# RESCUE AND SURVIVAL SYSTEMS MANUAL

U.S. Department of Homeland Security

United States Coast Guard

**COMDTINST M10470.10F**

***The World Standard for Professional Boat Operations***

U.S. Department of Homeland Security
United States Coast Guard

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United States Coast Guard

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Subj: RESCUE AND SURVIVAL SYSTEMS MANUAL

Ref:
(a) Administrative Investigation Manual, COMDTINST M5830.1 (series)
(b) Financial Resource Management Manual (FRMM), COMDTINST M7100.3 (series)
(c) Simplified Acquisitions Procedures (SAP) Handbook, COMDTINST M4200.13 (series)
(d) Supply Policy And Procedures Manual (SPPM), COMDTINST M4400.19 (series)
(e) Property Management Manual (PMM), COMDTINST M4500.5 (series)
(f) Boat Crew Seamanship Manual, COMDTINST M16114.5 (series)
(g) Coatings and Color Manual, COMDTINST M10360.3 (series)
(h) Equipment Lists, COMDTINST M16714.3 (series)
(i) United States Coast Guard Regulations 1992, COMDTINST M5000.3 (series)
(j) Uniform Regulations, COMDTINST M1020.6 (series)

1. PURPOSE. This Manual establishes operational policy, equipment standards, engineering procedures and procurement authorization for the use, configuration, maintenance and logistics of rescue and survival equipment used by the United States Coast Guard.

2. ACTION. Area and district commanders, commanders of maintenance and logistic commands, commanding officers of headquarters units, assistant commandants for directorates, the Judge Advocate General and special staff offices at Headquarters, sector commanders, boat unit commanding officers, cutter commanding officers and officers-in-charge shall ensure the contents of this Manual are utilized in all boat operations. Internet release is authorized.

3. DIRECTIVES AFFECTED. Rescue and Survival Systems Manual, COMDTINST M10470.10E, all previous Commandant Notes, released prior to Aug 2006, under SSIC 10470 and all subsequent message changes to the Rescue and Survival System Manual, COMDTINST M10470.10E are cancelled.

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NON-STANDARD DISTRIBUTION:

4. PROCEDURES. The personal protective equipment policies in this Manual apply to all Coast Guard personnel and scheduled passengers embarked on Coast Guard boats.

5. CHANGES. Commandant (CG-37RCB) will coordinate changes to this Manual. This Manual is under constant review and will be updated as necessary. Time-sensitive amendments will be promulgated by message, pending their inclusion in the next change to this manual. All users are urged to provide recommendations for improvement to this Manual via the chain of command.

6. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS. Environmental considerations were examined in the development of this Manual and have been determined not to be applicable.

7. FORMS. Personal Clothing and Equipment Record, AF Form 538 and Cutter Engineering Report, CG-4874 is available on USCG Forms.

DAVID P. PEKOSKE /s/
Rear Admiral, U.S. Coast Guard
Assistant Commandant for Operations

## Record of Changes

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# Chapter 1
# Introduction

**Introduction**

This manual contains the information necessary for the proper administration of the unit's rescue and survival systems program. It defines operational requirements, and directs specific policies related to procurement, required maintenance, procedures, and documentation necessary to meet Coast Guard personnel survivability and operational safety needs.

**Systems and Equipment Configurations**

The equipment and system configurations identified in this manual are found to be the most compatible with Coast Guard operations. Deviations or modifications to configurations of the equipment or systems identified in this manual are not authorized.

The Chain of Command shall ensure strict compliance with the Personal Protective Equipment (PPE) requirements directed in this manual. All Coast Guard personnel assigned as Crewmembers, scheduled mission personnel, and scheduled passengers are required to comply with the policies in this instruction. Commanding Officers shall convene an administrative investigation into all instances of non-compliance IAW reference (a). If the investigation reveals barriers to compliance attributable to the policies directed in this manual, funding, training or other cause that would require headquarters program manager action to alleviate, then a copy of the investigation and recommendations shall be forwarded to Commandant (CG-37RCB).

**In this chapter**

This chapter contains the following sections:


| Section | Topic | Page |
|---|---|---|
| A | Warnings, Cautions, and Notes | 1-3 |
| B | Program Manager | 1-5 |
| C | Changes | 1-7 |
| D | Maintenance | 1-9 |
| E | Logistics | 1-11 |

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# Section A. Warnings, Cautions, and Notes

**Overview**

The following definitions apply to Warnings, Cautions, and Notes found throughout this manual.

**A.1.**
**WARNING**

**OPERATING PROCEDURES, TECHNIQUES OR STEPS THAT MUST BE CAREFULLY FOLLOWED TO AVOID PERSONAL INJURY OR LOSS OF LIFE.**

**A.2.**
**CAUTION !**

OPERATING PROCEDURES, TECHNIQUES OR STEPS THAT MUST BE CAREFULLY FOLLOWED TO AVOID EQUIPMENT DAMAGE.

**A.3.**
**NOTE**

Operating procedures, techniques or steps that require additional emphasis.

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# Section B. Program Manager

**Authority**

This Rescue and Survival Systems Manual is prepared and released under the authority of the Commandant, United States Coast Guard.

Commandant (CG-37RCB) is the Rescue and Survival Systems Program Manager for U. S. Coast Guard rescue and survival systems.

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# Section C. Changes

**Changes**

Commandant (CG-37RCB) promulgates this manual and its changes. Submit change recommendations that include new or changed requirements and supporting rationale or justification via the chain of command to CG-37RCB using the standard Memo format.

The address for CG-37RCB is:

Commandant (CG-37RCB)
Attn: Rescue and Survival Systems Manager
2100 2ND Street SW STE 3208
Washington, D.C. 20593-0001

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# Section D. Maintenance

**D.1 Rescue and Survival Systems Petty Officer**

Surface units do not have a specific petty officer rating dedicated to rescue and survival equipment maintenance. Commanding Officers and Officers-In-Charge shall designate, in writing, a Rescue and Survival Systems Petty Officer (R&S PO) to manage the unit's rescue and survival equipment. The R&S PO is responsible for the administration of the requirements detailed in this manual, and is effectively the unit's expert for this equipment; however, it is not intended that this individual personally inspect or maintain all equipment, but ensures that the maintenance and inspections are carried out.

**D.2 Periodic Maintenance**

Periodic maintenance is essential to promote longevity and ensure that rescue and survival equipment and systems function properly when needed. Specific guidance is directed throughout this manual. Applicable equipment and systems sections indicate when and how maintenance is to be accomplished. Equipment and systems requiring only minor procedures for maintenance will contain those procedures in the applicable section. Equipment and systems requiring extensive procedures for maintenance will have a maintenance procedure card that shall be used to perform those procedures.

**D.3 Maintenance Procedure Cards**

Rescue and Survival Systems maintenance procedure cards have precedence over all other maintenance and inspection procedures. Cards are maintained electronically and are posted on Coast Guard Central.

**WARNING**

**FAILURE TO COMPLY WITH THE DIRECTED PERIODIC MAINTENANCE FOR EQUIPMENT OR SYSTEMS MAY RESULT IN INJURY OR LOSS OF LIFE.**

**D.4 Maintenance Documentation Instructions**

Maintenance logs shall be used to track equipment or system maintenance when maintenance is directed on a Maintenance Procedure Card. Reproduce the generic Maintenance Log in Appendix E of this manual for the equipment or system required.

Enter the name of the item on the first line and at the page bottom. Model, Serial Number and the date placed in service are required. When performing both scheduled and unscheduled maintenance to the item, record the inspection date, and type (W – Weekly, M – Monthly, Q – Quarterly, S – Semi Annually, A – Annually, P – Post Use, O – Other, and MX for maintenance only activities). For other than scheduled inspections (when circling "O" and "MX", specify the action taken in the Remarks section. Attach additional forms or work orders if necessary. If the item is sent to a servicing facility, ensure the Inspection Facility block is recorded. A servicing facility stamp may be used in this block.

Lot numbers and sub-assembly serial numbers can be recorded on page one of multiple page documents. Repeating this information on subsequent pages is not necessary providing a running total of pages exist for that item at the bottom right of the page. Lots or serial numbers that are replaced must be corrected in this section and noted in the Remarks block.

**NOTE**

Maintenance logs shall be used to track equipment or system maintenance for each item that has a Maintenance Procedure Card. Logs may be locally reproduced from the Maintenance Log in Appendix C of this manual. Entries shall be recorded in pen and ink only.

# Section E. Logistics

**E.1 Acquisitions Policy Statement**

Personal Protective Equipment (PPE) is procured under the statutory authority of 29 U.S.C. § 668 and 14 U.S.C. § 477 and is managed in accordance with reference (b). General safety equipment/PPE item selection criteria is based on 29 CFR §1910.132(a) (29 U.S.C. 653, 655, 657). Lifesaving/personnel survivability equipment and clothing selection criteria are based on 46 CFR Part 160 and CG policy. All items herein comply with USCG and OSHA regulations.

**E.2 Unit Allowances**

Unit allowances for rescue and survival equipment and systems shall be determined by platform type, mission to be accomplished, number of crewmembers assigned or passengers embarked, and geographical location or range the platform is ordered to operate in. A spare allowance may be necessary for augmentation during surge operations and to allow scheduling flexibility for equipment or systems out of service for rework or awaiting replacement. Commanding Officers and Officers-In-Charge may procure additional allowance items as necessary to ensure the unit maintains the directed readiness status. Engineering Logistics Center Instructions including: Management Information for Configuration and Allowances (MICA), Allowance Equipage Lists (AEL), Combined Allowance for Logistics and Maintenance Support (CALM), and this manual establish the minimum allowance requirements for platform type.

**E.3. Procurement Policies**

Rescue and survival systems listed in this manual are procured in accordance with reference (c) and listed in Appendix A. Equipment on Headquarters managed contracts shall only be procured following the provisions on those contracts. Equipment on General Services Administration (GSA) schedules shall be procured from among all qualified GSA vendors. Many equipment items presented are procured from commercial sources and the salient characteristics are described with known sources identified and units are required to procure brand name or equal equipment that meets all the salient characteristics. Some commercially procured equipment that is of a standard configuration critical to mission safety, platform configuration or law enforcement jurisdiction shall only be procured from the identified sources. The R&S PO is responsible for the administration of the requirements detailed in this manual, and is effectively the unit's expert for this equipment; however, it is not intended that this individual personally inspect or maintain all equipment, but ensures that the maintenance and inspections are carried out. Commanding Officers and Officers-In-Charge shall refer all procurement questions to the local Contracting Officer for guidance.

**E.4 Property Management**

Rescue and survival systems and equipment identified throughout this manual shall be managed in accordance with applicable directives. Rescue and Survival Equipment is managed as Direct Turnover (DTO) Material unless otherwise specified in this manual. Spare gear is considered expensed. There is no requirement to place these items into an inventory tracking system.

Only limited amounts of inventory should be maintained by the unit. If a unit keeps an Inventory of equipment it shall be managed in accordance with reference (d).

# Chapter 2
# Personal Survivability

**Introduction**

This chapter addresses survivability in an open water environment to ensure that the safety and survival of Coast Guard personnel is not compromised. Since the Coast Guard operates primarily at sea, it is imperative Coast Guard personnel become thoroughly familiar with the use and operation of safety and survival systems and equipment in this manual for use in an open water environment.

**In this chapter**

This chapter contains the following sections:


| Section | Topic | Page |
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| A | Human Factors and Survivability | 2-3 |
| B | Health and Hygiene | 2-13 |
| C | Environmental Factors and Survivability | 2-19 |
| D | Abandon Ship, Egress, and Raftsmanship | 2-35 |

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# Section A. Human Factors and Survivability

**Overview**

Survival is the "preservation of one's own life under conditions of immediate peril." To preserve one's own life at sea requires the ability to live through extreme conditions of emotional and physical shock, and hardship for an indefinite period of time. When faced with an open water survival situation, it is important to remember that environmental obstacles are as much mental as physical. Before accumulating information on the use and operation of survival systems, it is important to first understand the psychological barriers to the will to survive that must be overcome.

The most predominant psychological barrier to survival is fear: fear of the unknown, fear of discomfort, and fear of one's own weakness. Fear of the environment in an open water situation leads us to fear our own chances of survival, and even though we overcome these fears to some extent, a lack of confidence in our ability may weaken our will to survive. Studies of survivors and their experiences show that the successful survival of any situation depends on several factors. The survivor must:

- Be mentally and spiritually prepared for the possibility;
- Be in good physical condition;
- Have the proper equipment available and know how to use it;
- Be properly dressed for any survival situation; and
- Be thoroughly familiar with vessel egress procedures.

The key to these experiences is developing a survivor's "attitude". In other words, to develop those traits and characteristics that will enhance one's chance of survival.

# A.1 The Will to Survive

**A.1.a The Will to Survive**

Based on interviews with a number of sea survivors, twelve characteristics were identified to help in understanding the will to survive. They are:

| | |
|---|---|
| Courage | Purpose |
| Determination | Attentiveness |
| Cheerfulness | Confidence |
| Positiveness | Productiveness |
| Flexibility | Persistence |
| Willingness | Certainty |

**A.1.b Courage**

*Courage overrides self-doubt, but does not end it.*

*-Mason Cooley (b. 1927)*

Courage is the state or quality of mind or spirit that enables you to face danger or fear with self-possession, confidence, and resolution. Courage enables us to overcome these fears that can overcome us in a survival situation. Each time we encounter danger or fear and overcome it, we strengthen our courage.

It is important to realize the difference between fear and panic. Fear has a purpose. It is the mind's tool to pool all available resources. Panic on the other hand, is an unreasonable, overwhelming, and uncontrollable fear that can be one's worst enemy in a survival situation.

**A.1.c Determination**

*Let us not be content to wait and see what will happen, but give us the determination to make the right things happen*

*-Peter Marshall (1902–67)*

Stories about those who did not survive are usually founded on the idea that the would-be survivor did not realize they had it in them to carry on just a little further. Physically, the human body will rise to the occasion and call upon itself when needed. Many survival case histories show determination alone was the only factor in the successful return of the survivor.

Determination in thinking leads to quick, decisive action as you may have to act quickly. This excerpt to one survivor's story is evidence of determination:

> The shore was about 50 yards away, but I experienced extreme difficulty in swimming due to the incoming tide. Several times, I had to turn on my back and try to float and propel myself with only my feet. It was only with extreme effort that I was able to make the shore. Upon reaching it, I was completely exhausted and in a state of partial shock, but forced myself to go on.

**A.1.d Cheerfulness**

*Mirth is like a flash of lightning that breaks through a gloom of clouds, and glitters for a moment; cheerfulness keeps up a kind of daylight in the mind, and fills it with a steady and perpetual serenity.*

*-Joseph Addison (1672–1719)*

A strong sense of humor is instrumental in influencing the outcome of any survival situation. The ability to use humor and stay cheerful in a stressful situation will help the survivor withstand the anxieties and apprehensiveness of the situation.

**A.1.e Positiveness**

*Success goes thus invariably with a certain plus or positive power: an ounce of power must balance an ounce of weight.*

*-Ralph Waldo Emerson (1803–1882)*

Being positive helps the survivor make the best of the situation. Thoughts of failure will hinder the survivor's ability to make sound and clear decisions. Self-fulfilling prophecies are usually manifested from negative thoughts and attitudes. Failure is inevitable when one believes there is no hope in sight. Self-discipline, adaptability, and tolerance all play parts in being positive in a survival scenario.

**A.1.f Flexibility**

*Creativity can solve almost any problem. The creative act, the defeat of habit by originality, overcomes everything.*

*-George Lois*

Athletes base their performance on being flexible as part of their overall fitness. Coast Guard personnel also maintain high levels of fitness to perform their duties. Flexibility is also a mental process. Being mentally flexible means having an open mind and the ability to act in a unique, creative and imaginative manner.

**A.1.g Willingness**

*Nothing is easy to the unwilling.*

*-Yolanda Cornelia "Nikki" Giovanni (b.1960)*

Many studies suggest we avoid psychological pain and discomfort to a greater extent than we do physical pain. In most cases, freedom from mental stress is more important than those that are physical. Willingness is the ability to make decisions and a readiness to act even when the situation seems hopeless.

**A.1.h Purpose**

*The secret of success is constancy of purpose.*

*-Benjamin, Earl of Beaconsfield Disraeli (1804–1881)*

Setting realistic goals (both near-term and long-term) and achieving them drives our sense of purpose. In a survival scenario, goal setting has a high survival value. Goal setting is a motivator, and as such, generates a will to live.

**A.1.i Attentiveness**

*If I have ever made any valuable discoveries, it has been owing more to patient attention, than to any other talent.*

*- Sir Isaac Newton (1642 - 1727)*

One of the most dangerous aspects of Coast Guard life is being unprepared. Mental preparedness, whether it be for jogging around a track, executing a patrol mission, or finding oneself in an open water survival situation is absolutely key to efficient planning and effective mental attitude.

**A.1.j Confidence**

*You have to have confidence in your ability, and then be tough enough to follow through.*

*-Rosalynn Carter (b. 1927)*

Being properly trained is key in preparing for any situation. The skills and knowledge we obtain from training yields one important side-affect: Confidence. Confidence can only be built through repetition and experience.

**A.1.k Productiveness**

*Remember that fear always lurks behind perfectionism. Confronting your fears and allowing yourself the right to be human can, paradoxically, make you a far happier and more productive person.*

*-Dr. David M. Burns*

Keeping busy can also increase the chance of survival. Humans are social creatures, and teamed with loneliness and boredom can undermine the productive nature that is extremely important in a survival situation. Keeping the mind and body active will help to concentrate on the act of survival.

**A.1.l Persistence**

*He who labors diligently need never despair; for all things are accomplished by diligence and labor.*

*-Menander (342 BC - 292 BC)*

The will to survive is fundamentally based on persistence. Emotionally, the survivor needs to stay active in spite of the situation. The chance of survival is greatest during the first 24 hours after the mishap and even after 24 hours it is not time to give up. Concentrate on those items left behind. Family, friends, and personal goals will once again be met and achieved.

**A.1.m Certainty**

*He is no wise man that will quit a certainty for an uncertainty.*
*-Samuel Johnson (1709–1784)*

The will to survive is inevitably dependent on the survivor's ability to remain certain that they will once again return to family, friends and co-workers. Those who have survived in the past have not depended on luck or magic, they have depended on the mental skills presented above and on the equipment and procedures presented in the chapters that follow.

# A.2 Human Elements

**A.2.a Human Elements**

Human Factors play an important role in survival situations. This section provides detail on such areas of Human Factors as:

- Strength and Endurance
- Skill Level
- Intelligence
- Age and Gender
- Personal Experience

**A.2.b Strength and Endurance**

Coast Guard physical fitness standards are required to ensure crewmembers have sufficient strength, flexibility, and endurance to safely perform duties during normal and adverse conditions. These standards will also have a positive impact if a crewmember is exposed to cold, wet environments. The combination of rough seas, cold temperatures and wet conditions can quickly cause the crew to become less effective.

Physical fitness increases the ability to maintain a higher degree of thermoregulation between the skin and vital organs. However, high levels of body fat can increase the potential for survival in cold, wet environments. Increased body fat acts similar to extra layers of clothing in that it adds more protection to vital organs.

If the crewmember is able to get out of the water and into a life raft, or some other floatation device, survival will be highly dependent on the air temperature and wind velocity as well as their ability to sustain shivering. However, this state will decrease the rate of heat loss considerably due to the conductivity of air being less than that of water.

**A.2.c Skill Levels**

All tasks require a certain skill level. The required skill level is a function of the situational demands and the experience of the operator. Exposure to a cold, wet environment also has an effect on a person's skill level. As core temperature decreases to 93˚F (34˚C), cognitive and motor functions become impaired. Skilled performance can be categorized into three levels: Skill-based level, Rule-based level, and Knowledge-based level.

- **Skill-based level** is when highly automated sensory-motor and cognitive performances and takes place without conscious control. This level of behavior is the final level to be affected by exposure to cold, wet environments.

- At the **Rule-based level** an action is selected by activating in working memory a hierarchy of rules. Such rules may have been derived empirically during previous occasions, by instruction or by conscious problem solving and planning. Information from the environment is used to select or modify these rules. Rule-based level behavior is the second level of behavior that is affected by exposure to cold, wet environments.

- **Knowledge-based level** behavior is evoked when entirely new, unstructured, or complex problems are encountered. At this level, the individual uses meaningful concepts or physical properties to make decisions. Decision-making involves the identification of options or alternatives, assessing their relative attractiveness, assessing the likelihood of being realized, and integration of considerations to identify what appears to be the best option. Knowledge-based level behavior is the first level of behavior that is affected by exposure to cold, wet environments.

**A.2.d Intelligence**

Memory capacity plays an important role in open water survival situations. The rate at which we process cognitively (mental storage, retrieval, and manipulation) is not only a function of general intelligence but of individual aptitude as well. The better a survivor learns and acquires new information, the higher the probability of rescue.

### A.2.e Age and Gender

Aging is widely thought to compromise body temperature defense during cold exposure. Controlled laboratory comparisons show that older men may be less able than younger men to defend core temperature during cold exposures. Heat production due to shivering may also be less in older than younger men due to the reduction of muscle mass. These aging effects begin to be apparent after about 45 years of age in men. Older women defend core temperature during cold exposure as well as, or better than younger women; this is due to body composition changes attributable to aging. Older women tend to have more body fat than younger women, which accounts for impaired, as well as improved, thermoregulatory responses to cold environments.

Gender related differences in body size, body shape and composition contribute to a difference in cold tolerance between men and women, which is particularly apparent in cold water. Most women have greater body-fat content than men of comparable age. A thicker subcutaneous fat layer accounts for greater maximal tissue insulation and lower critical water temperature. Despite this difference, however, greater body-fat content may not provide women with a thermoregulatory advantage over men.

When women and men of equivalent subcutaneous fat thickness are compared, the women have a greater surface area and smaller total body mass. Although insulation is equivalent, women's total heat loss is greater due to the larger surface area. Because of their smaller body mass, body heat content is less in the women. Therefore body temperature falls more rapidly for any given thermal gradient and metabolic rate.

Comparison of men and women with equivalent total body masses shows that women still seem to be at a disadvantage in the cold. In this case, women's greater body-fat content enhances insulation, and surface area differences between genders are not as pronounced. Nevertheless, a smaller lean body mass limits a women's capacity for heat production, compared to men of comparable total body mass. However, under colder conditions that stimulate shivering the limited thermogenic capacity of women will result in a more rapid decline in their core temperature than in men of equivalent total body mass.

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# Section B. Health and Hygiene

**Overview**

This section contains information on medical issues in survival settings. Medical problems encountered in the open water are perhaps the only variable that has the most profound effect on the survivor's ability to be rescued successfully. Injuries can occur at any point—egress from the vessel, in open sea, boarding the raft, even during the rescue process.

This chapter identifies the first aid, health, hygiene and nourishment aspects of survival.

# B.1 Survival First Aid

**B.1.a Check for Injury**

Proper administration of first aid is key in any survival scenario. Each survival situation is usually the result of a catastrophic event that could have resulted in injury to one or all of the survivors. After all personnel are accounted for, those in charge must check their own body before tending to the injuries of others. Triage and evaluation, considering those injured the worst, must begin immediately. If possible, those with medical training should be primary responders with others offering support as needed.

Injury, including blood loss or other physical trauma can decrease the ability to shiver. It is important that any blood loss be restricted immediately to help slow this potential decrease. Individuals can generally tolerate blood loss of up to 15% without inducing major harm, while shock is likely to occur when blood loss reaches 40%.

**CAUTION !**

INTERNAL BLEEDING IS DIFFICULT TO DIAGNOSE IN THE FIELD. TREATMENT SHOULD BE LIMITED TO KEEPING THE PERSON WARM AND PREVENTING UNNECESSARY MOVEMENT.

**B.1.b Control of Bleeding**

With the majority of survival situations being the result of mishaps, bleeding is one of the most dangerous injuries that can occur in a survival situation. Severe wounds can cause a survivor to bleed to death in a relatively short period of time. There are several things that can be done to stop bleeding and prevent further blood loss:

- Elevate and apply direct pressure to the wound. Use sterile dressing found in most first aid kits. If sterile dressing is not available, use any other means to apply pressure including the bare hand.

- Elevate and apply pressure to the pressure points of the body.

- For last resort measures, apply a tourniquet around the limb just above the wound. This should be done **ONLY** if there is no other means for stopping blood flow. **DO NOT** release the tourniquet after it has been applied. Standard first aid measures suggest the time of application be written somewhere near the location of the tourniquet or on the forehead.

## B.2 Health Aspects

**B.2.a Burns**

The goal in treating burns is to prevent infection. Keep burned area as clean as possible and use the burn remedies supplied in the first aid kit. Keeping the body protected will also reduce the risk of sunburn, the most common burn among open water survivors.

**B.2.b Dehydration**

In most survival situations on open water, fresh drinking water will be scarce. Every effort must be made to conserve the water in your body. Dehydration is brought on by the loss of body fluids precipitated by: diarrhea, vomiting, perspiration, urination, and lack of available drinking water

Anything that can be done to prevent the loss of fluids in the body should be adhered to. Rainwater is a good source of drinking water, so every effort to collect rainwater must be made.

**B.2.c Shock**

Shock is a real threat in most traumatic situations with severe injury. Shock is difficult to diagnose, however, if shock is suspected, treat in the best possible manner. Lie the survivor down with the lower body elevated. Body temperature should be maintained as close to normal as possible. Encourage the survivor to rest and remain quiet.

# B.3 Personal Hygiene

**B.3.a Cleanliness**

In a survival scenario, cleanliness is essential for the prevention of infection. Skin being the body's first line of defense, must be cared for attentively. Keep the hands clean using saltwater. Soap is not critical in keeping clean.

Keep fingernails short as scratches breed infection.

**B.3.b Laundering**

Launder clothing if possible. Clean clothes help prevent infections and chafing.

## B.4 Nourishment

**B.4.a Collection**

Most survival kits have adequate nourishment for 24 hours. It is important to begin the search for food and water immediately to supplement this supply.

Food or others forms of nutrition should be consumed if at all possible. If deprived of nutrition and/or fatigued, metabolism will decrease. This decrease will affect the level of endurance that can be maintained.

