2 American National Standards Institute (ANSI) Z88.2-1992, Practices for Respiratory Protection. (Adopted by the Department of Defense and available from the Naval Publications and Forms Center, Philadelphia,

PA) (Not required on board ship but listed as a pertinent reference) (NOTAL)

B6-3 American National Standards Institute/Compressed Gas Association, Inc., Commodity Specification for Air, ANSI/CGA G-7.1-1989 (NOTAL)

B6-4 OPNAVINST 3150.27A, Navy Diving Program (NOTAL)

**Appendix B6-A**

**MEDICAL CLEARANCE REQUEST**

***FOR OFFICIAL USE ONLY***

From: _____ Division Officer

To: Medical Department Representative

Subj: REQUEST FOR MEDICAL CLEARANCE FOR RESPIRATOR USE

1. The following individual is referred to you for subject clearance:

Name _____ SSN _____ - ____ - _____

Supervisor _____ Date of Birth _____

Circle type(s) of respirator(s) to be used:

Air-purifying (non-powered) Air-purifying (powered)

Hose mask (with blower) Hose mask (without blower)

Air-line (demand) Air-line (pressure-demand)

Air-line (continuous flow) SCBA (closed circuit)

SCBA (open-circuit, demand) SCBA (open-circuit, pressure-demand)

Level of Work Effort (Circle one): Light Moderate Heavy Strenuous

Extent of usage (Circle one):

Daily Occasionally but more than once a week Rarely or emergency only

Length of time of anticipated effort (hours per day) _____

Special work considerations (e.g., high places, elevated temperatures, hazardous material, protective clothing required, etc.)

_____

_____

_____

_____
Division Officer Signature and Date

**FOR OFFICIAL USE ONLY**

From: Medical Department Representative
To: _____ Division Officer

_____ is: (Circle one)

Medically qualified to use the above respirator with no restrictions.

Medically qualified to use the above respirator subject to the restrictions specified below.

Not medically qualified to use the above respirator.

Restrictions _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

MDR Signature and Date

Copy to:
Respiratory Protection Officer

## Appendix B6-B

## TYPES OF RESPIRATORS

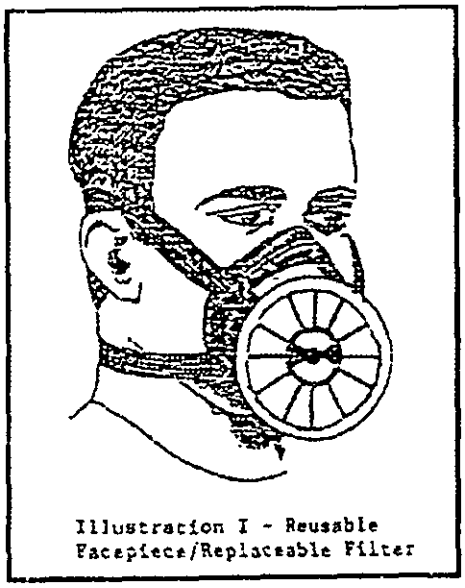

Illustration I - Reusable Facepiece/Replaceable Filter

Illustration I - Reusable Facepiece/Replaceable Filter

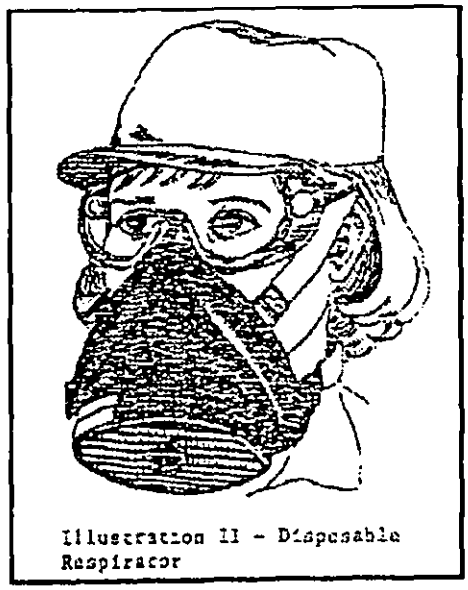

Illustration II - Disposable Respirator

Illustration II - Disposable Respirator

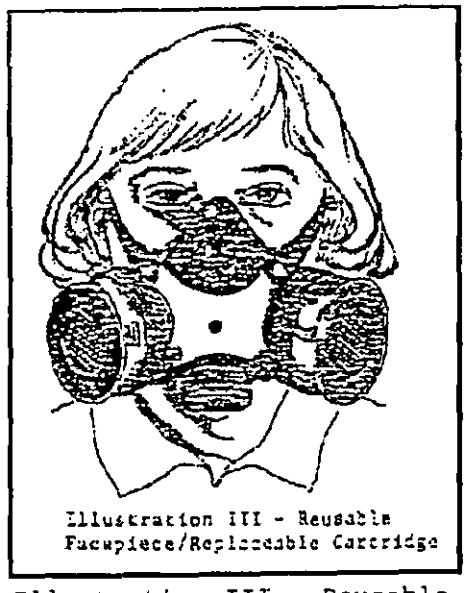

Illustration III - Reusable Facepiece/Replaceable Cartridge

Illustration III - Reusable Facepiece/Replaceable Cartridge

Illustration IV - Self-Contained Breathing Apparatus

Illustration IV - Self-Contained Breathing Apparatus

**Appendix B6-C**

**Qualitative Respirator Fit Test Protocols**

I. **Isoamyl Acetate Fit Test**

a. The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.

b. Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.

c. After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

d. A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

e. Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.

f. Allow 2 minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.

g. If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

h. If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in Ia through g above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

i. If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.

j. When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

II. Saccharin Solution Aerosol Protocol. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

a. Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

1. During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn.

2. The test enclosure shall have a 3/4 -inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

3. The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

4. Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

5. The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b)(5) below) in 100 ml of distilled water.

6. To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

7. Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

8. If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second 10 squeezes, the screening test is completed. The taste threshold is noted as 20 regardless of the number of squeezes actually completed.

9. If the second response is negative, 10 more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as 30 regardless of the number of squeezes actually completed.

10. The test conductor will take note of the number of squeezes required to solicit a taste response.

11. If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test. Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

12. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

13. Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

14. The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every 4 hours.

b. <u>Saccharin solution aerosol fit test procedure</u>

1. The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

2. The fit test uses the same enclosure described in IIb1 above.

3. The test subject shall don the enclosure while wearing the respirator selected in section 1b of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

4. A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

5. The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

6. As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

7. The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. A minimum of 10 squeezes is required.

8. After generating the aerosol, the test subject shall be instructed to perform the exercises in section Ie of this appendix.

9. Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

10. The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

11. If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

12. Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

III. **Bitrex TM (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol**. The Bitrex TM (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

a. **Taste Threshold Screening**. The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

1. During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn.

2. The test enclosure shall have a 3/4 inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

3. The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.

4. Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

5. The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

6. To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

7. An initial 10 squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the 10 squeezes, the screening test is completed. The taste threshold is noted as 10 regardless of the number of squeezes actually completed.

8. If the first response is negative, 10 more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second 10 squeezes, the screening test is completed. The taste threshold is noted as 20 regardless of the number of squeezes actually completed.

9. If the second response is negative, 10 more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of 10 squeezes, the screening test is completed. The taste threshold is noted as 30 regardless of the number of squeezes actually completed.

10. The test conductor will take note of the number of squeezes required to solicit a taste response.

11. If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

12. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

13. Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

14. The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every 4 hours.

b. Bitrex Solution Aerosol Fit Test Procedure.

1. The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

2. The fit test uses the same enclosure as that described in IIIa(1) above.

3. The test subject shall don the enclosure while wearing the respirator selected according to section Ib of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

4. A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

5. The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

6. As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

7. The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

8. After generating the aerosol, the test subject shall be instructed to perform the exercises in section Ie of this appendix.

9. Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

10. The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

11. If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

IV. Irritant Smoke (Stannic Chloride) Protocol. This qualitative fit test uses a person's response to the irritating chemicals released in the smoke produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

a. General Requirements and Precautions

1. The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

2. Only stannic chloride smoke tubes shall be used for this protocol.

3. No form of test enclosure or hood for the test subject shall be used.

4. The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.

5. The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

b. Sensitivity Screening Check. The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

1. The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

2. The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.

3. The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

b. Irritant Smoke Fit Test Procedure

1. The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).

2. The test subject shall be instructed to keep his/her eyes closed.

3. The test operator shall direct the stream of irritant smoke from the smoke tube toward the faceseal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within 6 inches of the respirator.

4. If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.

5. The exercises identified in section Ie of this appendix shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of 6 inches.

6. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.

7. Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.

8. If a response is produced during this second sensitivity check, then the fit test is passed.

**Appendix B6-D**

MEDICAL QUESTIONNAIRE FOR POTENTIAL RESPIRATOR USERS

**Part 1**

1. Today's date: _____

2. Your name: _____

3. Your age (to nearest year): _____

4. Your sex (circle one): Male/Female

5. Your height (Feet and Inches): _____

6. Your weight (Pounds): _____

7. Your job title/rate: _____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code):

_____

9. Circle the type of respirator you will use (you can check more than one category):

a. N, R, or P disposable respirator (filter-mask, non-cartridge type only)

b. N, R, or P non-disposable respirator (filter-mask, with cartridges)

c. Other type of cartridge respirators (for example, dust, fume , mist, or organic vapor respirators)

d. Other types of respirators (for example, powered-air purifying, supplied-air, or self-contained breathing apparatus).

10. Have you ever/previously worn a respirator (circle one): Yes/No
If yes, what type(s):

**Part 2**

Questions 1 through 9 below must be answered by every person who has been selected to use any type of respirator (please circle yes or no).

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you ever had any of the following conditions?

a. Seizures (fits): Yes/No

b. Diabetes (sugar disease): Yes/No

c. Allergic reactions that interfere with your breathing: Yes/No

d. Claustrophobia (fear of closed-in places): Yes/No

e. Trouble smelling odors: Yes/No

3. Have you ever had any of the following pulmonary or lung problems?

a. Asbestosis: Yes/No

b. Asthma: Yes/No

c. Chronic bronchitis: Yes/No

d. Emphysema: Yes/No

e. Pneumonia: Yes/No

f. Tuberculosis: Yes/No

g. Silicosis: Yes/No

h. Pneumothorax (collapsed lung): Yes/No

i. Lung cancer: Yes/No

j. Broken ribs: Yes/No

k. Any chest injuries or surgeries: Yes/No

l. Any other lung problem that you've been told about: Yes/No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?

a. Shortness of breath: Yes/No

b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No

c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No

d. Have to stop for breath when walking at your own pace on level ground: Yes/No

e. Shortness of breath when washing or dressing yourself: Yes/No

f. Shortness of breath that interferes with your job: Yes/No

g. Coughing that produces phlegm (thick sputum): Yes/No

h. Coughing that wakes you early in the morning: Yes/No

i. Coughing that occurs mostly when you are lying down: Yes/No

j. Coughing up blood in the last month: Yes/No

k. Wheezing: Yes/No

l. Wheezing that interferes with your job: Yes/No

m. Chest pain when you breathe deeply: Yes/No

n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you ever had any of the following cardiovascular or heart problems?

a. Heart attack: Yes/No

b. Stroke: Yes/No

c. Angina: Yes/No

d. Heart failure: Yes/No

e. Swelling in your legs or feet (not caused by walking): Yes/No

f. Heart arrhythmia (heart beating irregularly): Yes/No

g. High blood pressure: Yes/No

h. Any other heart problem that you've been told about: Yes/No

6. Have you ever had any of the following cardiovascular or heart symptoms?

a. Frequent pain or tightness in your chest: Yes/No

b. Pain or tightness in your chest during physical activity: Yes/No

c. Pain or tightness in your chest that interferes with your job: Yes/No

d. In the past 2 years, have you noticed your heart skipping or missing a beat: Yes/No

e. Heartburn or indigestion that is not related to eating: Yes/No

f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you currently take medication for any of the following problems?

a. Breathing or lung problems: Yes/No

b. Heart trouble: Yes/No

c. Blood pressure: Yes/No

d. Seizures (fits): Yes/No

8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question 9:)

a. Eye irritation: Yes/No

b. Skin allergies or rashes: Yes/No

c. Anxiety: Yes/No

d. General weakness or fatigue: Yes/No

e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No

**Part 3**

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently): Yes/No

11. Do you currently have any of the following vision problems?

a. Wear contact lenses: Yes/No

b. Wear glasses: Yes/No

c. Color blind: Yes/No

d. Any other eye or vision problem: Yes/No

e. Any other eye or vision problem: Yes/No

12. Have you ever had an injury to your ears, including a broken ear drum: Yes/No

13. Do you currently have any of the following hearing problems?

a. Difficulty hearing: Yes/No

b. Wear a hearing aid: Yes/No

c. Any other hearing or ear problem: Yes/No

14. Have you ever had a back injury: Yes/No

15. Do you currently have any of the following musculoskeletal problems?

a. Weakness in any of your arms, hands, legs, or feet: Yes/No

b. Back pain: Yes/No

c. Difficulty fully moving your arms and legs: Yes/No

d. Pain or stiffness when you lean forward or backward at the waist: Yes/No

e. Difficulty fully moving your head up or down: Yes/No

f. Difficulty fully moving your head side to side: Yes/No

g. Difficulty bending at your knees: Yes/No

h. Difficulty squatting to the ground: Yes/No

i. Climbing a flight of stairs or a ladder carrying more than 25 lbs.: Yes/No

j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

**Part 4**

(Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire)

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No

If yes, do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/No

If yes, name the chemicals if you know them:

3. Have you ever been a member of a HAZMAT spill response team, or a member of a HAZMINCEN: Yes/No

4. Have you ever worked with any of the materials, or under any of the conditions, listed below:

a. Asbestos: Yes/No

b. Silica (e.g., in sandblasting): Yes/No

c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No

d. Beryllium: Yes/No

e. Aluminum: Yes/No

f. Coal (for example, mining): Yes/No

g. Iron: Yes/No

h. Tin: Yes/No

i. Dusty environments: Yes/No

j. Any other hazardous exposures: Yes/No

If yes, describe these exposures:

5. List any second jobs or side businesses you have:

6. List your previous occupations:

7. List your current and previous hobbies:

8. Have you been in other military services? Yes/No

Do you suspect that you were you exposed to biological or chemical agents while in the military or in a military operation: Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No

If yes, name the medications if you know them:

10. Will you be using any of the following items with your respirator(s)?

a. HEPA Filters: Yes/No

b. Canisters (for example, gas masks): Yes/No

c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle yes or no for all answers that apply to you)?:

a. Escape only (no rescue): Yes/No

b. Emergency rescue only: Yes/No

c. Less than 5 hours per week: Yes/No

d. Less than 2 hours per day: Yes/No

e. 2 to 4 hours per day: Yes/No

f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort (circle):

a. Light: Yes/No Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs..) or controlling machines.

If yes, how long does this period last during the average shift (number of hours):

b. Moderate: Yes/No Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs..) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs..) on a level surface.

If yes, how long does this period last during the average shift (number of hours):

c. Heavy: Yes/No Examples of heavy work are lifting a heavy load (about 50 lbs..) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

If yes, how long does this period last during the average shift (number of hours):

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No

If ``yes,'' describe this protective clothing and/or equipment:

14. Will you be working under hot conditions (temperature exceeding 90 deg. F: Yes/No

15. Will you be working under humid conditions: Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

17. Provide the following information, *if you know it*, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift

Name of the second toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

Name of the third toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

The name of any other toxic substances that you'll be exposed to while using your respirator:

18. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, *rescue, security*):

**Appendix B6-E**

**SPECIFIC RESPIRATOR DISQUALIFYING CONDITIONS**

1. **Facial Deformities and Facial Hair**. Facial deformities or presence of excessive hair or other conditions that interfere with proper sealing of the respirator shall disqualify the applicant. Questionably disqualifying conditions shall be evaluated by fit testing.

2. **Use of Prescription Eyeglasses or Contact Lenses**. Individuals with prescription eyeglasses who are required to wear a full-facepiece respirator shall use special frames, purchased by the Navy, for their glasses that do not interfere with the facepiece seal. Special visual acuity and visual field requirements shall depend upon the nature of the work to be performed. Respirator users may wear soft contact lenses while using a respirator.

3. **Hearing Requirements**. These requirements shall be dependent upon the nature of the work to be performed. The service member's hearing shall be adequate to ensure communication and response to instructions and alarm systems. Individuals with perforated tympanic membranes cannot wear respirators in hazardous areas where inhalation or absorption of toxic materials or vapors through the perforation may occur. Existence of perforation by itself shall not immediately disqualify the individual from respirator use, but the examiner shall consider both the environmental conditions of the job and possible specific safety controls before reaching a final decision. Possible specific safety controls may also be recommended by the safety officer.

4. **Respiratory Diseases**. Disease affecting pulmonary functions may prevent respirator use. Significant restrictive or obstructive disease or perfusion disorders may preclude approval for use. Assessment as to the degree of disability shall depend upon the patient's history and clinical findings of X-ray and spirometry, where indicated. Special analysis shall be required when perfusion disorders are suspected.

5. **Cardiovascular Diseases**. Symptomatic coronary artery disease, significant arrhythmias, or history of recent myocardial infarction shall disqualify the service member from respirator use. Occurrence of frequent premature ventricular contractions (PVCs) with elevated pulse rates shall be considered disqualifying. The examiner, using clinical judgment, shall decide if individuals with uncontrolled hypertension or related symptoms and individuals on blood pressure or cardiovascular medications may wear respirators.

6. **Endocrinal Disorder**. General work limitations and restrictions identified for other work activities also apply for respirator use. If the service member may suffer sudden loss of consciousness or response capability, the examiner shall determine if the service member may use a respirator.

7. **Neurological Disability**. Inability to perform coordinated movement and conditions affecting response and consciousness shall disqualify the service member. Epilepsy, controlled on medication, should not be disqualifying if

the patient has been seizure-free for 1 year and has no significant side effects from medication.

8. **Medications**. The examiner shall use clinical judgment to determine if an individual should be denied use of a respirator due to a history of excessive use or problems related to prescription and non-prescription drugs, including alcohol, that affect judgment, performance, or reliability or alter the state of awareness or consciousness.

9. **Psychological Condition**. The examiner shall decide if a service member with a psychological condition that results in poor judgment or reliability should be disqualified. A history of claustrophobia may disqualify the service member. The examiner shall consider the severity of the individual's claustrophobia, and may recommend field-testing for the individual, prior to approving or denying use of the respirator. Clinical history or indication of severe anxiety shall also be considered by the examiner in determining an individual's ability to use respirators.

# CHAPTER B7

# ELECTRICAL SAFETY

## B0701. DISCUSSION

The purpose of this chapter is to provide guidance to assist in the identification of electrical hazards, and to prevent mishaps that could cause injuries and extensive damage to shipboard equipment and may compromise the ship's mission capabilities. Detailed technical guidance on electrical hazards and the potential for electric shock is contained in reference B7-1, chapter 300. Work involving electric tools, equipment and systems is inherently dangerous. Always use the principles of Operational Risk Management (ORM) when dealing with electricity. Details of ORM are found in reference B7-2.

## B0702. RESPONSIBILITIES

a. The commanding officer shall authorize all work on energized equipment per reference B7-1.

b. The safety officer shall:

(1) Ensure electrical/electronic indoctrination training is provided for all newly reporting personnel per paragraph B0708. Coordinate with the electrical officer/electronics material officer to provide this training.

(2) Complete training per B0708d.

c. The electrical officer/electronic maintenance officer shall:

(1) Establish an electrical tool issue room per B0707.

(2) Ensure that all maintenance and repair is conducted per references B7-3 through B7-5.

(3) Ensure that the on-board CPR instructor is certified per B0708.

d. The supply officer shall ensure that all electrical tools/equipment received on board are turned over to the electrical tool issue room (Electrical Division for submarines) for a safety inspection prior to issue.

e. Division officers shall:

(1) Ensure that assigned personnel are trained per paragraph B0708.

(2) Ensure that all portable electrical equipment is visually inspected prior to use, and is electrically safety checked quarterly. Detailed technical guidance on portable electric equipment is contained in reference B7-1 (paragraph 300-2.7).

(3) Ensure that all personal electrical/electronic equipment is authorized for shipboard use. A list of prohibited equipment is contained in paragraph 300-2.7.3.6.9 of reference B7-1.

(4) Ensure that required personnel receive CPR training per paragraph B0708.

(5) Ensure that items open purchased or received from Navy supply are electrically safety checked prior to use.

(6) Ensure that all personnel experiencing electrical shock report to medical.

f. All hands shall:

(1) Request permission from their division officer prior to bringing personal electrical/electronic equipment aboard. This requirement does not apply to battery-operated equipment not capable of being plugged into ships' electrical service.

(2) Report any condition, equipment or material that is believed to be unsafe.

(3) Report any electrical shock to their division officer.

B0703. ELECTRICAL SAFETY ELEMENTS

a. Working on de-energized equipment. (B0704)

b. Working on energized equipment. (B0705)

c. Personal protective equipment (PPE). (B0706)

d. Portable electrical tool issue. (B0707)

e. General precautions for portable electrical equipment. (Chapters C9 and D5)

f. Training. (B0708)

g. Safety standards implementation. (Chapters C9 and D5 list the Electrical Safety Standards).

B0704. WORKING ON DE-ENERGIZED EQUIPMENT

a. Safety from electrical hazards can be ensured by completely de-energizing equipment. Electrical equipment should be de-energized by opening the power supply circuit breaker or switch and/or removing the fuses. Some equipment has more than one source of power, which requires multiple breakers or switches to be opened and/or multiple fuses to be removed. Tag out the circuit breaker switches and fuses. Check the equipment with a voltmeter to ensure that it is completely de-energized before maintenance begins.

(1) For technical requirements concerning work on de-energized equipment, see reference B7-1, paragraph 300-2.4.

(2) For tag out procedures see reference B7-5.

B0705. WORKING ON ENERGIZED EQUIPMENT

a. Approval procedures. Energized electrical equipment shall not be disassembled nor undergo any maintenance without approval of such action by the commanding officer, or in his absence, the Command Duty Officer (CDO). Exceptions to this policy are those cases where approved instructions issued by higher authority (equipment technical manuals, PMS, or an established troubleshooting procedure) permit opening or inspecting equipment in the course of performing maintenance, routine testing, taking measurements, or making adjustments that require equipment to be energized. Commanding officer permission is not required when checking equipment or circuits to verify de-energization.

b. Energized circuit working procedures. Technical procedures for working on energized equipment are contained in reference B7-1, paragraph 300-2.5.2.

c. Damaged equipment shall be considered energized.