**B.4.b Water Collection**

Canned or bagged water may be supplied in your raft's survival kit; however, other sources of water should be used first. Watch the skies for clouds that may provide rainwater. Using available collection means (e.g., containers, tarps, etc) be ready to capture the rainfall. Store the water by any means possible, drink only to re-hydrate, and provide to others.

**WARNING**

**SEAWATER, FISH BLOOD, AND URINE SHOULD NEVER BE CONSUMED AS HYDRATION MEANS. FISH BLOOD CAN BE USED AS A FOOD SOURCE WHEN AMPLE WATER SUPPLY IS AVAILABLE.**

**WARNING**

**NEVER EAT INTESTINES, EGGS, OR LIVER. DO NOT EAT SEAWEED THAT IS SLIMY, HAS THORNS, OR AIR BLADDERS (EXCEPT KELP).**

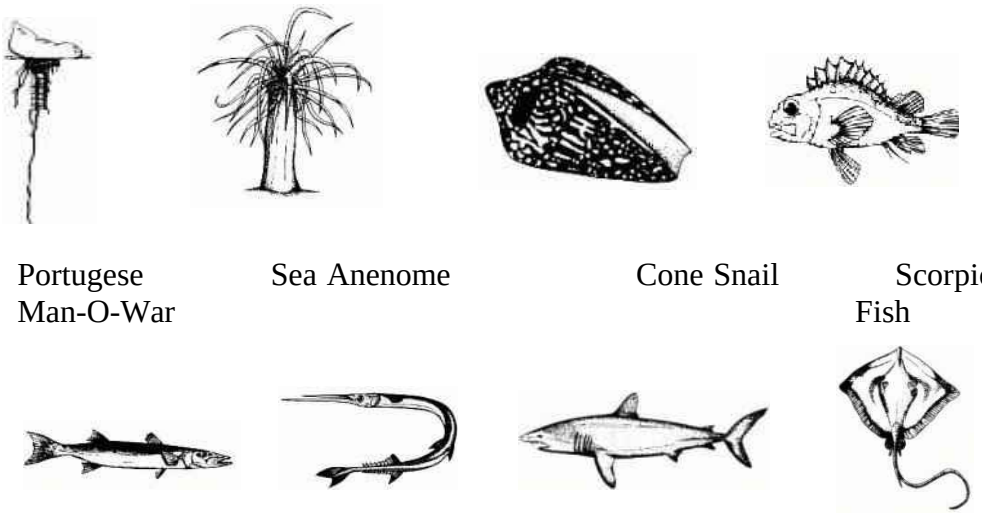
**B.4.c Food Collection**

Historically, open water survivors have been known to go several days and at times weeks with little or no food. Food provides energy and sustainment to carry out other tasks. Beginning early in the survival situation, the following should be considered:

Sources. Most fish, birds, plankton, sea weed are all good food sources. Clothing and other items at the survivor's disposal can provide means for catching sea life. Some marine life characteristics that should be avoided are depicted in **Figure 2-1: Marine Life to Avoid** and generally include:

- Fish, birds, sea weed with foul odor and taste.
- Fish with external spines.
- Fish with slimy gills.
- Fish with sunken eyes.
- Fish with flabby skin or skin that remains indented after being pressed with a finger.

Examples of marine life that should be avoided:




*Drawings courtesy of the Hawaiian Lifeguard Association*

**Figure 2-1: Marine Life to Avoid**

In all cases, clean and gut immediately upon capture. Inspect for worms and eat raw. Fish can be preserved by cutting the flesh into small strips and lay them on the raft's exterior to dry in the sun.

# Section C. Environmental Factors and Survivability

**Overview**

Recent technological advances have shortened the duration survivors spend in the open water. Search and rescue equipment, personnel training, and optimally designed equipment (as described in previous sections) have all attributed to increased successes in survivor recovery.

However, the possibility of extended open water survival still exists. Being mentally prepared, using Coast Guard approved and correctly maintained equipment will increase your chances for survival.

Time is critical when forced to enter cold water. The loss of body heat is the greatest danger to survival in open water. Critical factors that increase the threat of hypothermia and other cold water injuries include:

- Sea State
- Water Temperature
- Air Temperature
- Weather and Time of Day
- Proximity to Land
- Improper Use of Survival Equipment
- Protection From Exposure

This section contains information on the external environment and those elements of human factors that contribute to the success of open water survival.

# C.1 Sea State

**C.1.a Effects of Wind and Waves**

Sea states can range from calm and mirror-like to driving sea spray with exceptionally high waves. Survivability depends not only on the sea state the survivor deals with, but with the sea state the rescue vessel must bear.

There are several forces that create waves at sea, the most significant of which is wind. The factors which determine the characteristics of wind waves are: wind speed, wind duration, and fetch (the distance over open water which the wind has blown).

As the wind begins to blow, it creates seas, which are typically steep, choppy, and have little pattern. As the wind continues, the seas begin to become more defined. In heavy weather, observing and measuring waves is important; if you can get a general sense of the waves in which you are operating, it will allow you and your crew to operate accordingly.

Strong winds usually have the same effects as strong currents on wave behavior, but because of the infinite variables of wind speed, direction, and interaction with currents, it is often difficult to predict what effect the wind will have on waves.

The survivor must be more vigilant during high sea states and be ready to signal rescuers at a moment's notice. High seas contribute to severe motion sickness; feelings of frustration and water aspiration are major concerns.

**NOTE**

The sea anchor, supplied with life rafts provides the most stability in any wave pattern. To ensure proper positioning of the sea anchor, the sea anchor should rest in the trough of the wave as the bow of the craft is at the crest of the wave.

# C.2 Water Temperature

**C.2.a Hypothermia**

Like sea state, water temperature has a significant impact on chances of survival. One of the greatest dangers in open water survival is hypothermia. When the human body is submerged in water, heat is lost approximately 26 times faster than it is on dry land. Hypothermia is described in detail in Chapter 3, Protection from Exposure.

**C.2.b Application**

Regardless of the type of clothing, all clothing will prevent the skin from reaching the temperature of water. Cooling rates will vary depending upon the type of protection, whether wet or dry suits. Clothing provides extra thickness between the skin and water or wind. Since heat is generally conducted away from the body by the movement of water, adding extra layers keeps the skin further away from the moving water thus reducing heat loss to varying extents.

Dry suits increase protection and decrease cooling rates in both rough and calm water. Dry suits are the most effective form of protection in both rough and calm water. However, the barrier must be maintained between the water and skin for the suit to remain effective. Cooling rates are slightly higher in rough water, though this is often linked to increased heart rate and exertion in an attempt to stay afloat in rough water. If water does penetrate a dry suit, they are not rendered useless; however, the effectiveness of the suit decreases and cooling rates may increase, especially if there is water exchange. A downside is that cold water causes diuresis, or increased urinary output.

Wet suits provide excellent protection against cooling in calm water; however, in rough water wet suits suffer from water exchange. This occurs when the water warmed by contact with the skin is flushed away by cold water. This pattern continues and increases the cooling rate with each cycle. Wet suits provide the best protection when they fit tightly to the wearer. This decreases the amount of water flow along the skin surface. The difference in wet suit cooling rate in calm and rough water can range from 9% to 100% increase in cooling from the former to the latter. In calm water, the water in contact with the skin will warm and thus not be a major contributor to heat loss; rather it will act as a barrier.

In both wet and dry suits there are several factors that can increase or decrease their effectiveness: thickness; amount and location of closed-cell foam insulation; body surface-area covered; tightness of garment fit; and amount and location of buoyancy. If proper buoyancy is absent, more effort will be required to maintain clear airway freeboard. As energy is spent breathing, flushing will also occur in wetsuits and general physical exertion will increase the cooling rate.

It is important to remember that suits provide protection only to an extent and in all cases, with the exception of heated suits, will eventually lead to heat loss with the potential for hypothermic problems. Regardless of the suit worn, individuals should egress from the water as quickly as it is possible. A life raft or other floatation device should be used if available. Survival time will increase significantly once out of the water.

**C.2.c Symptoms of Lowered Body Core Temperatures**

The body goes through noticeable symptoms when exposed to cold water as indicated in **Table 2-1: Core Body Temperature**.

| °F | °C | Symptoms |
|---|---|---|
| 98.6 | 37 | Cold sensations<br>Skin vasoconstriction<br>Increased muscle tension<br>Increased oxygen consumption |
| 97 | 36 | Sporadic shivering suppressed by voluntary movements<br>Gross shivering spells<br>Further increase in oxygen consumption<br>Uncontrollable shivering |
| 95<br>(1) | 35 | Mental confusion<br>Impairment of rational thought<br>Drowning possible<br>Decreased will to survive |
| 93 | 34 | Loss of memory – speech impaired<br>Sensory function impaired<br>Motor performance impaired |
| 91<br>(2) | 33 | Hallucinations, delusions, clouding consciousness<br>Shivering stops |
| 90 | 32 | Heart rhythm irregularities<br>Motor performance grossly impaired |
| 88 | 31 | Shivering stopped |
| 86 | 30 | Loss of consciousness<br>No response to pain |
| 80 | 27 | Death |

Note 1: Voluntary tolerance limit in laboratory experiments.
Note 2: 50% of those in survival situations do not survive at this body core temperature.

**Table 2-1: Core Body Temperature**

**C.2.d Predicted Survival Time for the Average Person in 50° Fahrenheit Water**

Being prepared at the onset of a survival situation can help minimize heat loss. **Table 2-2: Predicted Survival Time** below shows the predicted survival times for various situations during a cold-water episode. Contrary to popular belief, the survivor should not swim around in efforts to keep warm. This will only increase the rate of heat loss and speed the onset of hypothermia.

**Without Flotation**

| | |
|---|---|
| Survival Floating | 1.5 Hours |
| Treading Water | 2.0 Hours |

**With Flotation**

| | |
|---|---|
| Swimming | 2.0 Hours |
| Holding Still | 2.7 Hours |
| HELP Posture | 4.0 Hours |
| Huddle w/ Others | 4.0 Hours |

**Table 2-2: Predicted Survival Time**

**NOTE**

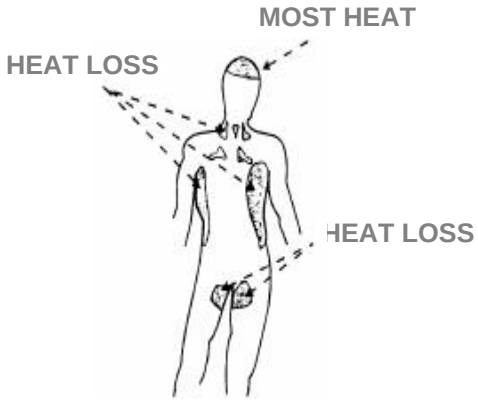
When worn correctly, the appropriate anti-exposure assemblies will protect the survivor and add layers of insulation. Thermal gloves, socks, underwear and neoprene hoods all add additional layers of protection.
Inflatable raft floors will provide an additional layer of insulation.

# C.3 Air Temperature

**C.3.a Effects of Wind and Waves**

Air Temperature is a prime contributor to hypothermia. The combination of cold air with cold water is a recipe for danger. When the wind is blowing, heat loss in the body increases exponentially due to the wind chill factor. Actions must be taken to protect against wind chill. In open water survival situations, actions taken to protect the survivor from wind effects (e.g., laying low in a raft, using neoprene hoods, etc) can greatly enhance survivability and lessen the effects of hypothermia.

**C.3.b Wind/Wave Effects Mitigation**




Survivors should be aware of the areas of the body that are most prone to heat loss. **Figure 2-2: Body Areas Prone to Heat Loss** represents those areas of the human body most prone to cooling. The majority of heat loss occurs in and around the top of the head.

*Drawing courtesy of U.S. Navy*

**Figure 2-2: Body Areas Prone to Heat Loss**

**NOTE**

When worn correctly, the appropriate anti-exposure assemblies will protect the survivor and add layers of insulation. Insulated boots, balaclavas, watch caps, thermal gloves, socks, underwear and neoprene hoods all add additional layers of protection.

# C.4 Weather and Time of Day

**C.4.a Effects of Weather on Survival**

The weather plays a major effect on any survival scenario. Survivors in open water must realize that rescue efforts may be hampered or even postponed because of inclement weather. Survivors must be prepared for a prolonged evolution—even after the weather improves.

- **Fog.** Fog is composed of minute water droplets hanging in the atmosphere, sufficiently dense to scatter light rays and reduce visibility. Fog makes locating anything more difficult, including survivors in the open water.

- **Waves.** Waves, seas, and surf can present the greatest challenges to survival skills. By understanding how waves form and behave, survivors know what to expect and how to minimize danger and increase the chance of survivability.

- Of the two major types of waves, the broad, rounded waves are likely to be the type of wave an open water survivor will have to deal with. Breaking waves are the most dangerous kind of wave for open water survivors. How dangerous the wave is depends on the ratio of wave height to length, and on wave frequency. Steep sloped waves are the most dangerous.

- **Rain, Sleet, & Snow.** As with fog, precipitation can limit the sight of the survivor as well as the rescue party. Precipitation can add to other complexities such as contributing to the onset of hypothermia.

**C.4.b Time of Day**

Statistically, rescues occur within a short time following a mishap. Wind and sea currents make pinpointing survivors more predictable when the mishap site is known. As time progresses, this predictability becomes more difficult. In hours of darkness, it becomes critical that the appropriate signaling devices are employed. Mentally, the first few moments an individual is in a survival situation are the most disorientating, however, the survivor must remember that rescue vessels may be nearby during this time. During hours of darkness, flares and lights are crucial when these vessels are near.

# C.5 Proximity to Land

**C.5.a Decision Factors**

With land in sight, the survivor must make a decision whether to swim or row for land or to wait. Swimming or rowing away from a "last known position" has inherent risk. Shorelines are dotted with various hazards including sharp rock, strong current, and breaking waves. Unless land is close and conditions appear favorable, the survivor should not try to swim to shore.

Considerations to consider when making the decision to swim or row to shore include:

- **Distance.** With no visible reference from sea, distance can be deceiving and create the illusion that land is closer than it actually is. Glare from the water surface can hinder the ability to gauge the distance to shore.

- **Water Current.** Underlying current near the shoreline may hamper progress and severely rob the survivor of available energy.

- **Physical Condition**. As mentioned above when dealing with water currents, the survivor's physical condition can be the limiting factor in surviving a swim or row for shore.

- **Swimming Competency**. Swimming skills must be considered in making the shoreline. A poor swimmer will expend more energy to make the shoreline than an accomplished swimmer.

- **Water Temperature**. The colder the water temperature, the more energy will be required to swim the same distance in warmer waters.

# C.6 Protection from Exposure

**C.6.a Exposure Factors**

The most inhospitable location on our planet is the open water. Hot, temperate, cool, or cold--the survivor must be prepared for any and all scenarios. Survivors must be aware of the dangers of too much exposure to the sun and take preventative measures to guard against a decrease in performance.

Hypothermia can be defined as: a low body temperature, as that due to exposure in cold weather or a state of low temperature of the body induced as a means of decreasing metabolism of tissues and thereby the need for oxygen. This reaction occurs when the body is exposed to extreme cold temperatures that threaten an individual's physical state. Cold-water exposure is one environment that can be harmful and/or life threatening.

**C.6.b Hot Climates**

Performance in open water can easily be affected by the heat and vibration of the boat, which can increase fatigue. This section discusses the various sun and heat related factors that crew members may encounter during their activities

Clothing and equipment should be worn so that there is free circulation of air between clothing and the body surface. Clothing acts as a barrier that prevents evaporative cooling. Many synthetic fabrics reduce the absorption and dispersal of sweat needed to achieve optimum heat loss by evaporation. Impermeable clothing does not "breath" and thus greatly increases an individual's susceptibility to heat related illnesses. Impermeable clothing must be avoided. When using impermeable clothing, take precautions to avoid the rapid buildup of body heat. Heat illnesses may be manifested in minutes if impermeable clothing is worn.

Survivors should shield themselves from the effects of sun and heat as best as possible. Sunshades should be fabricated from any means available. During the heat of the day, observe the following:

The body may be cooled by getting into the water; however, check for marine life and be sure you are secured to the raft. This action will also aid in dehydration, as survivors have actually absorbed enough water to activate the kidneys after only a short time in the water.

- Clothes can be kept wet by splashing water on them.
- Keep physical activity to an absolute minimum in the water.
- Use sun screen cream or similar ointment if available.
- Wear sunglasses or improvise eye cover made from cloth or paper.

Heat stroke can occur when the body's cooling mechanism (sweating) fails to adequately cool the body. The major symptom of heat stroke is red, hot and dry skin. Mitigating the effects of heat stroke can easily be accomplished by keeping the body cooled by the measures outlined above. Keep incapacitated survivors lying down with the head elevated. Outer clothing should not be removed. Underclothes may be removed and used to cover exposed head, neck or to parts of the body which would otherwise be exposed.

**NOTE**

Personnel, who are not accustomed to strenuous physical activity in hot and humid environments, are particularly susceptible to heat injuries. Excess body weight also contributes to this susceptibility.

**C.6.c Sunburn**

Continuous exposure to the sun can cause sunburn and other complications such as heat stroke, dehydration, etc. Unprotected exposed skin will suffer from premature aging and an increased chance of skin cancer. The limit to surface heating, the point at which skin becomes painful, is 109˚F (43˚C) and higher. At 113˚F (45˚C), pain is severe, and if that temperature is maintained burns will result.

Symptoms of sunburn are: redness, swelling, or blistering of the skin. Other effects of overexposure to the sun are fever, gastrointestinal symptoms, malaise, and pigment changes in the skin.

**C.6.d Dehydration**

An adequate fluid intake is essential to remain healthy. Fluids are lost from the body in several ways. The most obvious loss is through the kidneys. The less obvious loss of body fluid occurs through perspiration from the skin and respiration through the lungs. As a result, an average, healthy adult requires two or three liters of fluid a day to replace these losses. Extremely warm weather significantly increases the loss of fluids. Try to stay away from liquids such as tea, alcohol, coffee, and soft drinks. These liquids speed up fluid loss.

Healthy adults must satisfy their water and electrolyte requirements. When water and electrolytes are not replaced, the body experiences dehydration. Drinking alcohol and caffeine increases dehydration. At first there is thirst and general discomfort, followed by an inclination to slow physical movement, and a loss of appetite. As more water is lost, an individual becomes sleepy and experiences a rise in body temperature.

By the time the body loses 5% of body weight in fluids, the individual begins to feel nauseated. When 6 to 10% of body fluids are lost, symptoms increase in this order:

- Dry mouth
- Dizziness
- Headache
- Difficulty in breathing
- Tingling in the arms and legs
- Skin color turns bluish
- Indistinct speech
- Inability to walk
- Cramping legs and stomach

**C.6.e Heat Rash (Prickly Heat)**

Heat rash is prevalent among those living and working in warm, humid climates or in hot spaces ashore or aboard boats. It may occur in cool weather if a person overdresses. Heat rash is caused by:

- Breakdown of the body's ability to perspire, and
- Decreased evaporative cooling of the skin.

Heat rash interferes with sleep, resulting in decreased efficiency and increased cumulative fatigue, making the individual susceptible to more serious heat disorders. Heat rash also accelerates the onset of heat stroke. Symptoms are:

- Pink or red minute lesions
- Skin irritation (prickling)
- Frequent, severe itching

**C.6.f Heat Cramps**

Heat cramps are painful contractions caused by excessive salt and water depletion. Heat cramps may occur as an isolated occurrence with normal body temperature or during heat exhaustion. Recently stressed muscles are prone to heat cramps, particularly those muscles in the extremities and abdomen. Symptoms of heat cramps are:

- Victims legs will be drawn up
- Excessive sweating
- Victim may grimace and cry out in pain

**C.6.g Heat Exhaustion**

Heat exhaustion is more complex than heat cramps. The cause of heat exhaustion is a loss of too much water through perspiration. When suffering from heat exhaustion, a person collapses and sweats profusely. The victim has pale skin, a pounding heart, nausea, headache, and acts restless.

**C.6.h Heat Stroke**

Heat stroke is a major medical emergency and results from the complete breakdown of the body's sweating and heat regulatory mechanisms.

Operating in bright sun or working in a hot environment, such as an engine compartment, causes heat stroke or “sun stroke”. The onset of heat stroke is very rapid. The major symptoms of heat stroke are:

- Skin is red, hot, and dry to the touch (cessation of sweating); characteristic body temperature above 105$^{o}$F (40.5$^{o}$C).
- Headache.
- Weak and rapid pulse.
- Confusion, violence, lack of coordination, delirium, and/or unconsciousness.
- Brain damage will occur if immediate medical treatment is not given.

**C.6.i Effects of Cold Climates**

In cold climates, the major problems range from hypothermia and frostbite, to immersion, or “Trench” foot. In cold climates, observe the following:

- Keep as dry and warm as conditions will dictate. If possible, remove wet clothing and replace with dry clothing.
- Clothing should be worn in loose fitting layers.
- Don anti-exposure suit (if available).
- Inflate raft floor or add available material for additional layers of insulation.
- Huddle with other survivors.
- Mild stretching and exercise improves circulation—this is key in preventing immersion foot.
- Avoid sitting in cramped positions for long periods. Move arms, feet, and legs as much as possible.
- Wiggle the toes inside boots.
- Keep feet as warm and dry as possible.
- Avoid the use of alcohol and tobacco.

**C.6.j Effects of Hypothermia**

Hypothermia may begin to set in when the internal body core temperature, the temperature around vital organs (heart, lungs, brain, etc…), reaches approximately 93.2°F (34°C). At this temperature the body begins to lose useful functioning. If no measures are taken to counteract heat loss, physical and mental functioning will decrease to the point of muscular paralysis and mental disorientation. If the core temperature reaches 86°F (30°C), coma or unconsciousness is probable. At 80°F (27°C), cardiac or respiratory arrest is likely to occur, leading to death.

**C.6.k Physiology of Hypothermia**

To avoid hypothermia, which is caused by exposure to cold-water, water that is colder than the human body (98.6°F), an individual must maintain a higher rate of heat generation than the rate of heat loss. This can be accomplished, in part, through continual physical movement. As heat loss increases, the body naturally responds with the shivering reflex. Initially shivering starts as sporadic bursts, which increase in frequency until it is constant as the body cools. Shivering can be suppressed by swimming or other muscular activity. Shivering is an effective method intended to compensate for heat loss, accounting for a five to six fold increase in body heat production. The ability to maintain continual shivering varies between individuals, but research has shown that in most cases shivering fatigue does not occur before four and a half hours of continued expenditure.

Layers of clothing also provide added protection from hypothermia; more layers, even if wet, increase protection. Wet clothing, though not as protective as dry clothing, creates a buffer between the water or air and the skin. See the section on Wet/Dry Suits below for more information.

**C.6.l Hypothermia Factors**

An individual's survival time is dependent on many factors but can ultimately be expected to decrease with:

- **Decreased body fatness**. Individuals with high levels of body fat have added barrier protection than lean individuals. Also, the body metabolizes fat and other nutrients as a fuel to maintain heat production. Food sources, if available, can provide increased heat production time.

- **Decreased clothing protection**. As mentioned above, layers provide protection to the skin from the effects of heat conduction and convection by water and air, respectively.

- **Increased wetness.** As water penetrates clothing and/or comes in contact with skin it conducts heat away from the skin surface. If possible, minimize exposure to water transfer (waves, rain, etc…) and increased wetness, as this will drain the body of necessary heat.

- **Decreased metabolic capacity.** As the body becomes fatigued or the core temperature decreases drastically, the body will begin to lose its ability to metabolize nutrients. With this loss comes the loss of heating fuel and therefore the loss of heat production.

- **Injury.** Injury, whether physical bleeding or other trauma, even psychological impairment, will affect the ability to maintain proper heat production. Bleeding, depending upon the extent, can drastically reduce survival time. It is important to contain bleeding as quickly as possible. As mentioned above, unconsciousness can occur if the inner core temperature reaches 86°F (30°C). Psychological impairment can occur anytime prior to this, often times inhibiting a person's decision and reasoning abilities.

Individuals who have been exposed to cold-water and then egress to a life raft often will feel colder due to wind and sea spray. Often the reaction is to return to the water, where it appears to be warmer. Unfortunately, this will reduce survival time. The thermal conductivity of water, or the rate at which heat is directly transferred to water, is more than twenty times that of air. Therefore, it is recommended that anyone involved in a maritime mishap in cold seas get as much of his or her body out of the water as possible in order to minimize cooling rate while maximizing survival time. Even with the combined effects of wind, rain, and spray, heat loss will be greatly reduced than submersion in water.

Ultimately, the time it takes for the onset of hypothermia in cold water varies with both the physical characteristics of the individual and with the quality and amount of insulation provided by protective clothing.

# Section D. Abandon Ship, Egress, and Raftsmanship

**Overview**

Being prepared, mentally and physically for those situations where abandoning the vessel are necessary will greatly enhance the crew's chances for survival. Whether alone or in groups, proper raftsmanship will greatly enhance the ability to survive.

In some cases, a life raft or suitable floating debris may not be available or within close proximity to a survivor. Survivors floating in open water without a life raft or floating debris are at the greatest risk for survivability.

This section will cover:

- Abandon Ship Procedures
- Boat Egress
- Survival Raftsmanship
- Surviving Without a Raft

# D.1 Abandon Ship

**NOTE** ∽

For optimum survival, personnel leaving the ship should be fully clothed.

**D.1.a Abandon Ship Procedures Exiting The Ship**

If possible, personnel should get away from the ship in a lifeboat or life raft. Personnel should lower themselves into the water using a firmly attached line or hose. When a choice is available, personnel should leave the ship from the windward side and from whichever end of the ship is lowest to the waterline.

- **Entering The Water.** If it is necessary for personnel wearing a PFD to jump into the water, they must hold their legs together and keep their body erect. Personnel wearing a survival suit should cover their face with one hand, hold the crotch of the suit in place with the other and cross their legs when entering the water. Before lowering injured personnel into the water, always adjust the leg straps properly.

- **Jumping Into The Water.** Securely fasten inherently buoyant PFDs and keep them close to the body by folding the arms across the chest and gripping the jacket with the fingers. This procedure prevents buoyant PFDs from riding up and striking the chin or neck when the wearer hits the water. If an inflatable PFD is being worn, do not inflate it until the wearer is in the water. Use the same procedure for jumping with an inflated PFD as with the inherently buoyant PFD.