B0706. PERSONAL PROTECTIVE EQUIPMENT (PPE)

a. Use only gloves that are marked with a colored label indicating the usage limitations. Reference B7-1, Table 300-2-1 contains further information on stock numbers, maximum safe voltage usage, and label colors.

b. Rubber insulating gloves shall be stowed in the box in which they came. Planned Maintenance System (PMS) shall be performed on the gloves prior to stowage. Other rubber electrical safety protection equipment shall be stowed in a clean, dry, oil-free location. Care should be taken not to fold the gloves, as folding will frequently result in cracks that will greatly reduce insulating capability of the material. For further information on glove damage causes, inspection, and maintenance refer to reference B7-1, paragraph 300-2.5.3.

B0707. PORTABLE ELECTRICAL TOOL ISSUE (Not applicable to submarines)

a. A centralized portable electrical tool issue room shall be established for issue of portable electrical tools. Larger ships may have more than one tool issue room.

b. Personnel assigned to issue portable electric tools shall perform visual inspections and quarterly safety testing of equipment per reference B7-1 (paragraph 300-2.7.5) prior to issue to personnel. Additional technical guidance on portable electric equipment is contained in reference B7-1 (paragraph 300-2.7).

c. Prior to issue of portable electric tools, the personnel assigned to issue tools shall brief the tool users on general precautions for portable

electrical equipment per B0708, as well as issue any required personal protective equipment.

d. Certain divisions or work centers (those that contain electrical/electronic ratings) may be authorized to retain selected electrical tools or equipment in their permanent custody. These divisions will perform safety checks on their equipment at the required frequency. These divisions shall not issue portable electrical tools to other divisions or work centers.

e. Housekeeping items such as vacuum cleaners and floor buffers need not be retained in the electrical tool issue room.

f. Unsafe electrical tools should be clearly marked "OOC", be rendered incapable of being energized, and be kept in locked storage separate from the other tools. The only exceptions should be for those tools in which immediate repair is to be accomplished.

**B0708. TRAINING**

a. All personnel, when reporting aboard, shall receive indoctrination on basic electrical safety, including the requirements regarding use of personal protective equipment. Reference B7-1 may be used as a source of training material. The training shall also include recognizing symptoms of electrical shock, electrical shock trauma, and emergency first responder techniques.

b. Each ship shall have a certified American Red Cross/American Heart Association CPR instructor on board. At least 50 percent of all electrical/electronics associated ratings shall be certified in basic life support.

c. Personnel who man the portable electrical tool issue room shall complete the Electrical Tool Issue Room Watchstation 302 in the Safety Programs Afloat Personal Qualifications Standard (PQS), NAVEDTRA 43460-4A.

d. The safety officer shall complete watchstation 304 of the Safety Programs Afloat PQS within 16 weeks of assignment.

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## CHAPTER B7

## REFERENCES

B7-1 Naval Ship's Technical Manual (NSTM) Chapters 300, 302, 310, 313, 320, 330 and 400 (NOTAL)

B7-2 OPNAVINST 3500.39, Operational Risk Management (NOTAL)

B7-3 DOD-HDBK 289 (SH) 26 Nov 1986, "Lighting on Navy Ships" (NOTAL)

B7-4 OPNAVINST 4790.4B, Maintenance and Material Management (3-M) Manual.

B7-5 OPNAVINST 3120.32C, Standard Organization and Regulation of the U.S. Navy

# CHAPTER B8

# GAS FREE ENGINEERING PROGRAM

## B0801. DISCUSSION

a. No routine hazard, with the exception of ordnance, is as dangerous as the presence of potentially lethal atmospheres in ships' spaces. In many instances, potentially harmful gases or vapors are present in such a low concentration (parts per million (ppm)) that no adverse conditions are created. By design a ship has many confined spaces (especially tanks and voids) in which a multitude of both toxic and non-toxic gas or vapor creating substances and operations are used in the normal operation of the ship. Hazardous atmospheres may be created that can explode or cause asphyxiation. Compounding the problem is that many gases or vapors are not detected by the human ability of smell, and personnel attempting to save a fallen shipmate may themselves be overcome and killed by undetected vapors. It is for these reasons that every confined space must be gas free tested. This is known as gas free engineering.

b. SUBMARINES. The gas free engineering program for submarines is performed per NAVSEA Technical Manual, S9510-AB-ATM-010/(U) SUB ATM CONT, the Submarine Atmosphere Control Manual and reference B8-1. The provisions of the remainder of this chapter do not currently apply to submarines. (R

## B0802. PROGRAM RESPONSIBILITIES

a. The commanding officer is responsible for a comprehensive gas free engineering program within his/her command. The commanding officer shall:

(1) Ensure that there is at least one trained, qualified and certified gas free engineer on board. Qualification and certification requirements are specified in reference B8-1. The senior gas free engineer shall be designated as the command's gas free engineer (GFE).

(2) Ensure that gas free engineering practices are established and initiate directives applicable to this program.

b. The safety officer shall ensure that this program is evaluated for compliance and effectiveness annually. The checklist in Appendix B8-A may be used for this purpose. The safety officer shall not be the gas free engineer. (R

c. The gas free engineer shall ensure that:

(1) Sufficient petty officers, E-5 and above, trained, qualified and certified as gas free engineering petty officers are available to meet the requirements of the command. As a minimum, one certified gas free engineering petty officer shall be assigned to each inport duty section. Additional (R

support may be obtained from qualified marine chemists, shore activity GFEs, or industrial hygiene officers, certified as GFEs.

R) (2) All equipment required by reference B8-1 to properly conduct gas free engineering is aboard the ship, is inventoried annually, and is properly maintained and calibrated.

(3) Gas free certificates are posted in necessary areas.

(4) Personnel and training aids are made available to divisions for training, upon request.

(5) Records of gas free space testing are kept (reference B8-1).

A) (6) Ensure that all personnel engaged in gas free engineering are recertified as required by reference B8-1 at least annually.

A) (7) Observe operations, as needed, to verify that personnel do not work alone.

A) (8) Stop work and remove all personnel from a space if an unsafe condition is detected or suspected. Notify the commanding officer and the appropriate department head when any hazardous situation has been confirmed, including any cases of work stoppage or personnel evacuation.

d. Department heads/division officers shall ensure that:

(1) The GFE is notified before any unventilated, non-occupied space that has been designated to store hazardous or toxic materials or any sealed space is entered.

(2) The GFE is notified before hot work is conducted on a bulkhead, deck or overhead adjacent to a space containing flammable or potentially explosive atmosphere (such as a fuel oil or CHT tank).

(3) The GFE is notified of the stowage in a new location or spill of any hazardous or toxic material.

(4) Gas free engineering certificates posted on spaces for which they are responsible are complied with at all times.

(5) Gas free engineering retesting of assigned spaces is accomplished prior to the end of the period for which a gas free certificate is valid. If a change is made to a space, the space shall be retested and recertified prior to any additional work in the space.

(6) Assigned personnel are trained on the gas free engineering program upon reporting and annually thereafter.

e. All hands shall:

(1) Notify department head/division officer prior to entering any unventilated, non-occupied space designated to store hazardous or toxic materials or any sealed space, verify that such a space was checked by a gas free engineer prior to entry, and comply with the gas free engineering certificates posted outside the space.

(2) Notify the department head, division officer and GFE before any new space is used to store hazardous or toxic material or of any spill of hazardous or toxic material.

(3) When working in any confined or enclosed space, always work with an observer or an attendant monitoring the work from outside the space. Maintain communication with personnel outside the space. The type and frequency of communication shall be specified by the GFE based on the nature of the space, the operation, and the degree of hazard. (A

B0803. PROGRAM ELEMENTS

The following program elements apply to the gas free engineering program:

a. Confined/enclosed space entry procedures, including testing. (Reference B8-1, paragraphs 074-20.7 through 20.18) (R

b. Personal protective equipment. (Reference B8-1, paragraphs 074-20.3 through 20.5) (R

c. Ventilation requirements. (Reference B8-1, section 074-21) (R

d. Emergency and rescue procedures. (Reference B8-1, paragraph 074-20.2) (A

e. Instrumentation, including calibration and maintenance. (Reference B8-1, paragraphs 074-20.19 through 20.21) (A

f. Training of ship's force and gas free engineering personnel. (Paragraph B0804 and reference B8-1, paragraph 074-19.3) (R

B0804. TRAINING

a. The Division officers are responsible for ensuring that assigned personnel are trained on the gas free engineering program upon reporting aboard and annually thereafter. They shall arrange with the GFE for personnel and training aids to conduct this training. Records of such training shall be maintained.

b. Training will cover the following topics:

(1) How to identify confined/enclosed areas.

(2) Hazards encountered when entering confined/enclosed spaces.

(3) Procedures for requesting gas free testing.

(4) Procedures for helping shipmates in an emergency.

c. Training must stress to all personnel that if a person is seen unconscious in any space, no one is to enter that space without appropriate respiratory protective equipment and a backup assistant.

R) d. All gas free engineering personnel shall require certified training in cardiopulmonary resuscitation (CPR) so that they are qualified to administer CPR in the event of an emergency. Certification requirements and duration of certification shall be per the guidelines of the American Heart or American Red Cross Associations. They shall also receive training on emergency and rescue procedures as well as their gas free engineering procedures and techniques. Recertification and retraining on these aspects shall be accomplished annually.

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## CHAPTER B8

## REFERENCES

B8-1. Naval Ship's Technical Manual, NAVSEA S9086-CH-STM-030/CH-074 V3, "Gas Free Engineering".

**Appendix B8-A**

## GAS FREE ENGINEERING PROGRAM CHECKLIST

Indicate by an X, the answer to each of the questions below. If a question is not applicable to the command, indicate by NA in the YES block. Explain or describe the condition warranting any NO answer on the space provided at the end of the checklist or on additional sheets, if necessary.

The location of the NAVOSH Manual reference for any question is provided at the end of the question.

| | | YES | NO |
|---|---|---|---|
| PROGRAM RESPONSIBILITIES | | | |
| 1. | Is there at least one trained, qualified, and certified gas free engineer aboard? (B0802a(1)) | | |
| 2. | Do ship's directives exist which establish gas free engineering practices? (B0802a(2)) | | |
| 3. | Are sufficient petty officers, E-5 and above, trained, qualified and certified as gas free engineering petty officers available to meet the requirements of the command? (B0802c(1)) | | |
| 4. | Is at least one certified GFE petty officer available in each inport duty section? (B0802c(1)) | | |
| 5. | Is all equipment required by Naval Ships Technical Manual Chapter 074, Volume 3, "Gas Free Engineering" aboard? (B0802c(2)) | | |
| 6. | Is gas free engineering equipment properly maintained? (B0802c(2)) | | |
| 7. | Is gas free engineering equipment inventoried annually? (B0802c(2)) | | |
| 8. | Are gas free certificates posted in necessary areas? (B0802c(3)) | | |
| 9. | Does GFE provide personnel and training aids to divisions for gas free engineering training upon request? (B0802c(4)) | | |
| 10. | Are records kept of space gas free testing and are these records audited annually? (B0802c(5)) | | |

| | YES | NO |
|---|---|---|
| 11. Is the GFE notified before an unventilated, unoccupied space that has been designated to store hazardous or toxic materials or any sealed space is entered? (B0802d(1)) | | |
| 12. Is the GFE notified before hot work is conducted on a bulkhead, deck or overhead adjacent to a space containing flammable or potentially explosive atmosphere (such as a fuel oil or CHT tank)? (B0802d(2)) | | |
| 13. Is the GFE notified of the stowage in a new location or spill of any hazardous or toxic material? (B0802d(3)) | | |
| 14. Are gas free engineering certificates posted on spaces complied with at all times? (B0802d(4)) | | |
| 15. Is gas free engineering conducted whenever a change is made to a space under a gas free engineering certificate prior to additional work occurring in the space? (B0802d(5)) | | |
| IDENTIFICATION OF CONFINED/ENCLOSED SPACES<br>16. Are periods for which gas free certificates are valid posted on each certificate? (NSTM Ch 074 V3, para. 074-20.23) | | |
| 17. Are spaces retested prior to the end of the period for which a gas free certificate is valid? (NSTM Ch 074 V3, para. 074-20.30) | | |
| AIR SAMPLING AND ANALYSIS<br>18. Does the gas free engineering test log document all gas free engineering tests and contain the following data: (NSTM Ch 074 V3, para. 074-19.23) | | |
| a. Date and time of inspection/tests? | | |
| b. Location of space? | | |
| c. Tests conducted and results? | | |
| d. Prescribed actions/instructions? | | |
| e. Type of entry or work to be performed? | | |

| | | YES | NO |
|---|---|---|---|
| | f. Name of person conducting test/inspection? | | |
| 19. | Are gas free engineering tests conducted in the order of oxygen, combustible gases, toxic gases? (NSTM Ch 074 V3, para. 074-20.17) | | |
| 20. | Does the person conducting the gas free engineering tests perform them in accordance with NSTM Chapter 074V3? (NSTM Ch 074 V3, para. 074-20.17) | | |
| 21. | If gas free engineering tests indicated a presence of a flammable vapor, was the space ventilated until vapor was no longer detectable? (NSTM Ch 074 V3, para. 074-20.17) | | |
| 22. | Is a sufficient supply of gas free engineering certificates available (90 day supply) aboard ship? (NSTM Ch 074 V3, para. 074-20.19) | | |
| | TRAINING | | |
| 23. | Are all hands trained on the gas free engineering *program upon reporting aboard and annually* thereafter? (B0804a) | | |
| 24. | Does training cover the following? (B0804b, B0804c) | | |
| | a. How to identify confined/enclosed spaces? | | |
| | b. Hazards encountered when entering confined/enclosed spaces? | | |
| | c. Procedures for requesting gas free testing? | | |
| | d. Procedures for helping shipmates in an emergency? | | |
| 25. | Are GFE personnel trained in CPR and emergency and rescue procedures annually? (B0804d) | | |
| | GAS FREE ENGINEERING IN SHIPYARDS | | |
| 26. | If in a shipyard or where contractor gas free engineering practices are in effect aboard ship, are ship's force personnel briefed on the different gas free certificates they may encounter and their responsibilities? (NSTM Ch 074 V3, para. 074-19.12) | | |

# CHAPTER B9

# RADIATION PROTECTION PROGRAM

## B0901. DISCUSSION

a. Radiation is energy transmitted through space in the form of electromagnetic waves ("rays") or nuclear particles. Radiofrequency radiation, including microwaves, infrared, visible light, ultraviolet, x and gamma rays are electromagnetic waves. Alpha particles, beta particles, and neutrons are nuclear particles. Radiation is commonly divided into two categories that are indicative of the energy of the wave or particle. Radiation with sufficient energy to strip electrons from atoms in the media through which it passes is known as ionizing radiation. Examples include alpha particles, beta particles, x and gamma rays. Less energetic radiation that is not capable of such electron stripping is termed non-ionizing radiation. Radio waves, microwaves, visible light, and ultraviolet radiation belong to this category.

b. Potentially hazardous sources of ionizing and non-ionizing radiation exist aboard Navy ships. Ionizing radiation sources include radioactive material and x-ray generating equipment. Lasers, radar, and communications equipment emit non-ionizing radiation. This chapter outlines a program designed to minimize personnel exposure to radiation from sources other than nuclear power systems and nuclear weapons which have their own radiation protection and control programs. This chapter also excludes those individuals, who as patients, must undergo diagnostic or therapeutic procedures.

## B0902. PROGRAM RESPONSIBILITIES

a. The commanding officer shall:

(1) Establish an effective radiation safety program which includes training. If lasers are carried aboard, the radiation safety program shall include laser safety.

(2) Ensure that the use and disposal of military exempt lasers is in accordance with reference B9-1.

(3) Ensure that only laser installations which have been approved by the appropriate Systems Command as safe for specific applications in accordance with reference B9-2 are allowed to operate.

(4) Submit an annual inventory of all military exempt lasers to Commander, Space and Naval Warfare Systems Command (SPAWAR 223-2) as required by reference B9-2. (R

(5) If the ship has Class IIIb, Class IV, or military exempt laser systems (paragraph B0904b(2) and Appendix B9-A) aboard, appoint a laser system (R

safety officer (LSSO). The name of the LSSO shall be provided to SPAWAR 223-2.

b. The safety officer shall:

(1) Obtain technical assistance and/or advice on ionizing and radio-frequency radiation protection from appropriate commands, if necessary.

(2) Ensure that this program is evaluated for compliance and effectiveness. The checklist of Appendix B9-B may be used for this purpose.

c. The LSSO shall:

(1) Designate personnel enrolled in laser medical surveillance as either "incidental" or "laser personnel." Ensure that personnel receive medical examinations as required.

(2) Provide assistance to department heads and division officers in establishing laser safety regulations and operating procedures, using laser protective eyewear, posting of laser warning signs, training on laser safety, and investigating laser radiation incidents.

(3) Obtain technical assistance and/or advice on laser safety from the NAVENVIRHLTHCEN, Naval Surface Weapons Center (NSWC), BUMED or SPAWAR as appropriate.

d. Department heads and division officers shall:

(1) Establish and control access to areas in which excessive radiation or laser exposures could occur.

(2) Train personnel to be familiar with any potential workplace radiation or laser exposure hazards and appropriate protective measures. Ensure records are maintained.

(3) Ensure that warning signs and labels are installed where appropriate.

(4) Identify personnel who should be enrolled in either radiation or laser medical surveillance programs to the MDR.

(5) Conduct an annual inventory of all military exempt lasers.

(6) Conduct investigation of radiation or laser radiation incidents.

e. The MDR shall:

(1) Schedule personnel for eye examinations or physical examinations as required for medical surveillance.

(2) Ensure that appropriate dosimeters are provided when required and that individuals are instructed on the proper wearing of the dosimeters.

(3) Report any suspected or confirmed radiation overexposure to the cognizant medical authority as specified in reference B9-3.

f. All hands shall:

(1) Comply with radiation and laser radiation warning signs and labels.

(2) Report suspected overexposure to the MDR, division officer and safety officer.

(3) Properly wear and maintain assigned personnel protective equipment or dosimeters.

B0903. PROGRAM ELEMENTS

The radiation protection program consists of the following elements:

a. Identification and evaluation of radiation sources. (paragraph B0904)

b. Use of dosimetry to monitor exposure to ionizing radiation. (reference B9-3)

c. Medical surveillance. (paragraph B0905)

d. Radiation incidents investigation and reporting. (paragraph B0906)

e. Training. (paragraph B0907)

B0904. IDENTIFICATION AND EVALUATION OF RADIATION HAZARDS

a. Ionizing Radiation

(1) Radioactive Material

(a) Small quantities of radioactive material are used aboard ships in luminous markers, clocks, smoke detectors, compasses, depth gauges, and electron tubes. These items do not present a radiation hazard unless the item is damaged and the material is inhaled, ingested, or enters the body through an open wound. Therefore, the evaluation of such items shall consist of a simple inspection for physical damage.

(b) Magnesium-thorium alloys are often used as construction materials for aircraft and missiles. These materials do not constitute an external radiation hazard, however, they may be harmful if taken into the body. An evaluation of such material use is not required, however, repair or

alterations that involve cutting or grinding of these materials by ship crew members are prohibited. Thorium containing welding rods used in welding are exempt from radioactive material permitting.

NOTE

Such work may be accomplished by tenders or repair ships possessing a Navy Radioactive Material Permit issued per reference B9-4.

(c) Depleted uranium is used as penetrators in some munitions. All warship classes which stow depleted uranium munitions will be evaluated by COMNAVSEASYSCOM to ensure that personnel occupying spaces immediately adjacent to the munitions storage compartment are not exposed to radiation levels exceeding that allowed for the general population. All COMNAVSEASYSCOM recommendations shall be implemented.

(d) Various radioactive materials are used on tenders and repair ships for industrial radiography. These sources may be used in fixed, shielded vaults on the tender/repair ship or as portable devices on ships serviced by the tender/repair ship. Use of these sources is authorized under a Navy Radioactive Material Permit issued under reference B9-4. Such operations shall be evaluated as required by the reference for compliance with control conditions specified in the permit.

(2) X-ray Machines

(a) X-ray machines are used on tenders, repair ships and aircraft carriers for industrial radiography. Such operations shall be evaluated for compliance per the procedures outlined in NAVSEA Notice 5104, "Radiological Affairs Support Program (RASP) X-Ray Radiography Radiation Safety Requirements."

(b) Medical and dental x-ray facilities shall be surveyed every 2 years by a radiation health officer (RHO). Protection standards for such facilities are included in reference B9-5. The medical officer shall request the survey from the nearest geographic medical activity.

(3) Technical Assistance. Technical assistance and advice may be obtained as follows:

R) (a) For medical examination and medical surveillance information, contact the Bureau of Medicine and Surgery (BUMED) (MED-21), Washington, DC 20372, DSN: 294-1182/1185, commercial: (202) 653-1182/1185.

R) (b) For medical radiation problems, contact BUMED (MED-21).

(c) For industrial radiation problems or technical assistance, contact the Officer in Charge, Naval Sea Systems Command Detachment, Radiolog-

ical Affairs Support Office (NAVSEADET, RASO), Naval Weapons Station, Yorktown, VA 23691-5098, autovon: 953-4692/3/4, commercial: (804) 887-4692/3/4.

(d) For questions about ionizing radiation related to nuclear weapons, contact the Radiological Controls Program Office, (NAVSEA 06GN), Commander, Naval Sea Systems Command, Washington, DC 20362-5101, autovon: 222-1223/1252, commercial: (703) 692-1223/1252."

b. Non-ionizing Radiation

(1) Radiofrequency Radiation (RFR)

(a) Radar and communications equipment (transmitters) may emit hazardous levels of radiofrequency/microwave radiation. In addition to causing biological changes, radiofrequency/microwave radiation can induce electrical currents/voltages that may cause shocks and burns, premature activation of electro-explosive devices (EEDs) in ordnance, and arcs which may ignite flammable materials. Information on the hazards of electromagnetic radiation to ordnance personnel and fuels is available in reference B9-6.

(b) Sources of RFR hazards shall be evaluated by competent occupational health and safety personnel or COMNAVSEASYSCOM personnel using the recommended procedures of references B9-6, B9-7 and B9-8. A file of surveys, reports and theoretical calculations for each system shall be retained for at least 5 years at which time a determination shall be made as to its usefulness. Such evaluations are normally made after equipment installation or at the completion of new construction or regular overhaul. Additional information on permissible exposure limits (PELs) to RFR may be found in Appendix B9-C.

(c) Warning signs and labels.

1. The recommended Department of Defense (DoD) design for RFR warning signs and labels is provided in Appendix B9-D.

2. Warning signs and labels, which comply with Appendix B9-D, may be obtained from the Defense Logistics Agency, DoD General Service Center. Additional ordering information/guidance will be provided by separate correspondence as it becomes available.

3. Commander, Naval Sea Systems Command (SEA-04MS) shall provide (R detailed guidance for standardizing warning signs and labels.

4. RFR hazard warning signs are required at all access points to areas where the RFR levels may exceed the PEL (Appendix B9-C). This requirement may be waived by competent occupational health and safety professionals when military operational considerations prevent the posting of such signs.

5. Warning signs by themselves will not provide adequate protection in areas where the RFR levels may exceed 10 times the PELs and other warning devices and controls such as flashing lights, audible signals, fences, and interlocks may be required, depending on the potential risk for exposure.

(d) Protective Clothing. RFR shielded protective clothing is not authorized for routine protection of personnel who may be exposed to hazardous levels of RFR. Such protective clothing is to be used only as a last resort, and only under procedures which have been approved in advance by appropriate occupational safety and health professionals. Protective equipment, such as electrically insulated gloves and shoes, for protection against electrical shock and RF burn or insulation from the ground plane, is authorized only under conditions specified in paragraph 1d(3) of Appendix B9-C.

(e) Technical assistance. Technical assistance and advice may be obtained via the chain of command as follows:

R) 1. For RFR health hazards, medical examination, and medical surveillance information contact the Navy Environmental Health Center (NAVENVIRHLTHCEN), 2510 Walmer Avenue, Norfolk, Virginia, 23513-2617, DSN 564-4657, Commercial: (804) 444-4657.

D)
R) 2. For RFR hazard surveys and technical assistance for shipboard systems contact Naval Sea Systems Command (SEA 06K23), Commander, Naval Sea Systems Command Headquarters, Washington, D.C., 20362, DSN 222-3825, Commercial: (202) 692-3825.

(2) Lasers

(a) Military applications of laser systems are increasing rapidly. Common shipboard sources include laser range finders, laser guided munitions, communications equipment, fiber optics, scoring systems, landing systems and training aids. Federal safety regulations, including labeling, are applicable to Navy lasers except those used for combat or combat training or classified in the interest of national security. These lasers are exempt from the classification and labeling requirements of the regulations and are designated as "military exempt." The widespread use of laser systems increases the possibility of personnel exposure to hazardous levels of laser radiation. Consequently, laser hazard control programs are necessary to ensure personnel protection. The eye is the organ most vulnerable to permanent or disabling injury in almost all situations.

(b) The assessment of the hazard associated with a particular laser system is complex and depends on many factors. Consequently, Federal regulations require that all lasers, including military lasers, must be classified and labeled by the manufacturer. The classification specifies the relative hazard of the laser without the need for any measurements or calculations and infers the type of administrative and/or engineering control

measures needed for personnel protection. Laser classifications and general control measures are outlined in Appendix B9-A.

(c) Applicable technical data for each laser shall be reviewed to determine its classification. Once the classification is established, the appropriate controls shall be implemented. Technical assistance or advice needed to determine specific requirements may be obtained by the LSSO as follows:

1. For medical and industrial laser operations contact the (R NAVENVIRHLTHCEN, 2510 Walmer Avenue, Norfolk, Virginia, 23513-2617, DSN: 564-4657, Commercial: (804) 444-4657.

2. For laser related weapons systems and certification of laser (R firing ranges contact the Naval Surface Weapons Center, Dahlgren, Virginia, 22448, DSN: 249-8171, Commercial: (703) 663-8171.

(3) Other Optical Sources

(a) Broad-band optical sources such as germicidal lamps, photo-therapy, sun lamps, blacklights, arc lights, projector sources, high intensity discharge lamps and infrared arrays have many medical and industrial applications. Exposure control for these sources often is based on the prevention of acute, biological responses such as corneal burn or cataracts from infrared, erythema (skin) or keratoconjunctivitis from ultraviolet sources, or chorio-retinal burn from high intensity, visible or near infrared light sources. Refer to Appendix B9-C for information regarding exposure limits for these sources. Assistance in the evaluation of broad-band optical light sources, where personnel are considered to be at optical risk, should be obtained from NAVENVIRHLTHCEN.

(b) Another optical source, which has received a lot of attention, is the light associated with "video display terminals" (VDTs). The general complaints of headaches and eye fatigue of VDT operators are quite often incorrectly attributed to ultraviolet, infrared and radiofrequency sources. Past studies by the National Institute for Occupational Safety and Health (NIOSH) have shown that radiation emissions from VDTs are either non-detectable or are below generally recognized safe levels. The visual and musculoskeletal problems often attributed to VDTs are the result of general fatigue and can usually be resolved through the use of such ergonomic improvements as redesign of the workstation, operation, chair modification and control of illumination and glare.

B0905. MEDICAL SURVEILLANCE

a. Ionizing Radiation. Medical surveillance of personnel exposed to ionizing radiation shall follow reference B9-3.

R) b. Radiofrequency Radiation. Medical evaluations of personnel who may have been exposed to RFR levels that exceed five times the PEL shall be conducted as outlined in Appendix B9-C.

D) c. Lasers. The medical surveillance for lasers is specified in reference B9-9 with additional information found in reference B9-10, and is limited to those personnel at risk to laser radiation. The nature of the risk is associated with accidental, acute injuries, not chronic exposure. See Appendix B9-C for detailed information on medical surveillance.

B0906. RADIATION INCIDENTS

a. Ionizing Radiation. In the event of a radiation incident involving ionizing radiation, investigate and report as required by reference B9-3.

b. Radiofrequency Radiation

(1) Investigation of incidents involving alleged or actual RFR exposures which are five times the PEL or greater shall include, as a minimum, measurements of RFR exposure levels, appropriate medical examination, a detailed description of the circumstances surrounding the incident, recommendations for more detailed medical follow-up (if necessary), and recommendations to prevent any future occurrence of the incident. Refer to Appendix B9-C for medical evaluation procedural guidance.

R) (2) For each exposure incident which is five times the PEL or greater, the commanding officer shall submit a message report to the CHBUMED, Washington, D.C. (MED-21) within 48 hours after the incident is discovered.

c. Laser Radiation

R) (1) If an eye injury is suspected or observed from exposure to laser radiation, the person shall be given a medical examination by an ophthalmologist or optometrist within 24 hours of the exposure if operational requirements allow or as soon as possible. The examination shall consist of the procedures used in the preplacement medical surveillance examination, color photographs to document the injury, and any other medical information deemed necessary by the cognizant medical officer or after consultation with CHBUMED (MED-21), Washington, D.C.

R) (2) As required by reference B9-11, a report of the exposure incident shall be submitted to the CHBUMED (MED-21) within 30 days of the incident, with the following information as a minimum:

(a) List of personnel involved.

(b) Estimation of exposure(s) as related to the applicable PEL.

(c) Details of immediate and subsequent medical findings.

(d) Narrative account/summary of exposure incident--to include wavelength, mode of operation(s) and energy/power output.

(e) Details regarding safety procedures and equipment used.

B0907. TRAINING

a. All hands shall be indoctrinated on the hazards of radiation upon reporting aboard and annually thereafter. The training shall address the following topics:

(1) Identification and location of potentially hazardous radiation sources.

(2) Locations where occupancy is restricted for the purpose of radiation protection.

(3) Administrative or operational controls employed to minimize or prevent exposures (e.g., tag-out of equipment during maintenance aloft and warning signs).

(4) Use and maintenance of any required protective equipment such as laser eyewear.

(5) Use and maintenance of required dosimeters.

b. Radiofrequency radiation training shall be provided to personnel who work with RFR sources or work in an area(s) where the potential may exist for exposure above the PELs of Appendix B9-C. General awareness training shall be provided as part of work center basic training and as part of the more technical training associated with a particular RFR source. Such training is to be given prior to any assignment to an RFR area and annual refresher training shall be given to reinforce and reemphasize command training objectives. Such training shall be documented.

c. Designated LSSO's shall receive formal classroom training in laser radiation hazards and laser radiation control approved by SPAWAR 223-2 prior to assuming this duty. (R

## CHAPTER B9

## REFERENCES

B9-1 SECNAVINST 5100.14B, "Military Exempt Lasers" (NOTAL).

B9-2 SPAWARINST 5100.12A, "Navy Laser Radiation Hazards Prevention Program" (NOTAL).

B9-3 NAVMED P-5055, "Radiation Health Protection Manual.

B9-4 OPNAVINST 6470.3 "Navy Radiation Safety Committee" (NOTAL).

B9-5 NAVMEDCOMINST 6470.6, "Radiation Protection Survey and Equipment Performance Test of Diagnostic X-Ray Equipment".

B9-6 NAVSEA OP 3565/NAVAIR 16-1-529/NAVELEX 0967-LP-624-6010, "Electromagnetic Radiation Hazards (Hazards to Personnel, Fuel, and other Flammable Material)".

B9-7 American National Standard Techniques and Instrumentation for the Measurement of Potentially Hazardous Electromagnetic Radiation at Microwave Frequencies, C95.3-1973 American National Standards Institute (NOTAL - Should be held by commands with an industrial hygiene officer serving as safety officer).

B9-8 American National Standard Recommended Practice for the Measurement of Hazardous Electromagnetic Fields - RF and Microwave, C95.5 - 1981 American National Standards Institute (NOTAL - Should be held by commands with an industrial hygiene officer serving as safety officer).

B9-9 NAVMEDCOMINST 6470.2A, "Laser Radiation Medical Surveillance Program".

B9-10 NAVMEDCOMINST 6260.3 with DOD 6055.5-M, "Occupational Health Surveillance Manual", attached.

B9-11 DOD Instruction 6055.11, "Protection of DOD Personnel from Exposure to Radiofrequency Radiation" of 20 August 86 (NOTAL).

B9-12 American Conference of Government Industrial Hygienists' Report, "Threshold Limit Values and Biological Exposure Indices" (NOTAL).

B9-13 American National Standard for the Safe Use of Lasers, 2136.1 - 1986, American National Standards Institute (NOTAL - Should be held by commands with an industrial hygiene officer serving as safety officer).

B9-14 American Conference of Government Industrial Hygienists' Report, "Threshold Limit Values for Physical Agents in the Work Environment" (NOTAL).

## Appendix B9-A

## LASER CLASSIFICATIONS AND CONTROLS

**Class I lasers** emit levels of radiation which are not hazardous under any operation or viewing condition, and consequently require no controls or warning labels. The term "Class I laser system" refers to equipment in which a Class I laser or a higher powered laser is totally enclosed so that there is no possibility of exposure to personnel from the laser during normal operations. No controls are required unless the system is opened or the protective covers are removed for maintenance or alignment procedures.

**Class II lasers** refer to continuously emitting visible laser beams that are not considered hazardous for momentary exposure occurring in an unintentional viewing situation. Protection is based on the human aversion response to deliberately viewing a bright light. A yellow caution label on the laser warns against intentional staring into the direct laser beam. No other control measures are required.

**Class IIIa lasers** emit visible laser beams which are not considered hazardous for momentary exposure in an unintentional viewing situation, but which are potentially hazardous if the direct beam is viewed with magnifying optics such as binoculars. These lasers have a yellow caution label warning against viewing the direct beam with optical instruments. Control measures are required to preclude situations where personnel could inadvertently view the direct laser beam through magnifying optics.

**Class IIIb lasers** include both continuous and pulsed ultraviolet, visible and infrared lasers which are potentially hazardous if the direct beam or beam reflected from mirror-like surfaces are viewed by the unprotected eye even momentarily, but which do not produce (unless focused) hazardous diffuse reflections. These lasers have a red danger label warning against direct eye exposure to the laser beam. Care is required by the operators to avoid direct beam viewing and to control reflections from mirror-like surfaces. Protective laser eyewear is recommended. Control measures must preclude inadvertent exposures of other personnel to the direct beam or reflections from mirror-like surfaces.

**Class IV lasers** are high powered laser systems which are hazardous to the eye from direct viewing of the beam, reflections from mirror-like surfaces or diffuse reflections. They may also constitute a skin or fire hazard. These lasers have a red danger label warning against eye exposure to the direct beam or scattered reflections. Strict control measures including wear of laser protective eyewear, and door interlocks and/or baffles to guard against unprotected personnel entering during laser operations are required for Class IV lasers.

## Appendix B9-B

## RADIATION PROTECTION PROGRAM

Indicate by an X, the answer to each of the questions below. If a question is not applicable to the command, indicate by NA in the YES block. Explain or describe the condition warranting any NO answer on the space provided at the end of the checklist or on additional sheets, if necessary.

The location of the NAVOSH Manual reference for any question is provided at the end of the question.

| | | YES | NO |
|---|---|---|---|
| | PROGRAM RESPONSIBILITIES | | |
| 1. | Does the command have a radiation safety program (which includes laser safety if lasers are aboard)? (B0902a(1)) | | |
| 2. | Does the command ensure that only laser systems approved by the appropriate Systems Command as safe for specific applications are allowed to operate? (B0902a(2)) | | |
| 3. | Are military exempt lasers only used and disposed of in accordance with SPARWARINST 5100.12A? (B0902a(3)) | | |
| 4. | Is an inventory conducted of military exempt lasers annually? (B0902a(4)) | | |
| 5. | If class IIIb, class IV or military exempt laser systems are aboard, has a laser systems safety officer (LSSO) been appointed? (B0902a(5)) | | |
| 6. | If an LSSO has been appointed, has the name been provided to the Commander, Space and Naval Warfare Systems Command (SPARWAR 223-2)? (B0902a(5)) | | |
| 7. | Has the LSSO designated personnel enrolled in laser medical surveillance as either "incidental" or "laser personnel"? (B0902c(1)) | | |
| 8. | Has the LSSO provided assistance to department heads and division officers in establishing laser safety regulations and operating procedures, using laser protective eyewear, posting of laser warning signs, training on laser safety and investigating laser incidents? (B0902c(2)) | | |

(R

| | | YES | NO |
|---|---|---|---|
| 9. | If necessary, has the safety officer/LSSO requested technical assistance and/or advice on radiation/laser safety from appropriate commands? (B0902b(1) and B0902c(3)) | | |
| 10. | Have department heads and division officers established controlled access to areas in which excessive radiation or laser exposures could occur? (B0902d(1)) | | |
| 11. | Have department heads/division officers trained personnel on potential workplace radiation or laser exposure hazards and appropriate protective measures? (B0902d(2)) | | |
| 12. | Have department heads/division officers ensured that warning signs and labels are installed where appropriate? (B0902d(3)) | | |
| 13. | Do department heads/division officers identify personnel who should be enrolled in the radiation or laser medical surveillance program to the MDR? (B0902d(4)) | | |
| 14. | Does the MDR schedule personnel for eye or physical examinations as required for medical surveillance? (B0902e(2)) | | |
| 15. | Are appropriate dosimeters provided when required? (B0902e(2)) | | |
| 16. | Does the MDR report suspected or confined radiation over-exposures to the cognizant medical authority? (B0902e(3)) | | |
| | IDENTIFICATION AND EVALUATION OF RADIATION SOURCES | | |
| 17. | Has an evaluation of depleted uranium munitions stowage been conducted by NAVSEA? (B0904a(1)(c)) | | |
| 18. | Have all NAVSEA recommendations on depleted uranium munitions stowage been implemented? (B0904a(1)(c)) | | |
| 19. | Are radioactive materials, authorized by a Navy Radioactive Material Permit, used in compliance with the conditions specified on the permit? (B0904a(1)(d)) | | |
| 20. | Are x-ray operations evaluated for compliance with NAVSEA Notice 5104? (B0904a(2)(a)) | | |

| | | YES | NO |
|---|---|---|---|
| 21. | Have medical and dental x-ray facilities been surveyed every 2 years by an RHO? (B0904a(2)(b)) | | |
| 22. | Are a file of surveys, reports and theoretical calculations for each RFR system retained for at least 5 years? (B0904b(1)(b)) | | |
| 23. | Is RFR shielded protective clothing used only under the conditions specified in Appendix B9-C, paragraph 1d(3)? (B0904b(1)(d)) | | |
| 24. | If class IIIb or class IV lasers are on board, are the general precautions outlined in Appendix B9-A implemented? (B0904b(2)(b)) | | |
| MEDICAL MONITORING/SURVEILLANCE | | | |
| 25. | Is medical surveillance of personnel exposed to ionizing radiation performed as required by NAVMED P5055? (B0905a) | | |
| 26. | Are preplacement examinations required for maintenance/service personnel who work with RF emitters capable of generating levels in excess of permissible limits? (B0905b(1)) | | |
| 27. | Is periodic or situational medical surveillance conducted of personnel who may have been exposed to RFR levels that exceed five times the PEL? (B0905b(2)) | | |
| 28. | Are preplacement ocular examinations given to all personnel who are users of class IIIa, IIIb and IV lasers as required by NAVMEDCOMINST 6470.2? (B0905c) | | |
| RADIATION INCIDENTS | | | |
| 29. | Are ionizing, RFR, and laser radiation incidents properly investigated and reported? (B0906a, B0906b and B0906c) | | |
| TRAINING | | | |
| 30. | Are all hands given an initial indoctrination on radiation protection upon reporting aboard and annually thereafter? (B0907a) | | |

| | | | YES | NO |
|---|---|---|---|---|
| R) | 31. | Does radiation protection training address the topics listed in paragraph B0907 of the NAVOSH Program Manual for Forces Afloat? (B0907a) | | |
| | 32. | Is RFR awareness training provided to all who work with RFR sources or work in an area where potential may exist for exposure above the PEL as part of the basic and equipment specific training prior to assignment and annually thereafter? (B0907b) | | |
| R) | 33. | Has the LSSO received formal classroom training on laser radiation hazards and laser radiation control approved by SPARWAR (223-2) prior to assuming these duties? (B0907c) | | |

## Appendix B9-C

## NON-IONIZING RADIATION DETAILED INFORMATION

The following detailed information on the radiation protection program is provided for medical department representatives, laser system safety officers and industrial hygiene officers serving as safety officer.

1. Radiofrequency Radiation Threshold and Permissible Exposure Limit (PEL)

a. Background. Continuing biomedical research has shown that the PELs for personnel should account for frequency dependence and body resonance which are functions of physical size. Additionally, the biological effects have been determined to be a function of specific absorption rate (SAR). The threshold for adverse biological effects is now recognized to be 4 Watts per kilogram (W/kg), and with a safety factor of 10 added, the accepted threshold level is 0.4 W/kg for the whole body, averaged over any 6-minute period.

b. The threshold for adverse biological effects to RFR is 0.4 W/kg for the whole body averaged over any 6 minute period. PEL criteria and exposure situations, based on this threshold, are summarized below:

(1) Ships shall adhere to Table B9-C-1. Accordingly, when in port or when carrying passengers less than 55 inches in height (e.g., children) shall limit their RFR levels to the criteria in Table B9-C-2 to accommodate potential exposure of members of the general public. Figure B9-C-1 is a pictorial description of these tables.

(2) The criteria in Table B9-C-2 shall be utilized as a design goal in new ship construction.

c. With regard to RFR exposure and pregnancy, reference B9-11 notes that sufficient evidence exists to indicate that a fetus is at no greater risk than the mother during pregnancy since it will not receive any greater exposure and has not been shown to be more radiosensitive.

d. Exclusions. No practice shall be adopted or operation conducted which may involve potentially hazardous radiation exposure unless in an emergency for critical mission accomplishment. The following additional exclusions are permitted:

(1) Personnel who, as patients, undergo diagnostic or therapeutic procedures in medical or dental treatment facilities.

(2) Devices operating at or below 1 GHz with an output power of 7W or less.

(3) The derived equivalent PEL criteria in Table B9-C-1 may be exceeded under special circumstances provided it can be demonstrated by measurement that:

(a) The whole body SAR does not exceed 0.4 W/kg when averaged over any 6-minute period,

(b) The spatial peak SAR (hot spots) does not exceed 8.0 W/kg averaged over any one gram of body tissue for any 6-minute period,

(c) The maximum (peak) electric field intensity does not exceed 100 kV/m in a single pulse, and

(d) Personnel are adequately protected from electric shock and RF burns through the use of electrical safety matting and protective clothing or other isolation techniques.

e. Operating Procedures and Controls

(1) As previously noted, the adverse biological threshold for all personnel is 0.4 W/kg averaged over any 6 minute period. Exposures separated by more than 6 minutes are considered separate physiological events. For determining compliance with the 0.4 W/kg SAR, the derived equivalent PELs are provided in Tables B9-C-1 and B9-C-2.

(2) The derived equivalent power density PELs in Tables B9-C-1 and B9-C-2 are for far-field (plane wave) conditions and apply only where a strict far-field relationship exists between the electric and magnetic fields. In radiating near-field and reactive near-field conditions or at low frequencies (10 kHz to 3 MHz) both the electric and magnetic-field strength limits (now power density) in Tables B9-C-1 and B9-C-2 must be used to determine compliance with the PELs.

Note

Magnetic field measurement capability above 200 MHz does not exist at this time, therefore only electric field measurements are required above 200 MHz.

(3) All exposures shall be limited to a maximum (peak) electric field intensity of 100 kV/m in a single pulse.

(4) For mixed or broad band fields at a number of frequencies for which there are different values of PELs, the fraction of the PEL incurred within each frequency interval must be determined. The sum of all such fractions should not exceed unity. When multiple transmitters are in use in

the same frequency interval, the total field from all transmitters emitting simultaneously shall not exceed the PEL.

(5) The determination of an exclusion (paragraph 1d above) and the use of PELs greater than those in Tables B9-C-1 and B9-C-2 shall require:

(a) Measurement and evaluation of RFR levels by specially trained occupational health and safety personnel.

(b) Documentation of the evaluation findings (maintained locally).

(c) Briefing of supervisors and personnel on the finding of the evaluation, reasons for exception to the PELs, and what additional protective measures must be taken.

(d) Posting of the affected areas to notify all personnel of the exception.

2. Laser Radiation Permissible Exposure Limits (R

Laser radiation PELs also referred to as threshold limit values (TLVs) and maximum permissible exposure limits (MPEs) have been adopted from references B9-12 and B9-13. The use of these PELs for determining an individual's exposure should be limited to those individuals who have received laser radiation hazard evaluation training (including such features as laser repetition rate, beam divergence and diameter limits, and magnifying optical aids). Laser radiation hazard evaluation training must be provided by or approved by SPAWAR 223-2.