- **Inflate PFD**. The wearer shall inflate the PFD as soon as they are in the water and clear of flames or debris.

- **Swim Away.** When in the water, survivors shall swim away from the ship as rapidly as possible and, if available, climb into a lifeboat or life raft.

**WARNING**

**IF UNDERWATER EXPLOSIONS OCCUR IN THE VICINITY, SURVIVORS SHALL SWIM OR FLOAT ON THEIR BACKS, KEEPING THEIR HEADS AND CHESTS AS FAR OUT OF THE WATER AS POSSIBLE. UNDERWATER EXPLOSIONS ARE PARTICULARLY THREATENING TO LUNGS, ABDOMEN, SINUSES, AND EARDRUMS.**

**WARNING**

**INHERENTLY BUOYANT PFDS WILL NOT PERMIT THE WEARER TO SWIM BENEATH THE SURFACE. IF POSSIBLE, DO NOT WEAR INHERENTLY BUOYANT PFDS WHEN ABANDONING A SHIP SURROUNDED BY FLAMES.**

**D.1.b Abandonment**

When the ship is entirely surrounded by burning oil and abandonment is essential, personnel shall discard any buoyant articles of clothing or shoes. Whenever possible, personnel should wear only the inflatable PFD during this procedure, and should inflate the preserver only after the person is clear of the flames. Jump feet first through the flames and swim windward under the surface of the water for as long as possible. When air in the lungs is exhausted, the swimmers should spring above the water in a vertical position, push the flames away with a circular motion of the hands, quickly take a deep breath with their backs to the wind, submerge feet first in a vertical position, and swim under the surface again.

# D.2 Boat Egress

**D.2.a Enclosed Cabin Boats**

Crew tasking to conduct longer patrols in extreme weather conditions, has yielded the incorporation of full cabins to provide crew protection. The use of enclosed cabins on fast, highly maneuverable boats raised the concern of crew safety and egress in the unlikely event of capsizing. While the Coast Guard has experienced capsizes in similarly sized boats in the past, capsizing occurred in open boats and the crew has typically been either thrown from the boat during capsizing or were easily able to egress.

**D.2.b Egress Hazards**

Boat crews must be thoroughly familiar with capsize and egress hazards specific to the class boat they operate.

- An air pocket may exist in the cabin when inverted and may be useful; However, the motion of the boat due to surrounding seas may make it difficult to rely on this air pocket for long, and may disorient the crew.

- Once inverted, doors, windows, and hatches are oriented completely opposite from normal. Crews must realize that opening devices that are instinctively operated will be located on the opposing sides.

- Visibility may be hindered due to low or no lighting. Egress may have to be accomplished in low or no lighting conditions.

- Gear adrift, weapons, towing bitt, exterior devices, engines, and other obstructions may hinder the ability to egress.

- Increased buoyancy from PFDs, anti-exposure coveralls, air trapped inside the dry suit, and inflated PFDs will make it difficult (but not impossible) to egress.

**D.2.c Egress Procedures**

During a capsizing event where the cabin does not sustain significant damage and the windows and doors remain secured and intact, the cabin should not immediately flood.

1. Prepare and brace for impact.
2. Remain strapped in and hold onto a reference point until the violent motion subsides.
3. Remain strapped in and quickly perform crew coordination. Assess the situation and condition of all occupants. Plan your egress route prior to opening exit doors.
4. Open the door determined as the appropriate egress route.
5. Continue to hold onto the reference point with one hand. When in-rushing water slows, release restraint while maintaining hold of the reference point and pull hand-over-hand to a pre-determined exit
6. Pull sharply through exit.
7. Swim clear of the boat and inflate personal flotation device if applicable. Muster as directed.

**CAUTION !**

CHECK FOR THE PRESENCE OF FUEL IN THE WATER BEFORE ACTIVATING PYROTECHNIC SIGNALING DEVICES

**D.2.d Post-Egress Procedures**

Following egress, crewmembers should take the following action:

1. Muster the crew and passengers and account for any missing occupants.
2. Remain upwind/up current to prevent ingestion of fuel that may be present.
3. Attempt to climb aboard the inverted hull.
4. Check for injuries and administer first aid to the best of your abilities.
5. Conduct an inventory of signaling equipment. Activate Personal Locator Beacon (PLB).
6. Stay with the boat and do not swim for shore. Distances to the beach can be deceiving, and strenuous activities such as swimming in cold water can hasten the onset of hypothermia. Refer to Section C above.

# D.3 Survival Raftsmanship

**D.3.a Post-Abandon Ship Procedures**

After abandoning ship and all survivors are in the life raft, try to remain in the general area of the abandoned vessel. If the vessel does not sink immediately, leave the raft's painter line attached to the raft storage rack on the boat. If the boat sinks rapidly, cut the painter line before it breaks under the strain of the sinking vessel.

Command should be assumed by the senior person and assign tasks in proper priority to other survivors based on their individual capabilities.

Crew Resource Management (CRM) is key to effective group survival in an open water scenario. CRM increases the chance of survival by minimizing preventable error, maximizing survivor coordination, and optimizing risk management.

**D.3.b Boarding the Raft**

Upon boarding a raft, complete the following tasks as soon as possible:

1. Account for everyone post a lookout and search for survivors.

2. If more than one raft is deployed, tie them together.

3. Check the physical condition of all people aboard. Give first-aid as necessary.

4. Activate the EPIRB.

5. Salvage any floating equipment that may be useful. Inventory, stow, and secure all survival items.

6. To provide stability in moderate to heavy sea, life rafts on Coast Guard boats automatically deploy a sea anchor upon inflation.

7. Check the raft for proper inflation and points of possible chafing (areas where equipment may wear a hole in the buoyancy tubes).

8. Bail out any water that may have entered the raft.

9. Inflate the floor immediately.

10. In cold water, put on hypothermia protective clothing, if available. Rig the entrance cover, close when necessary.

11. If other people are with you, huddle together for warmth.

**D.3.c Raft Conduct**

The safety and survival of everyone in a raft depends on clear thinking and common sense. To protect those aboard and increase survival time, take the following steps:

1. Maintain a positive attitude.

2. DO NOT rely on memory. If possible, KEEP A WRITTEN LOG. Record the time of entry into the water, names and physical condition of survivors, ration schedule, winds, weather, direction of swells, times of sunrise and sunset and other navigation data.

# D.4 Surviving Without a Raft

**D.4.a Post-Abandon Ship Procedures**

Without access to a life raft, a survivor can become a casualty quickly. Floating debris and overturned hulls can become buoyant survival aids when a raft is damaged or unavailable.

**WARNING**

**IF A LIFE RAFT IS UNAVAILABLE, DO NOT ATTEMPT TO SWIM UNLESS IT IS NECESSARY TO REACH A FELLOW SURVIVOR OR TO A FLOATING OBJECT.**

**CAUTION!**

PFD's should never be discarded, even if raft bound or near the proximity of a raft. PFD's offer buoyancy and an additional layer of thermal protection.

**D.4.b Individual Open Water Survival Mitigation**

Assume the Heat Escape Lessening Posture (HELP) to prevent body heat loss. Unnecessary swimming will pump out any warm water between the body and the layers of clothing and will increase the rate of body-heat loss. Also, unnecessary movements of arms and legs send warm blood from the inner core to the outer layer of the body resulting in a rapid heat loss.

**Figure 2-3: Heat Escape Lessening Posture (HELP)**

The HELP position is very important in conserving heat as shown in **Figure 2-3: Heat Escape Lessening Posture (HELP)**. Float as still as possible with legs together, elbows close to your side and arms folded across the front of your PFD. Try to keep head and neck out of the water.

If you're wearing a Type III PFD, or if the HELP position turns you face down, bring your legs together tight and your arms tight to your sides and your head back.

**D.4.c Group Open Water Survival Mitigation**

Another heat conserving position is to huddle closely to others in the water making as much body contact as possible as shown in **Figure 2-4: Group Conservation Posture**. A PFD must be worn to be able to maintain these positions in the water.

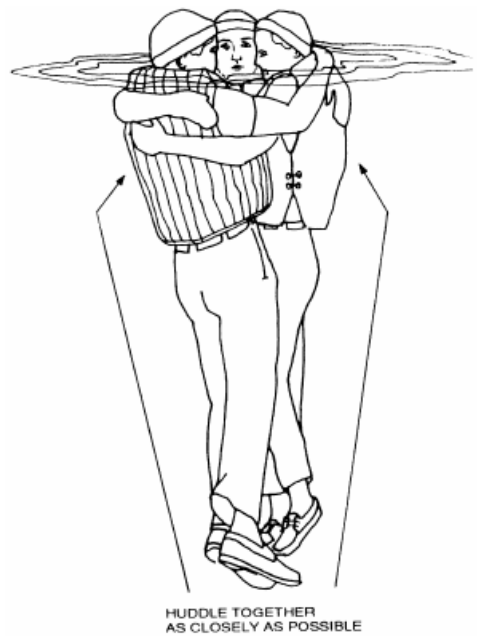



**Figure 2-4: Group Conservation Posture**

**D.4.d Additional Open Water Survival Mitigations**

Additional preventative measures that can be used to increase the chances for successful cold water survival including:

- Put on as much warm clothing as possible, making sure to cover head, neck, hands and feet.
- If the hypothermia protective clothing does not have inherent flotation, put on a PFD.
- Avoid entering the water if possible. If it is necessary to jump into the water, hold elbows close to your sides, cover nose and mouth with one hand while holding the wrist or elbow firmly with the other hand.
- Before entering the water, button up clothing, turn on signal lights (only at night), locate your survival whistle and make any other preparations for rescue.

- Immediately upon entering the water, become oriented to the surrounding area. Try to locate your sinking boat, floating objects, and other survivors.

- Try to board a lifeboat, raft or other floating platform as soon as possible to shorten the immersion time. Body heat is lost many times faster in the water than in the air. Since the effectiveness of the insulation worn is seriously reduced by being water soaked, it is important to be shielded from wind to avoid a wind-chill effect.

- If able to climb aboard a survival craft, use a canvas cover or tarpaulin as a shield from the cold. Huddling close to the other occupants in the craft will also conserve body heat.

- Avoid drown-proofing in cold water. Drown-proofing is a technique where you relax in the water and allow your head to submerge between breaths. It is an energy saver in warm water when a PFD is not worn. The head and neck are high heat loss areas and must be kept above the water. That is why it is even more important to wear a PFD in cold water. If a PFD is not worn, tread the water only as much as necessary to keep your head out of the water.

# Chapter 3
# Rescue Equipment and Protective Clothing

**Introduction**

This chapter contains information about rescue equipment and protective clothing used afloat and ashore. The sections in this chapter reflect approved equipment and their authorized configurations.

**In this chapter**

This chapter contains the following sections:


| Section | Topic | Page |
|---|---|---|
| A | Rescue Equipment Policy | 3-3 |
| B | Protective Clothing and Equipment Policy | 3-15 |
| C | Basic Clothing and Equipment Policy | 3-27 |
| D | Cold Weather Clothing and Equipment | 3-37 |
| E | Additional Equipment | 3-55 |

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# Section A. Rescue Equipment

**Overview**

This rescue equipment section establishes the operational requirements, describes the salient characteristics and discusses maintenance requirements and procurement information for the following equipment:

- CG-P6 dewatering pump
- Stokes litter
- Ring buoy
- Float light
- Rescue line throw bag
- Emergency Position Indicating Radio Beacons (EPIRBs)
- EPIRB Variants

# A.1 CG-P6 Dewatering Pump

**A.1.a Application**

The CG-P6 dewatering pump is used primarily for emergency dewatering of vessels in danger of sinking. The CG-P6 model has a rated output of 250 gallons per minute at a 12-foot suction lift. Under load this pump will dewater for approximately 4 to 5 hours on a full tank of gasoline.

**WARNING**

**DEWATERING PUMPS SHALL NOT BE USED TO PUMP FLAMMABLE LIQUIDS OR WATER CONTAMINATED WITH PETROLEUM PRODUCTS.**

**A.1.b Configuration**

The CG-P6 dewatering pump consists of a 6 ½-horsepower, 4-cycle gasoline driven engine attached to a straight centrifugal pump impeller. The 3-inch diameter suction and discharge hoses connect to the pump casing via color coded quick connect cam-lock style fittings. Priming is accomplished by actuating a manual, positive-displacement priming hand pump assembly. Priming at a 12-foot suction lift takes less than a minute. An integrated discharge check valve aids in priming and operating the pump. If the pump is stopped while dewatering, the impeller case will remain primed as long as the suction hose end strainer remains submerged. The CG-P6 uses a detachable portable fuel tank that mounts on the side of the engine and incorporates a quick disconnect fitting enabling rapid tank changes. Other features of this pump include a high degree of corrosion resistance in oceanic environments, a double lip pump shaft seal designed to survive loss of suction damage and continue to function at rated capacity and on-condition based maintenance instead of interval based. The CG-P6 is packed in the standard round aluminum container.

**A.1.c Accessory Equipment**

A discharge outlet adapter is available that allows coupling a 1 ½-inch fire hose to the discharge for limited fire suppression capability. A suction inlet adapter is available that allows coupling a CG-P1B suction hose to the suction inlet. A 25-foot suction hose is available for deep compartment dewatering.

**A.1.d Maintenance and Repair**

Maintenance is performed in accordance with Maintenance Procedure Card. Repairs are limited to parts replacement within unit capabilities. Repairs beyond unit capabilities can be accomplished using local small engine repair shops. If local shops are used, ensure shop technicians are aware that water must be in the impeller case during engine operation.

**A.1.e Inspection**

Acceptance, monthly, annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card.

**A.1.f Supply Sources**

The life saving equipment and clothing listed in this manual is procured in accordance with reference (c). See Appendix A for additional known ordering information.

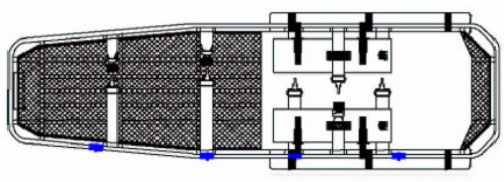
**NOTE**

Many other parts for maintaining the pump assembly are available from the Engineering Logistics Center. Refer to Allowance Parts List number 01158520A2 for additional items.

## A.2 Stokes Litter

**A.2.a Application**

The stokes litter (ridged or folding) is a mobile transportation device designed to safely transport non-ambulatory personnel onboard ships and boats or for applications such as helicopter hoisting. The basic stokes litter can be reconfigured for hoisting or surface operations.



**A.2.b Flotation Characteristics**

When the litter is configured in accordance with the Maintenance Procedure Cards it will float face-up at a 45-degree angle with the foot end submerged. The top 18 to 24 inches at the head end of the litter will be above the surface of the water. The stokes litter is self-righting.

**WARNING**

**PATIENTS WEARING BUOYANT GARMENTS, SUCH AS EXPOSURE SUITS OR PFD'S WILL AFFECT AND POSSIBLY NEGATE THE FLOTATION AND SELF-RIGHTING CHARACTERISTICS OF THE LITTER. DILIGENT ATTENTION TO FLOTATION CHARACTERISTIC CHANGES WHEN PATIENTS ARE SECURED IN THE LITTER MUST BE MAINTAINED.**

**WARNING**

**THE FOLLOWING IN-WATER PATIENT RESTRAINT PROCEDURE MUST BE TRAINED PRIOR TO USE. CREW COORDINATION BETWEEN THE SWIMMER AND DECK CREW IS CRITICAL TO EVOLUTION SUCCESS. RECURRENT TRAINING OF THIS PROCEDURE IS HIGHLY RECOMMENDED.**

**NOTE**

Tending lines and hoisting sling cables must be kept from interfering with patient restraint straps. The gray, red, blue, and green restraint straps shall be disconnected and secured to the right side of the litter prior to lowering the litter to the water's surface. The black restraint strap with flotation pads shall be buckled.

**NOTE**

When securing the black restraint strap with flotation pads, difficulty may be encountered with patients wearing buoyant garments. Buoyant garments are not to be removed; instead place as much slack in the restraint strap as possible and attempt to connect the buckle.

**WARNING**

**IF THE PATIENT IS SECURED TO A BACKBOARD OR SPINAL IMMOBILIZATION DEVICE, DO NOT REMOVE IT.**

**A.2.c In Water Patient Restraint**

Use the following procedure to secure a patient in the litter while in the water.

1. Disconnect the litter from the hoist hook.
2. Disconnect the black restraint strap.
3. Guide the patient into the litter with a collar or equipment tow.
4. Pull the gray restraint strap loose from the right side of the litter and route it under the patient's arms and over the patient's chest. Connect the buckle pulling the slack from the strap.
5. Pull the blue restraint strap loose from the right side of the litter and route it over the patient's arms and torso. Connect the buckle pulling the slack from the strap.
6. Secure the remaining restraint straps around the patient, working from head to toe, using the same procedure.
7. Reconnect the litter to the hoist hook.

**A.2.d Configuration**

Commanding Officers and Officers-In-Charge are responsible for ensuring that the stokes litter is configured properly. Operational missions should be considered when dictating the unit's standard stokes litter configuration (basic, surface or helicopter hoisting). Maintaining kits with parts required for each configuration is recommended for each mission for which stokes litter may be used. This will allow rapid configuration changes and enhance operational readiness. The stokes litter is constructed of high strength stainless steel or titanium alloy. Its construction includes stainless steel slats, which provide longitudinal support and strength. Aluminum litters are no longer authorized for use. The basic design includes ballast weight at the foot end and a removable flotation assembly. Five restraining straps and smooth plastic mesh netting are incorporated for patient restraint. The litter may be a ridged one-piece or foldable two-piece design.

**A.2.e Flotation Kit Requirements**

The flotation kit assembly with ballast weight shall be installed for operations on ships, boats, and helicopters. Stokes litter flotation shall consist of a chest pad, flotation tubes, ballast bar and restraint straps. More recent flotation kit designs incorporate a back pad installed over the plastic mesh netting in the upper portion of the litter. Stokes litters used ashore do not require flotation and ballast, patient restraining straps are required.

**WARNING**

**A SURFACE STOKES LITTER SHALL NOT BE USED FOR HELICOPTER HOISTING.**

**A.2.f Configuration Kits**

Two configuration kits should be maintained for different configuration applications. A surface kit containing four tending lines is used primarily for surface operations. A helicopter hoisting kit containing the standard NATO helicopter-hoisting sling marked "Helicopter Hoistable" is used for helicopter hoisting operations. In no instance shall more than one configuration be rigged simultaneously. Changing stokes litter configurations shall be accomplished in accordance with Maintenance Procedure Cards. The surface stokes litter is not interchangeable with the hoisting stokes litter.

| | |
|---|---|
| **A.2.g Helicopter Hoisting Sling Installation** | The only authorized helicopter hoisting sling to be installed on cutter and boat stokes litters is the NATO hoist sling, national stock number 1670 01 226 5300. The Lifesaving Systems hoist sling, part number 193, is specifically not authorized for cutter and boat stokes litters. The part number 193 hoist sling is a cotter pinned, semi-permanent installation and does not allow detachment of the hoist sling so that surface use tending lines may be installed rapidly. |
| **A.2.h Maintenance and Repair** | Seawater rapidly degrades and/or corrodes stokes litters and associated components. If stokes litters are stored on weather decks, fresh water washes are required weekly. Maintenance requirements can be found on the applicable Maintenance Procedure Cards. Repairs are limited to attached component replacement. Structural repairs to the litter frame are not authorized at the unit level. Structural repairs may be accomplished by the manufacturer. |
| **A.2.i Inspection** | Build-up, quarterly and post use inspection and semi-annual load testing procedures are contained in the applicable Maintenance Procedure Card. |
| **A.2.j Supply Sources** | Stokes litters and associated components shall be procured in accordance with reference (c). See Appendix A for additional known ordering information. |

# A.3 Ring Buoys

**A.3.a Application**

Ring buoys are primarily used for a crewmember overboard. Procedures for its use can be found in reference (f). The ring buoy can be easily deployed from stowage brackets to mark an object or person in the water during daytime or nighttime operations. The floating electric marker light and rescue line throw bag are generally stowed adjacent to the ring buoy.

**A.3.b Salient Characteristics**

The standard ring buoy is available in three sizes, 20, 24, and 30 inches. Ring buoys are constructed of molded unicellular plastic, are inherently buoyant and nylon line is attached around the outside circumference. The ring buoy is colored international orange for high visibility.

**A.3.c Configuration**

The ring buoy shall be fitted with SOLAS grade retro-reflective tape with a minimum of 5 cm (2 inches) width around the ring buoy at four locations spaced equally around the circumference. Retro-reflective material shall be Type II material that is approved under 46 CFR 164.018. Ring buoy identifying markings are in accordance with reference (g).

**A.3.d Maintenance and Repairs**

Maintenance for the ring buoy is accomplished in accordance with Maintenance Procedure Card. Repairs to the ring buoy are limited to line and retro-reflective tape replacement.

**A.3.e Inspection**

Build-up and semi-annual inspection procedures are contained in the applicable Maintenance Procedure Card.

**A.3.f Supply Sources**

Units may obtain acceptable ring buoys from many sources. A listing of approved manufacturers is contained in reference (h). The National Stock System may maintain a supply of ring buoys. Procure in accordance with reference (c). See Appendix A for additional known ordering information.

# A.4 Floating Electric Marker Light

**A.4.a Application**

The floating electric marker light is primarily used to mark the location of a crewmember overboard. Procedures for its use can be found in reference (f). The floating electric marker light can be easily deployed from stowage brackets to mark an object or person in the water during daytime or nighttime operations. An attachment line is used to attach the light to the ring buoy. Units shall keep this line attached at all times. If use of the ring buoy without the light is desired, the attachment line can be quickly disconnected. The floating electric marker light is designed to operate for a minimum continuous duration of 36 hours. The ring buoy and rescue line throw bag are generally stowed adjacent to the Floating Electric Marker Light.

**A.4.b Salient Characteristics**

Any suitable, Coast Guard Approved, floating Electric Marker Light meeting the specifications and certified as outlined in 46 CFR 161.010.

**A.4.c Maintenance and Repairs**

Maintenance for the floating electric marker light is accomplished in accordance with Maintenance Procedure Card. Repairs to the float light are limited to commercially available parts replacements.

**A.4.d Inspection**

Build-up and semi-annual inspections procedures are contained in the applicable Maintenance Procedure Card.

**A.4.e Supply Sources**

Units may obtain brand name or equal floating electric marker light in accordance with reference (c). See Appendix A for additional known ordering information.

# A.5 Rescue Line Throw Bag

**A.5.a Application**

The rescue line-throw bag is used as a survivor retrieving line or to assist in boat handling. It is easy to use and provides quick and accurate deployment of 75 feet of floating line. The line is easily repacked and can be quickly re-deployed as required. It can be used safely for throwing to survivors in the water. The user opens the bag and extracts the looped end of the rope from inside the bag. The loop end, with attached snap hook, is grasped and held firmly as the bag is tossed towards the target. The end loop protrudes through the bottom of the bag and provides a handhold for the survivor to grasp while being rescued. In addition, the snap hook may be attached to the ring buoy and the rescue line deployed as the ring buoy is thrown towards the survivor.

**A.5.b Salient Characteristics**

The line bag is constructed of an international orange nylon cloth or mesh. Hardware or elastic is used to close the bag. A carrying strap is attached which provides for easy retrieval and a handhold for survivors to grasp while being pulled to safety. A foam disk is incorporated in the bag for flotation. The nylon line stowed in the bag is 3/8-inch double braid construction with multi-filament polypropylene core and is 70 to 100 feet long. The nylon provides strength and is abrasion and U/V resistant. The line is brightly colored for high visibility and has excellent flotation characteristics. The nylon line has a working load of 500-pounds.

**A.5.c Maintenance and Repairs**

Repairs of the line-throwing bag are limited to cleaning of the bag and line replacement. Additional inspection procedures for this item are contained in the applicable Maintenance Procedure Card.

**A.5.d Inspection**

Periodically inspect the line-throwing bag for signs of deterioration. Replace line as necessary. Replace bags that are damaged beyond economical repair.

**A.5.e Supply Sources**

Units may obtain brand name or equal rescue line throw bags and associated parts procured in accordance with reference (c). See Appendix A for additional known ordering information.

## A.6 406 MHz Category I and II EPIRBS

**A.6.a Application**

The 406-MHz Category I EPIRB is used aboard cutters for electronic transmission of a data signal that will aid vessel/crew relocation in the event of capsizing, sinking, or abandon ship.

**A.6.b Configuration**

406-MHz Category I EPIRBs are constructed of high impact resistant plastics and are usually brightly colored. Generally, a four-position switch is incorporated that allows the unit to be armed, tested, disabled, or manually activated. A strobe light and antenna are also incorporated. The EPIRB is stored in a bracket that uses a hydrostatic release mechanism designed to allow automatic float-free deployment and activation from the vessel when submerged to an approximate depth of 13 feet. The EPIRB may also be manually released and activated.

**A.6.c Category I, Internal GPS Equipped**

Category I, internal GPS equipped EPIRBs combine the features of the Category I EPIRB with the features of the global positioning system to provide near instantaneous position information from geo-stationary satellites.

**A.6.d Category II**

406-MHz Category II EPIRBs are configured the same as Category I EPIRBs; however, they must be manually deployed and activated. Water activated models are available.

**A.6.e Maintenance and Repair**

Maintenance is limited to fresh water rinsing and testing every 30 days. Repair is not authorized at the unit level. Return EPIRBs to the manufacturers authorized repair facilities for repair or battery replacements.

**A.6.f Inspection**

Registration and 30-day inspection procedures are contained in the applicable Maintenance Procedure Card.

**A.6.g Supply Sources**

Equipment Lists, COMDTINST M16714.3 (series), contains numerous commercial listings for manufacturers of EPIRBs.

# A.7 Other EPIRB Variants

**Overview**

This section contains information about different types of EPIRBs commercially available. This data is provided for informational purposes only and does not establish requirements for use of the items discussed.

**A.7.a Configuration**

Class A EPIRBs are automatic activating, float-free devices that transmit on 121.5/243.0 MHz. Class B EPIRBs are a manually activated version of the Class A device. Class C EPIRBs are manually activated devices that transmit on VHF-FM channels 15 and 16, and are only detectable by aircraft or other surface units. Class S EPIRBs are similar to Class B EPIRBs. Class S EPIRBs either float or they are an integral part of a survival craft.