3. PELs/TLVs for Other Light Sources.

PELs or TLVs have been developed for the control of eye and skin exposure to ultraviolet, visible and infrared sources. Refer to reference B9-14 for guidance.

4. Laser Medical Surveillance

a. A preplacement ocular examination shall be conducted to establish a baseline against which ocular damage can be measured in the event of an accidental exposure, and a termination ocular examination to provide documentation of an individual's medical condition at termination of military service. Periodic re-examination is required at least triennially or when a suspected or known exposure, to the eye, has occurred.

b. Military personnel enrolled in the laser medical surveillance are designated as either "incidental" or "laser personnel." This designation

shall be made by the command's laser system safety officer who is responsible for ensuring that personnel receive medical examinations as required.

(1) Medical surveillance of personnel who use Class I or Class II lasers or laser systems is not required.

(2) "Incidental" defines those personnel whose duties make it possible, but unlikely, that they may be exposed to sufficient laser energy to damage their eyes. Examples might include individuals exposed in one-time demonstrations of field equipment (at an approved laser range with adequate protection) as well as those custodial, clerical, and supervisory personnel who work in a laser area but not with lasers.

(3) "Laser personnel" defines those personnel who routinely work with Class III or Class IV lasers or laser systems. This generally includes:

(a) Maintenance personnel who repair or align Class III or Class IV lasers or laser systems.

(b) Operators who routinely work with Class III engineering laser transits, geodimeters and alignment laser devices.

(c) Operators for certain military laser rangefinders, designators, or illuminator systems unless exempted by the Laser Safety Review Board (convened by SPAWAR-OOF).

(4) Visitors or other personnel involved, on an infrequent basis, in the operation of a laser or laser system shall be protected, but are not required to have a medical surveillance eye examination unless injury is suspected.

c. Preplacement medical surveillance examinations shall be administered to "laser personnel" prior to any duty assignment involving Class III or Class IV lasers. A termination examination shall be administered, as soon as practical, when the person's duties no longer involve lasers or upon separation or termination of employment. Each individual's health record shall be clearly marked indicating the need for a termination examination.

5. Evaluation/Assessment of RF Radiation Incident

a. Discussion

(1) The widespread use of RF radiation sources in the Navy very likely could result in an overexposure incident, real or alleged. When such a situation occurs Medical Department personnel should be prepared to deal with the patient(s) medical needs and answer any questions concerning possible biological effects.

(2) An overexposure incident is considered to have occurred when personnel exposure exceeds five times the PELs in paragraph 1.

(3) When an overexposure incident occurs a message report shall be provided by the commanding officer to BUMED (MEDCOM-02), noting all of the particulars of the incident. Detailed guidance concerning conduct of the evaluation/assessment of the RF radiation incident is to be conducted independently and concurrently by electronics and medical personnel, respectively. Close coordination is essential to overall evaluation of the RF radiation incident.

b. Evaluation of RF Radiation Incident. An evaluation into the circumstances of the RF radiation incident shall be conducted by electronics personnel. The following information shall be developed as a minimum:

(1) What is the military/commercial designation of the RF radiation source?

(2) What mode, operating parameter(s), and frequency were used?

(3) What was the duration of exposure and power density ($mW/cm^2$)? Was the power density measured or estimated? If measured, what meter was used? If estimated, what assumptions were made?

(4) What were the circumstances of the incident? Was the exposure from the feedhorn directly, a leaking waveguide, or from close proximity to the antenna or were the involved personnel at some distance from the antenna? If exposure was from damaged equipment, such as a leaking waveguide, describe the equipment failure, including the physical dimensions and location of the damage.

(5) Describe the geometric relationship and distance of each individual exposed to the RF radiation source and estimate the exposure duration and power density to various parts of the body. Specifically delineate parts of the body exposed or not exposed.

(6) Describe any comments made or sensations noted by involved personnel at the time of the incident.

c. Patient Medical Assessment. A medical assessment of those individuals exposed in an RF radiation incident shall be developed by medical department personnel. Their principal concern shall be to quantify exposure history in relation to any existing symptoms and to document medical assessment. The following information shall be developed as a minimum.

(1) Determine if the patient is in any type of acute distress. In an overexposure incident it is extremely unlikely that patients will experience

any acute distress nor are they likely to demonstrate any psychological upset. Any acute symptoms will be related to the heating effect, such as redness of skin, or if significant exposure has occurred, an increase in core body temperature. In all situations treat the patient symptomatically.

(2) Interview the patient. The patient should be reassured, calmed and asked to relate the facts of the incident. Ask the patient if any sensations were noted during the incident. Use the biological effects information in paragraph 5e to help answer questions and put the incident in proper perspective.

(3) Evaluate each patient. Use a Standard Form 600 to record the following test results:

(a) Oral temperature: if greater than 101°F monitor rectal temperature.

(b) Blood pressure: initial and 5 minute recumbent.

(c) Clinical observation with particular emphasis on visual acuity, skin, psychological and neurological responses, and anatomical areas where symptoms were noted. If the incident involved the head or upper body, a slit lamp examination should be given if possible.

Note

No laboratory examinations are necessary immediately following the incident.

(4) Develop a summary of the incident with estimated exposure to the various anatomical areas and any sensations noted by the patient.

d. Follow-up Medical Review. Medical Department personnel shall institute follow-up medical procedures, should they be needed, to treat or evaluate RF radiation symptoms.

e. Biological Effects Information. The following biological effects information may be used to answer any questions and to set the RF radiation incident in proper perspective.

(1) RF radiation is a form of non-ionizing radiation and the expected biological effects from an RF radiation exposure differ from the effects expected from ionizing radiation sources, i.e., x-rays, gamma rays, and neutrons.

(2) The frequency of the RF radiation determines the amount of body penetration. Low frequencies penetrate the body further than high frequencies

which are absorbed superficially. All frequencies may produce some surface (skin) heating.

(3) If sufficient RF radiation has been absorbed, the whole body response is similar, physiologically, to hyperthermia which may be caused by any other heat source. Burns are possible.

(4) Lenticular opacities, often termed cataracts, occur only at quite high RF radiation exposures, i.e., 100 $mW/cm^2$ for 60 minutes.

(5) Transitory decrease in sperm count may occur from high RF radiation exposure. This effect is similar to what can be expected from other forms of heat, i.e., hot bath, and is reversible.

(6) Aggravation of existing dermatitis is possible especially if the RF radiation is high frequency. A feeling of warmth and sensation of pain may result.

(7) Pulsed RF radiation can be heard as a "clicking" or "buzzing" noise by the transduction of energy in the bones and soft tissue. If this is experienced then action(s) must be taken to preclude personnel from working in the area. Such sensation is proof of a physiological reaction and may also cause certain psychological effects and work disruption.

## RFR Biological Threshold and Permissible Exposure Limit Criteria

### Table B9-C-1

### DERIVED EQUIVALENT PERMISSIBLE EXPOSURE LIMITS FOR RESTRICTED AREAS

| Frequency (MHz) | Power Density ($mW/cm^2$) | Electric Field Strength Squared ($V^2/m^2$) | Magnetic Field Strength Squared ($A^2/m^2$) |
|---|---|---|---|
| 0.01-3 | 100 | 400,000 | 2.5 |
| 3-30 | $900/f^2$ | $4000(900/f^2)$ | $0.025(900/f^2)$ |
| 30-100 | 1.0 | 4000 | 0.025 |
| 100-1000 | f/100 | 4000(f/100) | 0.025(f/100) |
| 1000-300,000 | 10 | 40,000 | 0.25 |

Table B9-C-2

**DERIVED EQUIVALENT PERMISSIBLE EXPOSURE LIMITS FOR UNRESTRICTED AREAS**

| Frequency (MHz) | Power Density ($mW/cm^2$) | Electric Field Strength Squared ($V^2/m^2$) | Magnetic Field Strength Squared ($A^2/m^2$) |
|---|---|---|---|
| 0.01-3 | 100 | 400,000 | 2.5 |
| 3-30 | $900/f^2$ | $4000(900/f^2)$ | $0.025(900/f^2)$ |
| 30-300 | 1.0 | 4000 | 0.025 |
| 100-1500 | f/300 | 4000(f/300) | 0.025(f/300) |
| 1500-300,000 | 5.0 | 20,000 | 0.125 |

NOTES

1. Restricted access areas are controlled to exclude persons less than 55 inches in height.

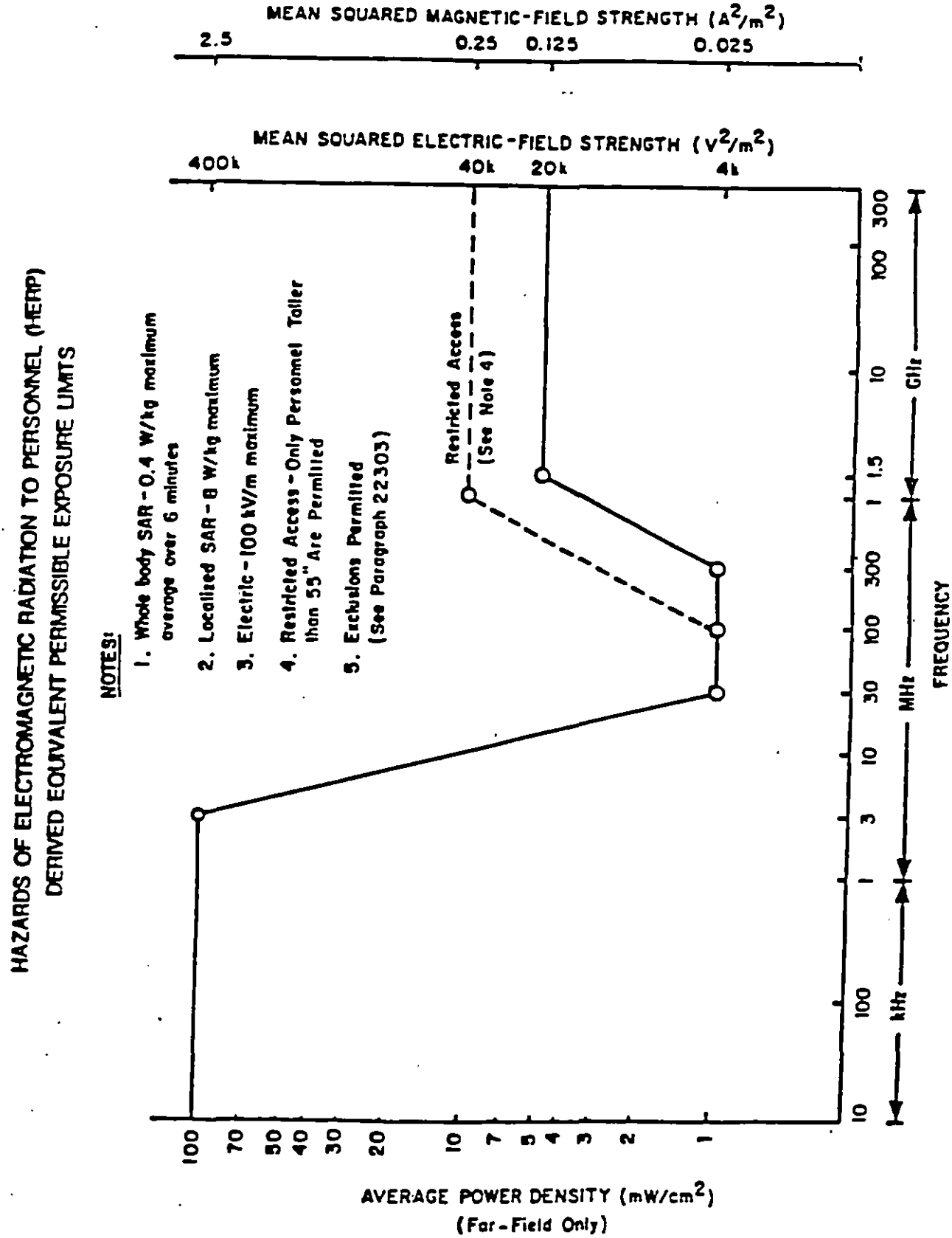
2. Unrestricted access areas are not controlled and all persons, regardless of height, may enter.

3. Values in these tables were derived by setting the impedance of free space equal to 400 ohms. This value is rounded up from the generally accepted value of 377 ohms to allow for case of calculation.

4. When both the electric field and magnetic field are measured, both values must be equal to or less than their applicable derived equivalent PEL, otherwise use the more restrictive electric or magnetic field measurement.

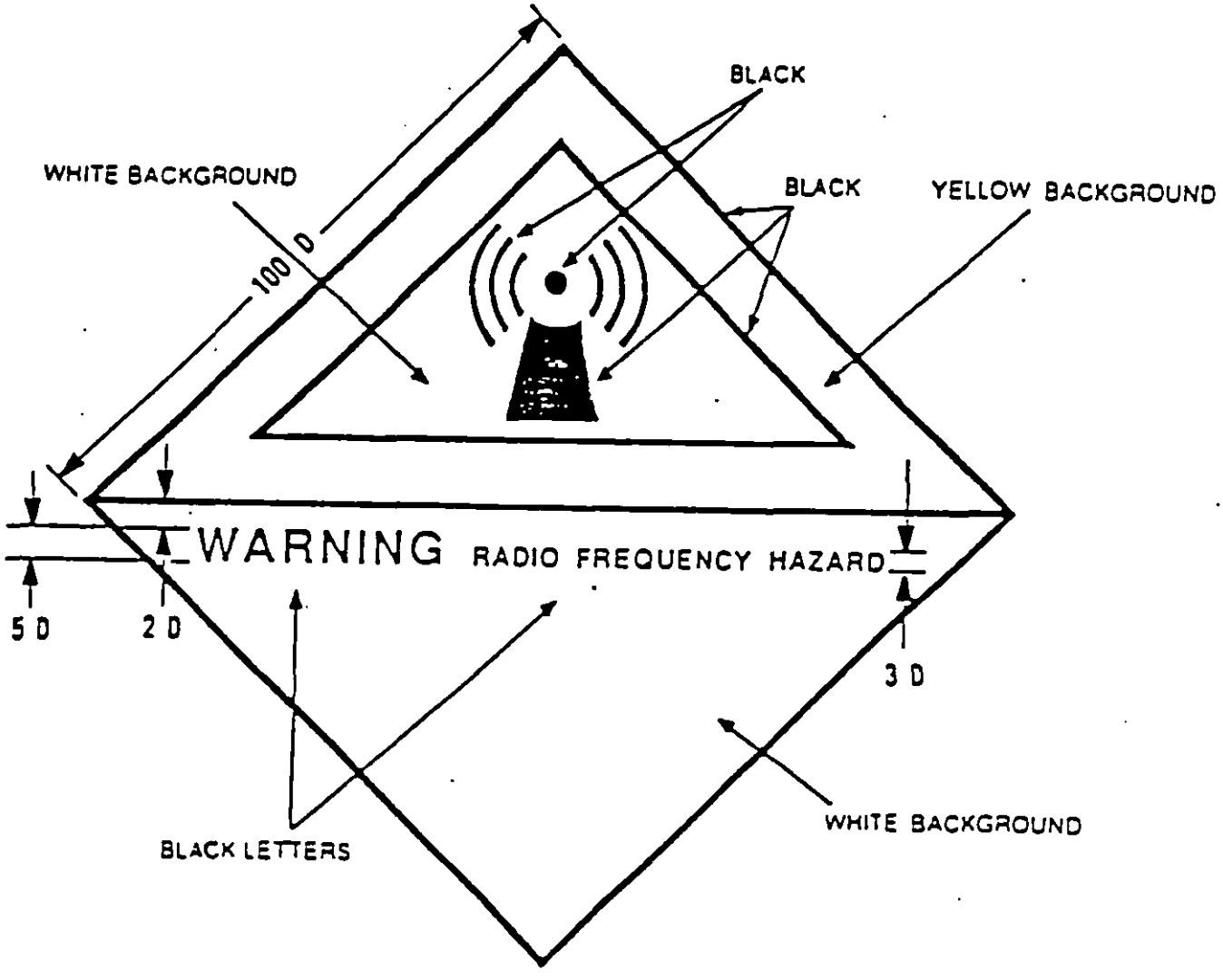
5. Tables apply only to whole body exposures and are based on the overall SAR of 0.4 W/kg.

Figure B9-C-1


MEAN SQUARED MAGNETIC-FIELD STRENGTH ($A^2/m^2$)
2.5
0.25
0.125
0.025
MEAN SQUARED ELECTRIC-FIELD STRENGTH ($V^2/m^2$)
400k
40k
20k
4k
HAZARDS OF ELECTROMAGNETIC RADIATION TO PERSONNEL (HERP)
DERIVED EQUIVALENT PERMISSIBLE EXPOSURE LIMITS
NOTES:
1. Whole body SAR - 0.4 W/kg maximum average over 6 minutes
2. Localized SAR - 8 W/kg maximum
3. Electric - 100 kV/m maximum
4. Restricted Access - Only Personnel Taller than 55" Are Permitted
5. Exclusions Permitted (See Paragraph 22303)
Restricted Access (See Note 4)
300
100
10
1.5
1
300
100
30
10
3
1
100
10
GHz
MHz
kHz
FREQUENCY
100
70
50
40
30
20
10
7
5
4
3
2
1
AVERAGE POWER DENSITY ($mW/cm^2$)
(Far-Field Only)

Appendix B9-D

## Radiofrequency Radiation (RFR) Hazard Warning Sign/Label



# CHAPTER B10

# LEAD CONTROL

## B1001. DISCUSSION

a. The purpose of this chapter is to prevent lead intoxication and related injuries during the use, handling, removal and melting of materials containing lead.

b. In this chapter, " lead" means metallic lead, all inorganic lead compounds, and organic lead soaps. Lead's low melting point, high molecular weight, high density and malleability make it useful structural material. When added to resins, grease, or rubber, lead compounds act as antioxidants. Common uses for lead and lead compounds include ballast, radiation shielding, paint filler and hardener, rubber and pipe joints, high voltage cable shielding, small arms ammunition, batteries and weights. While not an absolute indicator, red, forest green, chrome yellow and "school bus" yellow color paints typically contain lead compounds. Lead may also be found in polyurethane and water based paints.

c. Significant lead exposures can occur during: lead and babbitt melting and casting; ballast handling; spraying, sanding, grinding, burning, and abrasive blasting of lead-containing materials and lead-containing paint; brazing with torches; high voltage cable repair; abrasive blasting with smelting slag; lead-acid battery reclaiming; machining lead; disassembly of gasoline engine components (which have used leaded gasoline); and handling of contaminated personal clothing.

d. Lead is a recognized health hazard. Lead may adversely affect the peripheral and central nervous systems, as well as the red blood cells, kidneys, reproductive and endocrine systems.

e. In recognition of the serious health hazards associated with lead and the numerous sources of potential lead exposure, the Navy has established strict controls to limit both occupational and environmental exposures. Standards and controls discussed in this chapter shall be applicable to all Navy personnel.

## B1002. PERMISSIBLE EXPOSURE LIMIT AND ACTION LEVEL TRIGGERING REQUIREMENTS

a. **Permissible Exposure Limit (PEL)**. The PEL for an 8-hour time-weighted average (TWA) exposure to airborne lead is 50 micrograms per cubic meter ($ug/m^3$) of air.

b. **Action Level (AL)**. The AL for an 8-hour TWA exposure to airborne lead is 30 $ug/m^3$ (without regard to respirator use).

c. **Biological monitoring and medical surveillance** shall be initiated when an employee's exposure exceeds the AL for more than 30 days per year.

d. Engineering and administrative controls shall be initiated when an individual's exposure exceeds the PEL for more than 30 days per year. When a person's exposure is greater than the AL, but less than the PEL, engineering controls shall be initiated to reduce the workplace environmental level to a maximum of 200 ug/$m^3$. Thereafter, any combination of engineering and administrative controls may be used to maintain exposure at or below the PEL.

**B1003. LEAD CONTROL RESPONSIBILITIES**

a. The commanding officer shall not authorize paint removal for cosmetic reasons or due to excessive paint thickness. They may only authorize paint removal to protect the ship from corrosion, when incidental to hot work, and when bare metal is required for an inspection.

b. The safety officer shall:

(1) When applicable, as determined by the baseline industrial hygiene survey, establish effective shipboard lead control practices that include as a minimum those elements in paragraph B1004.

(2) Verify that the ship has the proper clothing and equipment aboard to protect personnel during shipboard lead work.

(3) Notify the commanding officer when sufficient funds are unavailable to obtain mandatory protective clothing and equipment to protect ship's force personnel during shipboard lead work.

(4) If specified in the baseline industrial hygiene survey, ensure a written compliance plan to comply with lead control requirements is available. The supporting industrial hygiene officer/industrial hygienist should prepare this plan.

(5) Implement lead hazard training for all personnel identified in the baseline industrial hygiene survey as potentially exposed to lead at or above the AL.

(6) Request industrial hygiene assistance for the evaluation of new potential lead hazards.

c. Division officers shall:

(1) Ensure that personnel required to perform work involving lead exposure are provided with proper clothing and equipment and trained in its use.

(2) Ensure that personnel who work with lead or who work in areas where the potential exists for lead exposure at or above the AL are properly trained.

(3) Identify to the medical department representative (MDR), personnel who work with lead or who work in areas where the potential exists for lead exposure at or above the AL.

d. The MDR shall:

(1) Assist the safety officer with conducting lead hazard training upon request.

(2) Schedule personnel for blood lead analysis and physical examinations at shore medical activities as required for medical surveillance.

e. All hands shall:

(1) Obtain and properly use protective equipment and use safe work practices as trained when working with lead.

(2) Report for medical surveillance tests and examinations, when scheduled.

**B1004. LEAD CONTROL ELEMENTS**

The following elements, as a minimum, are necessary to carry out effective lead control:

a. Industrial hygiene survey (paragraph B1005)

b. Control of lead in the workplace environment (paragraph B1006)

c. Waste disposal procedures (paragraph B1007)

d. Medical surveillance (paragraph B1008)

e. Written compliance plan (paragraph B1009)

f. Worker and supervisor training (paragraph B1010)

**B1005. INDUSTRIAL HYGIENE SURVEY**

a. An industrial hygienist shall evaluate all workplaces in which lead is used. This evaluation shall be accomplished during the baseline industrial hygiene survey specified per Chapter A3. Where a potential for exposure from inhalation of airborne lead particulate or personnel contamination is found, the industrial hygienist shall establish an exposure monitoring plan to characterize personnel exposures. When personnel lead exposures warrant, the industrial hygiene survey shall identify the need for the command to have a written lead hazard compliance plan and provide the specific content for the plan.

b. Within 5 working days after the receipt of exposure monitoring results, the command shall notify affected personnel in writing of results that represent their exposure. Whenever the results indicate that the individual was exposed above the PEL, without regard to respirator use, the written statement shall include that fact and a description of the corrective action(s) taken to reduce the individuals exposure.

c. If the safety officer or any supervisor has a question regarding the potential lead hazards and appropriate controls involving an operation which includes or potentially includes lead, the safety officer shall request industrial hygiene officer assistance from a tender, staff or local medical treatment facility or Navy Environmental and Preventive Medicine Unit (NAVENPVNTMEDU).