Class A, B, and S EPIRBs will no longer be available after December 2006. Class C EPIRBs were phased out by the end of 1999 and are no longer authorized for use.

**A.7.b Inmarsat E**

Inmarsat E EPIRBs are automatic activating, float free devices that transmit on 1646 MHz. Inmarsat E EPIRBs are detectable by Inmarsat geo-stationary satellites recognized by the Global Maritime Distress and Safety System. These EPIRBs are not sold in the USA.

**A.7.c 406 MHz Personal Locating Beacon (PLB)**

The 406 MHz PLB is a handheld version of the 406 EPIRB. It must be COSPAS-SARSAT and FCC certified and manufactured for use in the marine environment. It operates on 406MHz and 121.5 MHz. Operating temperature of a Class 1 is -40°F to 13°F. Operating temperature of a Class -2 is -4°F to 131°F.

# Section B. Protective Clothing and Equipment Policy

**Overview**

This protective clothing and equipment policy section establishes the minimum standards for outfitting all personnel carried aboard Boats, as classified in reference (i). Commanding Officers, Officers in Charge, Coxswains, Boarding Officers and all other CG personnel carried in a boat are responsible for compliance with directed standards to assure their personal safety and the safety of others. The wear policies established in this section apply to all CG personnel carried in a boat. Scheduled passengers that may be carried in boats from time to time such as, but not limited to, non-CG military members, members of other government organizations and the media are also required to be outfitted in accordance with these requirements. Unscheduled passengers embarked while the boat is away from the parent unit are exempt from the requirements of this chapter; however, every effort should be made to protect unscheduled passengers to the level prescribed for scheduled crew and passengers. The following policies are established:

- Command responsibility and waiver authorization
- Thermal protection principles
- Government property and personal issue documentation

# B.1 Command Responsibility and Waiver Authorization

**B.1.a Command Responsibility**

The Commanding Officer or Officer-In-Charge must carefully weigh the urgency of each mission. Mission planning for underway operations shall include an assessment of personnel survivability and risk management. This analysis shall be based on the possibility that personnel might be forced into a survival situation during any phase of the mission. All CG personnel and scheduled passengers carried in boats shall wear hypothermia protective devices in accordance with **Figure 3-1: 50/50 Box**. If sea and weather conditions are unknown, CG personnel should always be prepared for the most adverse conditions by carrying extra thermal protection. Commanding Officers, Officers in Charge and Coxswains responsible for shore and cutter based boats shall ensure that all CG personnel understand and comply with these requirements. Specifically, when a boat is deployed from a cutter or station, personnel shall be appropriately outfitted for the environmental conditions expected to be encountered. Regardless of weather and other equipment, personal flotation devices and the boat crew survival vests with properly maintained and functional equipment shall be worn by all CG personnel.

**NOTE**

Scheduled passengers who have not been formally trained to use military specification pyrotechnics shall not wear equipment that contains MK 79 or MK 124 pyrotechnics. Scheduled passengers shall be outfitted with PFDs that contain a whistle and personal marker lights or strobe light.

**B.1.b**
**50/50 Box**

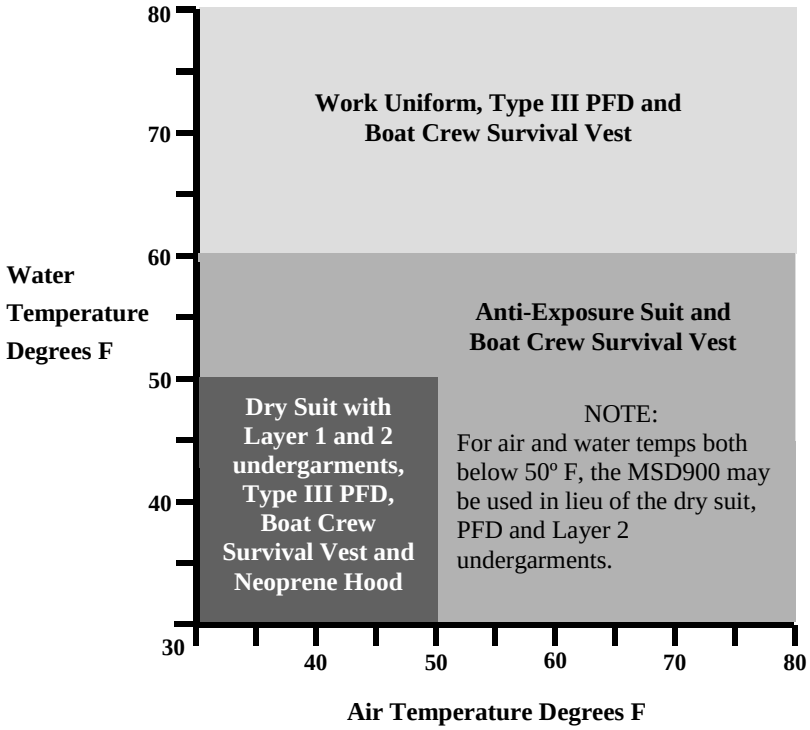



**Figure 3-1: 50/50 Box**

All CG personnel that operate in or are carried by shore or cutter based boats shall wear hypothermia protection and survival equipment indicated in the table (also referred to as the "50/50 box") above. The table reflects the minimum required equipment. Additional protection may be worn at the crewmembers discretion. Use the table as follows:

- Draw a horizontal line across the table that is equal to the water temperature for the mission.
- Draw a vertical line up the table that is equal to the air temperature for the mission.
- Don the equipment identified in the shaded area where the lines intersect.

**B.1.c Hypothermia Protective Device Waivers and Documentation**

Commanding Officers and Officers-In-Charge, on a single mission basis only, may waive the requirement for wearing a hypothermia protective device only after a determination that the risk associated with crew performance degradation, thermal stress, and environmental considerations are offset by the benefits associated with the waiver. **Figure 3-2: Outer Garment Comparison** is provided to assist with risk management decisions associated with waiver consideration. This waiver provision is provided to ensure the unit has optimal flexibility in mission planning. However, the waiver provision is not authorization to justify granting blanket waivers as unit standard operating procedure. Documentation of the factors used to grant a waiver for wearing hypothermia protective devices shall be logged in the unit logbook for each waiver granted. In all single mission waiver cases, CG personnel and scheduled passengers must carry hypothermia protective. Coxswains shall ensure all CG personnel and scheduled passengers don hypothermia protective devices when the conditions considered for granting the waiver are exceeded.

**NOTE**

Commanding Officers and Officers-In-Charge shall document the factors used for determining each waiver granted in unit logs.

**NOTE**

During ATON missions, BU/BUSL, ANB and cable boat crew members may use an anti-exposure coverall in lieu of a dry suit when air and water temperatures are both below 50 degrees at the discretion of the officer in charge.

**NOTE**

Cutter boarding officers and boarding team members are not required to carry hypothermia protective devices on board cutter boats during waiver conditions authorized by the commanding officer or officer in charge.

**B.1.d Boat Crew Survival Vest Waivers and Documentation**

Cutter Commanding Officers and Officers-In-Charge, for individual mission sorties only, may waive the requirement for boarding team members to wear the boat crew survival vest. This waiver provision is provided to ensure the cutter has optimal flexibility in mission planning. However, the waiver provision is not authorization to justify granting blanket waivers as standard operating procedure on cutters for mission types or units. Documentation of the factors used to grant a waiver to boarding team members from wearing boat crew survival vests shall be logged in the cutter logbook for each waiver granted. This waiver provision is provided for cutter based boarding team members only.

**NOTE**

Cutter personnel conducting boarding's and inspection/examination team members are permitted to remove the boat crew survival vest and personal flotation device only after safe embarkation and if in the opinion of the team leader, wearing these items unduly restricts their ability to safely carry out the intervention.

**NOTE**

Aids to navigation teams, operating a standard boat, are permitted to remove the boat crew survival vest while actively engaged in deck operations or working on structures. Upon securing from deck operations and before putting way on for transit, all personnel shall don the boat crew survival vest. For the purposes of this note only, deck operations is defined as working an aid or series of aids in a single mission. Team members would not be required to don the vest while transiting from aid to aid in a series. In addition, aids to navigation teams underway on standard boats at anchor for crew rest may relax the requirements directed by **Figure 3-1: 50/50 Box** at the coxswain's discretion.

**B.1.e Outer Garment Comparison**

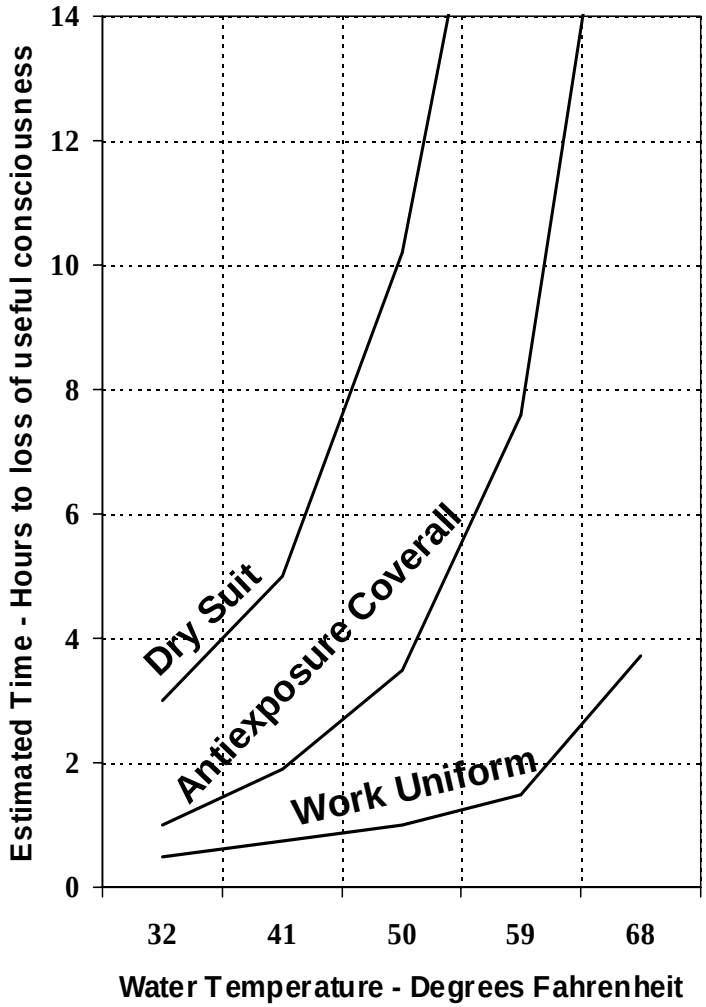



**Figure 3-2: Outer Garment Comparison**

## B.2 Thermal Protection Principles

**B.2.a Garment Layering**

Garment layering is the method of using thinner to progressively thicker thermal undergarments and outer shell garments to achieve the protective properties necessary to slow down the hypothermia process on the body. CG personnel engaged in waterborne operations operating in cold temperatures are authorized basic and cold weather personal protective equipment. Personnel shall wear Layer 1 (wicking) and Layer 2 (fleece) thermal underwear under the dry suit for added insulation. By layering underwear, crewmembers can achieve maximum protection from hypothermia under most conditions.

**B.2.b Three Layer Protection**

Garment layering is usually accomplished with three layers of protection. First layer protection is that layer that lies directly against the skin. Second layer protection is the layer that adds additional thermal protection. Third layer protection is the outer garment selected to stop intrusion of wind and water.

**B.2.c First Layer**

Staying dry is essential to warmth. Clothing worn next to the skin must carry or "wick" moisture away from the body. The first layer alone provides a minimum level of hypothermic protection when worn beneath an outer garment. A Lightweight and / or medium weight synthetic underwear shall be used as first layer protection.

**WARNING**

**COTTON SHALL NOT BE WORN AS FIRST LAYER PROTECTION. COTTON ABSORBS AND RETAINS MOISTURE, ROBBING BODY HEAT AND CAN CAUSE RAPID ONSET OF HYPOTHERMIA.**

**B.2.d Second Layer**

The insulating effect of a fabric is related to how much warm air is trapped by it. Loose-knit or fuzzy material is better than one that is tightly knit. Two thin layers of a given material are better than one thick one. The second layer traps air, which will retain body heat, while absorbing and transferring excess moisture from the first layer. Exotherm ® I, II and III fleece undergarments shall be used as second layer protection.

**B.2.e Third Layer**

Outer layer garments should stop wind and water intrusion so the inner layers can work as designed. Third layer garments include the anti-exposure coverall, dry suit, or raingear. Personnel shall select the outer garment directed for use by **Figure 3-1: 50/50 Box** for the conditions anticipated for each mission.

## B.3 Government Property and Personal Issue Documentation

**B.3.a Government Property**

All PPE items required by the policies listed in this manual remain the property of the Coast Guard.

**B.3.b Inspection**

The protective clothing and equipment identified in this manual are subject to inspection and associated maintenance procedures to ensure high quality is maintained, and prolong product longevity. Each section identifies inspection and maintenance requirements for the clothing or equipment discussed. Personnel issued PPE are responsible for maintaining that issue. It is intended that individuals receiving personally issued PPE items perform the required inspection and associated maintenance requirements. Prior to each use, personnel who are issued PPE shall inspect each item for any discrepancies that would compromise integrity. Discrepancies shall be corrected prior to use. Seawater rapidly degrades protective clothing and equipment. At a minimum, after each use, protective clothing and equipment shall be fresh water rinsed to remove all traces of seawater and allowed to completely dry before stowage.

**B.3.c Issue**

This manual in conjunction with reference (b) provides authority to individually issue personal protective equipment. The guidelines for accountability of personally issued protective clothing and equipment contained in this manual shall be strictly adhered to.

**B.3.d Issue Documentation and Accountability**

Personal Clothing and Equipment Record, AF Form 538, shall be used to document all issues of personal PPE items. Accountability is maintained by the issuing command through periodic inventory inspections. Document inventory inspections on AF Form 538 annually. These annual inventory inspections are useful in determining unit needs for maintaining an inventory of protective clothing and equipment for issue, recurring replacement costs associated with personally issuing clothing and equipment, and to ensure that periodic inspection and associated maintenance procedures are being accomplished. The unit's Rescue and Survival Systems Petty Officer shall perform the annual inventory inspections for each set of protective clothing and equipment issued to unit personnel. The inspection shall be entered into AOPS TMT by the unit AOPS administrator.

**B.3.e Personnel Transfer**

It is intended that personal clothing and equipment issued to personnel at shore based boat units be transferred to the new unit when permanent change of station occurs. If the new assignment does not require the use of boat crew clothing and equipment, all items issued shall be returned to the issuing command prior to personnel transfer.

**B.3.f AF Form 538**

Document all issues and returns of protective clothing and equipment on AF Form 538. Lines 1 through 20 of the form are used to identify each item issued by article name, serial number (if applicable), quantity issued, size, and date of issue or turn-in. Use lines 23 through 27 to identify the unit and the individual receiving the issue. Section 28 shall be used to document annual inventory inspections and shall be signed by the individual performing the inspection and the individual accountable for the items. Maintain the unit's AF Form 538 file in a controlled area. Copy the form and forward the original to the new unit upon a member's permanent change of station. Personal Clothing and Equipment Record, AF Form 538, is available on the standard workstation in USCG Forms.

**B.3.g Reclamation Control**

The RSS Petty Officer will reclaim items based on **Figure 3-3: Reclamation Control** below when the individual assigned the equipment is either transferred to a non Boat Forces unit or when separating from the service.

Returnable items issued to Cutter personnel should remain with the Cutter.

| RETURNABLE ITEMS | NON-RETURNABLE ITEMS |
|---|---|
| Helmet | Boat Shoes |
| Raingear | Sunglasses |
| Goggles | Gloves and Waterproof Inserts |
| Parachute Bag | Safety Boots |
| Knife | Layer 1 Thermal Protection |
| Anti-Exposure Coverall | Thermal Socks |
| Layer 2 Thermal Protection | Cold Weather Glove Layer 1 |
| Dry Suit | Insulated Boots |
| Cold Weather Gloves Layers 3 and 2 | |

**Figure 3-3: Reclamation Control**

**B.3.h Equipment Sizing**

Equipment is normally available in sizes ranging from the fifth percentile female to ninety-fifth percentile male. If standard sized equipment does not provide the proper fit and the manufacturer is unable to provide special sizing to meet personnel needs, units are authorized to purchase an alternative item that most closely meets the characteristics of the standard equipment.

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## Section C. Basic Clothing and Equipment

**Overview**

This section describes the minimum outfit of basic clothing and equipment required to meet CG personnel survivability strategy. The basic clothing and equipment items presented in this section are the standard by which funding is justified and represent the minimum inventory of survival clothing and equipment required by individual personnel. Other equipment may be required at individual units. Basic clothing and equipment are issued to all persons engaged in waterborne operations to include: coxswains, crewmembers, boarding officers and boarding team members assigned to cutters, stations, aids to navigation teams, MSSTs, PSUs and designated inspection/examination team members. Items listed in **Figure 3-4: Basic Clothing Issue** are presented and shall be issued in the quantities shown below.

| QTY | ITEM |
|---|---|
| 1 each | Helmet |
| 1 set | Raingear |
| 1 pair | Boat Shoes (Optional, only if required) |
| 1 pair | Gloves and Waterproof Inserts |
| 1 pair | Goggles (prescription lens procured from unit funds) |
| 1 each | Parachute Bag |
| 1 pair | Sunglasses (prescription lenses may be available from medical) |
| 1 each | Knife |
| 1 pair | Safety Boots |
| 1 each | Anti-Exposure Coverall |

**Figure 3-4: Basic Clothing Issue**

**NOTE**

Anti-exposure coveralls are no longer required to be personally issued at shore units and cutters assigned to CG Sectors Guam, Honolulu, Key West, Miami and San Juan.

# C.1 Helmet

**C.1.a Application**

CG personnel shall wear head protection during hazardous conditions such as boat lowering detail, heavy weather, surf, and helicopter operations as defined in reference (f). Coxswains shall ensure all crewmembers wear head protection with chinstraps securely fastened snuggly around the chin during hazardous conditions or when, in the judgment of the coxswain, the situation warrants head protection use.

**C.1.b Salient Characteristics**

The boat crew helmet is a red, lightweight plastic outer shell, with a closed cell foam lining and corrosion resistant hardware. SOLAS grade retro-reflective tape is applied for increased visibility in low-light environments. A 2-inch by 3-inch piece of pile tape is affixed to the helmet for attaching the strobe light/PLB. A removable visor may be installed. Openings allow for heat venting, hearing and rapid draining of water. The adjustable neck strap restraint system shall have a suitable fastening device centered in the chin area.

**C.1.c Maintenance and Repair**

Clean the helmet with mild soap and water. Repairs are limited to replacement of the visor, retro-reflective tape and pile tape.

**C.1.d Inspection**

Inspect the helmet shell, retention strap, visor, interior pads, hardware, retro-reflective tape and pile tape for material condition. If discrepancies are found repair or replace helmet.

**C.1.e Exception to Policy**

Based on mission needs, MSST's, PSU's and TACLETS may wear a subdued color version of the helmet above as long as the alternative helmet is personally issued and a 2" by 3" piece of pile tape has been affixed.

**C.1.f Supply Sources**

Units may obtain brand name or equal helmets procured in accordance with reference (c). See Appendix A for additional known ordering information.

## C.2 Rain Gear

**C.2.a Application**

Rain gear shall be worn as the primary layer 3 garment when exposure to intermittent sea spray or rain is encountered. This suit is not designed to preclude the entry of water upon immersion and provides little protection from the cooling effects of unintended immersion in water.

**WARNING**

**RAINGEAR HAS NO INHERENT BUOYANCY. PERSONAL FLOTATION DEVICES SHALL BE WORN WITH RAINGEAR.**

**C.2.b Salient Characteristics**

Raingear consists of a coat and pants constructed of Pantone Color® Warm Red C or 172 C waterproof and breathable tri-laminate fabric. Seams are stitched and sealed from water intrusion with seam tapes. Jackets shall have an attached hood with drawstring closure, adjustable wrist cuffs, SOLAS grade retro-reflective tape and "U. S. COAST GUARD" printed on the back in 1 ½ to 3 inch high white or black solid block lettering. Pants shall have an elastic waistband with drawstring closure and adjustable ankle cuffs.

**C.2.c Exception to Policy**

Units authorized to wear the camouflage utility uniform (CUU) are considered to have met the rain gear personal issue requirement if the CUU compatible GORE-TEX rain gear is personally issued. Both types of raingear need not be personally issued. Units shall not divert PPE funding from other required items to make up possible funding shortfalls resulting from the price difference in raingear.

ATON units may issue a secondary PVC style rain gear meeting all other above mentioned SPECS for wear during ATON specific work when increased risk of destroying the rain gear is likely.

**C.2.d Maintenance and Repair**

Generally raingear is replaced when worn to the point of showing discrepancies.

**C.2.e Inspection**

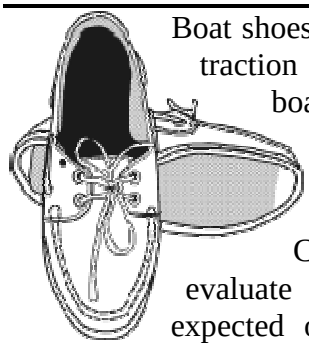
Inspect the raingear for tears or holes. Minor holes and tears can be patched. Replace badly damaged or excessively worn raingear.

**C.2.f Supply Sources**

Units may obtain brand name or equal rain gear procured in accordance with reference (c). See Appendix A for additional known ordering information.

# C.3 Boat Shoes

**C.3.a Application**



Boat shoes are worn when working aboard boats where non-slip traction and non-marking soles are required, such as when boarding recreational boats.

Boat shoes provide little protection from hypothermia and no crush protection for the toes. Commanding Officers and Officers-In-Charge shall evaluate the need to outfit boat crewmembers to meet the expected operational mission. Purchase boat shoes only if operational mission requires their use.

**C.3.b Configuration**

Boat shoes have skid resistant non-marking soles. The uppers shall be dark brown leather and lace closed.

**C.3.c Maintenance and Repair**

Maintenance is limited to cleaning and polishing. Laces can be replaced as needed. It is usually not cost advantageous to repair boat shoes. If repair is considered, use local repair shops but do not exceed the cost of replacement shoes. Replace boat shoes with soles worn beyond tread depths.

**C.3.d Inspection**

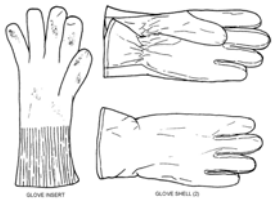
Inspect boat shoes for general condition. Replace as necessary.

**C.3.e Supply Sources**

Boat shoes shall be procured in accordance with reference (c) and listed in Appendix A through the Coast Guard Uniform Distribution Center using a Procurement Request, DOT Form 4200.1.2CG. The Uniform Distribution Center stock identification is listed as Boat Shoe Dark Brown Female or Boat Shoe Dark Brown Male. Sizes for female shoes range from 5 through 9½, widths of medium and wide. Sizes for male shoes range from 6 through 15, widths of medium and wide. Half sizes are available for both female and male shoes.

# C.4 Gloves

**C.4.a Application**



Gloves shall be worn as required to provide thermal protection in intermediate cold/wet weather. The glove should be adequate for a variety of general purposes and be durable enough to withstand the marine environment.

**C.4.b Characteristics**

The glove should be water resistant/waterproof. The glove may be of a full finger, long-finger or short-finger style. Weapon and tool use should be considered when selecting glove style. Palm and fingers should be constructed of durable materials such as Proton®, AMARA® or Kevlar®.

**NOTE**

Intermediate gloves will provide limited protection from hypothermia when wet inside. During operations where additional protection from hypothermia is required, a cold weather glove system shall be used.

**WARNING**

**THE WEARER SHOULD EXERCISE EXTREME CARE WHEN WEARING GLOVES TO AVOID CATCHING FINGERS OR HANDS BETWEEN A LINE AND A CLEAT, CAPSTAN OR BITT.**

**C.4.c Maintenance and Repair**

Maintenance is limited to cleaning. It is usually not cost advantageous to repair gloves and inserts. Replace gloves and waterproof inserts as required.

**C.4.d Inspection**

Inspect the gloves for general condition. Replace as necessary.

**C.4.e Supply Sources**

Gloves meeting the above characteristics are available from various GSA Schedules and Gill, Harken, Musto, Outdoor Research (OR), Ronstan. Procure in accordance with reference (c). See Appendix A for additional known ordering information.

# C.5 Goggles

**C.5.a Application**

Personnel operating in an environment where wind, spray and water may cause injury or hamper vision, such as during helicopter operations shall wear goggles.

**C.5.b Salient Characteristics**

Goggles consist of a black synthetic rubber or foam face frame with plastic non-fogging and 100% UV protective lenses. Goggles are universally sized and come equipped with an adjustable elastic headband. When required, the goggles shall be of a design that allows prescription lenses to be fitted.

**C.5.c Prescription Lenses**

Personnel needing prescription eyewear are authorized to have corrective lenses procured for their goggles. Over the glasses type goggles do not provide the level of protection necessary to perform boat crew duties.

**C.5.d Maintenance and Repair**

Maintenance is limited to replacement of the headband and lenses. Clean lenses with lint free cloth and anti-fogging compound, national stock number 6850 00 754 2671.

**C.5.e Inspection**

Inspect goggle lenses for cracks and scratches and the headband for elasticity. Replace goggles as necessary.

**C.5.f Supply Sources**

Procure goggles, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. Corrective lenses can be procured from SPEX USA and prescription inserts can be procured from BOLLE. When ordering, specify Water-Goggle, black, with plain black strap, clear or gray, with non-polarized lenses only.

## C.6 Parachute Bag

**C.6.a Application**

Personnel issued protective clothing and equipment shall use this bag for gear storage.

**CAUTION !**

DO NOT STORE WET OR DAMP EQUIPMENT IN THE PARACHUTE BAG. DAMAGE TO EQUIPMENT WILL OCCUR. ALLOW ALL EQUIPMENT TO COMPLETELY DRY BEFORE STOWAGE.

**C.6.b Configuration**

The parachute bag is made of nylon or canvas duck material. It has a slide fastener opening and two webbing carrying handles. It is large enough to stow all basic and cold weather clothing.

**C.6.c Maintenance and Repair**

Maintenance of the bag is limited to minor repairs of holes and seams. Replace worn or damaged bags as necessary.

**C.6.d Supply Sources**

The bag is procured in accordance with reference (c). See Appendix A for additional known ordering information.

# C.7 Sunglasses

**C.7.a Application**

Sunglasses shall be worn by personnel to prevent radiation trauma. Sunglasses provide crewmembers protection from the sun's glare and reflection off the water. Use sunglasses during searches to enhance search operations.

**NOTE**

Prescription sunglasses may be available from the Naval Ophthalmic Support & Training Activity (NOSTRA). Contact your MTF or HBA for assistance.

**C.7.b Characteristics**

Sunglasses shall meet or exceed ANSI Z87.1+ and Z80.3 standards. Sunglasses shall be impact resistant and provide at least 98 percent UVA and 100 percent UVB protection. Lenses should be Neutral/Neutral Slate/Green Smoke/ Gray in color. Sunglasses shall conform to the guidelines set forth in reference (j) for Military appearance.

**WARNING**

**SUNGLASSES ARE IMPACT RESISTANT. HOWEVER, THEY WILL BREAK AND DO NOT PROVIDE AN UNBREAKABLE SHIELD AGAINST EYE INJURY.**

**C.7.c Maintenance and Repair**

Sunglasses shall be cleaned following the manufacturers recommendations. Replacement of broken parts is authorized in modular designed sunglasses.

**C.7.d Inspection**

Inspect lenses for cracks and scratches. Replace sunglasses as necessary.

**C.7.e Supply Sources**

Procure sunglasses, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# C.8 Temperate/Wet Weather Boot

**C.8.a Application**

Personnel shall wear the temperate/wet weather boots in air and water temperatures above 50 degrees Fahrenheit. The boot is designed to protect the wearer's foot from immersion, thermal injury and impact.

**C.8.b Salient Characteristics**

The boot shall be waterproof/breathable, if constructed of leather the leather will be water-Resistant/breathable, the boot shall meet ANSI safety standards; with a Non-metallic safety toe box. The boot shall contain shock absorbing soling properties. A boot with a removable liner is optimal. The boot should be at least 8 inches high.

**NOTE**

This boot offers protection from the cold wet environment, but is not intended to replace the insulated boot designated for use as extended hypothermia protective equipment in extreme cold temperatures, heavy weather and surf.

**C.8.c Maintenance and Repair**

Maintenance is limited to cleaning and polishing. Laces can be replaced as needed. It is usually not cost advantageous to repair safety boots. If repair is considered, use local repair shops but do not exceed the cost of replacement boots. Repair or replace boots with soles worn beyond tread depths. Stow boots in a dry atmosphere.

**C.8.d Inspection**

Inspect boots for general condition, if the boots exhibits wear such that safety protection is no longer afforded replace the boot as necessary.

**C.8.e Supply Sources**

Temperate/wet weather boots shall be procured in accordance with reference (c) and listed in Appendix A through the Coast Guard Uniform Distribution Center (UDC) using a Procurement Request, DOT Form 4200.1.2CG. The UDC stock number is listed as the boot size and width prefaced by "SSB". Sizes range from 4 narrow to 16 extra-wide. Width designations are "N" for narrow, "R" for regular, "W" for wide and "XW" for extra-wide. Examples of the complete stock numbers are shown below:

| | |
|---|---|
| SSB91/2XW | Size nine and a half extra-wide boots |
| SSB5N | Size five narrow boots |

# C.9 Anti-Exposure Coveralls

**C.9.a Application**

Personnel shall wear anti-exposure coveralls when operating in conditions requiring anti-exposure coverall use. Refer to Figure 3-1 to determine when anti-exposure coverall use is required. The Anti-exposure coverall is the primary layer three garment worn when exposure to intermittent sea spray or rain is encountered and thermal protection is also required. This suit is designed to permit the entry and exit of water upon immersion.

**C.9.b Configuration**

Anti-exposure coveralls are constructed of a urethane coated nylon fabric with a closed cell foam interlining. Sleeve and leg openings can be closed tightly around the wrist and ankles; however they do not provide a watertight seal. Anti-exposure coveralls provide 22 to 45 pounds of buoyancy (depending on size) and feature, an attached orally inflated pillow to support the wearer's head in the water, an attached hood for extra thermal protection, and retro-reflective tape on the hood and shoulders is applied for increased visibility in low-light environments. Seven sizes range from extra small to extra-extra-extra large. If the boat crew survival vest is not worn over this PFD, a personal marker light or strobe light and the whistle are required.

**C.9.c Salient Characteristics**

Anti-exposure coveralls shall be USCG approved per the requirements set forth in 46CFR160.053. The suit shall incorporate 62 sq. inches of SOLAS grade retro-reflective material that would be visible above the water's surface from all directions while the wearer is floating upright with legs and torso submerged in chest deep water. The suit shall be orange or orange and black. Manufacturers marking should be kept to a minimum and not distract from the military appearance of the garment.

**C.9.d Maintenance and Repair**

Maintenance is limited to cleaning of the coverall and lubrication of slide fasteners. Repairs are authorized only to the limits of the unit's capabilities. Commercial repairs are authorized; contact the manufacturer for repair facilities.

**C.9.e Inspection**

Build-up procedures and semi-annual inspections are contained in the applicable Maintenance Procedure Card.

**C.9.f Supply Sources**

Procure Anti-exposure coveralls, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. Specify orange/black when ordering.

# Section D. Cold Weather Clothing and Equipment

**Overview**

This section describes the minimum outfit of cold weather clothing and equipment required to safely perform the duties required of personnel operating shore and cutter based boats in areas where the air and water temperatures both fall below 50 degrees Fahrenheit. The cold weather clothing and equipment items presented in this section are the standard by which funding is justified and represent the minimum inventory cold weather survival clothing and equipment required by personnel engaged in waterborne operations. Other equipment may be required at individual units. Cold weather clothing and equipment are issued to all personnel meeting the criteria and operating in the following geographic regions:

- District 1, 5, 9, 11 (except Sector San Diego units), 13 and 17 station and aids to navigation units, and Sector Charleston.
- District 8 station and aids to navigation units located north of 31 Degrees Latitude.
- Cutters operating in district 1, 5, 9, 11 (except Sector San Diego units), 13 and 17
- Cutters operating in district 7 north of Florida and district 8 north of Louisiana

Items noted on **Figure 3-5: Cold Weather Clothing Issue** shall be issued in the quantities shown below.

| QTY | ITEM |
|---|---|
| 1 each | Maritime Cold Weather Suit System (provides Layer III protection) |
| 1 each | Industrial type Dry Suit (provides Layer III & II protection) |
| 1 pair | Insulated boots |
| 2 sets | Thermal underwear (1 set Layer I synthetic and 1 set Layer 2 polar fleece) |
| 2 pair | Thermal socks |
| 1 each | Balaclava |
| 1 each | Watch cap |
| 1 each | Cold weather glove layers (1 pair of each component) |
| 1 each | Neoprene hood |

**Figure 3-5: Cold Weather Clothing Issue**

**NOTE**

The MCWSS is the primary Dry Suit worn by CG personnel. The Industrial type dry suit is primarily intended for the ATON community or whenever a more forgiving (wear and tear) suit is indicated.

# D.1 Layer III Garment

**D.1.a Application**

The Maritime Cold Weather Suit System (MCWSS) is the primary dry suit worn by CG personnel when operating in conditions requiring dry suit use. Refer to Figure 3-1 to determine when dry suit use is required. A dry suit is the primary layer three garment worn when a constant wear suit designed to preclude the entry of water upon immersion is needed.

**D.1.b Salient Characteristics**

The MCWSS is constructed in accordance with the dry suit specifications maintained on file at U. S. Coast Guard Headquarters, Office of Boat Forces. The MCWSS is orange and black color combination, waterproof and breathable (moisture vapor permeable) fabric. Seams are stitched and sealed with seam tapes. Sleeve and neck openings maintain watertight integrity from latex rubber/neoprene seals. Sock type feet are integrated into the legs. The knee and seat portions of the suit are reinforced. Retro-reflective material is applied for increased visibility in low-light environments. The MCWSS is available in sizes ranging from small to extra-extra large. Custom sizing may be available. The Neoprene Hood, section C.6, is required to be carried on the person when wearing the dry suits.

**NOTE**

The MCWSS or other dry suit may be authorized in additional color schemes for authorized mission types.

**D.1.c WARNING**

**DRY SUITS ALONE PROVIDE INADEQUATE INSULATION FOR HYPOTHERMIA PROTECTION. PERSONNEL SHALL WEAR LAYER 1 SYNTHETIC AND LAYER 2 FLEECE THERMAL UNDERWEAR BENEATH THE DRY SUIT TO PROVIDE PROTECTION FROM COLD TEMPERATURE, WIND, SEA SPRAY AND RAIN.**

**D.1.d WARNING**

**DRY SUITS ARE NOT INHERENTLY BUOYANT. PERSONAL FLOTATION DEVICES SHALL BE WORN WITH DRY SUITS.**

**D.1.e Maintenance and Repair**

Maintenance is generally limited to cleaning of the MCWSS, lubrication of slide fasteners and application of 303 Aerospace Protectant™ to latex seals. Repairs to the MCWSS fabric are not authorized by unit personnel. Replacement of latex seals is authorized. Contact the manufacturer for gasket repair tool kits and replacement instructions.

| | |
|---|---|
| **D.1.f Inspection** | Personal issue build-up procedures and semi-annual inspections shall be performed in accordance with the applicable Maintenance Procedure Card. |
| **D.1.g Supply Sources** | The Rescue and Survival Systems Program Manager retains the sole authority to initiate contracts for dry suits worn by CG personnel engaged in waterborne operations. Units shall only procure an approved dry suit.<br><br>A list of approved dry suits and contract(s) is available by contacting the Rescue and Survival Systems Program Manager. |

# D.2 MCWSS Wear and Maintenance

**D.2.a**
**Donning**

**WARNING**

**USE OF COMFORT DEVICES TO STRETCH THE NECK OR WRIST SEALS AWAY FROM THE SKIN SUCH AS NECK RINGS OR O-RING COMFORT DEVICES ARE NOT AUTHORIZED AND SHALL NOT BE USED.**

**CAUTION !**

USE EXTREME CAUTION WHEN DONNING THE MCWSS. PRIOR TO DONNING THE MCWSS, REMOVE ALL RINGS, WATCHES, EARRINGS, NECKLACES AND EYEGLASSES THAT WILL CAUSE DAMAGE TO WRIST AND NECK SEALS.

Use the following procedure to put on the Maritime Cold Weather Suit System. Follow the steps closely to ensure proper sealing of neck and wrist seals.

1. Lubricate inside of the neck and wrist seals with unscented talc.
2. Don layer 1 polypropylene followed by layer 2 fleece insulating undergarments.
3. Don the MCWSS in the same fashion as donning coveralls, entering it one leg at a time.
4. Pull the bottom section of the suit up to the waist and place arms into the sleeves.
5. Gently push one hand through the wrist seal at a time using the index finger of the opposite hand to stretch the seal as you push your hand through. Repeat for opposite hand. Make sure insulating undergarments are not sandwiched between seal and skin and flatten any folds or rolls of the seal flat against the skin.

**NOTE**

Use only one or two fingers to pull the entry and relief slide fasteners closed. If more force is required, the slide fastener may not be properly aligned or lubricated. If difficulty is encountered when closing slide fasteners, stop immediately, back the slide up and check for the cause of the interference. Correct the problem before proceeding. The slide fastener must be snug tight against the sealing plug. Use paraffin to lubricate the slide fastener.

**D.2.b Donning Procedure continued**

6. Bring the upper portion of the suit over the head, aligning the neck opening with the top of the head. Reach inside the top of the neck seal with the fingers and gently pull the seal outward and down as you push your head through. Ensure insulating undergarments are not sandwiched between seal and skin, and flatten any folds or rolls of the seal flat against the skin.
7. Close the entry and relief slide fasteners. Have a fellow crewmember double check slide fastener to ensure it is closed completely against the sealing plug.
8. Remove excess air from the suit by sliding fingers under the neck seal and squatting down, pull arms tight against the chest and release seal

**D.2.c Doffing Procedure**

Use the following procedure to take off the dry suit.

1. Remove all other equipment donned over the dry suit before removing the dry suit.
2. Wash down the dry suit while wearing it paying particular attention to entry and relief slide fasteners. Remove all traces of salt.

**CAUTION!**

FAILURE TO COMPLETELY OPEN SLIDE FASTENER WILL DAMAGE THE SUIT WHEN IT IS REMOVED.

3. Completely open the entry slide fastener.
4. Insert fingers between neck seal and neck. Gently stretch the seal outward and upward while pulling head from seal and shoulders and head out of the suit.
5. Insert two fingers under wrist seal and gently pull seal outward. Cup the hand, fingertips and thumb together, and gently pull hand from seal. Repeat for other hand.
6. Remove legs from suit. Insert a wide dry suit hanger out through the neck seal, close entry slide fastener half way and hang until dry.

# D.3 Industrial Style Dry Suit

**D.3.a Application**

Coxswains, crewmembers, boarding officers and boarding team members may use the Industrial breathable marine survival system in lieu of the MCWSS when operating in conditions requiring dry suit use. Refer to Figure 3-1 to determine when a dry suit is required. The Industrial style dry suit is designed for more industrial applications such as aids to navigation maintenance, buoy deck operations, fisheries boardings and other applications where damage to the suit is likely to occur. The Industrial dry suit provides 16 pounds of buoyancy with the head pillow inflated as well as layer two thermal protection. PFDs may be worn over the suit but are not required. The boat crew survival vest is required to be worn over the suit and Layer 2 synthetic thermal underwear is required against the skin beneath the suit.

**D.3.b Configuration**

The Industrial dry suit provides hypothermia protection and inherent buoyancy using three interconnected modules to form a single system. The thermal/flotation module is a breathable foam thermal liner which functions as layer two protection and provides inherent buoyancy. The immersion module is constructed of a waterproof and breathable (moisture vapor permeable) fabric that provides the suit with watertight integrity. **Sleeve openings maintain watertight integrity from neoprene seals and the neck opening is constructed of a waterproof stretch nylon material that seals water out when the elastic drawstring is pulled tight.** Sock type feet are integrated into the legs. The outer shell module is constructed with an orange and black urethane-coated nylon that provides a durable water-resistant barrier to wind, sea spray and rain. Knee and seat portions of the outer shell are reinforced and an attached foam-lined thermal hood is required to be worn if a crewmember enters the water.

**D.3.c Maintenance and Repair**

Maintenance is limited to cleaning and lubrication of all slide fasteners in accordance with maintenance procedure card. Stitch type repairs can be made to the outer shell and thermal/flotation module. Contact the manufacturer for repairs to the immersion module.

**D.3.d Inspection**

Personal issue build-up procedures and semi-annual inspections are contained in the applicable Maintenance Procedure Card.

**D.3.e Supply Sources**

The Industrial Style Dry Suit is procured in accordance with reference (c). See Appendix A for additional known ordering information.

**D.3.f MSD901 Donning Procedure**

**WARNING**

**USE OF COMFORT DEVICES TO STRETCH THE NECK OR WRIST SEALS AWAY FROM THE SKIN SUCH AS NECK RINGS OR O-RING COMFORT DEVICES ARE NOT AUTHORIZED AND SHALL NOT BE USED.**

**WARNING**

**THE MSD901 SHALL BE WORN WITH ALL THREE MODULES COMPLETELY ASSEMBLED.**

**CAUTION !**

USE EXTREME CAUTION WHEN DONNING THE MSD900. PRIOR TO DONNING THE MSD901, REMOVE ALL RINGS, WATCHES, EARRINGS, NECKLACES AND EYEGLASSES THAT WILL CAUSE DAMAGE TO WRIST AND NECK SEALS.

**D.3.f MSD901 Donning Procedure continued**

Use the following procedure to put on the MSD901. **Follow the steps closely to ensure proper sealing of neck and wrist seals**.

1. Ensure the MSD901 is completely assembled in accordance with maintenance procedure card.
2. Completely loosen the neck seal.
3. Ensure the wrist, thigh and ankle adjustments are loose.
4. Completely open the chest zipper.
5. Completely open the waterproof circumference zipper.
6. Don layer 1 polypropylene undergarment.
7. Fold the upper portion of the suit forward at the waist and slide one leg at a time into the suit until your toes reach the end of the socks.
8. Pull the bottom section of the suit up to the waist and place arms into the sleeves.
9. Gently push one hand through the wrist seal at a time using the index finger of the opposite hand to stretch the seal as you push your hand through. Repeat for opposite hand. Make sure insulating undergarments are not sandwiched between seal and skin and flatten any folds or rolls of the seal flat against the skin.
10. Bring the upper portion of the suit over the head, aligning the neck opening with the top of the head. Reach inside the top of the neck seal with the fingers and gently pull the seal outward and down as you push your head through. Make sure insulating undergarments are not sandwiched between seal and skin and flatten any folds or rolls of the seal flat against the skin.
11. Fold the waterproof zipper cover out of the way.
12. Grasp the end of the waterproof zipper on your right side and the zipper pull with the opposite hand.

**D.3.f MSD901 Donning Procedure continued**

13. Pull the zipper closed completely around the waist circumference ensuring the zipper is tight against the sealing plug.

**WARNING**

**FAILURE TO COMPLETELY CLOSE THE WATERPROOF ENTRANCE AND RELEIF ZIPPERS TO THE SEALING PLUG WILL ALLOW WATER TO LEAK INTO THE SUIT RESULTING IN DRASTIC LOSS OF SURVIVAL TIME.**

14. Pull relief zipper closed completely ensuring the zipper is tight against the sealing plug.
15. Fold the waterproof zipper cover closed over the zipper.
16. Buckle the waist belt and adjust to a comfortable fit.
17. Adjust and close the ankle and thigh adjustment straps.
18. Grasp and pull the neck seal drawstring to **ensure a watertight and comfortable fit**.

19. Secure the end of the neck seal drawstring to the tab under the outer collar.

**D.3.g Doffing Procedure**

Use the following procedure to take off the MSD901:

1. Remove all other equipment donned over the MSD901 before proceeding.
2. Wash down the MSD901 while wearing it paying particular attention to entry and relief slide fasteners. Remove all traces of salt.
3. Unbuckle the waist belt and release the ankle, wrist and thigh adjustment straps.

**CAUTION!**

FAILURE TO COMPLETELY OPEN SLIDE FASTENER WILL DAMAGE THE SUIT WHEN IT IS REMOVED.

4. Fold the waterproof zipper cover out of the way. Completely open the waterproof zipper.
5. Completely loosen the neck seal drawstring and open the chest zipper.
6. Insert fingers between neck seal and neck. Gently stretch the seal outward and upward while pulling head from seal and shoulders and head out of the suit.
7. Insert two fingers under wrist seal and gently pull seal outward. Cup the hand, fingertips and thumb together, and gently pull hand from seal. Repeat for other hand.
8. Remove legs from suit. Hang the suit by the hanging loop, close waterproof zipper half way and hang until dry.

# D.4 Insulated Boots

**D.4.a Application**

Coxswains, crewmembers, boarding officers, boarding team members and inspection teams working in a cold, wet environment aboard boats should wear the intermediate cold wet or insulated rubber boot. Boot design includes thermal insulation and protects the wearer's foot from immersion, thermal injury and impact.

**D.4.b Salient Characteristics**

The rubber insulated boot; is 10 to 16 inches high, slip on with a drawstring top closure and 100% waterproof upper and a non-marking/non-slip waterproof outsole. A non-metallic safety toe is preferred. Acceptable colors for the rubber boot are black, navy or dark green.

The Intermediate Cold Wet boot; is a 10-inch high boot constructed of waterproof, breathable leather with a waterproof breathable membrane package and thermal insulation. It has shock attenuating soling system, a non-metallic safety toe and fiberglass shank.

Insulated boots are available in sizes 7 through 15.

**D.4.c Maintenance and Repair**

Maintenance is limited to cleaning the outsole and inner liner. No repairs are authorized. Replace boots with holes or leaks. Stow boots in a dry area.

**D.4.d Inspection**

Inspect boots for general condition, if the boots exhibits wear such that safety protection is no longer afforded replace the boot as necessary.

**D.4.e Supply Sources**

Procure insulated boots, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

## D.5 Thermal Underwear

**D.5.a Application**

Personnel shall wear Layer 1 and Layer 2 thermal underwear as part of the MCWSS. Light and/or medium weight synthetic thermal underwear is first layer protection worn directly against the skin. Light, medium and heavy weight fleece is second layer protection worn over the first layer. Refer to Figure 3-1 for policy on when to use thermal underwear.

**D.5.b Configuration**

First layer light and medium weight synthetic thermal underwear are separate shirt and long drawers. Light, medium and heavy weight fleece are single piece jumper style. Two-piece fleece configurations are available for use under drop seat dry suits.

**WARNING**

**COTTON LONG UNDERWEAR SHALL NOT BE WORN FOR THERMAL PROTECTION UNDER THE DRY SUIT. COTTON ABSORBS AND RETAINS MOISTURE, ROBBING BODY HEAT AND CAN CAUSE RAPID ONSET OF HYPOTHERMIA.**

**D.5.c Maintenance and Repair**

Maintenance is limited to laundering. Launder in cold water and hang dry or tumble dry in cool air. Using a commercial fabric softener in the rinse cycle removes body oils during laundering. Repair to thermal underwear is not recommended. Polypropylene thermal underwear does not clean well when washed in regular laundry detergent. Disinfectant/detergent, national stock number 7930 01 346 4289, is most effective at cleaning heavily soiled polypropylene material.

**D.5.d Inspection**

Inspect thermal underwear for tears or holes. If discrepancies are found replace the underwear.

**D.5.e First Layer Supply Source**

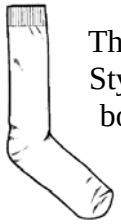
First layer light and medium weight synthetic shirts and long drawers may be available from the national stock system: First layer garments are marketed commercially under names like: Capilene®, ColdGear®, and Polypropylene®.

**D.5.g Second Layer Supply Source**

Procure Layer 1 and Layer 2, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# D.6 Thermal Socks

**D.6.a Application**



Thermal socks are an integral part of the MCWSS and Industrial Style Dry Suit. Coxswains, crewmembers, boarding officers, boarding team members and inspection teams operating in cold environments where added thermal protection to the feet is necessary shall wear thermal socks.

**WARNING**

**COTTON SOCKS SHALL NOT BE WORN FOR THERMAL PROTECTION. COTTON ABSORBS AND RETAINS MOISTURE, ROBBING BODY HEAT AND CAN CAUSE RAPID ONSET OF HYPOTHERMIA.**

**D.6.b Configuration**

Thermal socks are made of a fleece material similar to the fleece jumper, or a synthetic fabric. Thermal socks with legs 12 inches long are preferred.

**D.6.c Maintenance and Repair**

Maintenance is limited to laundering. Launder in cold water and hang dry or tumble dry in cool air to avoid shrinkage. Using a commercial fabric softener in the rinse cycle removes body oils during laundering.

**D.6.d Inspection**

Inspect thermal socks for tears or holes. If discrepancies are found, replace the socks.

**D.6.e Supply Sources**

Procure thermal socks, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# D.7 Neoprene Hood

**D.7.a Application**

The neoprene hood is an integral component of the MCWSS and shall be carried by all personnel. Neoprene hoods shall be donned anytime a crewmember enters water that is 50°F or lower.

**D.7.b Salient Characteristics**

The neoprene hood is constructed of international orange, 2 to 5-millimeter closed cell neoprene fabric that covers the entire head and neck area except for the face opening. SOLAS grade retro-reflective tape is applied for increased visibility in low-light environments. A pile tape patch is installed for attachment of the strobe light/PLB. The neoprene hood is typically available in 4 sizes based on head circumference. Contact the manufacturer for sizing requirements.

**D.7.c Maintenance and Repair**

Maintenance is limited to cleaning. Cleaning is required after each use. Hand-wash the cap in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289. Rinse completely and hang dry. Minor repairs are authorized to small holes or tears in the neoprene fabric. Use McNett's Aquaseal™ adhesive. Repairs to holes or tears across seams are not authorized. Replace hoods for damage found beyond unit repair capabilities.

**D.7.d Inspection**

Daily visual inspection shall be performed prior to each use. If discrepancies are found the neoprene hood shall be removed from service and discrepancies corrected prior to use. Replace neoprene hoods as required.

**D.7.e Supply Sources**

Procure neoprene hoods, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# D.8 Balaclava

**D.8.a Application**

Coxswains, crewmembers, boarding officer, boarding team members and inspection teams operating in cold environments where added thermal protection for the head is necessary shall wear the WindStopper™ Balaclava.

**D.8.b Configuration**

The WindStopper™ Balaclava is black in color and is available in small, medium and large sizes. The balaclava is polypropylene or fleece, may be worn in conjunction with the PS50 watch cap or protective helmet and provides protection from wind, rain and sea spray.

**D.8.c Maintenance and Repair**

Maintenance for the balaclava is limited to cleaning. Launder in cold water and hang dry or tumble dry using cool air. Repairs are not recommended. Replace balaclavas when torn or holes appear.

**D.8.d Inspection**

Inspect the balaclava for tears, holes or split seams. Replace damaged balaclavas.

**D.8.e Supply Sources**

Procure a balaclava, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

## D.9 PS50 Watch Cap

| | |
|---|---|
| **D.9.a Application** | Coxswains, crewmembers, boarding officers, boarding team members and inspection teams operating in cold environments where added thermal protection for the head is necessary shall wear the PS50 watch cap. |
| **D.9.b Configuration** | The PS50 watch cap is black in color and is available in small, medium and large sizes. The PS50 watch cap is stretch fleece, and may be worn in conjunction with the balaclava or protective helmet and provides protection from wind, rain and sea spray. |
| **D.9.c Maintenance and Repair** | Maintenance for the watch cap is limited to cleaning. Launder in cold water and hang dry or tumble dry using cool air. Repairs are not recommended. Replace watch caps when torn or holes appear. |
| **D.9.d Inspection** | Inspect the watch cap for tears, holes or split seams. Replace damaged watch caps. |
| **D.9.e Supply Sources** | Procure a watch cap, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. |

# D.10 Cold Weather Glove Layers

**D.10.a Application**

Gloves are an integral part of the MCWSS and Industrial Dry Suit. Coxswains, crewmembers, boarding officers, boarding team members and inspection teams operating in cold/wet environments where added thermal protection for the hands is required shall use cold weather glove layers.