## B1006. CONTROL OF LEAD IN THE WORKPLACE ENVIRONMENT

There are seven basic principles to be used when working with lead or materials that contain lead:

a. General Workplace Control Practices

(1) Use non-lead paint.

(2) Keep mechanical grinding and sanding to the absolute minimum with primary reliance on impact tools and authorized chemical strippers for paint removal. Mechanical tools equipped with high efficiency particulate air (HEPA) filtered exhaust for removal and reclamation of lead dust are preferred.

(3) When feasible, minimize the heating of lead and leaded materials by using thermostatically-controlled heating (below 600°F) or removing the lead-containing surface coatings or contaminants prior to heating.

(4) Establish procedures to maintain work surfaces as free of lead dust as is practical. Clean up lead dust with a HEPA filtered vacuum cleaner. Wet sweeping, wet brushing and wiping down with wet rags may be effective in removing lead dust. Rags used for wiping down shall be disposed of as lead waste.

(5) Lead-containing waste, scrap, debris, containers, equipment and clothing consigned for disposal shall be collected, sealed, and labeled in impermeable containers. Transportation shall be conducted in a manner that does not release airborne dust or pollute surrounding waterways. Dispose of lead waste per the procedures of Chapter B3.

(6) To minimize exposure potential, isolate hot work on lead and abrasive lead removal operations from other operations.

b. Ventilation

(1) If deemed necessary by the cognizant industrial hygienist, provide fixed local exhaust ventilation connected to high efficiency particulate air filters at the point of particulate generation.

(2) Do not exhaust emissions to another workspace.

c. Personal Protective Clothing and Related Control Facilities

(1) Personnel engaged in the handling of lead or in situations where the concentration of airborne particulate lead is likely to exceed the PEL, or where the possibility of skin or eye irritation exists shall remove uniform clothing and wear protective clothing. Consult the command's industrial hygiene officer, industrial hygiene survey, or contact the local BUMED industrial hygienist for specific clothing requirements. Clothing shall be waterproof when wet lead is handled.

(2) Personnel shall remove protective clothing before leaving the work area.

(3) Provide change rooms as close as practical to the lead work area(s) for personnel who work where the airborne lead exposure is above the PEL (without regard to the use of respirators). When possible, locate shower facilities between the "clean" and "dirty" change rooms. Consult the command's industrial hygiene officer, industrial hygiene survey, or contact the local BUMED industrial hygienist for specific decontamination facility requirements.

(4) Launder lead-contaminated clothing to prevent release of lead dust in excess of the AL. Transport lead-contaminated clothing in sealed containers to which are affixed the standard "caution label" (see paragraph B1006e). Notify persons who clean or launder protective clothing or equipment in writing of the potentially harmful effects of exposure to lead and monitor these persons for exposure to lead as required by paragraph B1005.

d. Respiratory Protection

(1) Respirators are required where the concentration of airborne, particulate lead is likely to exceed the PEL.

(2) Consult the command's industrial hygiene officer, industrial hygiene survey, or contact the local BUMED industrial hygienist for specific respirator requirements.

e. Warning Signs and Caution Labels

(1) Warning signs shall be provided and displayed at each location where airborne lead concentrations may exceed the PEL. Signs shall state, as a minimum, the following:

**WARNING**

**LEAD WORK AREA**

**POISON**

**NO SMOKING, EATING OR DRINKING**

(2) Caution labels shall be affixed to containers of lead-contaminated clothing and equipment, raw materials, waste, debris, or other products containing lead. These caution labels shall state:

**CAUTION**

**CLOTHING CONTAMINATED WITH LEAD**

**DO NOT REMOVE DUST BY BLOWING OR SHAKING**

**DISPOSE OF LEAD CONTAMINATED WASH WATER ACCORDING TO**

**APPLICABLE LOCAL, STATE OR FEDERAL REGULATIONS**

f. Housekeeping

(1) Where lead containing materials are routinely melted, ground or cut, maintain all surfaces as free as practical of lead accumulation. Clean surfaces at least once per shift to prevent accumulation of lead dust.

(2) All cleaning shall use methods such as vacuuming with HEPA filtered vacuum cleaners or washing down where feasible, observing water pollution regulations as they pertain to lead-contaminated wastewater. Only use wet sweeping, shoveling or brushing shall when other methods have been tried and found to be ineffective or infeasible.

(3) Do not use compressed air to clean work surfaces.

(4) When wash down procedures are used to clean surfaces or wetting is used to control dust, treat floor surfaces with a non-skid agent and drain the floor so that excess water is collected in a holding tank for disposal per chapter B3.

g. Personal Hygiene

(1) Prohibit eating, drinking, smoking, chewing of tobacco products or gum, the application of makeup, and storage of food and tobacco products in lead work areas.

(2) Personnel working with lead shall wash their hands and faces prior to eating, drinking, smoking or applying cosmetics.

B1007. WASTE DISPOSAL PROCEDURES

a. Lead-containing waste materials are classified as hazardous material and must be handled per Chapter B3. Bag hazardous lead waste in heavy-duty plastic bags or other impermeable containers. Label bags with caution labels described in paragraph B1005e(2).

b. Label containers such as bags and trash cans "**LEAD WASTE ONLY.**" Care must be exercised in order to prevent bags and other containers from rupturing when being moved.

B1008. MEDICAL SURVEILLANCE

a. Medical surveillance consists of: preplacement medical evaluation, blood lead monitoring, and follow-up medical evaluation based on the results of blood lead analysis, worker complaint, and physician opinion. Personnel are included in this program when industrial hygiene surveillance indicates that they perform work or are likely to be in the vicinity of an operation which generates airborne lead concentrations at or above the AL more than 30 days per year. Inclusion in this program is based on measured airborne concentrations without regard to respirator use, and therefore does not indicate that an individual is overexposed to lead.

b. Within 5 days of receipt of blood lead monitoring results, the command shall notify affected personnel in writing of his/her blood lead if their blood lead level is at or above 30 ug/100gm. Notification should include the criteria for removal from lead work and, if appropriate, notification that the person is being temporarily removed from lead exposure per reference B10-1. If an individual is pregnant, she should be counseled on the possible adverse affects to the pregnancy or fetus. A decision regarding any action to be taken will be made by the physician on a case-by-case basis.

c. All records of examinations, possible lead-related conditions, related laboratory results and all forms and correspondence related to the person's medical history shall become a permanent part of the health record and be retained for the period of naval service plus 20 years, or 40 years after the date of the last entry, whichever is longer.

**B1009. WRITTEN COMPLIANCE PLAN**

The supporting industrial hygiene officer or industrial hygienist should prepare a written compliance plan for processes that produce exposures in excess of the PEL as specified in reference B10-1. The ship only needs a lead compliance plan if lead processes are identified during the baseline industrial hygiene survey. These plans shall include the following items, at a minimum:

a. A description of each operation in which lead is emitted; e.g. machinery used, material processed, controls in place, crew size, employee job responsibilities, operating procedures and maintenance practices

b. A description of the specific means that will be employed to achieve compliance, including engineering plans and studies used to determine methods selected for controlling exposure to lead

c. A report of the technology considered in meeting the permissible exposure limit

d. Air monitoring data that documents the source of lead emission;

e. A detailed schedule for implementation of the program, including documentation such as copies of purchase orders for equipment, construction contracts, etc.

f. A work practice program which includes items required under paragraphs (g), (h) and (i) of reference B10-1

g. An administrative control schedule required by paragraph (e)(6) of reference B10-1, if applicable

h. Other relevant information.

The supporting industrial hygiene officer/industrial hygienist shall review written plans and update as necessary at least every 6 months to reflect the current status.

**B1010. TRAINING**

a. All personnel who are potentially exposed to lead at or above the AL, and their supervisors shall receive initial training prior to such assignment and at least annually thereafter. This training shall, at a minimum, include the following:

(1) The specific nature of operations during which exposure is possible.

(2) The purpose, proper selection, fit testing, use and limitations of respirators.

(3) The adverse health effects of lead with particular attention to the reproductive effects upon both males and females, including the possible adverse effects on pregnancy and the fetus.

(4) The purpose and description of the medical surveillance program, including the use of chelating agents.

(5) The engineering controls and work practices to be applied and used in the work, including personal protective equipment and personal hygiene measures.

(6) The contents of any compliance plan in effect.

**NOTE**

The command shall procure sufficient copies of reference B10-1 from the Department of Labor and make them available to personnel required to receive training. They should be provided with Appendix B (Employee Standard Summary) of reference B10-1 and, upon request, any other handout-type materials used in or related to the training.

b. All painted surfaces that cannot be identified as lead-free through laboratory analysis must be handled as containing lead. Division officers shall train personnel assigned to remove paint per the safety precaution for paint removal in chapters C18 and D12.

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## CHAPTER B10

## REFERENCES

B10-1 29 Code of Federal Regulations (CFR) 1910.1025, Lead (As Amended) (NOTAL - This reference should be ordered by commands, as appropriate, to provide to personnel under medical surveillance (see paragraph B1008). Commands with an industrial hygiene officer as safety officer shall have this reference aboard).

# CHAPTER B11

# TAG-OUT PROGRAM

## B1101. DISCUSSION

A tag-out procedure is necessary because of the complexity of modern ships and the cost, delays, and hazards to personnel which could result from improper operation of equipment or the inadvertent release of stored energy. In order to prevent injury to personnel and damage to equipment, the tag-out program is mandatory for all shipboard equipments, components, and systems. The program is designed to notify personnel that tagged-out equipment or systems are not in a normal operating condition. The tag-out procedure consists of a series of tags or adhesive labels that are applied to instruments, gages, or meters to indicate that they are inoperative, restricted use, or out of calibration. Each tag contains information necessary to avoid a possible mishap. Standard tag-out procedures are to be used for all corrective maintenance including work done by an intermediate maintenance or depot level repair activity. Tag-out procedures shall be enforced at all times. The use of tags or labels is not a substitute for other safety measures such as chaining or locking valves, removing fuses, or racking out circuit breakers. (R

If any system, portion of a system, component, equipment, or instrument has more than one type of tag or sticker, the DANGER (RED) tag, when present, shall take precedence over all other tags or stickers. The specific procedures for accomplishing an equipment, component, or system tag-out are contained in reference B11-1, section 630.17, EQUIPMENT TAG-OUT BILL. This chapter will discuss the responsibilities and elements necessary to accomplish a successful tag-out program.

## B1102. PROGRAM RESPONSIBILITIES

a. The commanding officer shall ensure that all hands comply with the Equipment Tag-out Bill, reference B11-1. He or she shall designate a department head as the manager of each Tag-out Log established aboard the command.

b. The safety officer shall ensure that this program is evaluated for effectiveness and compliance. The checklist in Appendix B11-A may be used for this monitoring.

c. Department heads assigned responsibility for a Tag-out Log shall:

(1) Establish the Log as required by reference B11-1, paragraph 630.17.4, ensuring sufficient supplies of tags, labels and forms are available to properly execute the program.

(2) Designate authorizing officers, who are responsible for supervising the Tag-out Log, by billet or watchstation.

(3) Ensure that audits are accomplished at the required frequency. They shall assign officers to conduct the audits.

(4) Personally check the Tag-out Log at least once a month, note errors, bring errors to the attention of responsible personnel and remove completed Tag-out Record Sheets and Instrument Logs.

d. All department heads shall ensure assigned personnel are trained on and comply with tag-out procedures.

e. All hands shall comply with tag-out procedures.

B1103. PROGRAM ELEMENTS

The Tag-out Program has the following elements:

a. Tag-out Log(s) establishment. (Reference B11-1, paragraph 630.17.4)

b. Authorizing officers assignment. (Reference B11-1, paragraph 630.17.3)

c. Use of tags, labels and forms. (Reference B11-1, paragraph 630.17.6)

d. Audits and checks. (Reference B11-1, paragraph 630.17.7)

e. Training. (Paragraph 1104)

B1104. TRAINING

R) a. All hands shall receive training on the tag-out program upon reporting aboard and annually thereafter. This training shall include:

(1) The purpose and use of tags and labels.

(2) That tags are essentially warning devices affixed to energy isolating means (e.g., valve, switch, circuit breaker, etc.) and do not provide the physical restraint on those devices that is provided by a lock.

(3) When a tag is attached to an energy isolating means (e.g., valve, switch, circuit breaker, etc.), it is not to be removed without permission of the appropriate authorizing officer and only after being cleared per the command approved procedures. Tag-outs are never to be ignored, bypassed, or defeated.

(4) That, in order to be effective, tags must be legible and understandable to all personnel.

(5) That tags may evoke a false sense of security and that full compliance by all hands is necessary to prevent injury or death from the inadvertent release of energy.

(6) That tags must be securely attached to the energy isolating means (e.g., valve, switch, circuit breaker, etc.) in such a manner that they cannot be inadvertently or accidentally detached while in use.

b. Persons who affix, check, or remove tags or labels shall receive (R
training on the recognition of applicable hazardous energy sources, the type and magnitude of energy present in the workplace, and the Equipment Tag-out Bill procedures prior to being assigned those duties and annually thereafter.

c. Persons being assigned to watchstations or billets designed as Authorizing Officers shall receive training on the responsibilities and the requirements and procedures of the Equipment Tag-out Bill prior to such assignment. These persons shall be given an oral checkoff on their knowledge of tag-out requirements and procedures if it is not on the Personnel Qualifications Standard (PQS) for that watchstation or billet. Authorizing officers shall receive training annually on tag-out procedures.

d. Tag-out training will be documented.

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## CHAPTER B11

## REFERENCES

11-1. OPNAVINST 3120.32B, "Standard Organization and Regulations of the Navy". (SORM)

## Appendix B11-A

## TAG-OUT PROGRAM CHECKLIST

Indicate by an X, the answer to each of the questions below. If a question is not applicable to the command, indicate by NA in the YES block. Explain or describe the condition warranting any NO answer on the space provided at the end of the checklist or on additional sheets, if necessary.

The location of the NAVOSH Manual reference for any question is provided at the end of the question.

| | | YES | NO |
|---|---|---|---|
| PROGRAM RESPONSIBILITIES | | | |
| 1. | Have department heads been assigned the responsibility for each Tag-Out Log established aboard the command? (B1102a) | | |
| 2. | Has each department head assigned responsibility established a Tag-out Log in accordance with the Tag-out Bill of OPNAVINST 3120.32B, SORM (paragraph 630.17.4)? (B1102c(1)) | | |
| 3. | Do responsible department heads ensure that a sufficient supply (90 days) of tags, labels, and forms are available to properly execute the program? (B1102c(1)) | | |
| 4. | Do responsible department heads designate authorizing officers by billet or watchstation, who are responsible for supervising the Tag-out Log? (B1102c(2)) | | |
| 5. | Do responsible department heads assign officers to conduct tag-out audits? (B1102c(3)) | | |
| 6. | Do responsible department heads personally check their Tag-out Log once a month, noting errors, bringing errors to the attention of responsible people, and remove completed Tag-out Record Sheets and Instrument Logs? (B1102c(4)) | | |
| 7. | Do all department heads ensure assigned personnel comply with tag-out procedures? (B1102d) | | |

| | | YES | NO |
|---|---|---|---|
| 8. | On nuclear ships, is a separate Tag-out Log maintained for each propulsion plant? (SORM 630.17.4a) | | |
| TAG-OUT LOG ESTABLISHMENT | | | |
| 9. | Is a copy of the Equipment Tag-out Bill and any amplifying instruction kept in the front of the Tag-out Log? (SORM 630.17c(1)) | | |
| 10. | Does each log have a designated location which is readily accessible for use by appropriate personnel? (SORM 630.17.4a) | | |
| 11. | CHECK the specified location for each log. Has the log been returned to its specified location? (SORM 630.17.4a) | | |
| 12. | Does the log contain the following sections: (SORM 630.17.4c) | | |
| | a. A copy of the Equipment Tag-out Bill and amplifying instructions? | | |
| | b. DANGER/CAUTION Tag-out Index and Record of Audits? | | |
| | c. Effective DANGER/CAUTION Tag-out Record Sheets? | | |
| | d. Instrument Log? | | |
| | e. Cleared DANGER/CAUTION Tag-out Record Sheets? | | |
| 13. | CHECK 20 DANGER tags covered by the Tag-out Log. Is each properly filled out (signatures of authorizing officer, person attaching tag, person checking tag, and repair activity representative (if appropriate); serial number; item identification; date and time; position and condition of the item tagged)? (SORM 630.17.6) | | |
| 14. | CHECK five CAUTION tags. Are they properly filled out (signatures of authorizing officer, person attaching tag, person checking tag, and repair activity representative (if appropriate); serial number; item identification; and date and time)? (SORM 630.17.6) | | |

| | | YES | NO |
|---|---|---|---|
| 15. | Do special instructions on the back of the CAUTION tags checked state specific conditions under which the tagged object may be operated? (SORM 630.17.6) | | |
| 16. | CHECK at least 10 Out of Commission or Out of Calibration labels. Are they properly filled out (serial number, date, time, authorizing officer signature, signature of repair activity representative (if appropriate), and signature of person attaching label)? (SORM 630.17.6) | | |
| 17. | Do Out of Calibration labels checked indicate a correction factor to be applied to the instrument? (SORM 630.17.6) | | |
| 18. | CHECK at least 10 effective DANGER/CAUTION Tag-out Record Sheets. Are they properly filled out (a serial number is assigned which is indicated on the Index Sheet; signatures of authorizing officer, petty officer in charge, second person, and repair activity representative (if appropriate); personnel/equipment hazard is indicated for DANGER tags, amplifying instructions are present for CAUTION tags; the back lists each tag with each block filled as appropriate (ditto marks are not used); work necessary to clear tags is indicated; the work for which tag-out is issued is indicated (including the applicable tag numbers); and "DCC (or other appropriate watch-station) notified" is indicated in the upper right corner of the record sheet front)? (SORM 630.17.6) | | |
| 19. | Is the Instrument Log properly filled out (each label has a label condition code and sequential number, the instrument name or number is provided, the instrument condition or the correction factor to be applied is indicated, an authorizing officer has signed each entry, the person attaching the label has initialled the entry)? (SORM 630.17.6) | | |
| 20. | Have the appropriate columns for cleared labels been filled in on the Instrument Log? (SORM 630.17.6) | | |
| 21. | CHECK at least two cleared DANGER/CAUTION Tag-out Record Sheets. Do they contain the clearance position or condition, the clearance authorizing signatures, cleared by initials, and signature of the watch or duty station officer)? (SORM 630.17.6) | | |

| | | YES | NO |
|---|---|---|---|
| 22. | Has the Tag-out Log audit been accomplished at the required intervals? (SORM 630.17.7) | | |
| 23. | Are the audits indicated by a line entry with the signature on the Index and Audit Sheet and by line entries on the back of each DANGER/CAUTION Tag-out Record Sheet? (SORM 630.17.7) | | |
| 24. | If audits have identified discrepancies, has corrective action been taken and completed? (SORM 630.17.7) | | |
| | <u>TRAINING</u> | | |
| 25. | Do all hands receive training on the tag-out program upon reporting aboard and annually thereafter? (B1104b) | | |
| R) 26. | Have persons who affix, check, or remove tags or labels been trained on the recognition of applicable hazardous energy sources and the type and magnitude of energy present in the workplace and on the Equipment Tag-out Bill procedures prior to being assigned these duties and annually thereafter? (B1104a) | | |
| 27. | Do authorizing officers receive training on their responsibilities and the requirements and procedures of the Equipment Tag-out Bill prior to such assignment and annually thereafter? (B1104b) | | |
| 28. | Do authorizing officers receive an oral checkoff on their knowledge of tag-out requirements and procedures if it is not on the PQS for that watchstation or billet? (B1104b) | | |
| | <u>TAG-OUT PROGRAM STANDARDS</u> | | |
| 29. | Are tag-out procedures enforced at all times? (C0905a) | | |
| 30. | Are tags used to indicate the presence of relief valve gagging devices, blank flanges, or similar type safety devices? (C0905b) | | |
| 31. | Are tags or labels used in the tag-out program not used for valve identification, for marking deficiencies, or for unspecified purposes? (C0905c) | | |

| | | YES | NO |
|---|---|---|---|
| 32. | Is appropriate action to remedy situations requiring a tag-out initiated whenever a tag or label is used? (C0905e) | | |
| 33. | Are sufficient tags used to completely isolate equipment or prevent operation of equipment from all stations which might exercise control? (C0905g) | | |
| 34. | Are tag-outs carefully planned to eliminate unnecessary record sheets and tags and to reduce the efforts required to perform audits? (C0905h) | | |
| 35. | Are tags attached so that they are apparent to anyone who may attempt to operate the component? (C09051) | | |
| 36. | Do supervisory watchstanders review the applicable Tag-out Log during watch relief? (C09051) | | |

# CHAPTER B12

# PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

## B1201. DISCUSSION

This chapter provides procedures for provision and use of personal protective clothing and equipment. Chapters 1, 3, 4, 5, 6, 8, 9 and 10 of the B section of the manual contain more detailed instructions for use and maintenance of certain specialized equipment.

As described in paragraph A0403, personal protective devices establish a "last line of defense" against workplace hazards. Any personal protective equipment breakdown, failure, or misuse immediately exposes the wearer to the hazard. Many protective devices, through misapplication or improper maintenance, can become ineffective without the knowledge of the wearer. For this reason, proper equipment selection and maintenance, personnel training (including equipment limitations), and enforcement of protective equipment maintenance, configuration, and use are key elements to an effective personal protective effort. (R

During overhauls or shorter duration availabilities, personal protective equipment (respirators, disposable eye/ear protection, gloves and disposable coveralls) is often the only means of protecting personnel (fire watches, chippers, grinders, painters and bilge cleaners) from workplace hazards. Preparation for any availability should include careful assessment of personal protective equipment needs over the entire period.