**D.10.b Configuration**

A modular glove system offers the widest degree of thermal management. The glove system will determine the number of layers. In a three layer system: Layer I (TS-10 Thermolite® Lycra®) is a thin lightweight liner. This liner may be worn alone in mild conditions or as a first layer. Layer II (TS-40 Thermolite® Lycra®) is a thermal protective layer of wind stopping fleece and is designed to provide the user with thermal protection and the ability to transfer body moisture and block out wind. Layer III (TEC-250 Gore-Tex™ Thinsulate™ outer shell with Grip-Tex™ palm and wrist strap closure) is a gauntlet type moisture barrier. This layer offers protection from water, wind and sea spray.

**D.10.c Maintenance and Repair**

Maintenance is limited to laundering of gloves in cold water and hang dry or tumble dry in cool air. Repairs are not authorized. Components of the cold weather glove layers shall be replaced when torn or holes appear.

**D.10.d Inspection**

Inspect the cold weather glove layers for tears, holes or split seams. Replace system components when discrepancies are found.

**D.10.e Supply Source**

Procure cold weather gloves, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# Section E. Additional Equipment

**Overview**

This section describes additional equipment required to safely perform the duties required of coxswains, crewmembers, boarding officers and boarding team members operating shore and cutter based boats. The following items are presented:

- Boat crew survival vest
- Boat crew safety belt
- Tactical Rappel Harness (TBD)
- Double Pickup Strap (TBD)
- Immersion suit

# E.1 Boat Crew Survival Vest

**E.1.a Application**

The boat crew survival vest is used to store survival items methodically selected for use in the majority of survival scenarios. The vest is worn by all coxswains, crewmembers, boarding officers and boarding team members over a Type I or Type III Coast Guard-approved PFD, Anti-Exposure Coverall, or Float Coat on all missions. The components of the boat crew survival vest shall not be removed unless needed.

**WARNING**

**THE BOAT CREW SURVIVAL VEST PROVIDES NO BUOYANCY AND SHALL BE WORN OVER A TYPE I OR TYPE III COAST GUARD-APPROVED PFD OR OVER ANTI-EXPOSURE COVERALLS.**

**WARNING**

**WHEN DONNING THE BOAT CREW SURVIVAL VEST OVER ANTI-EXPOSURE COVERALLS ENSURE THE INFLATABLE HEAD SUPPORT OF THE ANTI-EXPOSURE COVERALL IS PLACED OUTSIDE THE VEST FABRIC.**

**E.1.b Configuration**

The boat crew survival vest is orange nylon mesh with Coast Guard markings and retro-reflective tape applied for increased visibility in low-light environments. Incorporated in the vest are 5 stowage pockets used to store the following:

- MK-124 marine smoke and illumination signal;
- MK-79 illumination signal kit;
- Strobe light;
- Signal mirror;
- Whistle;
- Personal Locator Beacon; and,
- Survival knife.

Survival items are secured to the vest pockets in accordance with the applicable Maintenance Procedure Card. The vest is available in two sizes, regular and large, and has a waist adjustment strap for fitting to individual comfort. Instructions for use of attached survival equipment can be found in reference (f).

**E.1.c Maintenance and Repair**

Seawater rapidly degrades the contents of the vest. Fresh water rinsing and complete drying is required after each use. Particular attention should be given to the pyrotechnics. Remove pyrotechnics and completely rinse and dry before re-stowing. Required maintenance shall be accomplished in accordance with Maintenance Procedure Card. Repair is limited to minor re-stitching of pockets to mesh and survival item replacement.

**E.1.d Inspection**

Build-up procedures and semi-annual inspections are contained in the applicable Maintenance Procedure Card.

**E.1.e Supply Sources**

Procure the boat crew survival vest, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

MK-124 and MK-79 pyrotechnics can be obtained from group or local servicing armories.

# E.2 Boat Crew Safety Belt

**E.2.a Application**

All MLB coxswains, crewmembers, boarding officers, boarding team members and scheduled passengers shall use the boat crew safety belt as a safety restraint system during hazardous conditions such as heavy weather and surf as defined in reference (f). The belt is designed to restrain the user to the boat should a knockdown or rollover occur.

**E.2.b Configuration**

The boat crew safety belt is a padded adjustable nylon-webbing belt that is secured around the waist with a quick release buckle constructed of high strength stainless steel and molded plastic. Attached to the belt are two adjustable webbing restraint straps each with a locking snap hook used to secure the user to an anchor point. The belt is available in two sizes, small and regular.

**WARNING**

**A PROPERLY ADJUSTED BELT SHOULD FIT SNUGLY LOW AROUND THE HIPS WHEN BUCKLED. RESTRAINT STRAPS SHALL BE ADJUSTED TO ALLOW FREEDOM OF MOVEMENT, BUT WITHOUT EXCESSIVE SLACK.**

**NOTE**

The characteristics of the locking snap hook require that users be thoroughly familiar with the operation of the hook. While wearing gloves, users shall practice locking in and disconnecting the hook from all possible attachment points paying particular attention to working the latch gate release. Prior to operational use of the belt, each user shall don the belt and practice locking in and disconnecting from point to point around the boat deck. Operation should become second nature.

**E.2.c Maintenance and Repair**

Maintenance of the boat crew safety belt is limited to cleaning after each use and lubricating the latch gate release on the snap hook. Lubricate the latch gate release with non-aerosol fluid film corrosion preventative national stock number 8030-01-381-6357. Repair is limited to replacement of worn or damaged restraint straps.

**E.2.d Inspection**

Daily visual inspection shall be performed prior to each use. If discrepancies are found the belt shall be removed from service.

**E.2.e Supply Sources**

Procure the Boat Crew Safety Belt, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

For safety reasons, this belt is the only belt authorized for procurement.

**NOTE**

Existing inventories of part number 218 or 218-S boat crew safety belts with the Wichard® non-locking and Talon locking snap hooks may be used until no longer serviceable. All new requisitions for the 218 and 218-S boat crew safety belts will be supplied with the new Super Talon locking snap hook, part number 511.

# E.3 Immersion Suit

**E.3.a Application**

The immersion suit is worn when abandoning ship. Immersion suits are required for each person aboard cutters operating on the ocean or Great Lakes in all areas north of 32 degrees north latitude and south of 32 degrees south latitude.

The number of immersion suits available on cutters is based on 125% of available berthing.

**E.3.b Configuration**

Immersion suits shall be USCG approved IAW 29 CFR 160.171. The immersion suit is a one-piece international orange garment constructed of 3/16-inch nylon lined neoprene or polyvinyl chloride foam. It has a front entry slide fastener for easy fast entry. The garment is hooded and gloved and is available as a one size fits all suit. The immersion suit provides 35 pounds of buoyancy.

**NOTE**

Once the immersion suit is donned the mobility and dexterity of the user is somewhat diminished. During abandon ship drills don the immersion suit and practice moving about and manipulating signaling devices with gloved hands.

**E.3.c Maintenance and Repair**

Maintenance of the immersion suit shall be performed in accordance with Maintenance Procedure Card. Repairs of minor tears and holes are authorized. Use commercial repair facilities for damage beyond unit capabilities.

**E.3.d Inspection**

Build-up and post usage/semi-annual inspections are contained in the applicable Maintenance Procedure Card.

**E.3.e Supply Sources**

Procure the immersion suit, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. Units shall verify that the immersion suit is USCG approved.

# Chapter 4
# Personal Flotation Devices

**Introduction**

This chapter contains information about personal flotation devices (PFDs) used aboard cutters and boats. The sections in this chapter reflect approved PFDs and their authorized uses.

**In this chapter**

This chapter contains the following sections:


| Section | Topic | See Page |
|---|---|---|
| A | Personal Flotation Device Policy | 4-3 |
| B | Coast Guard Approved Inherently Buoyant PFDs | 4-7 |
| C | Non-Coast Guard Approved Cutter Specific PFDs | 4-17 |
| D | Non-Coast Guard Approved Automatic/Manual Inflatable PFDs | 4-23 |

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# Section A. Personal Flotation Device Policy

**Overview**

This personal flotation device policy section establishes operational polices and the minimum personal flotation requirements for specific evolutions on Coast Guard vessels. The following policies are established:

- Command responsibility and risk management
- Minimum flotation requirements

# A.1 Command Responsibility and Risk Management

**A.1.a Command Responsibility**

All personnel embarked in shore and cutter based boats and those personnel engaged in specific deck operations on cutters shall wear PFDs as required by reference (i). Commanding Officers and Officers-in-Charge shall ensure flotation requirements established by this chapter are complied with.

**A.1.b Risk Management and PFD Selection**

The minimum flotation standards required for most Coast Guard vessel operations can be achieved by using the inherently buoyant Coast Guard approved Type III PFD. Specific cutter deck operations require a different flotation standard. Commanding Officers and Officers-In-Charge, in conjunction with the crew, shall determine the most appropriate PFD type to be used during each operational mission or evolution. Mission planning for underway operations as well as dockside maintenance periods shall include an assessment of personal survivability and risk management. This analysis shall be based on the possibility that the crew might be forced into a survival situation during any phase of operations. If the conditions are unknown, personnel shall be prepared for the most adverse conditions by selecting the inherently buoyant Coast Guard approved Type I PFD.

**A.1.c**

**Minimum required gear**

A personal marker light or strobe light and whistle are not required to be attached when worn with the boat crew survival vest. If the boat crew survival vest is not worn over any authorized PFD, a personal marker light or strobe light and the whistle shall be required.

## A.2 Minimum Flotation Requirements

**A.2.a Minimum Flotation Requirements**

It is not possible to identify all operational evolutions and assign or establish a minimum flotation requirement for each. However, the risks associated with some operations have been evaluated and the following minimum flotation requirements shall be complied with for the given operations identified. Commanding Officers and Officers-in-Charge shall evaluate all operations not presented for risk at the unit level and apply the appropriate flotation requirements.

**A.2.b Shore and Cutter Based Boat Operations**

The Coast Guard approved Type III PFD is established as the inherently buoyant minimum flotation requirement for shore and cutter based boat operations. This policy includes law enforcement boarding operations. Alternatives to this requirement include:

- Stearns® Model I600 Type I
- Mustang Survival MD3031 with survival equipment pockets
- Mustang Survival MD3183 with survival equipment pockets
- Mustang Survival MD0450 version 22
- Lifesaving Systems Life Preserver Survival Vest
- Lifesaving Systems 481CG or 481CGM
- Anti Exposure Coveralls with boat crew survival vest
- Flotation Jacket with boat crew survival vest

**A.2.c Cutter Towing and Buoy Deck Operations**

The minimum flotation requirement for cutter towing and buoy deck operations is established as the inherently buoyant Coast Guard approved Type III PFD. Alternatives to this requirement include:

- Stearns® Model I600 Type I
- Flotation Jacket
- Anti Exposure Coveralls

**A.2.d Markings**

PFDs, anti-exposure coveralls, and float coats worn during maritime law enforcement shall be orange and/or orange-black in color, be free of manufacturer's emblems on the outside of the garment and marked as follows:

- On the left breast, with a Coast Guard emblem as described in Title 33 CFR Subpart 23. The emblem shall have a diameter of three inches, plus or minus ¼ inch.
- On the right breast, with a Coast Guard ensign as described in Title 33 CFR Subpart 23. The ensign shall measure 2½ inches in height and 3½ inches in width, plus or minus ¼ inch.
- In the center of the back, with the words "U.S. COAST GUARD" in block letters measuring 2½ inches plus or minus ½ inch. Lettering shall be solid black or white in color against the international orange background.

Identification markings should be applied using a silk-screen process or embroidered patch. Silk-screened markings are available from manufacturers or distributors. The embroidered patch may be procured locally and sewn or attached to the garment using adhesive.

**A.2.e Tactical Operations**

The minimum flotation requirement for Tactical operations is established as the inherently buoyant Coast Guard Approved Type III PFD. Options to this requirement include the following:

- Tactical Flotation Support System, TFSS-5326 (O)
- Stearns® Model I600 Type I
- Mustang Survival MD3031 with survival equipment pockets
- Mustang Survival MD3183 with survival equipment pockets
- Lifesaving Systems Life Preserver Survival Vest
- Anti Exposure Coveralls with boat crew survival vest
- Flotation Jacket with boat crew survival vest

# Section B. Coast Guard Approved Inherently Buoyant PFDs

**Overview**

This section describes the Coast Guard approved inherently buoyant devices and the policies pertaining to their use. The following items are presented:

- Stearns® Model I600 Type I
- Type III
- Dynamic Strength Tested Type III
- Survivors Type I
- Type III Flotation Jacket
- Anti-Exposure Coveralls (see chapter 3)

# B.1 Stearns® Model I600 Type I

**B.1.a Application**

The Stearns® Model I600 Type I PFD is used as the standard abandon ship PFD and is intended to replace the Navy Standard PFD with Collar on an attrition basis. In addition, this PFD may be used by Coast Guard boat and cutter crews as directed by the unit Commanding Officer/Officer-In-Charge, based on conditions encountered that may require a higher level of flotation characteristics than the Coast Guard-approved Type III device. This device provides greater mobility than the survivors Type I when the use of law enforcement or other types of gear are required. When the Stearns® model I600 is selected for use on shore and cutter based boat missions, the boat crew survival vest shall be worn over it by all coxswains, crewmembers, boarding officers and boarding team members.

The Stearns® Model I600 is the only Coast Guard-Approved Type I PFD authorized for military law enforcement/boat crewmember's use.

**WARNING**

**THE STEARNS® MODEL I600 TYPE I PFD IS NOT DYNAMIC STRENGTH TESTED FOR HIGH SPEED BOAT OPERATIONS.**

**B.1.b Configuration**

The Stearns® Model I600 Type I PFD is a low profile, inherently buoyant, and universally sized device that will turn an unconscious or exhausted crewmember face up while in the water and wearing law enforcement equipment such as weapons and ballistic panel inserts. It provides 22 pounds buoyancy. A harness D-ring slit is cut into the back panel to facilitate the tending harness D-ring. A pocket is installed on the front to hold a strobe light and whistle. Two models are available.

- The Stearns® model I600 ORG NLT includes the flat orange whistle and the ACR Firefly III strobe light.
- The Stearns® model I600 ORG NAV does not include the strobe light or the flat orange whistle.

When this PFD is used as the abandon ship PFD, the strobe light and whistle shall be attached. When this PFD is used for shore and cutter based boat missions, the boat crew survival vest shall be worn over the PFD and the strobe and whistle are not required to be attached to the PFD.

| | |
|---|---|
| **B.1.c Maintenance and Repair** | Maintenance is limited to cleaning after use or as required. Cleaning in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289, is most effective for heavily soiled PFDs. Rinse with fresh water and hand dry on a wooden hanger to completely dry before storing. Repairs are limited to the unit's capability to repair the device. |
| **B.1.d Inspection** | Build-up, semi-annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card. |
| **B.1.e Supply Sources** | Procure the USCG approved type I PFD, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. |

# B.2 Type III

**B.2.a Application**

The Coast Guard-approved Type III PFD is used by Coast Guard boat and cutter crews as directed by the unit Commanding Officer/Officer-In-Charge, based on conditions not requiring the use of a Type I device. This device provides the best mobility for cutter crewmembers working over the side and boat crewmembers as the normal outfit. When the Type III is selected for use on shore and cutter based boat missions, the boat crew survival vest shall be worn over it by all coxswains, crewmembers, boarding officers, boarding team members and inspection teams.

**WARNING**

**THE COAST GUARD-APPROVED TYPE III PFD WILL NOT TURN AN UNCONSCIOUS OR EXHAUSTED CREWMEMBER FACE UP IN THE WATER.**

**B.2.b Configuration**

The Type III vest shall be USCG approved, international orange in color, have SOLAS-grade reflective tape installed for increased visibility in low-light environments, and a D-ring for attachment of a Lanyard/Kill-switch. The vest may be of a solid nylon or mesh on the upper half design. The vest shall be marked IAW paragraph 4.A.2.e. This is a low profile, vest type and inherently buoyant PFD that provides the most mobility. The vest provides 15 ½ pounds buoyancy. A personal marker light or strobe light and whistle are not required to be attached when worn in conjunction with the boat crew survival vest. If the boat crew survival vest is not worn over this PFD, a personal marker light or strobe light and the whistle are required.

**B.2.c Maintenance and Repair**

Maintenance is limited to cleaning after use or as required. Cleaning in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289, is most effective for heavily soiled PFDs. Fresh water rinse and hang dry completely before storing. Repairs are limited to the unit's capability to repair the device.

| | |
|---|---|
| **B.2.d Inspection** | Build-up, semi-annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card. |
| **B.2.e Supply Sources** | Procure the USCG approved type III PFD, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. |

# B.3 Dynamic Strength Tested Type III

**B.3.a Application**

Dynamic Strength tested Type III PFDs may be used for high speed boat operations at the discretion of the Commanding Officer/Officer In Charge. The dynamic strength rating is indicated on the Coast Guard approval label in statute miles per hour. Dynamic strength ratings certify that the PFD has been tested by Underwriters Laboratories®, at the request of the manufacturer, to determine if the PFD will come off of the wearer after impact with the water up to the speed indicated on the Coast Guard approval label. When dynamic strength tested type III PFDs are selected for use on shore and cutter based boat missions, all coxswains, crewmembers, boarding officers, boarding team members and inspection teams shall wear the boat crew survival vest over it.

**WARNING**

**THE DYNAMIC STRENGTH TESTED TYPE III PFD WILL NOT TURN AN UNCONSCIOUS OR EXHAUSTED CREWMEMBER FACE UP IN THE WATER.**

**WARNING**

**DYNAMIC STRENGTH RATINGS ARE NOT INDICATIONS OF IMPACT PROTECTION FOR THE WEARER.**

**B.3.b Configuration**

Dynamic strength tested Type III PFDs are typically configured the same as those PFDs that are not dynamic strength tested with the same or all of the following additions:

- Full torso length zippers
- Additional torso circumference belts
- Crotch straps

Generally, the more secure the PFD is when worn the higher the dynamic strength rating. Dynamic strength tested Type III PFDs provide 15 1/2 pounds buoyancy.

| | |
|---|---|
| **B.3.c Maintenance and Repair** | Maintenance is limited to cleaning after use or as required. Cleaning in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289, is most effective for heavily soiled PFDs. Rinse with fresh water and hang dry on a wooden hanger completely before storing. Repairs are limited to the unit's capability to repair the device. |
| **B.3.d Inspection** | Build-up, semi-annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card. |
| **B.3.e Supply Sources** | Procure the USCG approved Dynamic Strength tested PFDs, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.<br>▪ The 320-CG is dynamic strength tested to 35 statute miles per hour.<br>▪ The 460-CG is dynamic strength tested to 50 statute miles per hour.<br>▪ The 430-CG is dynamic strength tested to 100 statute miles per hour. |

# B.4 Survivors Type I

**B.4.a Application**

The Coast Guard approved survivors Type I PFD is intended for use by passengers, prisoners, and other non-mission essential personnel. Coast Guard boat and cutter crews shall not use this device as their PFD standard because of the mobility restricting nature of this device.

**B.4.b Salient Characteristics**

Any reversible Coast Guard Approved Type I PFD certified in accordance with 46 CFR 160.001. SOLAS tape is required. The color of the vest shall be international orange.

**B.4.c Maintenance and Repair**

Maintenance is limited to cleaning after use or as required. Cleaning in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289, is most effective for heavily soiled PFDs. Rinse with fresh water and hang dry on a wooden hanger completely before storing. Repairs are limited to the unit's capability to repair the device.

**B.4.d Inspection**

Build-up, semi-annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card.

**B.4.e Supply Sources**

Procure USCG approved Survivors type I PFDs, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# B.5 Type III Flotation Jacket

**B.5.a Application**

The Coast Guard-approved Type III flotation jacket (Float Coat) may be used by Coast Guard personnel working on or near the water. This jacket can be used in lieu of vest type, Type III PFDs when air and water temperatures are not cold enough to warrant the use of anti-exposure coveralls or dry suits. Refer to Figure 3-1. When Type III flotation jackets are selected for use on shore and cutter based boat missions, all coxswains, crewmembers, boarding officers, boarding team members and inspection teams shall wear the flotation jacket under the boat crew survival vest.

**B.5.b Configuration**

The Type III flotation jacket is a bomber style, waist length inherently buoyant jacket that provides 15 1/2 pounds buoyancy. The jacket is available in international orange or an international orange and black combination with retro-reflective tape applied for increased visibility in low-light environments. The jacket shall be marked IAW paragraph A.2.e. A personal marker light or strobe light and whistle are not required to be attached when worn with the boat crew survival vest. If the boat crew survival vest is not worn over this PFD, a personal marker light or strobe light and the whistle are required.

**NOTE**

Floatation jackets shall be orange or orange / black color combination. Colors other than orange or orange / black color combination are specifically not authorized for procurement and/or use as personal protective equipment for the Coast Guard.

**WARNING**

**THE TYPE III FLOTATION JACKET WILL NOT TURN AN UNCONSCIOUS OR EXHAUSTED CREWMEMBER FACE UP IN THE WATER.**

**WARNING**

**THE TYPE III FLOTATION JACKET IS NOT DYNAMIC STRENGTH TESTED FOR HIGH SPEED BOAT OPERATIONS.**

**B.5.c Maintenance and Repair**

Maintenance is limited to cleaning after use or as required. Cleaning in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289, is most effective for heavily soiled PFDs. Rinse with fresh water and hang dry on a wooden hanger completely before storing. Repairs are limited to the units' capability to repair the device.

| | |
|---|---|
| **B.5.d Inspection** | Build-up, semi-annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card. |
| **B.5.e Supply Sources** | Procure USCG approved floatation jackets, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. |

# Section C. Non-Coast Guard Approved Cutter Specific PFDs

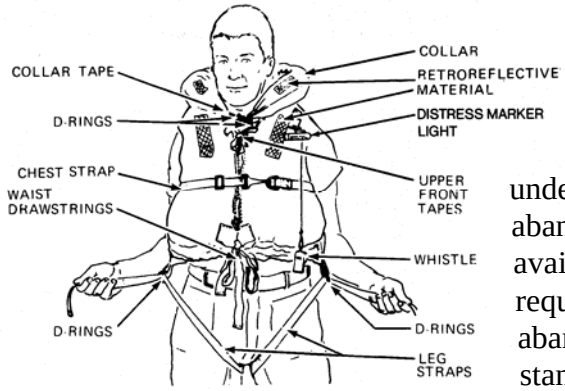
**Overview**

This section describes the Non-Coast Guard approved inherently buoyant devices and the policies pertaining to their use. The following items are presented:

- Standard Navy PFD with Collar
- Abandon Ship Life Preserver

# C.1 Standard Navy PFD with Collar

**C.1.a Application**




The standard Navy PFD with collar is required for use by cutter crewmembers at general quarters or engaged in underway replenishment, towing, and abandon ship operations. When available, ship's personnel are required to use survival suits during abandon ship operations. The standard Navy PFD with collar is also routinely used on weather decks during heavy weather.

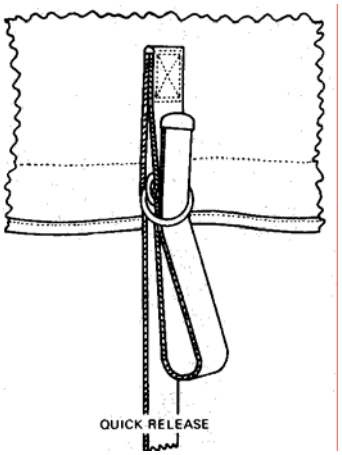
**C.1.b Configuration**

The standard Navy PFD with collar is an inherently buoyant international orange, sleeveless, vest type PFD constructed of a nylon or cotton outer shell filled with removable unicellular plastic pads or kapok. Adjustment straps and ties allow for sizing over a wide range. Leg straps are incorporated to keep the PFD from riding up on the wearer and keeping the PFD on when jumping into the water from high freeboard vessels. It will turn an exhausted or unconscious crewmember face up while in the water while providing 32 pounds buoyancy. This PFD allows for complete relaxation while in the water and enables the wearer to assume positions that preserve body heat and extend survival time. A personal marker light or strobe light and a whistle shall be attached to the device.

**C.1.c Donning**

Use the following procedure to put on the standard Navy PFD with collar:

1. Don the PFD as you would a vest.
2. Secure the chest-strap snap hook on the right side to the D-ring on the left and pull strap tight around the chest.
3. Extend the leg straps hanging from the rear waist area and route through legs from the rear to the front.
4. Insert the right leg strap through the right double D-rings hanging from the side waist area and route the bitter end over the top D-ring and through the bottom. Pull all slack from the strap. Rig strap for quick release as shown in the figure below. Repeat for the left leg strap.




5. Pull waist drawstrings tight and secure with a bowknot.
6. Tie upper front tapes together with a bowknot.
7. Secure collar tapes through collar D-rings and tie with a bowknot.

**C.1.d Maintenance and Repair**

Maintenance is limited to cleaning after use or as required. Remove unicellular plastic flotation pads prior to cleaning. Cleaning in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289, is most effective for heavily soiled PFDs. Rinse with fresh water and hang dry on a wooden hanger completely before storing. Repairs are limited to the unit's capability to repair the device.

**C.1.e Inspection**

Build-up, semi-annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card.

**C.1.f Supply Sources**

The standard Navy PFD with collar is no longer available for procurement. The Stearns® model I600 is the replacement. See Section B.1 above.

# C.2 Abandon Ship Life Preserver

**C.2.a Application**

The Abandon Ship Life Preserver is used by cutter crewmembers in high heat areas and/or confined spaces during general emergency conditions.

**C.2.b Configuration**

The Abandon Ship Life Preserver is a single chambered, manual $CO_2$ or orally inflated device constructed of urethane-coated nylon cloth. When properly donned and fully inflated this preserver provides 35 pounds of buoyancy. The assembly consists of an integrated adjustable waist belt with buckle, storage pouch, and inflatable chamber. A strip of pile tape is installed on the inflatable chamber for attachment of a strobe light after inflation. Enclosed in the storage pouch is a toggle line and loop assembly used for securing survivors together or securing the wearer to a liferaft, a personal strobe light, and a whistle.

**C.2.c Donning, Adjusting and Inflating**

Use the following procedures to don, adjust, and inflate the Abandon Ship Life Preserver:

1. Buckle the waist belt around the waist with the pouch to the rear.
2. Adjust the waist belt to allow rotation of the pouch to the stomach area.
3. When required, unsnap the pouch, unroll the inflatable chamber, and pass head through yoke opening.
4. Inflate the preserver by pulling the yellow inflation lanyard with a slow steady pull until the inflation assembly actuates.
5. If the $CO_2$ inflation assembly fails, orally inflate preserver by unscrewing the knurled ring, depressing the mouthpiece, and blowing into the oral inflation tube.

**C.2.d Maintenance and Repair**

Seawater rapidly degrades the survival items of this device. Fresh water rinsing and complete drying of the survival items may be required after each use. Particular attention should be given to the pyrotechnics. Remove pyrotechnics and fresh water rinse and completely dry before re-stowing. Required maintenance shall be accomplished in accordance with the applicable MPC. No repairs are authorized to this PFD or equipment pocket. Inflatable chamber and inflation assembly repairs are not authorized; contact the manufacturer for repairs and replacement parts.

| | |
|---|---|
| **C.2.e Inspection** | Build-up, semi-annual and post use inspection procedures are contained in the applicable Maintenance Procedure Card. |
| **C.2.f Supply Sources** | Procure the abandon ship life preserver, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. |

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# Section D. Non-Coast Guard Approved Automatic/Manual Inflatable PFDs

**Overview**

This section describes the Non-Coast Guard approved automatic/manual inflatable devices and the policies pertaining to their use. Each of the devices presented requires completion of an associated performance qualification standard that is unique to the specific device. The performance qualification standard shall be completed and placed in the members training record prior to using the PFD. In addition, the items presented have been approved for use by boat crewmembers and boarding team members only after meeting established functional and configuration requirements. Similar products from other vendors may be available; however, prior to procurement and use, similar products shall be evaluated and approved for use by the Rescue and Survival Systems Program Manager. The following items are presented:

- Mustang Survival MD3031 w/ survival equipment pocket
- Lifesaving Systems Life Preserver Survival Vest
- Lifesaving Systems 481CG or 481 CGM
- Mustang Survival MD3183 w/survival equipment pocket
- Mustang Survival MD0450 version 22

**WARNING**

**THE NON-COAST GUARD APPROVED AUTOMATIC/MANUAL INFLATABLE PFDS PRESENTED IN THIS SECTION ARE NOT DYNAMIC STRENGTH TESTED FOR HIGH SPEED BOAT OPERATIONS.**

**WARNING**

**AUTOMATICALLY INFLATABLE PFDS ARE KNOWN TO HINDER EGRESS IN AN ENCLOSED CABIN ENVIRONMENT AND ARE NOT AUTHORIZED FOR USE ON HELICOPTERS.**

# D.1. Mustang Survival MD3031 w/ Survival Equipment Pocket

**D.1.a Application**

The Mustang Survival MD3031 w/ survival equipment pocket may be used on shore and cutter based boat missions by coxswains, crewmembers, boarding officers and boarding team members who have completed the Mustang Survival MD3031 performance qualification standard. The Mustang Survival MD3031 is optional equipment that can be used in lieu of inherently buoyant PFDs and boat crew survival vest combination. The Mustang Survival MD3031 is an automatic/manual inflatable PFD and survival equipment pocket for carrying survival items required during operational missions. The Mustang Survival MD3031 can be worn over ODU, anti-exposure coveralls, dry suits or float coats on all missions. The survival items of the Mustang Survival MD3031 survival equipment pocket shall not be removed to other devices.

**WARNING**

**HARNESSES OF ALL TYPES, SUCH AS THE BOAT SWIMMER HARNESS AND OTHER CLIMBING SAFETY HARNESSES, SHALL NOT BE USED WITH AUTOMATICALLY INFLATING PFDS. HARNESSES WORN OVER INFLATABLE PFDS CAN RESTRICT THE OUTWARD INFLATING ACTION AND MAY PREVENT BREATHING OR CAUSE CRUSHING INJURIES TO THE UPPER TORSO.**

**WARNING**

**AUTOMATICALLY INFLATABLE PFDS ARE KNOWN TO HINDER EGRESS IN AN ENCLOSED CABIN ENVIRONMENT AND ARE NOT AUTHORIZED FOR USE ON HELICOPTERS.**

**D.1.b Configuration**

The Mustang Survival MD3031 is a low profile inflatable buoyancy chamber and a survival equipment pocket attached to a nylon webbing support harness. The buoyancy chamber and equipment pocket are orange nylon material with Coast Guard markings and retro-reflective tape is applied for increased visibility in low-light environments. An automatic/manual inflatable flotation chamber provides 35 pounds of buoyant lift capability. The inflation assembly is a carbon dioxide cylinder actuator that is manually inflated by pulling the beaded inflation lanyard or automatically inflates upon submersion in fresh water or seawater. All survival items shall be secured to the survival equipment pocket in accordance with the MPC. The Mustang Survival MD3031 is available as one size fits all and has a waist adjustment strap for fitting to individual comfort.

**D.1.c Maintenance and Repair**

Seawater rapidly degrades the survival items of this device. Fresh water rinsing and complete drying of the survival items may be required after each use. Particular attention should be given to the pyrotechnics. Remove pyrotechnics and fresh water rinse dry on a wooden hanger completely before re-stowing. Required maintenance shall be accomplished in accordance with MPC. No repairs are authorized to this PFD or equipment pocket. Inflatable chamber and inflation assembly repairs are not authorized; contact the manufacturer for repairs and replacement parts.

**D.1.d Inspection**

Build-up, acceptance, monthly chemical pill change, semi-annual inspection and annual functional testing procedures are contained in the applicable Maintenance Procedure Card.

**D.1.e Supply Sources**

Procure the PFD inflation assembly and survival equipment pocket (MA6000), meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# D.2. Mustang Survival MD3183 w/ Survival Equipment Pockets

**D.2.a Application**

The Mustang Survival MD3183 v22 w/ survival equipment pockets may be used on shore and cutter based boat missions by coxswains, crewmembers, boarding officers and boarding team members who have completed the Mustang Survival MD3183 v22 performance qualification standard. The Mustang Survival MD3183 v22 is optional equipment that can be used in lieu of inherently buoyant PFDs and boat crew survival vest combination. The Mustang Survival MD3183 v22 is an automatic/manual inflatable PFD and w/survival equipment pockets for carrying survival items required during operational missions. The Mustang Survival MD3183 v22 can be worn over ODU, anti-exposure coveralls, dry suits or float coats on all missions. The survival items of the Mustang Survival MD3183 v22 survival equipment pockets shall not be removed to other devices.

**WARNING**

**HARNESSES OF ALL TYPES, SUCH AS THE BOAT SWIMMER HARNESS AND OTHER CLIMBING SAFETY HARNESSES, SHALL NOT BE USED WITH AUTOMATICALLY INFLATING PFDS. HARNESSES WORN OVER INFLATABLE PFDS CAN RESTRICT THE OUTWARD INFLATING ACTION AND MAY PREVENT BREATHING OR CAUSE CRUSHING INJURIES TO THE UPPER TORSO.**

**WARNING**

**AUTOMATICALLY INFLATABLE PFDS ARE KNOWN TO HINDER EGRESS IN AN ENCLOSED CABIN ENVIRONMENT AND ARE NOT AUTHORIZED FOR USE ON HELICOPTERS.**

**D.2.b Configuration**

The Mustang Survival MD3183 v22 is a low profile inflatable buoyancy chamber and a survival equipment pockets attached to a nylon webbing support harness. The buoyancy chamber and equipment pocket are orange nylon material with Coast Guard markings and retro-reflective tape is applied for increased visibility in low-light environments. An automatic/manual inflatable flotation inflatable chamber provides 35 pounds of buoyant lift capability. The inflation assembly is a carbon dioxide cylinder actuator that is manually inflated by pulling the beaded inflation lanyard or automatically inflates upon submersion in fresh water or seawater. The Mustang Survival MD3183 v22 is available as one size fits all and has a waist adjustment strap for fitting to individual comfort.

**D.2.c Maintenance and Repair**

Seawater rapidly degrades the survival items of this device. Fresh water rinsing and complete drying of the survival items may be required after each use. Particular attention should be given to the pyrotechnics. Remove pyrotechnics and fresh water rinse and completely dry before re-stowing. Required maintenance shall be accomplished in accordance with MPC. No repairs are authorized to this PFD or equipment pocket. Inflatable chamber and inflation assembly repairs are not authorized; contact the manufacturer for repairs and replacement parts.

**D.2.d Inspection**

Build-up, acceptance, monthly chemical pill change, semi-annual inspection and annual functional testing procedures are contained in the applicable Maintenance Procedure Card.

**D.2.e Supply Sources**

Procure the MD3183 v22 and survival equipment pockets, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# D.3 Lifesaving Systems Life Preserver Survival Vest

**D.3.a Application**

The Life Preserver Survival Vest (LPSV) may be used on shore and cutter based boat missions by coxswains, crewmembers, boarding officers and boarding team members who have completed the LPSV performance qualification standard. The LPSV is optional equipment that can be used in lieu of the inherently buoyant PFD and survival vest combination. The LPSV in an automatic/manual inflatable PFD with pockets for carrying survival items required during operational missions. The LPSV can be worn over the ODU, anti-exposure coveralls, dry suits or float coats on all missions. The survival items of the LPSV shall not be removed to other devices.

**WARNING**

**HARNESSES OF ALL TYPES, SUCH AS THE BOAT SWIMMER HARNESS AND OTHER CLIMBING SAFETY HARNESSES, SHALL NOT BE USED WITH AUTOMATICALLY INFLATING PFDS. HARNESSES WORN OVER INFLATABLE PFDS CAN RESTRICT THE OUTWARD INFLATING ACTION AND MAY PREVENT BREATHING OR CAUSE CRUSHING INJURIES TO THE UPPER TORSO.**

**WARNING**

**AUTOMATICALLY INFLATABLE PFDS ARE KNOWN TO HINDER EGRESS IN AN ENCLOSED CABIN ENVIRONMENT AND ARE NOT AUTHORIZED FOR USE ON HELICOPTERS.**

**D.3.b Configuration**

The LPSV is an orange nylon mesh vest with Coast Guard markings and retro-reflective tape is applied for increased visibility in low-light environments. Incorporated in the vest are 2 stowage pockets used to store a MK-124 marine smoke and illumination signal, MK-79 illumination signal kit, strobe light, signal mirror, PLB and whistle. A survival knife mounting strap is sandwiched between the inflatable chamber and the vest's mesh carrier. An automatic manual inflatable flotation chamber provides 35 pounds of buoyant lift capability. The inflation assembly is a carbon dioxide cylinder actuator that is manually inflated by pulling the beaded inflation lanyard or automatically inflates upon submersion in fresh water or seawater. The vest is available as one-size-fits-all and has a waist adjustment strap for fitting to individual comfort.

**D.3.c Maintenance and Repair**

Seawater rapidly degrades the survival items of the vest. Fresh water rinsing and complete drying of the survival items may be required after each use. Particular attention should be given to the pyrotechnics. Remove pyrotechnics and fresh water rinse and completely dry before re-stowing. Required maintenance shall be accomplished in accordance with maintenance procedure. Repair is limited to minor re-stitching of pockets to mesh and survival item replacement. Inflatable flotation chamber and inflation assembly repairs are not authorized; contact the manufacturer for inflatable chamber or inflation assembly replacements.

**D.3.d Inspection**

Build-up, acceptance, monthly chemical pill change, semi-annual inspection and annual functional testing procedures are contained in the applicable Maintenance Procedure Card.

**D.3.e Supply Sources**

Procure the LPSV, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

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# Chapter 5
# Life Rafts, Gripes, Releases, Life Float and Multiple Person Recovery System

**Introduction**

This chapter contains information about life rafts, gripes, releases, embarkation nets, life floats and the multiple person recovery system.

**In this chapter**

This chapter contains the following sections:


| Section | Topic | See Page |
|---|---|---|
| A | Boat Installed Life Rafts | 5-3 |
| B | 8 and 25 person Coast Guard Approved Cutter Life Rafts | 5-5 |
| C | Navy MK series 25 person Life Rafts | 5-9 |
| D | Cutter Specific Gripes and Hydrostatic Releases | 5-11 |
| E | Multiple Person Recovery System (MPRS) | 5-15 |

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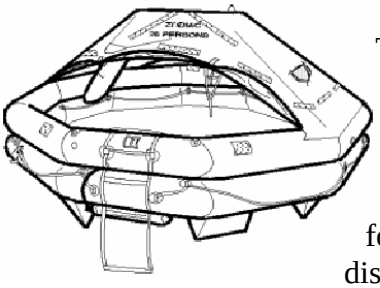
# Section A. Boat Installed Life Rafts

**A.1.a Application**



The 6-Person Coastal Service Life Raft is a Coast Guard approved life raft used aboard the 41' UTB and 49' BUSL for crew survival in the event the boat is rendered not seaworthy. In addition, the raft may be used for rescue and assistance at the coxswain's discretion.

**A.1.b Configuration**

The life raft is packed in a rectangular fiberglass container. The raft meets or exceeds all requirements for Coast Guard approval in accordance with 46 CFR 160.051. **Table 5-1: 6-Person Coastal Life Raft Container Contents** lists items contained within the provided container.

| Qty | Item | Qty | Item |
|---|---|---|---|
| 1 | Bailer | 1 | Repair Kit |
| 1 | Flashlight | 1 | Signal Mirror |
| 2 | Leak Stopper | 1 | Spare Batteries/Bulb |
| 2 | Over Pressure Valve Plug | 1 | Sponge |
| 2 | Paddles | 1 | Survival Instruction Card |
| 1 | Pump | 1 | Whistle |

**Table 5-1: 6-Person Coastal Life Raft Container Contents**

**A.1.c Deployment for Survival**

Use the following procedure to deploy the raft for use by the crew.

1. Cut or untie painter line from the hydrostatic release unit.
2. Secure painter line to a strong point on ship deck.
3. Lift the container and toss overboard.
4. Pull painter line to actuate inflation cylinder, life raft will inflate.
5. Time permitting, place extra equipment and supplies aboard the raft such as immersion suits, water, food, and EPIRBs.
6. If practical, keep raft close to the boat and board raft directly from the boat.
7. Deploy sea anchor.
8. Pull the canopy over the support tubes and secure.
9. If the boat begins to sink, cut the painter line to free the raft to drift.
10. Follow the “Immediate Actions” instruction booklet located inside the equipment container.

**CAUTION !**

IN THE EVENT OF UPSIDE-DOWN INFLATION, RIGHT THE RAFT FROM THE END OPPOSITE OF THE INFLATION ASSEMBLY AND CO2 BOTTLE. THIS END IS MARKED *“HERE TO RIGHT”*.

# Section B. 8 and 25 person Coast Guard Approved Cutter Life Rafts

**B.1.a Application**

8 and 25 person Coast Guard-approved life rafts are used for crew survival in the event the cutter is rendered not seaworthy. In addition, the rafts may be used for rescue and assistance at the Commanding Officer's discretion.

**B.1.b Required Capacity**

The number of life rafts carried by cutters is based on the cutters total available berthing. Life rafts shall be provided for 125-percent of the available berthing. The number of life rafts shall be sufficient to retain life raft capacity of 100-percent of available berthing in the event the largest cluster of life rafts is destroyed. A cluster is defined as life rafts being supported by a common stowage structure.

**NOTE**

Section 5.C of this manual describes the Navy supported Life Raft installed on various cutters.

**B.1.c Configuration**

8 and 25 person Coast Guard-approved life rafts may be configured differently. All are Coast Guard approved and meet the requirements of 46 CFR 160.151. Specific configurations and arrangements for each cutter class may be obtained from the Engineering Logistics Center Platform Management Branch.

**B.1.d Service Life Limit**

8 and 25 person Coast Guard-approved life rafts have a service life of 20 years. No life raft or component part of a life raft shall remain in service after 20 years from the date of manufacture. If a life raft exceeds the 20 year service life prior to the expiration of the annual recertification sticker, it shall be removed from service and replaced.

**B.1.e Deployment for Crew Survival**

Use the following procedure to deploy the raft for use by the crew.

1. Cut or untie the painter line from the weak link.
2. Trigger the hydrostatic release and remove the raft container from the stowage rack.
3. Secure the painter line to a cleat or bitt.
4. Drop the raft into the water on the leeward side of the cutter.
5. Pull the remaining painter line (approximately 50 feet) from the raft container to actuate the inflation assembly. As the raft inflates, tend the painter line to keep the raft close. Fend off the inflating raft to prevent damage to the raft from the cutter.
6. Time permitting; place extra equipment and supplies aboard the raft such as signals, portable radios, immersion suits, water and food.
7. If practical, pull the raft alongside the embarkation net and board the raft directly from the net.
8. Set a watch on the cutter and painter line. If the cutter begins to sink, cut the painter line to free the raft to drift.

**B.1.f Deployment for Rescue and Assistance**

The crew's rafts may be used for rescue and assistance at the commanding officer's discretion. Follow steps 1 through 5 in paragraph B.1.e. Tie two lines to the raft tow bridle. Heave one line to survivors and retain the other for tending. Launching of the cutters boat or deployment of the swimmer may be required to assist survivors into the raft.

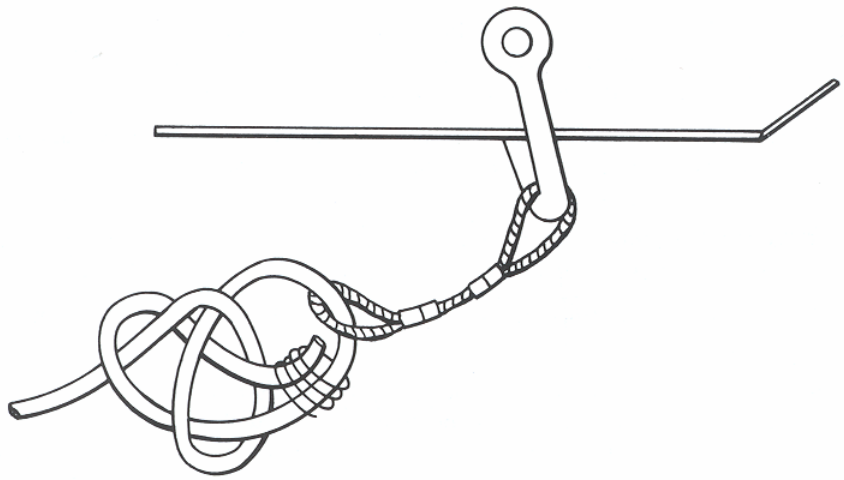
**B.1.g Maintenance and Repair**

Maintenance is limited to cleaning the container exterior. Repairs are not authorized. Refer to Section D for maintenance and repair guidance on gripes and hydrostatic releases.

**B.1.h Inspection**

Perform the weekly inspection once every seven calendar days as follows:

1. Visually inspect the exterior of the life raft container for damage to case or seal.
2. Inspect the stowage rack for general condition.
3. Inspect the painter line for cuts, fraying, and proper attachment of weak link. Refer to figure below.



4. Inspect the hydrostatic release for proper attachment and general condition. See Section D or contact Engineering Logistics Center Platform Management Branch for guidance.
5. Record weekly inspection date on the life raft maintenance log.

Annual inspection and recertification is required every year prior to the raft certification sticker expiration or anytime the raft container is opened. Use Coast Guard approved local servicing facilities to perform the annual inspection and recertification. For new life rafts, the annual inspection and recertification may be extended up to two years if the survival equipment packed inside will not expire prior to the raft certification sticker expiration. Refer to 46 CFR 160.151-57. Annual life raft inspections shall be recorded on the Cutter Engineering Report, (CG-4874).

**NOTE**

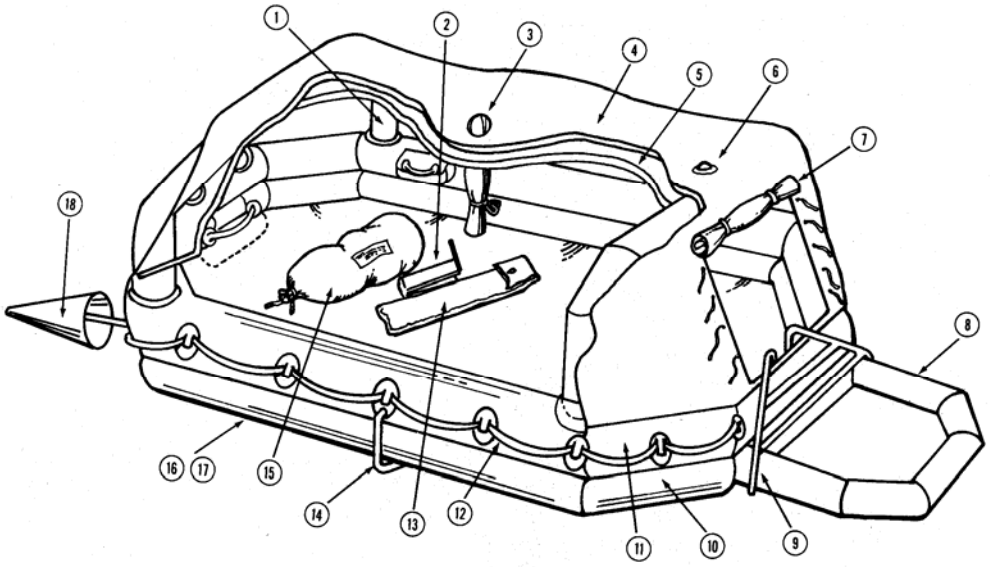
Recertification periodicity for Navy MK Series liferafts is listed on the Maintenance Procedure Card for the corresponding Cutter.

**B.1.i Supply Sources**

The 25 person life raft is supported by Engineering Logistics Center. These Coast Guard approved life rafts are procured in accordance with reference (c) and listed in Appendix A.

**B.1.j Typical Life Raft**

1. Canopy Arch
2. Pump
3. Rain Catcher with Tie-Down Line
4. Exterior Canopy
5. Inner Canopy
6. Outside Light (Recognition)
7. Canopy Closure
8. Boarding Ramp
9. Boarding Handles
10. Hull Tube
11. Gunwale Tube
12. Life Line
13. Paddle Bag
14. Righting Line
15. Equipment Container
16. Hull $CO_2$ Bottle
17. Gunwale $CO_2$ Bottle
18. Sea Anchor




**NOTE**

Cutters that have been transitioned to the Navy MK series life raft may obtain policy and guidance for periodic inspection and maintenance of the Mark series life rafts from Engineering Logistics Center Platform Management Branch.

# Section C. Cutter Specific Gripes and Hydrostatic Releases

**C.1.a Life Raft Gripes**

Life raft gripes shall be configured and installed in accordance with the Naval Engineering Manual, COMDTINST M9000.6 (series) Chapter 583. Gripes shall be plastic covered corrosion resistant steel or nylon covered stainless steel strap. Coast Guard Drawing FL-8201-86 shall be used as the standard installation guidance. View Coast Guard drawing FL-8201-86 at the following Naval Engineering Technical Information Management System web site:

- http://10.38.16.120:1088/NE-Tims/index.html

**C.1.b Configuration**

Life raft release systems used aboard all cutters shall be configured in accordance with Navigation and Vessel Inspection Circular (NVIC) Number 4-86, titled "Hydraulic Release Units For Life Rafts, Life Floats and Buoyant Apparatus, and Alternative Float-Free Arrangements". The circular summarizes the requirements for installing and maintaining Coast Guard approved hydraulic release units used with life rafts. Units may obtain NVIC 4-86 from the following world wide web site:

- http://www.uscg.mil/hq/g-m/nvic/

**NOTE**

Specific configurations for each cutter class may be obtained from Engineering Logistics Center Platform Management Branch.

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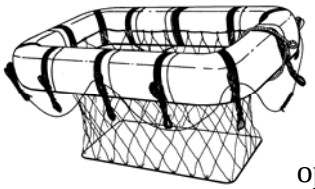
# Section D. Life Floats

**D.1.a Application**



The life float is used as an alternative to the life raft and provides a means of crew flotation after abandoning ship. Life floats are used on WLR class cutters on inland navigable water where the cutter's operating area precludes the need for a life raft.

**D.1.b Configuration**

The 6 person life float provides 240 pounds buoyancy and is constructed of either fiberglass reinforced plastic laminate around a rigid cellular polyurethane core or unicellular plastic foam with a fiberglass or vinyl cover. The platform has a polyethylene mesh netting strung on an aluminum frame suspended from the float by straps of fiberglass or metal. Retro-reflective tape is applied for increased visibility in low-light environments.

**D.1.c Maintenance and Repair**

Maintenance and repairs shall be limited to replacement of lifelines and retro-reflective tape.

**D.1.d Inspection**

Acceptance and semi-annual inspections, as well as a 24-month buoyancy test procedures are contained in the applicable Maintenance Procedure Card.

**D.1.e Supply Sources**

Procure USCG approved life floats, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

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# Section E. Multiple Person Recovery System (MPRS)

**E.1.a Application**

The multiple person recovery system (MPRS) is an inflatable rescue device specifically designed to assist in the retrieval of multiple survivors from the water to the deck of the 41-foot UTB. When installed and operated correctly, the MPRS will inflate in less than 10 seconds and be ready for use. Design characteristics will enable rescuers to descend the ramp to assist non-ambulatory survivors.

**E.1.b Salient Characteristics**

The MPRS is comprised of two inflatable sections, the lower platform and the stairway. The lower platform of the MPRS is in contact with the water at all times and is stabilized by two water pockets, one located at the boarding area and one at the attachment of the lower platform and the stairway. Located on the floor of the lower platform are handholds that enable the survivors to pull themselves up onto the MPRS. The stairway is outfitted with handholds and steps that assist a survivor in boarding the vessel. Two recovery assist straps are provided along each side allowing crewmembers to rotate the lower platform and stairway upwards and inboard. The recovery assist straps also serve as handholds for survivors. Both lower platform and stairway are fitted with retro-reflective tape and boarding instructions. The MPRS is packaged in a container from which the attachment “girt” extends. The girt is equipped with a girt bar which secures the MPRS to stanchions on each vessel. Inflation of the MPRS is accomplished by carbon dioxide from an inflation system attached to the bumper tube.