## B1202. RESPONSIBILITIES

a. The commanding officer shall ensure that there is sufficient personal protective equipment aboard to meet the needs of his/her command. He/she shall ensure that adequate funding is provided to obtain or replace missing or worn out personal protective equipment.

b. The safety officer shall ensure that the use of personal protective equipment is monitored for required work or in required spaces, as well as being worn in a proper and effective manner. The checklist in Appendix B12-A may be used to monitor compliance with personal protection equipment requirements.

c. Division officers shall stock personal protective clothing and equipment and shall provide it to personnel as needed. Division officers shall ensure that the supply officer is aware of required changes to the allowance of personal protective equipment so that Coordinated Shipboard/Shore-based Allowance List (COSAL), Allowance Parts List (APL) or Authorized Equipment List (AEL) can be changed accordingly. Once equipment is acquired, division officers shall ensure that it is properly maintained. Additionally, division officers shall ensure that assigned personnel are adequately trained on the type and proper use of personal protective equipment

required at their work stations and shall enforce the proper use and wear of protective equipment.

d. The medical department representative shall assist in obtaining medically fitted personal protective equipment.

e. All hands shall ensure that they wear the required personal protective equipment to perform assigned work in a proper manner. If the required equipment is not available to do the assigned work, or if instruction is needed on how to wear or use the equipment, the supervisor shall be notified immediately.

B1203. PROTECTIVE EQUIPMENT

When coupling equipment needs with hazards posed, the following general guidelines shall be used:

a. Head Protection. Helmets or hard hats protect crew members from the impact of falling and flying objects, from impact with low overheads, and on a limited basis from electric shock and burn. Metal hard hats are not acceptable for shipboard use. See Appendix B12-B for stock number information for hard hats.

b. Foot Protection. Shipboard environments such as flight decks, hangar decks, machine shops, pipe shops, heavy supply parts stowage areas, replenishment areas, and rigging sponsons expose personnel in some degree to foot hazards. Leather shoes are required for all personnel aboard ship for normal daily wear. Poromeric (e.g., CORFAM®) shoes may be worn when immediately departing or returning to the ship or when specifically authorized by the commanding officer for ceremonial or other special occasions. CORFAM®, plastic, synthetic or vinyl shoes shall not be worn in firerooms, main machinery spaces or in hot work areas. Several types of safety shoes are available:

R) (1) Standard stock safety shoes, with built-in toe protection and non-slip soles, are intended primarily to provide protection from falling objects. Enlisted personnel are issued safety shoes at Recruit Training Commands. When safety shoes exhibit wear, such that safety protection is no longer afforded, the command shall provide standard stock safety shoes as organizational clothing (similar to coveralls or foul weather gear). Officers shall be provided standard stock safety shoes when required by their work.

(2) Special safety shoes:

(a) Semi-conductive safety shoes are used to dissipate static electricity.

R) (b) Safety shoes with special electrical hazard soles are used to guard against shock hazards when performing electrical work and shall be provided to EMs, ETs, and personnel working around high voltage.

(c) Safety shoes or boots with rubber or synthetic material are used for protection against acids, caustics and other liquid chemical hazards. They may or may not have toe protection.

(d) Molders boots, with toe protection, should be provided to all molders and welders to provide easy removal in case hot slag or metal drops in or on the boot. (A

(3) See Appendix B12-B for stock number information for foot protection equipment.

c. Hand Protection. Hand hazards may occur in many forms in the workplace. They can include handling sharp objects, working with chemicals or electrical equipment and hot work. The following guidance shall be followed:

(1) When handling sharp materials, leather gloves shall be worn. Leather gloves shall also be worn over electrical grade rubber gloves whenever the rubber gloves could be subjected to cutting by sharp or abrasive objects.

(2) Whenever it is necessary to work with portable electric tools or equipment in damp locations or when it is necessary to work on live electrical circuits or equipment, electrical grade insulating rubber gloves shall be worn.

(3) When working with caustic or toxic chemicals, specified gloves shall be required. Thin rubber or plastic gloves such as surgical or foodhandler types are not resistant to chemical absorption; they are easily torn and prone to leakage and are not approved for use. Only approved, chemical resistant gloves shall be worn to handle acids, corrosives, solvents, and other industrial chemicals. Rubber gloves will protect against some chemicals. Gloves of a special plastic may be needed for protection against other chemicals. The hazardous material coordinator shall assist supervisors in the selection of gloves to protect against chemical hazards. (R

(4) When it is necessary to handle hot items or perform hot work, even if tongs or other gripping/clamping tools are available, non-asbestos, insulated gloves shall be worn.

(5) Gloves will not be worn when operating rotating or moving machinery.

(6) See Appendix B12-B for stock number information on hand protection equipment.

d. Safety Clothing. Special clothing may consist of flameproof coveralls, disposable coveralls, impervious chemical spill coveralls, welding leathers, and chemical aprons. These items may be specified as required by annual safety zone inspections, industrial health surveys, or standard work practices. Special clothing is required for personnel involved in asbestos ripout (see Chapter B1). Synthetic clothing, such as certified Navy twill, (R

shall not be worn in ship's firerooms, main machinery spaces, and in hot work areas. Fire retardant coveralls and dungarees shall be used by engineering personnel who stand watch or work in these spaces. See Appendix B12-B for stock number information on safety clothing.

e. Personal Fall Protection Equipment. When climbing, working aloft or over the side, parachute-type safety harnesses with Dyna-Brake® safety lanyard shall be worn at all times. Additionally, the following actions shall be used to provide maximum protection:

(1) Wire rope shall be used instead of nylon line when doing hotwork.

(2) Safety harnesses, D-rings, and safety lines shall be inspected by the cognizant division safety petty officer or designated safety observer before each use.

(3) Personnel who work aloft or over the side shall be trained in the proper use of personal fall protection equipment.

(4) Safety lanyards shall not be used for any other purpose than personal fall protection. In particular, they shall not be used for hoisting heavy objects.

(5) See Appendix B12-B for stock number information on personal fall protection equipment.

R) f. Personal Flotation Devices. Whenever personnel other than aircrew members and flight deck personnel are required to wear life jackets in open sea operations, the life jackets must be inherently buoyant. Those jacket-type life preservers are used by personnel in exposed battle stations, when working over the side, topside in heavy weather, during replenishment at sea, and in small boats. See Appendix B12-B for stock number information on personal flotation devices.

B1204. STORAGE, MAINTENANCE AND INSPECTION OF PERSONAL PROTECTIVE EQUIPMENT

a. Storage. Personal protective equipment will be stowed in such a manner that the protective feature is not reduced or destroyed by the storage environment.

(1) Helmets or hard hats shall be stowed in a manner so that cracks will not develop in hat material. Heavy materials shall not be stowed atop composite material hard hats.

(2) Protective shoes shall be stowed in a dry atmosphere. Where practical, they shall be stowed upright, allowing the insides to dry out.

(3) Rubber insulating gloves shall be stowed in the box in which they came. Planned Maintenance System (PMS) shall be performed on the gloves prior to stowage. Other rubber electrical safety protection equipment shall be

stowed in a clean, dry, oil-free location. Care should be taken not to fold such equipment as folding will frequently result in cracks which will greatly reduce the insulating capability of the material.

(4) Leather protection equipment shall be stowed in a clean, dry atmosphere. Gloves shall be dried prior to stowing, preferably in the boxes supplied with them. Welding leathers shall be hung up.

(5) Lanyards and safety harnesses used for personal fall protection equipment shall be hung in a cool, dry atmosphere. Do not pile equipment one upon the other. Such action may prevent proper drying and result in rotting and weakening of lanyards.

(6) Life jackets shall be thoroughly dried prior to stowage. Following drying, they should be stowed in designated clean and dry locations. Flight deck, MK-1 inflatable life jackets shall be hung in a clean, dry atmosphere.

b. Maintenance and Inspections

(1) Many items of personal protective equipment have maintenance and inspection requirements specified by PMS. To ensure proper protection, perform specified maintenance and inspections at the designated intervals or occasions.

(2) Personally retained, safety shoes should be periodically examined for worn soles and heels which would reduce the non-skid features of the shoe. These shoes shall be resoled and reheeled with rubber non-skid products. Do not use leather products. Safety shoes shall be replaced when the upper leather is worn or develops cracks exposing the toe protection or the foot.

(3) Hard hats shall not be worn if cracked, if the hat material has a hole other than one caused by the manufacturer or if painted. Such hard hats will be turned in and replaced. Do not drill any holes in hard hats or modify them in any way. Such action will greatly reduce the protective capability of the head wear. Affixing decals on protective head wear is permitted.

B1205. TRAINING

All personnel who are required to wear or use the personal protective equipment described in this manual shall receive training prior to initial use and annually thereafter to ensure that they properly wear and maintain this equipment. See Chapter A7 for information on training requirements, training documentation, and available training aids.

## Appendix B12-A

## PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT CHECKLIST

Indicate by an X, the answer to each of the questions below. If a question is not applicable to the command, indicate by NA in the YES block. Explain or describe the condition warranting any NO answer on the space provided at the end of the checklist or on additional sheets, if necessary.

The location of the NAVOSH Manual reference for any question is provided at the end of the question.

| | YES | NO |
|---|---|---|
| **RESPONSIBILITIES** | | |
| 1. Is there sufficient personal protective equipment (PPE) aboard the command? (B1202a) | | |
| 2. Is adequate funding provided to obtain or replace missing or worn out personal protective equipment? (B1202a) | | |
| 3. Does the safety officer, in conjunction with the master-at-arms force, monitor work stations to ensure that personal protective equipment is used for required work or in required spaces as well as being worn in a proper manner? (B1202b) | | |
| 4. Do division officers inform the supply officer of changes to the allowance of PPE so that COSALs, APLs, or AELs can be changed? (B1202c) | | |
| 5. Do division officers stock sufficient PPE to support the division's needs and issue it to personnel when required? (B1202c) | | |
| 6. Do division officers ensure that personal protective equipment is properly maintained? (B1202c) | | |
| 7. Does the MDR assist in obtaining/providing medically fitted PPE? (B1202d) | | |
| **PROTECTIVE EQUIPMENT** | | |
| 8. Does the command ensure that metal hard hats are not used? (B1203a) | | |

| | | YES | NO |
|---|---|---|---|
| R) | 9. Do all enlisted hands possess standard stock safety shoes (issued at Recruit Training) and replaced when worn out? (B1203b) | | |
| | 10. Are poromeric (i.e. CORFAM®) shoes prohibited except for departing or returning to the ship or when specifically authorized by the commanding officer for ceremonial purposes? (B1203b) | | |
| | 11. Are deck personnel provided with leather gloves to protect against hand injury when handling sharp objects, wire rope, or banding material? (B1203c(1)) | | |
| | 12. When working with caustic or toxic materials, are personnel provided with gloves suitable for handling the material? (B1203c(3)) | | |
| | 13. Are insulated gloves (non-asbestos) available for personnel doing hot work? (B1203c(4)) | | |
| | 14. Is synthetic clothing such as certified Navy twill, prohibited in ship's fire rooms, main machinery spaces, and hot work areas? (B1203d) | | |
| | 15. Are fire retardant coveralls and dungarees provided to engineering personnel who stand watch or work in fire rooms or main machinery spaces? (B1203d) | | |
| | 16. Are personnel working aloft or over the side provided with a parachute-type safety harness, with a Dyna-Brake® safety lanyard? (B1203e) | | |
| | 17. Are wire rope lanyards used instead of nylon when doing hot work either aloft or over the side? (B1203e(1)) | | |
| | 18. Are safety harnesses, D-rings, and safety lanyards inspected by the division safety petty officer or designated safety observer prior to each use? (B1203e(2)) | | |
| | 19. Are safety lanyards prohibited from being used for any other purpose than personal fall protection? (B1203e(4)) | | |
| | 20. Do personnel, other than air crew members and flight deck personnel who are required to wear life jackets in open sea operations, wear the inherently buoyant life jacket? (B1203f) | | |

| | YES | NO |
|---|---|---|
| 21. Do personnel wear inherently buoyant life jackets when in exposed battle stations, when working over the side, topside during heavy weather, in small boats and during towing and other evolutions when personnel can be carried over the side? (B1203f) | | |
| **STORAGE, MAINTENANCE AND INSPECTION OF PERSONAL PROTECTIVE EQUIPMENT**<br>22. Do divisions properly stow personal protective equipment? (B1204a) | | |
| 23. Check the PMS records for the personal protective equipment. Are maintenance and inspections being accomplished at the proper intervals? (B1204b) | | |
| 24. Are the hard hats being used by crew members free from cracks, holes, paint, or unauthorized modifications? (B1204b) | | |
| **TRAINING**<br>25. Do personnel, who are required to wear or use PPE in work, receive training prior to use and annually thereafter? (B1208) | | |

## Appendix B12-B

## PERSONAL PROTECTIVE EQUIPMENT STOCK NUMBER INFORMATION

| | ITEM | | NSN* | |
|---|---|---|---|---|
| 1. | Head Protection: | | | |
| | | Hard Hat | 8415-01-025-9958 | |
| | | Helmet, Flight Deck Crew Cloth | 8415-00-861-3527 | |
| | | Pad, Back Assembly | 8415-00-178-6830 | |
| | | Pad, Front Assembly | 8415-00-178-6831 | |
| | | Shell Assembly, Front | 8415-00-178-7013 | |
| | | Shell Assembly, Back | 8415-00-178-6855 | |
| 2. | Safety Shoes: | Steel Tip | 8430-00-596-5396 through 6052<br>8430-01-032-2900 through 2909<br>8430-01-079-1252, MIL-S-21894 | (D |
| | | Steel Tip Boots | 8430-00-624-2151 (series) | |
| | | Molder's | 8430-00-926-9965 (series) | |
| | | Electrical | 8430-00-611-8314 (series) | |
| | | Rubber | 8430-00-624-2151 (series) | |
| 3. | Gloves: | Leather | 8415-01-092-3910 | |
| | | Butyl | 8415-00-753-6551 through 6554 | |
| | | Industrial (corrosive handling) | 8415-00-266-8673, 8675, 8677, 8679 | |
| | | Industrial (organic solvent handling) | 8415-00-823-7456, 7457 | |
| | | Neoprene | 8415-00-753-6551 through 6554 | |
| | | PVC | 8415-00-916-2817, 2818 | |
| | | Rubber (chemical handling) | 8415-00-753-6651 through 6654 | |
| | | Rubber latex | 8415-01-012-9294 | |
| | | Protective Fuel and Oxidizer Resistant (Resin Modified Butyl) | 8415-00-577-4091 (series) | (D |
| | | Chipper, Gauntlet Left | 8415-00-559-1339 (series) | |

* National Stock Numbers (NSN) are subject to change. Recheck Numbers prior to ordering.

Appendix B12-B

PERSONAL PROTECTIVE EQUIPMENT STOCK NUMBER INFORMATION
(Continued)

| | | ITEM | NSN |
|---|---|---|---|
| | | Chipper, Gauntlet Right | 8415-00-599-1337 (series) |
| | | Cotton, Work | 8415-00-268-8330 |
| | | Cloth, leather palm | 8415-00-268-8350 |
| | | Leather, Welder, Gauntlet | 8415-00-269-0432 (series) |
| | | Leather, heavy | 8415-00-268-7871 (series) |
| | | Leather, Gauntlet, Linesman | 8415-00-274-2432 (series) |
| | | Cotton Knit, Fire Retardant | 8415-00-024-9505 |
| | | Heat Protective Mitten | 8415-00-092-0039 |
| R) | | Rubber, Electrical Insulating | 8415-01-158-9445 through 9449 |
| R) | 4. Safety Clothing: | Butyl apron | 8415-00-281-7812 through 7815 |
| | | Plastic apron | 8415-00-715-0450 |
| | | Rubber apron | 8415-00-082-6108 |
| | | Boot covers, butyl | 8430-00-262-5295 through 5297 |
| | | Boot covers, disposable | 8430-00-591-1359 |
| | | Coveralls, toxicological | 8415-00-099-6962, 6968, 6970 |
| | | Coverall, white cloth | 8405-00-082-5536 through 5539 |
| | | Coveralls (fire retardant) | 8405-01-105-6138 (series) |
| | | Coveralls, Catapult Crewman | 8415-00-753-6346 (series) |
| | | Coveralls, Cotton Sateen (Maintenance) | 8405-00-131-6507 (series) |
| | | Coveralls, Microwave Radiation Protection | 8415-00-006-7770 (series) |
| | | Coveralls, Arc Protection | 8415-00-081-6481 (series) |
| | | Footwear, Disposal Covers (used for OTTO II handling and with microwave protection coveralls) | 0430-00-591-1359 (series) |

## Appendix B12-B

## PERSONAL PROTECTIVE EQUIPMENT STOCK NUMBER INFORMATION

(Continued)

| | ITEM | | NSN | |
|---|---|---|---|---|
| | | Coveralls, Explosive Handling | 8415-00-280-2455 (series) | |
| | | Coveralls, Rocket Fuel Handlers Impermeable Full Protection | 841500-725-3627 (series) | |
| | | Hood, Rocket Fuel Handlers, Impermeable | 8415-00-753-6210 | |
| | | Clothing, leather (for welders) | | |
| | | Sleeves | 8415-00-164-0513 | |
| | | Jacket | 8415-00-268-8262 (series) | (R |
| | | Apron | 8415-00-250-2531 | |
| 5. | Personal Fall Protective Equipment: | Safety Harness Complete Assembly (work/safety lanyard) | 4240-00-402-4514 | |
| | | Safety Harness | 4240-00-022-2522 | |
| | | Working lanyard, Nylon | 4240-00-022-2518 | |
| | | Safety lanyard, 1/2" Nylon Rope with Dyna-Brake® | 4240-00-022-2521 | |
| | | Safety lanyard, 1" Strap Nylon with Dyna-Brake® | 4240-00-022-2521 | |
| | | Climber Safety Sleeve | 4240-01-042-9688 | |
| 6. | Personal Flotation Devices: | Life Preserver, Vest, Foam Pack (Inherently Buoyant) | 4220-00-200-0538 | |
| | | Life Preserver, Steinke Hood | 4220-00-066-4396 | |
| | | Life Preserver, Vest MK1 Vest | | |
| | | Vest | 4220-00-926-9459 (series) | |
| | | Bladder | 4220-00-935-5528 | |
| | | Inflation Assembly | 4220-00-012-3571 | |

# GLOSSARY

## GLOSSARY

The words **shall**, **will**, **must**, **should**, **may**, and **can** are used throughout this manual. **Shall**, **will**, and **must** are directive in nature and require mandatory compliance. **Should** is a strong recommendation, but compliance is not required. **May** or **can**, when used, are optional in nature and compliance is not required.

**Abate** - To eliminate or reduce permanently an unsafe or unhealthful working condition by coming into compliance with the applicable NAVOSH standard.

**Abrasive-blasting Respirator** - A continuous flow airline respirator constructed so that it will cover the wearer's head, neck, and shoulders and protect the wearer from abrasives and other related materials.

**Acid** - Any corrosive having a pH less than 7.

**Acid Locker** - A locker specifically designed and authorized for storing HM with a pH less than 7. (R

**Action Level** - Unless otherwise specified in a NAVOSH standard, one-half the relevant Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV).

**Acute** - Severe, usually crucial, often dangerous in which rapid changes are occurring. An acute exposure runs a comparatively short course.

**Administrative Control** - Any procedure which limits daily exposures to toxic chemicals or harmful physical agents by control of the work schedule.

**Aerosol** - Any material dispensed from a pressurized container using a gas propellant.

**Afloat Mishap** -Any mishap caused by DoD operations resulting in injury or death to anyone aboard the ships (craft) listed below whenever the ship is underway; ship's military and federal civilian mariners assigned as a crew member (permanent or under temporary orders) aboard the ships listed below, on- or off-duty ashore; or material loss or damage, occurring to the ships listed below at all times, both underway and moored: (R

a. Commissioned, U.S. Navy ships and their embarked boats and landing craft or leased boats

b. Pre-commissioned, U.S. Navy ships and their embarked boats and landing craft or leased boats beginning when the ship gets underway for Acceptance Trials

c. Landing Craft, Air Cushioned (LCAC)

d. All USNS ships manned by federal civilian mariners assigned to *Military Sealift Command.*

A) **Afloat Special Case Mishaps** - For data collection and analysis purposes, the following special case mishaps are *reportable to COMNAVSAFECEN in a MR:*

a. All cases of electric shock. (Include the voltage in the report.)

b. All cases of hazardous material, chemical, or toxic exposure requiring medical attention.

c. All cases of back injury requiring medical attention.

d. All mishaps involving explosives, oxidizers, incendiaries, explosive systems, or chemical warfare agents. They include the detonation, accidental launch, malfunction, dangerous defect, improper handling, damage to a launching device, weapon impact off-range or other unusual or unexpected weapons-related occurrence. They shall be reported using the information provided in Appendix A6-F. *If the explosive mishap meets the criteria for an afloat Class* A mishap, a mishap investigation board shall conduct a formal mishap investigation and submit an MIR.

**ALARA** - As Low as Reasonably Achievable.

**Alternate Standards** - Proposed standards giving equal or better protection than existing NAVOSH standards. Alternate standards shall be submitted to CNO (N45) through the chain of command for approval.

**ANSI** - American National Standards Institute, a national consensus standard-developing organization.

**Atmosphere Immediately Dangerous to Life or Health (IDLH)** - The concentration of a contaminant which can produce an immediate irreversible debilitating effect on health, or which can cause death.

**Asbestos** - A fibrous mineral, which can be produced into a material that is fireproof and possesses high tensile strength, good heat and electrical insulating capabilities, and moderate to good chemical resistance.

**Asbestos Medical Surveillance Program (AMSP)** - A program consisting of a periodic medical screening examination which may include special purpose histories, physical examinations and laboratory tests. Directed at detecting early changes in specific organ systems which have been identified with asbestos diseases.

**Audiogram** - A graph or table showing hearing threshold levels as a function of frequency.

**Audiometer** - Instrument used to measure hearing sensitivity using pure tones.

**Aviation Bends (Altitude Decompression Sickness)** - Aviators exposed to altitude may experience symptoms of decompression sickness similar to those experienced by divers. (A

**A-Weighted Sound Level** - Sound level in decibels as measured on a sound level meter using an A-weighted network. This network attempts to reflect the human ear's decreased sensitivity to low frequency sounds.

**Authorizing Officer** - Officer in the tag-out program who has authority to sign tags/labels to be issued or cleared.

**Base** - Any corrosive having a pH greater than 7.

**Baseline Survey** - Initial survey (after construction or overhaul) to identify hazardous workplace conditions or unsafe work practices.

**Biological Monitoring** - Periodic examination of blood, urine or any other body substance to determine exposure to toxic substances.

**Bound Asbestos** - Asbestos which is tightly compacted and is not normally a health hazard unless worked by punching, grinding, machining or sanding or when the material is deteriorated.

**Canister, Oxygen-Generating** - A container filled with a chemical which generates oxygen by chemical reaction.

**Capture Velocity** - That velocity at a distance from a hood, necessary to overcome dispersive forces and capture the contaminant.

**Carbon Dioxide Fixed Flooding Systems** - Fire extinguishing systems that may be used to protect spaces such as paint lockers, generator rooms, pump rooms, engine rooms, and flammable liquids storerooms.

**Cartridge, Air-Purifying** - A container with a filter, sorbent, or catalyst, or any combination of these which removes specific contaminants from the air drawn through it.

**Caustic** - Any corrosive having a pH greater than 7.

**Caution Tag** - Yellow tag used as precautionary notification to indicate that caution must be exercised in operating tagged equipment.

**Chemical Agent** - A chemical compound intended for use in military operations to kill, seriously injure, or incapacitate people through its chemical properties. Excluded are riot control agents, chemical herbicides, pesticides, and industrial chemicals unrelated to chemical warfare.

**Chronic** - Persistent, prolonged, repeated.

A) **Class A Mishap (afloat)** - The total cost of reportable damage is $1,000,000 or more; or any injury or work-related illness resulting in death or permanent total disability. All Class A mishaps occurring on a ship specified in paragraph A0601 require investigation by a mishap investigation board (MIB) and submission of a Mishap Investigation Report (MIR). Class A mishaps occurring ashore or as a result of motor vehicle mishaps shall be reported by Mishap Report (MR) or Motor Vehicle Mishap Report (MV) and do not require a mishap investigation board.

A) **Class B Mishap (afloat)** - The total cost of reportable property damage is $200,000 or more, but less than $1,000,000; an injury or work-related illness resulting in permanent partial disability; or a mishap resulting in the hospitalization of five or more people.

a. Type commanders shall direct the investigation of shipboard Class B or other mishaps or near mishaps by a mishap investigation board if the investigation may reveal vital safety information.

b. Class B mishaps not investigated by a mishap investigation board shall be investigated and reported using a MR, DV, MV, or RAHS.

A) **Class C Mishap (afloat)** - The total cost of reportable property damage is $10,000 or more, but less than $200,000; or an injury preventing an individual from performing regularly scheduled duty or work beyond the day or shift on which it occurred; or a nonfatal illness or disability causing loss of time from work or disability at any time (lost time case). For data collection and analysis purposes, Class C mishaps shall be reported to COMNAVSAFECEN by MR, DV, MV, or RAHS if:

a. The total cost of reportable property damage is $10,000 or more, but less than $200,000.

b. There is an injury preventing an individual from performing **regularly scheduled duty or work** 5 days beyond the day or shift on which it occurred.

**Collection, Holding and Transfer (CHT) System** - A type of marine sanitation device installed aboard naval ships. This system employs waste holding tanks for use when transiting restricted zones. It is only installed on ships of sufficient size to accommodate the tanks without reducing military capabilities.

A) **Combustible Liquid** - A liquid having a flash point at or above 100°F.

**Compressed Gas** - Material, which may or may not be HM in itself, which is stored in pressurized containers.

**Concentration** - The quantity of a substance per unit volume (in appropriate units).

Examples of concentration units are provided below:

- $mg/m^3$ milligrams per cubic meter for vapors, gases, fumes or dusts
- ppm parts per million for vapors or gases
- fibers/cc fibers per cubic centimeter for asbestos

**Confined Space** - A compartment such as a double-bottom tank, cofferdam or void, which because of its small size, limited access, or confined nature can readily create, aggravate, or result in a hazardous condition due to the presence of toxic gases or lack of oxygen.

**Contaminant** - A material that is not normally present in the atmosphere, which can be harmful, irritating or a nuisance to anyone who breathes it.

**Contractor Caused Mishaps** - Injuries or work-related illnesses of DoD personnel caused by contractor operations. The parent command of affected DoD personnel shall report these mishaps. Mishaps involving civilian contractor personnel caused by contractor operations shall be referred to COMNAVSAFECEN for guidance. (A

**Conventional Ordnance Deficiency** - A malfunction, observed defect, or induced defect involving conventional ordnance, explosives, ammunition, explosives systems or devices, support and handling equipment used to handle, load, store, or transport ordnance. (A

**Corrosive Material** - Any HM that will cause severe tissue damage by chemical action or materially damage surfaces or cause a fire when in contact with organic material or certain other chemicals.

**Current Ships Maintenance Project (CSMP)** - A computerized report which lists the deferred maintenance reported by a command. Such reports are also provided to the type commander. Reports can provide either a detailed or summary listing of deferred maintenance information. The CSMP is used for generating Board of Inspection and Survey packages and automated work requests (AWRs) prior to overhaul or availabilities.

**Damage** - The partial or total loss of hardware caused by component failure. Exposure of hardware to heat, fire or other environments; human errors; or other inadvertent events or conditions.

**Danger Tag** - Red tag prohibiting operation of equipment that endangers safety of personnel or equipment, systems, or components.

**Decibel-dB** - A unit used to express sound pressure levels; specifically, 20 times the logarithm of the ratio of the measured sound pressure to a reference quantity, 20 micropascals (0.0002 microbars). In hearing testing, the unit used to express hearing threshold levels as referred to audiometric zero.

**Designated Safety and Occupational Health Official** - The individual at the Secretary of the Navy level who is responsible for the administration of the Navy safety and occupational health program.

**Detector Tube** - A glass tube which utilizes a sensitive chemical (in a suspension of silica gel) which produces color change whenever contaminated air is pulled through the tube.

**Disabling Work/Duty Injury** - Any impairment resulting from an accident or occupational disease which prevents a military person from performing his or her regularly established duty or work for a period of 24 hours or more, subsequent to 2400 on the day of injury.

A) **Diving Mishap** - Injury, recompression therapy, or death resulting from an incident occurring while breathing compressed gases (for example, air, $HeO_2$, or oxygen) before, during, or after entering or leaving the water.

A) **DoD Personnel** - Defined as:

a. On-duty, DoD civil service employees (including National Guard and Reserve technicians, unless in military duty status); non-appropriated fund employees (excluding part-time military); Corps of Engineers civil works employees; Youth or Student Assistance Program employees; foreign nationals employed by DoD components; and Army-Air Force Exchange Service employees.

b. All U.S. military personnel on active duty; U.S. Military Reserve or National Guard personnel on active duty or in a drill status; Service Academy cadets or midshipmen; Reserve Officer Training Corps (ROTC) cadets or midshipmen when engaged in directed training activities; Officer Candidate School students when engaged in directed training activities; and foreign national military personnel assigned to DoD components.

**Dosimeter** - A device for measuring cumulatively the ionizing radiation exposure of an individual over a period of time.

**Dust** - Small solid particles created by the breaking up of larger particles by processes such as crushing, grinding, or explosion.

Examples of processes that generate dust: use of machine shop tools, paint chipping, sanding, woodworking, abrasive blasting.

**EEBD (Emergency Escape Breathing Device)** - A respirator that provides the user with oxygen through a chemical reaction. Only to be used in emergency escape procedures.

**Effectiveness of Corrective Action** - The degree to which the proposed hazard abatement system can be expected to reduce the cited hazard. For health hazards, this would typically be expressed as the intensity of the hazardous chemical or physical agent remaining, in appropriate units, after the proposed abatement measure is operational. For safety hazards, effectiveness is expressed as "in full compliance" or "not in full compliance" with the applicable standard, if any.

**Electric Shock** - The passage of direct or alternating electrical current through the body or a body part. (A

**Electrical Safety Officer** - Person who is responsible to the commanding officer in conducting an effective ship-wide electrical safety program.

**Emergency Repair** - A repair necessary to protect life or the ship. (A

**Employment Mishap** - A mishap occurring as a result of work performance exposure to the work environment.

**Enlisted Safety Committee** - A committee consisting of the safety officer, division safety petty officers, and the chief master-at-arms. Identifies and discusses NAVOSH problems, enhances interdepartmental communication in mishap prevention, and submits issues and recommendations to the Safety Council.

**Explosion** - The unintentional or inadvertent initiation, detonation, deflagration, reaction, or burning of ordnance material resulting in damage, death, or injury. (A

**Explosive Material** - A chemical, or a mixture of chemicals, which undergoes a rapid chemical change (with or without an outside supply of oxygen) liberating large quantities of energy in the form of blast, light, or hot gases. Incendiary materials and certain fuels and oxidizers which can be made to undergo a similar chemical change are also explosive materials. Examples of explosive materials include: (A

a. Explosives. TNT, PBXN, PETN, PBXC, RDX, compositions, Explosive D, tetryl, fulminate of mercury, black powder, smokeless powder, flashless powder, and rocket and missile propellants.

b. Fuels and Oxidizers. OTTO fuel, mixed amine fuel, inhibited red fuming nitric acid, and ethylene oxide.

c. Incendiaries. Napalm, magnesium, thermite, and pyrotechnics.

**Explosive Mishaps** - An incident or accident involving conventional ordnance, ammunition, explosives, or explosive systems and devices resulting in an unintentional detonation, firing, deflagration, burning, launching of ordnance material (including all ordnance impacting off-range), leaking or spilled propellant fuels and oxidizers, or chemical agent release. Even if an ordnance (A

system works as designed, if human error contributed to an incident or accident resulting in damage, injury, or death, the event is reported as an explosive mishap. Explosive mishaps include:

a. An unintentional or inadvertent initiation, explosion, or reaction of an explosive material, component, or system. Accidental discharge of all guns, including small arms.

b. An unintentional launching of a weapon.

c. Any unintentional or uncontrolled release of a chemical agent.

d. Leaking or spilled propellant fuels and oxidizers (less OTTO II fuel).

e. Ordnance impacting off-range.

A) **Explosive System** - A weapon, device, or tool using explosive materials. Also includes its components and the operationally adjacent mechanisms. Examples are: small arms, projectiles, bombs, missiles, rockets, targets using explosive material, mines, torpedoes, grenades, charges, rounds, cartridge activated devices (CADs), explosively operated stud drivers, flares, and smoke grenades.

**First Aid** - Any one-time treatment, any follow-up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care. Such one-time treatment, and follow-up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

R) **Flammable Liquid** - A liquid with a flash point below 100°F and having a vapor pressure not exceeding 40 lbs./square inch.

**Flammable Liquids Cabinet** - A cabinet specifically designed and authorized for storing flammable in-use material.

**Flammable Liquids Storeroom** - A space specifically designed and authorized for storing flammable liquids.

**Flashpoint** - The minimum (lowest) temperature at which the vapors given off from a material will support combustion provided an ignition source.

**Frequency** - The rate at which a sound source vibrates or makes the air vibrate determines frequency. The unit of time is usually one second and the term Hertz (Hz) is used to designate the number of cycles per second. Frequency is related to the subjective sensation of pitch. High frequency sounds (2000, 3000, and 4000 Hz) are high pitched.

**Friable Asbestos** - Loosely bound asbestos whose fibers may easily crumble or pulverize. A health hazard because it easily releases contaminants into the air.

**Fume** - Very small particles (1 micrometer or less) formed by the condensation of volatilized solids, usually metals.

Examples of processes that generate fumes: zinc socket pouring, smelting, furnace work, foundry operations, and welding.

**Gas** - A material that under normal conditions of temperatures and pressure (20 degrees Celsius and 760mmHg, respectively) tends to occupy an enclosed space uniformly.

**Gas Free Engineer** - Person who is responsible for testing spaces to be entered by personnel for the presence of harmful vapors or vapor density content.

**General Use Safety Mishap Investigation Reports (MIRs)** Safety reports (A prepared to record data concerning all reportable DoD mishaps not covered by Limited Use Safety MIRs. Their primary use is mishap prevention. Although they may be used for other purposes, DoD components are required to take reasonable measures to protect the information and to encourage the cooperation of essential witnesses.

**Government Motor Vehicle** - A motor vehicle owned, leased, or rented by the (A U.S. government (not individuals), and primarily designed for highway use to transport cargo or personnel. Under this definition, government-owned mopeds and all terrain vehicles (ATVs) are motor vehicles. Any object such as a trailer being towed by a motor vehicle is a part of the vehicle, including such devices when detached while in motion or set in motion by a motor vehicle (for example, pushing). Motor vehicle equipment designed primarily for off-the-highway operation such as tracked or half-tracked vehicles, forklifts, road graders, agricultural tractors, and aircraft tugs are special purpose or combat vehicles according to their use.

**Ground** - Base (zero) potential. To make an electrical connection between an object and the ship or from ship to dry dock to ensure that no potential difference exists.

**Hazard** - A workplace condition that might result in injury, health impairment, (A illness, disease, or death to any worker who is exposed to the condition, or which might result in damage to or loss of property/equipment. Mishap investigators use the term to explain causes of mishaps. Hazards are detected through inspections, industrial hygiene surveys, observations of near-mishaps, safety program evaluations, or from reports by others.

**Hazard Abatement Log** - A record of identified deficiencies in chronological order by department.

**Hazard Severity** - An assessment of the worst potential consequence which is likely to occur as a result of deficiencies. Hazard severity categories are:

a. Category I - Catastrophic: the hazard may cause death or loss of a facility.

b. Category II - Critical: may cause severe injury, severe occupational illness, or major property damage.

c. Category III - Marginal: may cause minor injury, minor occupational illness, or minor property damage.

d. Category IV - Negligible: probably would not affect personnel safety or health, but is nevertheless in violation of specific criteria.

**Hazardous Material (HM)** - Any material that because of its quantity, concentration, or physical or chemical characteristics may pose a substantial hazard to human health or the environment when purposefully released or accidentally spilled. This definition includes the following:

- Aerosol Containers
- Flammable Materials
- Toxic Materials
- Corrosive Materials (including acids)
- Oxidizing Materials
- Compressed Gases

For this manual the definition does not include ammunition, weapons, explosives, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical wastes, infectious materials, bulk fuels, and radioactive materials.

R) **Hazardous Material Control and Management (HMC&M) Hazardous Material Information System (HMIS)** - A computer based information system distributed Navy-wide on compact disk - read only memory (CD-ROM) which provides right-to-know information found in the MSDS' written by the manufacturer for HM used throughout the DoD.

**Hazardous Waste** - Any discarded material (liquid, solid or gas) which meets the above definition of hazardous material and/or is designated as a hazardous waste by the Environmental Protection Agency or a state hazardous material control authority.

**Hearing Level** - Amounts in decibels by which the threshold of audition for an ear differs from zero decibels (dB) for each frequency - a standard audiometric threshold derived from normal-hearing young adults.

**Heat Exhaustion** - A heat illness caused by salt depletion and dehydration, which is evidenced by profuse sweating, headache, nausea, vomiting, and tingling sensations, leading to unconsciousness.

**Heat Stress** - Any combination of air temperature, thermal radiation, humidity, air flow, and work load which may stress the body as it attempts to regulate body temperature. Heat stress becomes excessive when the body's capability to adjust is exceeded, resulting in an increase of body temperature.

**Heat Stroke** - Heat illness where the thermo-regulatory system fails to function, so the main avenue of heat loss is blocked resulting in unconsciousness, convulsions, delirium and possible death.

**Hertz (Hz)** - Unit of frequency.

**Hospitalization** - Formally admitted to the hospital or sick bay for treatment of an injury or exposure. (A

**Hyperbaric** - Pressure greater than that normally measured at sea level. High gaseous pressure found in a diving environment. (A

**Hypobaric** - Pressure less than that normally measured at sea level. Low gaseous pressure found at altitude as in flight or a chamber flight simulator (hypobaric chamber). (A

**Illness** - Any abnormal condition or disorder, other than one resulting from an injury, caused by exposure to conditions associated with the occupational environment.

**Imminent Danger** - A condition that **immediately** threatens the loss of life or serious injury or illness of an employee.

**Impulse or Impact Noise** - Sound of short duration, usually less than 1 second, with an abrupt onset and rapid decay.

**Incompatible HM/HW** - Any materials that react with each other to produce undesirable products. Mixing incompatible hazardous material can produce heat or pressure, fire or explosion, or toxic, irritating, or flammable dusts, mists, fumes, or gases.

**Industrial Hygiene** - The science that deals with the recognition, evaluation and control of potential health hazards in the work environment.

**Industrial Hygiene Officer (IHO)** - Medical Service Corps officer with a subspecialty and trained in the area of industrial hygiene. Trained to identify, evaluate, and prescribe controls for workplace hazards. Assigned as safety officer aboard tenders and as assistant safety officer aboard aircraft carriers. Some staffs are designated to have IHOs assigned. (R

R) **Injury** - Traumatic bodily damage, such as a cut, fracture, burn or poisoning, caused by a single or acute (short-term) exposure to an external force, toxic substance, or physical agent.

**Inspection** - Careful and critical workplace monitoring for safety hazards and deficiencies conducted by ship's force and outside commands (type commander, group commander, squadron commander, Inspection and Survey (INSURV) Board). Ensures that standards are being observed.

**Interim Controls** - Those measures meeting or exceeding minimum requirements for temporary protection of personnel or operations pending full and complete corrective action.

**In-Use Material (IUM)** - The minimum quantity of HM required to be ready for a 1-week's use by Maintenance Requirement Cards (MRCs) Job Process, etc.

**Ionizing Radiation** - Radiation with sufficient energy to strip electrons from atoms in the media through which it passes. Examples include alpha particles, beta particles, X- and gamma-rays.

**Isolation** - The physical separation of a hazard from potential personnel contact by the use of a barrier or limiter.

**Laser** - A device which generates coherent electromagnetic radiation in the ultraviolet, visible, or infrared regions of the spectrum.

A) **LCAC Mishap Categories** - Mishaps involving LCACs including:

a. Operational Mishap (OM) - Mishaps in which the intent for operation of the craft existed at the time of occurrence. Intent for operation exists when an LCAC engine is started to commence authorized operations. An engine is started the instant an attempt is made to set it in motion from within or outside the craft. The intent for operation continues until the LCAC comes to rest at the intended landing site with the engines and propellers stopped.

b. Non-operational Mishap (NOM) - Mishaps in which there was no intent for operation of the craft at the time of occurrence.

A) **Limited Use Safety MIRs** - Safety reports used only by DoD activities. Their sole use is for mishap prevention within DoD. Individuals providing information to mishap investigators for a Limited Use Safety Mishap Investigation, do so with a promise of restricted access to and use of the privileged information they provide.

a. For afloat mishaps, only a mishap investigation board may write a Limited Use Safety MIR.

b. Limited Use reports shall not be used as evidence for disciplinary action; misconduct or line-of-duty investigations; in evaluation boards; or to

determine liability in administrative or legal claims for or against the government.

c. To the maximum extent permissible under the law, no one shall release Limited Use reports outside DoD. DoD will use its best efforts in court to prevent their release.

**Lost Workday Case** - A reportable lost-work-time case in a Class C mishap is one preventing a person from performing duty or work for 5 days or more after 2359 on the day of injury or onset of illness. This includes assignment to the Binnacle List or sick in quarters (SIQ). It does not include in port weekends, regular leave, or holidays, when not scheduled for duty. However, if the person is in a light-duty status or performs some work (even though not his or her normal job) it is not lost-work-time. All lost time while underway is considered lost-work-time. (A

**Man-made Vitreous Fibers (MMVF)** - are a group of fibrous inorganic materials, generally aluminum or calcium silicates, that are derived from rock, clay, slag, and glass and used for thermal and acoustical insulation and as reinforcement materials.

**Material Safety Data Sheet (MSDS)** - Written or printed data concerning a HM prepared by the manufacturer of the HM in accordance with paragraph (g) of 29 CFR 1910.1200 - Hazard Communication.

**Medical Attention** - An injury or exposure requiring treatment by the ship's medical department representative (physician, nurse, or corpsman) and a medical record entry. (A

**Medical Surveillance** - An effort to monitor the health of individuals for job certification/recertification, for ensuring the effectiveness of hazard limiting programs, for indication of excessive exposure in the workplace and for compliance with NAVOSH standards.

**Medical Treatment** - Treatment administered by a physician or by registered personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered professional personnel.

**Mercury Control Officer** - Appointed in writing by the commanding officers of afloat IMAs to ensure the requirements of this directive are implemented.

**Military Personnel** - All Navy military personnel on active duty (USN/USNR); Naval Reserve personnel (USNR-R) on active duty or in a drill status; Naval Academy midshipmen; Reserve Officer Training Corps (ROTC) midshipmen when engaged in directed training activities; and other DoD and Foreign National military personnel assigned to the Navy or embarked in Navy or Military Sealift Command ships.

**Mishap** - Any unplanned or unexpected event causing personnel injury, occupational illness, death, or material loss or damage or an explosion of any kind whether damage occurs or not.

A) **Mishap Causes** - Conditions or events explaining why a mishap occurred.

A) **Mishap Costs** - Include all DoD property damage, other property damage, and injury costs.

a. DoD Property Damage Costs. The cost of repair or replacement of all DoD property involved in the mishap by basing estimates on the actual cost of materials and $16 for each hour for labor.

b. Other Property Damage Costs. The actual cost of repair or replacement, if possible.

c. Injury Costs. The cost based on the extent of injury reported and current costs estimates. Calculated by COMNAVSAFECEN.

d. Written Estimates. When prepared in written form, all estimates must conspicuously state:

**"This estimate is prepared solely for the purposes of OPNAVINST 5100.19C. It is not intended to reflect, in any way, the extent of any party's damages or liability for purposes of administrative claims or litigation."**

e. Assistance With Damage Issues. In all matters related, in any way, to damage to civilian or foreign ships on navigable water, to damage to any property or cargo on board such ships, or to injuries of persons on board such ships, refer to Chapter XII of the NAVJAGMAN and/or contact the Office of the Judge Advocate General, Admiralty Division (Code 31).

**Mishap Investigation** - The investigation conducted into the facts surrounding the causes of a mishap.

A) **Mishap Investigation Board (MIB)** - A formal investigating body appointed to determine the primary cause(s) of Class A shipboard mishaps. The board consists of a minimum of three members. The immediate superior in command (ISIC) of the ship or craft involved in the mishap normally appoints the senior member of the mishap investigation board.

A) **Mishap Investigation Report (MIR)** - A Limited Use report written by a mishap investigation board as a result of Class A and selected Class B and other mishaps or near mishaps. An MIR contains privileged information. See Appendix A6-A for information on the concept of privilege and Appendix A6-C for the MIR format.

**Mishap Probability** - The likelihood that a deficiency will result in a mishap, based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and affected population. Represented by a letter according to the following criteria:

| Subcategory | Description |
|---|---|
| A | Likely to occur immediately or in a short period of time. |
| B | Probably will occur in time. |
| C | May occur in time. |
| D | Unlikely to occur. |

**Mishap Report (MR)** - A General Use report containing no privileged information. Surface ships, LCACs, and submarines submit a MR for all reportable shipboard mishaps not investigated by a MIB. (A

**Mist and Fog** - Finely divided liquid droplets suspended in air and generated by condensation or atomization. A fog is a mist of sufficient concentration to obscure vision. Examples of materials and processes that produce mists: acid sprays used in metal treatment (e.g., electroplating) organic solvent sprays, and spray painting).

**Monitoring Industrial Hygiene** - Measurement of the amount of contaminant or physical stress reaching the worker in the environment.

**Monitoring (Medical Surveillance)** - The preplacement and periodic evaluation of body functions to ascertain the health status of personnel exposed to significant concentrations of toxic substances (e.g., decreased lung function, dermatitis, abnormal blood count) allowing early detection of adverse health effects on the individual.

**Monitoring Hearing Tests** - Periodic hearing tests, obtained subsequent to the reference hearing test, which are used to detect shifts in the individual's threshold of hearing.

**Moored** - Secured alongside a pier, wharf, quay, or causeway; to a mooring buoy; or at anchor. (A

**Motor Vehicle Mishap** - A mishap entailing the operation of a motor vehicle or motorcycle involving collisions with other vehicles, objects, or pedestrians; fatality, personal injury, or property damage; fatality or personal injury in moving vehicles or by falling from moving vehicles; towing or pushing mishaps; and other injury and property damage. Collisions involving pedestrians or bicyclists when struck by a motor vehicle or other vehicular objects are to be included if other reporting requirements are met. (A

**MSHA** - Mine Safety and Health Administration.

**NAVOSH** - Navy Occupational Safety and Health.

**Navy Environmental and Preventive Medicine Unit (NAVENPVNTMEDU)** - A Navy Medical Command activity which provides training and technical assistance in environmental and occupational health to Navy commands, afloat and ashore.

**Navy Occupational Safety and Health (NAVOSH) Standards** - Occupational safety and health standards published by the Navy which include, are in addition to, or are alternatives for, the OSHA standards which prescribe conditions and methods necessary to provide a safe and healthful working environment. Afloat standards are given in section C of this manual and submarine standards are given in section D of this manual.

**Navy Personnel** - *Includes the following categories:*

a. **Civilian** - General Schedule and Wage Grade employees; Youth/Student Assistance Program employees, Foreign Nationals directly employed by Navy commands; and non-appropriated fund employees.

b. **Military** - All U.S. Navy personnel on active duty; U.S. Military Reserve or National Guard personnel on active duty or in drill status; *Service Academy midshipmen/cadets; Reserve Officer Training Corps midshipmen* when engaged in directed training activities; Foreign National military personnel assigned to Navy commands. Personnel of other branches of the Armed Forces serving with the Navy.

A) **Near Mishap** - An act or event in which injury or damage was avoided merely by chance. The situations are reported internally by Safety Hazard Report (OPNAV 3120/5) or Internal Mishap/Near Mishap Report; and externally, when there is a lesson learned, by SAFETYGRAM, (OPNAV 5102/4) to COMNAVSAFECEN.

R) **NIOSH** - National Institute of Occupational Safety and Health.

**NIOSH/MSHA Certified Equipment** - Respirators or other equipment that have been tested by NIOSH or MSHA and jointly approved as meeting certain minimum requirements of protection against specified hazards.

**Noise Exposure** - Personal interaction to a combination of effective sound level and its duration.

**Non-ionizing Radiation** - Radiation which is not capable of stripping electrons from atoms in the media through which it passes. Examples include radiowaves, microwaves, visible light, and ultraviolet radiation.

**Normal Working Population Exposed to Hazard** - The number of people whose authorized activities cause them to be exposed to the specified hazardous condition on a significant number of occasions during a work year; no one

should be included in this estimate who is exposed to the cited hazard so infrequently or at such low exposure concentrations that it can be considered insignificant. Do not count as exposed those persons who only occasionally pass by the door of a room where a hazard is present.

For specific chemical or physical agents, the population exposed is dependent on the numbers of personnel involved in the specific activity, the effectiveness of confinement or containment systems, and the process steps involved. For agents requiring extensive processing, potential exposure may be ship-wide, but will vary in intensity. If isolation is practiced, the exposed population may be only one person per shift or watch. If collection systems are not used to confine potential emissions, personnel not actively engaged in the operation may also be exposed to hazardous substances.

Populations exposed to a specific safety hazard will vary with the type of hazard and its locations. If the safety hazard is associated with a specific piece of equipment, only the operator may be exposed. For a grinder, the population exposed could differ according to the safety features of the equipment. If the grinder has a guard, only the operator might be injured through contact with the grinding wheel; on the other hand, if a grinder is without an adequate guard, shattering of the grinding wheel could injure other personnel in the immediate vicinity.

**Occupational Health** - That multidisciplinary field of general preventative medicine which is concerned with the prevention and/or treatment of illness induced by factors in the workplace environment. The major disciplines involved are: occupational medicine, occupational health nursing, epidemiology, toxicology, industrial hygiene, and health physics.

**Occupational Medicine Services** - Occupational medicine services shall include medical examinations and tests related to preemployment, preplacement, periodic, and pretermination; tests required for protecting the health and safety of naval personnel; job-related immunizations and chemoprophylaxis; education and training related to occupational health; and other medical services provided to avoid lost time or to improve employee effectiveness.

**Off-Duty** - Applicable to DoD personnel. Such personnel are off-duty when they are not on-duty as defined below. (A

**On-Duty**. DoD personnel are on-duty when: (A

a. Physically present at any location (area under the control of a DoD component) where they are to perform their officially assigned work. (This includes those activities incident to normal work activities that occur on DoD installations, such as lunch, coffee, or rest breaks, and all activities aboard vessels.)

b. Being transported by DoD or commercial conveyance for the purpose of performing officially assigned work. (This includes travel in private motor vehicles for performing official duty, but not routine travel to and from work.)

c. Participating in compulsory physical training activities (including compulsory sports and command-sponsored activities during work hours).

d. Ready Reservists performing inactive duty training (drill) and are between departure and return home without diversion.

e. On temporary duty or temporary additional duty (TDY/TAD). Personnel on assignment away from the regular place of employment are covered 24 hours a day with respect to any injury that results from activities essential or incidental to the temporary assignment. However, when personnel deviate from the normal incidents of the trip and engage in activities, personal or otherwise, which are not reasonably incidental to the duties of the temporary assignment contemplated by the employer, the person ceases to be considered on-duty for reporting purposes of occupational injuries or illnesses.

A) **Operational Readiness Repair** - A repair necessary to accomplish ship's mission.

**OSHA** - Occupational Safety and Health Administration, Department of Labor.

**OSHAct** - The Williams-Steiger Occupational Safety and Health Act of 1970 (Stat. 1590 et seq.,. 29 U.S.C. 651 et seq.).

**OSHA Standards** - OSHA standards are those standards issued by the Department of Labor's Occupational Safety and Health Administration under Section 6 of the OSHAct.

R) **Oxidizers** - Any material that readily yields oxygen to support combustion.

**Oxygen Breathing Apparatus (OBA)** - Respirator that provides the user with oxygen through a chemical reaction. OBA's are for emergency or damage control use only.

**Oxygen Deficient Atmosphere** - Atmosphere with insufficient oxygen ($O_2$) to support life. This deficiency is generally caused by oxidation, dilution, or by the displacement of oxygen by other gases.

Examples: Oxidation can consume $O_2$ either very quickly as in a fire or quite slowly as rusting in a confined space. Dilution/displacement of $O_2$ may occur in one of three ways: (a) deliberately, as in suppressing a fire using carbon dioxide ($CO_2$) or a halocarbon; (b) deliberately, as in inerting to prevent rusting or for inerting prior to hot work, using nitrogen ($N_2$) or another inert gas; or (c) accidentally, as when a halocarbon solvent, such as "Freon"-113, is spilled and vaporizes in a confined space.

**Particulate Matter** - Any fine solid or liquid particles such as dust, fog, fumes, mist, smoke or spray. Particulate matter suspended in air is commonly known as an aerosol.

Permanent Partial Disability. An injury or occupational illness that does not result in death or permanent total disability but, in the opinion of competent medical authority, results in permanent impairment through loss, or loss of use, of any part of the body, with the following exceptions: (A

a. Loss of teeth.

b. Loss of fingernails or toenails.

c. Loss of tips of fingers or tips of toes (less than one joint).

d. Inguinal hernia, if it is repaired.

e. Disfigurement.

f. Sprains or strains that do not cause permanent limitation of motion.

**Permanent Total Disability** - A nonfatal injury or occupational illness that, in the opinion of competent medical authority, permanently and totally incapacitates a person to the extent that he or she cannot follow any gainful occupation.

**NOTE:**

The loss, or loss of use, of both hands, both feet, both eyes, or a combination of any of these parts of the body as a result of a single mishap, shall be considered as a permanent total disability.

**Permissible Exposure Limit (PEL)** - The legally established time-weighted average (TWA) concentration or ceiling concentration of a contaminant or exposure level of a harmful physical agent that shall not be exceeded.

**Personal Information** - Information exempt from release under exemption (b)(6) of the Freedom of Information Act. (A

**Personal Protective Equipment (PPE)** - A device or item to be worn, used, or put in place for the safety or protection of an individual or the public at large, when performing work assignments or in entering hazardous areas or under hazardous conditions. Equipment includes hearing protection, respirators, electrical matting, barricades, traffic cones, lights, safety lines, and life jackets.

**Pesticide** - Any chemical used to kill pests, such as insects.

Examples: Baygon (propoxur), Killmaster (dursban), d-phenothrin, Malathion.

**Physiological Heat Exposure Limit (PHEL)** - A set of curves that compare the Wet Bulb Globe Temperature (WBGT) index and the degree of effort or work rate to determine the maximum permissible exposure to the heat stress environment.

**Potentially Hazardous Noise** - Exposure to 85 dB (A-weighted) or greater sound level or 140 dB peak sound pressure level for impact or impulse noise. The safe exposure time (T) for periods of less than 16 hours in any 24-hour period may be determined using the equation:

$$T = \frac{16}{2^{\frac{L-80}{4}}}$$

where T = Time in hours and L = Effective sound level in dBA.

**Potentially Hazardous Noise Area** -

a. Any work area where the A-weighted sound level (continuous or intermittent) is routinely 85 dB or greater.

b. Any work area where the peak sound pressure level (impulse or impact noise) routinely exceeds 140 dB.

A) **Private Motor Vehicle** - A motor vehicle (not government owned), primarily designed for highway use to transport cargo or personnel. Under this definition, a moped is a motor vehicle. Although not designed primarily for highway use operation, ATVs and trail bikes are included in this definition. Any object such as a trailer being towed by a motor vehicle is a part of the vehicle, including such devices when detached while in motion or set in motion by a motor vehicle (for example, pushing).

A) **Privileged Information** - The information given under the promise of confidentiality is protected from release under executive privilege. Promises of confidentiality are given to witnesses and members of the MIB. Therefore, witness statements and the deliberative analyses of findings, conclusions, and recommendations of the MIB are privileged. Any information that the MIB would not have discovered, except as a result of information provided under a promise of confidentiality, is also privileged. Information calculated or developed by the MIB, when disclosing that information would reveal the MIB's deliberative process, is also deemed privileged. The promise of confidentiality guarantees that the information provided will be used solely for safety purposes. Appendix A6-B thoroughly discusses privileged information.

A) **Property Damage** - DoD and civilian or foreign facilities, equipment, property, or material destroyed or made inoperable in a DoD mishap. DoD expresses property damage severity in terms of cost. Total costs determine whether a mishap is reportable.

**Protective Clothing** - An article of clothing furnished to an employee at government expense and worn for personal safety and protection in the performance of work assignments in potentially hazardous areas or under hazardous conditions.

**Qualitative Fit Testing** - A simple procedure of fitting an individual with a respirator face mask.

**Quantitative Fit Testing** - Respirator fit test procedure involving the use of a special enclosure filled with sodium chloride mist or other chemicals, a sensor attached to the mask to be tested, and a monitoring device to detect leakage of the chemical into the mask.

**Radiation Safety Officer** - An officer assigned by the commanding officer to be the technical manager of the radiation protection program.

**Rate of Exposure** - The estimated number of hours per year that an average member of the exposed population is exposed to the cited hazardous condition. This figure should be an estimate by someone familiar with the work situation, based on the best available existing information. Special studies to obtain these data are not required.

The estimate should be based on net working days per year (e.g., total working days per year minus leave and holidays. Usually, net working days is 40 hours per week and 50 weeks per year (e.g., 2,000 hours per year).

For an exposure to a health hazard, the rate of exposure may be easily calculated if the individual works only at the operation in question. However, an employee will generally work in an area of potential exposure for a period of time and move to another location. If the transiency follows a predictable routine, the rate of exposure can be assessed by determining the degree of hazard at all work locations and eliminating those where the potential hazard is minimal.

The rate of exposure to safety risks may also vary. As an example, in general traffic areas, the lack of a guard rail on platforms or hand rails on stair steps may create brief repetitive exposures to several people, including operators, inspectors, and occasional casual personnel. In such cases, calculate average use of the steps or the platforms to determine the rate of exposure.

**Recompression Therapy** - Treatment to compress gas bubbles in the blood to a small volume to relieve local pressure and restart blood flow, allow sufficient time for gas bubble resorption, and increase blood-oxygen content and improve oxygen delivery to injured tissues. (A

**Recovery** - The principle by which removal from noise allows the inner ear hair cells to regain their pre-noise exposed condition.

**Reference Hearing Test** - A hearing test performed when an individual is not experiencing a temporary threshold shift in hearing or other transient otologic pathology. The resulting audiogram will be used as a reference in computing any possible future threshold shift. Normally, this reference audiogram will be the first performed for hearing conservation purposes.

**Respirator** - Device used for protecting the respiratory tract from harmful contaminants.

R) **Risk Assessment Code (RAC)** - A simple expression of risk which combines the elements of hazard severity and mishap probability. This assessment will be used to help prioritize abatement projects. Investigators may include RACs in the MIR and MR.

**Safety** - Freedom from those conditions that can cause death, injury, occupational illness, or damage to or loss of equipment or property.

**Safety Committee** - Consists of the safety officer, chief master-at-arms (CMAA), and divisional safety petty officers. The committee identifies and discusses NAVOSH problems and makes recommendations to the Safety Council.

**Safety Council** - Consists of the commanding officer, safety officer, training officer, all department heads, medical officer/representative and the ship's
command master or senior chief petty officer. The Council develops specific NAVOSH policies and analyzes the progress of the overall program.

**Safety Data File** - The computer file, developed as part of the HMIS, used to store the hazardous material characteristics relevant to their safe handling, use, and disposal.

**Safetygrams** - A form submitted to the Naval Safety Center by personnel identifying a new or potential safety hazard or a near mishap.

**Safety or Health Professional** - Persons who meet the Office of Personnel Management standards for Safety and Occupational Health Manager GS-018, Safety Engineer, GS-803, Safety Technician GS-019, Aviation Safety Officer GS-1825, Air Safety Investigating Officer GS-1815, Fire Protective Engineer GS-0804, Fire Protection Specialist/Marshall, GS-0081, Medical Officer GS-602, Health Physicist GS-1306, Industrial Hygienist GS-690, Occupational Health Nurse GS-610, Industrial Hygiene Technologist, or comparably qualified personnel as determined by appropriate Navy authority.

**Safety Stand-down** - A period during which command's normal work is curtailed and a concerted effort is made to correct safety deficiencies or train personnel on safety.

**Safety Zone Inspection** - A special zone inspection which specifically identifies safety hazards and deficiencies for baseline workplace surveillance.

**SEED** - Supplemental Emergency Escape Device. An emergency self-contained air supply for main propulsion watchstanders.

**Self-Contained Breathing Apparatus (SCBA)** - Breathing apparatus where compressed air is carried in a tank on the user's back.

**Serious Physical Harm** - Permanent, prolonged, or temporary impairment of the body in which part of the body is made functionally useless or is substantially reduced in efficiency on or off the job. Illness could shorten life or significantly reduce physical or mental efficiency by inhibiting the normal function of part of the body. Examples of such illnesses are silicosis, asbestosis, hearing impairment, radiation exposure, and visual impairment.

**Sewage Disposal Operational Sequencing System (SDOSS)** - Operating instructions for collection, holding and transfer (CHT) tanks tailored for each ship.

**Ship's Hazardous Materials List (SHML)** - A list of hazardous materials (R
authorized for use aboard surface ships. This list is updated by Ships Parts Control Center (SPCC), Mechanicsburg, PA, and can be found in the HMC&M HMIS on CD-ROM.

**Significant Threshold Shift** - A change of hearing threshold level of 15 dB or greater, in either ear, at any frequency (1,000 to 4,000 Hz) between the reference audiogram and any subsequent audiogram.

**Smoke** - Carbon or soot particles less than 0.1 micrometer in size resulting from the incomplete combustion of carbonaceous materials such as coal or oil.

**Solvent** - A substance, most commonly water, but often an organic compound which is used to dissolve another substance.

**Specific Hazard (Safety or Health)** - A word or words constituting the distinctive designation of the cited hazard; for example, the name of the safety hazard might be "unguarded flywheel" or "lack of fire exit"; the name of the health hazard might be "asbestos fibers in the air," "mercury," or "noise." General terms are not acceptable for health hazards.

For chemical hazards, the specific name of the dangerous chemical is required. As an example, if a solvent is being used, its chemical name, i.e., "trichloroethylene" must be given; the word "solvent" is not adequate. If more than one chemical is involved in the work operation, or a chemical mixture is being used, give the chemical name of the single most hazardous chemical involved. If the specific hazard is a chemical by-product or by-product mixture resulting

from the work operation, give the chemical name of the single most hazardous by-product.

For noise hazards, specify whether they are steady-state or impulse. When the cited health standard is one that details ventilation requirements for a particular type of operation, such as spray painting or arc-welding, the specific hazard name should be "insufficient ventilation to control _____." Terms such as spray paint, welding fumes, etc., are adequate only in cases relating to ventilation standards.

**Standard** - A rule, established by a competent authority, which designates safe and healthful conditions or practices under which work must be performed to prevent injury, occupational illness, or property damage.

a. **Criteria** - Those parts of a standard that establish a measurable quality, i.e., specifications, inspection intervals, etc.

b. **Equivalent Criteria** - The measurement of equivalency shall be a judgment based on the preponderance of information available. Generally, they must provide protection at least as effective as the criteria they replace.

A) **Submarine Material Control List (SMCL)** - A list of hazardous materials authorized for use aboard submarines. This list is updated and maintained by SPCC, Mechanicsburg, PA. It is issued quarterly on CD-ROM.

**Substitution** - The risk of injury or illness may be reduced by replacement of an existing process, material, or equipment with a similar item having a lower hazard potential.

**Supervisor** - One who immediately directs the job efforts of a working group or individual.

**Survey** - An examination of the condition of industrial hygiene and occupational health of a command. This examination is performed by industrial hygienists or technicians under the supervision of an industrial hygienist.

A) **Surveys of Damages** - A formal procedure relevant to admiralty claims and litigation. Only the Judge Advocate General may accept survey invitations from potential claimants, extend survey invitations to persons responsible for damage to naval property, or request representation of the United States by a marine surveyor. In no case shall any person involved in mishap investigating or reporting accept or offer an invitation for a survey of damages on behalf of the United States. In any instance of receipt of invitation to a survey, refer to Chapter XII of the NAVJAGMAN and notify the Office of the Judge Advocate General, Admiralty Division (Code 31).

**Threshold Limit Value (TLV)** - An atmospheric exposure level under which nearly all workers can work without harmful effects. TLVs are established by the American Conference of Governmental Industrial Hygienists (ACGIH).

**Time-Weighted Average (TWA)** - The average concentration of a contaminant in air during a specific period of time, usually an 8-hour work day or a 40-hour work week.

**Toxic Material** - A substance which when ingested, inhaled, or absorbed through the skin in sufficient amounts can produce harmful effects such as changes in living tissue, impairment of the central nervous system, severe illness or, in extreme cases, death.

**Transportation Data File** - The computer file, developed as part of the HMIS used to store the hazardous material characteristics relevant to their safe transportation and handling.

**Underway** - A vessel not made fast to the ground in any manner. She may or may not have way on (that is, she may be hove to), but she is free floating in the sea, subject to wind, currents, and of course her own propulsion system. (A

**Vapor (inorganic or organic)** - The gaseous state of a substance which is normally a liquid or solid at room temperature.

Examples of substances that produce vapors: degreasers, fuels, hydraulic fluids, paints and thinners, and dry cleaning fluids.

**Variances** - When and if a NAVOSH standard is found to be impossible to comply with, variances can be requested from the type commander, via the chain of command. Variance requests shall explain why compliance is impossible and describe actions taken to achieve the maximum degree of protection possible.

**Ventilation** - The control of potentially hazardous airborne substances through the movement of air.

**Wet Bulb Globe Temperature (WBGT) Index** - A measurement of environmental conditions (heat stress). Consists of a weighted average of dry-bulb, wet-bulb, and globe temperatures. Expressed in the following equation:

WBGT = (0.1 x dry-bulb) + (0.7 x wet-bulb) + (0.2 x globe temperature)

**WBGT Meter** - Instrument used for measuring heat stress. Measures dry-bulb, wet-bulb and globe temperatures and integrates these values into the WBGT index.

**Workplaces** -

a. **Applicable Workplaces and Operations** - Navy workplaces and operations generally comparable to those of business and industry in the private sector.

b. **Unique Military Equipment, Systems and Operations** - Navy equipment and systems which are unique to the national defense mission. Examples include military aircraft, ships, submarines, and missiles; and includes operations that are uniquely military such as naval operations, flight operations, associated research test and development activities and actions required under emergency conditions.

**Workplace Monitoring** - The evaluation of each Navy workplace to accurately identify and quantify all potential hazards. This will consist of internal command routine inspections and industrial hygiene surveys.

**Zone Inspections** - Command inspections which ensure that proper measures are taken to keep machinery, spaces, and equipment operational, clean, and in a satisfactory state of preservation.

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