**E.1.c Maintenance and Repair**

Maintenance is limited to cleaning. Minor repair to the container is authorized.

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# Chapter 6
# Surface Swimmer Equipment

**Introduction**

This chapter contains information about approved and authorized equipment used by surface swimmers. In some instances, the cutter swimmer equipment is different than the boat swimmer equipment. Refer to the appropriate section B or C below. Cutter and boat surface swimmer equipment issued to personnel are government properties considered to be organizational uniform items. The principles, concepts and procedures discussed in Chapter 3 of this manual apply to cutter and boat surface swimmer equipment. Refer to the Chapter 3 sections labeled Inspection, Issue, Issue Documentation and Accountability, and AF Form 538 for management of cutter and boat surface swimmer equipment. All issued items of cutter and boat surface swimmer equipment shall be returned to the unit stock when cutter and boat surface swimmers are reassigned to other duties or units. Cutter and boat surface swimmers shall wear thermal undergarments appropriate for the climate conditions expected to be encountered during a deployment in accordance with Chapter 3.

**In this chapter**

This chapter contains the following sections:


| Section | Topic | Page |
|---|---|---|
| A | Generic Surface Swimmer Equipment | 6-3 |
| B | Cutter Specific Swimmer Equipment | 6-11 |
| C | Boat Specific Swimmer Equipment | 6-19 |

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# Section A. Generic Surface Swimmer Equipment

**Overview**

This generic surface swimmer equipment policies section establishes the operational requirements, describes the salient characteristics and discusses maintenance requirements and procurement information for equipment that shall be used by both cutter and boat surface swimmers:

- Surf cap
- Booties
- Neoprene gloves
- Mask and snorkel
- Fins

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# A.1 Surf Cap

**A.1.a Application**

The surf cap is worn by surface swimmers during all deployments at night and when the water temperature is below 72 degrees Fahrenheit. Use of the surf cap is optional for all other deployments.

**A.1.b Salient Characteristics**

The surf cap is constructed of a vivid reddish orange, or similar hue, 2-millimeter neoprene fabric that covers the top of the head and ears. The neck strap uses a hook and pile type or other suitable closure and retro-reflective tape is applied for increased visibility in low-light environments. A pile tape patch is installed for attachment of the strobe light/PLB. The surf cap is available in 8 sizes based on head circumference. Contact the manufacturer for sizing requirements.

**A.1.c Maintenance and Repairs**

Maintenance is limited to cleaning. Cleaning is required after each use. Hand-wash the cap in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289. Rinse completely and hang dry. Minor repairs are authorized to small holes or tears in the neoprene fabric. Use Aquaseal™ adhesive available through Lifesaving Systems Corp. Repairs to holes or tears across seams are not authorized. Replace caps for damage found beyond unit repair capabilities.

**A.1.d Inspection**

Daily visual inspection shall be performed prior to each use. If discrepancies are found the cap shall be removed from service and discrepancies corrected prior to use. Replace caps as required.

**A.1.e Supply Sources**

Procure a surf cap, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# A.2 Booties

**A.2.a Application**

Booties are worn by surface swimmers over the dry suit sock foot or over the bare foot on all deployments. Two pairs of different size booties may need to be issued, one pair for over the bare foot and a larger pair for over the dry suit sock foot and any thermal socks worn under the dry suit.

**A.2.b Salient Characteristics**

Booties are constructed of black 5-millimeter neoprene fabric welded to hard rubber traction soles. The booties use a slide fastener type closure and are nominally 5 inches high. Booties are available in 9 sizes. Contact the manufacturer for sizing requirements.

**A.2.c Maintenance and Repair**

Maintenance is limited to cleaning and lubrication of the slide fastener. Cleaning is required after each use. Hand-wash the booties in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289. Rinse completely and hang dry. Minor repairs are authorized to small holes or tears in the neoprene fabric. Use Aquaseal™ adhesive available through Lifesaving Systems Corp. Repairs to holes or tears across seams or slide fasteners are not authorized. Replace booties for damage found beyond unit repair capabilities. Lubricate the slide fastener with paraffin, national stock number 7930 01 346 4289.

**A.2.d Inspection**

A visual inspection shall be performed prior to each use. If discrepancies are found the booties shall be removed from service and discrepancies corrected prior to use. Replace booties as required.

**A.2.e Supply Sources**

Procure booties, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# A.3 Neoprene Gloves

**A.3.a Application**

Neoprene gloves are worn by surface swimmers during all deployments where the water temperature is below 72 degrees Fahrenheit.

**A.3.b Salient Characteristics**

Any suitable 3 or 5-millimeter neoprene five-finger glove locally procured is authorized.

**A.3.c Maintenance and Repair**

Maintenance is limited to cleaning. Cleaning is required after each use. Hand-wash the gloves in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289. Rinse completely and hang dry.

**A.3.d Inspection**

A visual inspection shall be performed prior to each use. Replace gloves as required.

**A.3.e Supply Sources**

Procure neoprene gloves, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# A.4 Mask and Snorkel

| | |
|---|---|
| **A.4.a Application** | A mask and snorkel is used by surface swimmers for all deployments. This equipment is considered boat or cutter outfit and is not personally issued. |
| **A.4.b Salient Characteristics** | The mask is a low-volume clear silicone split window design with unbreakable, UV protected lenses and has an attached chemical light bar. The snorkel is a free-hanging black or clear silicone straight plastic tube with corrugated mouthpiece. The top of the tube is wrapped with red retro-reflective tape for increased visibility in low-light environments. |
| **A.4.c Prescription Lenses** | Cutter swimmers requiring prescription eyewear are authorized to procure corrective lenses for their mask. Contact the manufacturer for prescription requirements. |
| **A.4.d Maintenance and Repairs** | Maintenance is limited to cleaning. Fresh water rinse after each use. Repairs are not authorized. Apply red retro-reflective tape to the top of the snorkel tube. Red retro-reflective tape is available using national stock number 4240 01 250 2610. |
| **A.4.e Inspection** | A visual inspection shall be performed prior to each use. If discrepancies are found the mask and snorkel shall be removed from service and discrepancies corrected prior to use. Replace as required. Lenses that are scratched or broken shall be replaced. Mask straps and snorkel keepers are available from the manufacturer. |
| **A.4.f Supply Sources** | Procure the mask and snorkel, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information. |

# A.5 Fins

**A.5.a Application**

Fins are used by the surface swimmer for all deployments to assist the surface swimmer in leg kicking motion and to reduce fatigue. This equipment is considered boat or cutter outfit and is not personally issued.

**A.5.b Configuration**

Fins are black rubber open heel design. Adjustable straps allow for a wide range of foot sizes.

**A.5.c Maintenance and Repair**

Maintenance is limited to cleaning. Fresh water rinse after each use. Repair is limited to strap replacement.

**A.5.d Inspection**

A visual inspection shall be performed prior to each use. If discrepancies are found the fins shall be removed from service and discrepancies corrected prior to use. Fins straps are susceptible to rapid deterioration. Spare straps should be maintained in unit stock for rapid replacement when required. Replace fins as required.

**A.5.e Supply Sources**

Procure fins, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information."

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# Section B. Cutter Specific Swimmer Equipment

**Overview**

This cutter specific swimmer equipment policies section establishes the operational requirements, describes the salient characteristics and discusses maintenance requirements and procurement information for the following equipment:

- Cutter swimmer dry suit
- Cutter swimmer rapid don rescue suit
- Cutter swimmer wet suit
- Harness Flotation Vest

# B.1 Cutter Swimmer Dry Suit

**B.1.a Application**

The cutter swimmer dry suit is worn by cutter swimmer personnel when deployed into water that is 55 degrees Fahrenheit and below.

**B.1.b Configuration**

The swimmer dry suit is constructed of black waterproof tri-laminate fabric that provides excellent mobility and superior environment protection for the swimmer. The dry suit incorporates a front entry slide fastener, wear area padding, sock type feet and latex neck and wrist seals. The sizing is universal and incorporates internal suspenders that adjust to fit women and men in ranges from 5 feet 5 inches, 125 pounds to 6 feet 3 inches, 250 pounds.

**WARNING**

**DRY SUITS ALONE PROVIDE INADEQUATE INSULATION FOR HYPOTHERMIA PROTECTION. PERSONNEL SHALL WEAR THERMAL UNDERWEAR BENEATH THE DRY SUIT TO PROVIDE PROTECTION FROM COLD TEMPERATURE, WIND, SEA SPRAY AND RAIN. DRY SUITS ARE NOT INHERENTLY BUOYANT. THE HARNESS FLOTATION VEST SHALL BE WORN OVER THE DRY SUIT FOR ALL CUTTER SWIMMER DEPLOYMENTS.**

**B.1.c Maintenance and Repair**

Maintenance is limited to cleaning of the dry suit and lubrication of slide fasteners. Repairs are not authorized at the unit level unless the unit has personnel specifically trained for dry suit repair and that training is documented on a certificate from the training facility. Contact the manufacturer for commercial repair facilities.

**B.1.d Inspection**

Build-up and semi-annual inspection procedures are contained in the applicable Maintenance Procedure Card.

**B.1.e Supply Sources**

Procure a Cutter Swimmer Dry Suit, meeting any salient characteristics and other requirements specified above, in accordance with reference (c.) See Appendix A for additional known ordering information.

**CAUTION !**

USE EXTREME CAUTION WHEN DONNING THE DRY SUIT. PRIOR TO DONNING THE DRY SUIT, REMOVE ALL RINGS, WATCHES, EARRINGS, NECKLACES AND EYEGLASSES THAT WILL CAUSE DAMAGE TO WRIST AND NECK SEALS.

**B.1.f Donning Procedure**

Use the following step to put on the cutter swimmer dry suit.

1. Lubricate the inside of the neck and wrist seals with unscented talcum powder.
2. Don insulating undergarments as required.
3. Pull the bottom section of the suit up to the waist and place arms into the sleeves.
4. Gently push one hand through the wrist seal at a time using the index finger of the opposite hand to stretch the seal as the hand pushes through. Repeat for opposite hand. Make sure insulating undergarments are not sandwiched between seal and skin and flatten any folds or rolls of the seal flat against the skin.
5. Bring the upper portion of the suit over the head, aligning the neck opening with the top of the head. Reach inside the top of the neck seal with the fingers and gently pull the seal outward and down as the head pushes through. Make sure insulating undergarments are not sandwiched between seal and skin and flatten any folds or rolls of the seal flat against the skin.

**NOTE**

Use only one or two fingers to pull the entry and relief slide fasteners closed. If more force is required, the slide fastener may not be properly aligned or lubricated. If difficulty is encountered when closing slide fasteners, stop immediately, back the slide up and check for the cause of the interference. Correct the problem before proceeding. The slide fastener must be snug tight against the sealing plug. Use paraffin to lubricate the slide fastener.

6. Close the entry and relief slide fasteners. Have a fellow crewmember double check slide fastener to ensure it is closed completely against the sealing plug.
7. Remove excess air from the suit by sliding fingers under the neck seal and squatting down, pull arms tight against the chest and release seal.

**B.1.g Doffing Procedure**

Use this procedure to take off the cutter swimmer dry suit.

1. Remove all other equipment before removing the dry suit.
2. Wash down the dry suit while wearing it; pay particular attention to entry and relief slide fasteners. Remove all traces of salt.

**CAUTION !**

FAILURE TO COMPLETELY OPEN SLIDE FASTENER WILL DAMAGE THE SUIT WHEN IT IS REMOVED.

3. Completely open the entry slide fastener.
4. Insert fingers between neck seal and neck. Gently stretch the seal outward and upward while pulling head from seal and shoulders and head out of the suit.
5. Insert two fingers under wrist seal and gently pull seal outward. Cup the hand, fingertips and thumb together, and gently pull hand from seal. Repeat for other hand.
6. Remove legs from suit.

# B.2 Cutter Swimmer Rapid Don Rescue Suit

**B.2.a Application**

The cutter swimmer rapid don rescue suit may be used by cutter swimmers in lieu of the dry suit and harness flotation vest combination. This suit may also be worn by Ice Rescue units. This suit is faster to don because the inherent thermal insulating properties alleviate the need to don thermal undergarments. The primary use for this suit would be for very cold water environments where immediate retrieval of a person overboard is necessary to prevent death.

**WARNING**

**THE RAPID DON RESCUE SUIT HAS PERMANENTLY ATTACHED BULKY 5-FINGER GLOVES THAT LIMIT DEXTERITY. SWIMMERS WILL NOT BE ABLE TO MANIPULATE LITTER STRAPS OR OTHER TOOLS THAT REQUIRE FINE DEXTERITY TO OPERATE.**

**B.2.c Configuration**

The cutter swimmer rapid don rescue suit is constructed of closed cell neoprene foam or welded urethane coated nylon outer shell with closed cell foam inner lining insulation. The suit has an integrated lifting harness, 5 finger gloves and neoprene padding for the knees.

**WARNING**

**THE RAPID DON RESCUE SUIT IS A NON-BREATHABLE SUIT.**

**B.2.d Maintenance and Repair**

Maintenance is limited to cleaning of the suit and lubrication of slide fasteners. Repairs are not authorized at the unit. Contact the manufacturer for commercial repair facilities.

**B.2.e Inspection**

Inspect rapid don rescue suits at least every 180 days. The cutter swimmer shall ensure the rapid don rescue suit is ready for immediate use at all times. Individual units may change the inspection intervals to less than 180 days.

**B.2.f Supply Sources**

Procure a Rapid Don Rescue Suit, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information

## B.3 Cutter Swimmer Wet Suit

**B.3.a Application**

The "shorty" or the full-length portion of the wet suit ensemble is worn by cutter swimmer personnel at their discretion when required to deploy into water that is 55 degrees Fahrenheit and above.

**B.3.b Salient Characteristics**

The wet suit ensemble consists of the full-length 5-millimeter and the 2-millimeter "shorty" wet suits are constructed of international orange/black color combination neoprene fabric. Both suits incorporate rear entry slide fasteners that can be closed by the wearer. Retro-reflective tape is applied for increased visibility in low-light environments. Contact the manufacturer for sizing requirements.

**B.3.c Maintenance and Repair**

Maintenance is limited to cleaning and lubrication of the entry slide fastener. Cleaning is required after each use. Hand-wash the suit in a solution of water and disinfectant/detergent, national stock number 7930 01 346 4289. Rinse completely and hang dry. Minor repairs are authorized to small holes or tears in the neoprene fabric. Use Aquaseal adhesive available through Lifesaving Systems Corp. Repairs to holes or tears across seams or slide fasteners are not authorized. Contact the manufacturer for repairs beyond unit capabilities. Lubricate the slide fastener with paraffin, national stock number 7930 01 346 4289.

**B.3.d Inspection**

Inspection is required prior to each use. Any discrepancies found shall be corrected prior to use. Replace wet suits as required.

**B.3.e Supply Sources**

Procure a cutter swimmer wet suit, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# B.4 Cutter Swimmer Harness Flotation Vest

**B.4.a Application**

The harness flotation vest is worn by the cutter swimmer on all deployments. The vest provides flotation and holds items of equipment that may be used during the deployment.

**B.4.b Configuration**

The harness flotation vest serves as the swimmer's tethered harness and flotation. The harness is constructed of heavy-duty nylon webbing and stainless steel hardware. Slide fasteners and snaps are corrosion resistant, high strength plastic. The swimmer's tending line is attached to a quick releasing snap shackle that is released by a beaded handle. The flotation cell is installed inside an abrasion and puncture resistant nylon case that is attached to the harness. The cell is manually inflated by actuating a $CO_2$ cylinder beaded handle or orally inflated using the oral inflation tube providing up to 35-pounds buoyancy.

**WARNING**

**DO NOT JUMP DIRECTLY INTO THE WATER WITH THE HARNESS FLOTATION VEST INFLATED. IF THE FLOTATION CELL HAS BEEN ORALLY INFLATED, ACTUATING THE BEADED INFLATION LANYARD WILL CAUSE THE CELL TO RUPTURE, POSSIBLY CAUSING INJURY TO THE SWIMMER.**

**B.4.c Maintenance and Repair**

Seawater rapidly degrades the contents of the vest. Fresh water rinsing and complete drying is required after each use. Particular attention should be given to the pyrotechnics. Remove pyrotechnics and completely rinse and dry before re-stowing. Required maintenance shall be accomplished in accordance with Maintenance Procedure Card. Repairs are not authorized. Contact the manufacturer for repairs.

**B.4.d Inspection**

Build-up, post use/semi-annual inspection and annual functional inspection procedures are contained in the applicable Maintenance Procedure Card.

**B.4.e Supply Sources**

Procure a Harness floatation vest, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

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# Section C. Boat Specific Swimmer Equipment

**Overview**

This boat specific swimmer equipment policies section establishes the operational requirements, describes the salient characteristics and discusses maintenance requirements and procurement information for the following equipment:

- Boat swimmer harness and tending line

Surface swimmers deployed from shore-based boats are deployed wearing the same organizational clothing and PFD they get underway with.

# C.1 Boat Swimmer Harness and Tending Line

**C.1.a Application**

The boat swimmer harness and tending line is worn by the boat swimmer on all deployments.

**WARNING**

**HARNESSES OF ALL TYPES, SUCH AS THE BOAT SWIMMER HARNESS AND OTHER CLIMBING SAFETY HARNESSES, SHALL NOT BE USED WITH AUTOMATICALLY INFLATING PFDS. HARNESSES WORN OVER INFLATABLE PFDS CAN RESTRICT THE OUTWARD INFLATING ACTION AND MAY PREVENT BREATHING OR CAUSE CRUSHING INJURIES TO THE UPPER TORSO**

**C.1.b Configuration**

The boat swimmer harness is constructed of black nylon webbing. The harness has torso and shoulder straps with stainless steel adjustment hardware. A rescue knife is attached to the harness waist strap. A quick release snap shackle is incorporated into the shoulder strap for quick release of the attached tending line. The tending line is 70 feet long and has a tender's hand loop spliced in one end and a stainless steel ring spliced into the other.

**C.1.c Maintenance and Repair**

Fresh water rinsing and complete drying is required after each use. Repairs to the harness webbing are not authorized. Contact the manufacturer for repairs.

**C.1.d Inspection**

Daily inspection shall be accomplished during routine boat outfit checks. If discrepancies are found the harness and tending line shall be removed from service. Correct all discrepancies prior to use.

**C.1.e Supply Sources**

Procure a Boat swimmer harness and tending line, meeting any salient characteristics and other requirements specified above, in accordance with reference (c). See Appendix A for additional known ordering information.

# Appendix A Equipment Listing

**Overview**

The below information provides the RSS Petty Officer with a list of equipment and amplifying requisition information for items outlined in this manual. This is not intended to place restrictions or limits on the types of equipment or sources of supply being used, but rather to recommend items currently available.

Listing this source is not meant to limit competition, and other sources may be available. For purchases not exceeding $2500, one quote is acceptable if deemed reasonably priced. Such purchases must be equally distributed among qualified suppliers. For purchases in excess of $2500, the request must be submitted to your servicing Contracting Officer for processing.

**Changes**

Recommendations for additions, deletions, or changes to this section shall be submitted IAW Chapter 1, Section 3 of this manual.

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**Research**

The RSS Petty Officer is responsible for properly researching and verifying all reference numbers for price and source of supply prior to ordering.

**FED-LOG**: FED-LOG can find information about any item in the stock system. Information includes NSNs, item description, and manufacturer's information.

**DLA Websites**: Several of the Defense Supply Centers have Websites. Look up items under their respective PGC or stock number. Most RSS items fall under either Clothing and Textiles (follow the S9T link) or Construction & Equipment and weapons Systems (follow the S9I link) at http://www.dscp.dla.mil.

When calling any of the customer service follow these procedures:

1. For general information on a particular item, supply the first four digits of the NSN of the inquiry. For example, since the NSN for sunglasses begins with 4240, ask the customer service representative for the 4240 item manager and the call should be transferred to the item manager in charge of all 4240 items.

2. Have the entire NSN ready so it can be researched further. Quantities on hand, manufacturers, shipment arrival dates, and MIL SPECs can also be accessed by the item manager.

3. For inquiries about the status of an order, have the item's document number ready so the item manager can research that information for you.

**Customer Supply Assistance Program Handbook**: Refer to this Handbook for more detailed information. Copies or additional copies of this handbook can be obtained by contacting the Defense Logistics Agency at 1-877-352-2255.

**Reading the Tables**

Equipment listing tables are divided into three sections.

Section 1: Basic Clothing
Section 2 Cold Weather Equipment
Section 3: Station/Cutter Equipment

Each section contains columns that are comprised of the following headings:

- **Group**. This column denotes items that are similar in application.
- **Nomenclature**. The nomenclature used in this card to describe the various parts may not be the same used in the Federal Supply System (FSS). A more descriptive identification is used if the FSS descriptor is vague.
- **P/N**. Part Number of item.
- **U/I**. Unit of Issue
- **Source of Supply (SOS)**. Each SOS has a three character identifier. The SOS is a three digit identifier code that denotes the supply source name and Customer Service telephone number.
- **Project Group Codes (PGC)/National Stock Number (NSN)**. PGCs are used to quickly look up all sizes of an item carried in the Federal Stock System in a particular group. NSNs are a specific number for a specific size of the item.
- **Source of Supply (SOS)**. This column identifies providers for items procured.
    - **PV**: Prime Vendor Program[1]
    - **GSA**: U.S. General Services Administration
    - **UDC**: U.S.C.G. Uniform Distribution Center
    - **COTS**: Commercial Off-the-Shelf

*Access the Marine Lifesaving & Diving Program Prime Vendors at http://www.dscp.dla.mil/gi/general/mardiv.htm*

# Section 1: Basic Clothing

| Group | Nomenclature | P/N | U/I | PGC/NSN/FSS | SOS | Source* |
|---|---|---|---|---|---|---|
| Eyewear | Goggles, | 535 | EA | | PV | LSC |
| | Goggles, | 38-500001 | EA | | PV | BOL |
| | Goggles, | | EA | | PV | SPX |
| | Sunglasses | UVEX XC | EA | 4240-01-516-5361 | FSS | |
| | Sunglasses | Body Specs Pistol | EA | 4240-01-526-9637 | FSS | |
| | Sunglasses | Revision Sawfly | EA | 4240-01-527-4051 | FSS | |
| | Sunglasses | Wiley X PT-1 | EA | 4240-01-510-7853 | FSS | |
| | Sunglasses | ESS ICE-2 | EA | 4240-01-525-5085 | FSS | |
| Gloves | Gloves, | | PR | | PV/GSA | See B.4.g |
| Headgear | Helmet, Cascade Water | 458 | EA | | PV/GSA | LSC |
| | | P26-CG | EA | | PV/GSA | MAR |
| | Helmet, Pro-Tec Ace water | | EA | | PV/COTS | |
| | Helmet, LSC | 458 | EA | | GSA | |
| Footwear | Boat Shoes | | PR | | UDC | See B.3.f, B.9.f |
| | Boot Safety | Matterhorn 2005 | PR | | UDC | |
| Rain Gear | Rain Gear, Red w/retro | 610-CG | EA | | GSA | LSC |
| Storage | Bag, Parachute | 17249 | EA | 8460 00 606 8366 | | |

## Section 2: Cold Weather Clothing

| Group | Nomenclature | | P/N | U/I | PGC/NSN/FSS | SOS | Sources* |
|---|---|---|---|---|---|---|---|
| Anti-Exposure Coverall | Mustang | | MS2175 v22 | EA | | PV/GSA | MUS |
| | Stearns | | I580 | EA | | PV/GSA | LSC |
| Dry Suit | Boat Crew, Industrial | Suit | MSD901 v22 | EA | HSCG23-06-D-DNQ299 | Contract | MUS |
| | | Insulated Boot | BK0893 (Workday 2) | PR | | | GEN |
| | | | BK0894 (Workday 3) | PR | | | GEN |
| | DAS, MLE/FP, TACLET | | CG/8888N | EA | HSCG23-06-D-DNQ157 | Contract | US |
| | PSU | | CG/8888G | EA | HSCG23-06-D-DNQ157 | Contract | US |
| | Boat Crew | | CG/8888O | EA | HSCG23-06-D-DNQ157 | Contract | US |
| Footwear | Boot Cold Weather | | Kamik | PR | | | |
| Gloves | Gloves, Cold Weather Layers | | TS-10 | PR | GS-07F-0340J | | MAN |
| | | | TS-40 | PR | GS-07F-0340J | | MAN |
| | | | TEC-250 | PR | GS-07F-0340J | | MAN |
| Headgear | Balaclava, | | 83240 | EA | GS-07F-0405K | PV/GSA | |
| | Hood, Neoprene | | MA7148 | EA | | GSA | MUS |
| | Hood, Surf Cap | | CGH30V | EA | | GSA | HA |
| | Watch Cap | | 83930 | EA | GS-07F-0405K | | OR |
| Immersion Suits | Imperial | | 1409A | EA | | GSA | |
| | Mustang | | OC8000 | EA | | GSA | MUS |
| | Stearns | | 340 | | | | LSC |
| Undergarments | Drawers, extreme cold | | | EA | 02809 | | |
| | Drawers, cold weather | | | EA | 02276 | | |
| | Drawers, cold weather | | | EA | 01941 | | |
| | Undershirt, extreme cold | | | EA | 02812 | | |
| | Undershirt, cold weather | | | EA | 02277 | | |
| | Undershirt, cold weather | | | EA | 01942 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Thermal underwear (Layer II) | Exotherm I, II, III | EA | | GSA | US |

## Section 3: Station/Cutter Equipment

| Group | Nomenclature | P/N | U/I | PGC/NSN/FSS | SOS | Source |
|---|---|---|---|---|---|---|
| | Thermal Socks | Bootie I, II, III | PR | | GSA | US |
| | Drawers, extreme cold | | EA | 02809 | | |
| Knife | Knife, Gerber Easy Out | | EA | 5110 01 414 4916 | GSA | |
| | Knife, Spyderco | C10SBK | EA | 5110 01 432 6186 | GSA | |
| | Knife, Benchmade | 550S | EA | 5110 01 451 0707 | GSA | |
| | Knife, Locking Folding | | EA | 5110 00 530 1757 | GSA | |
| | Knife, Survival | | | 4220 01 278 3007 | | |
| Life Float | Life Float | | EA | 4220 01 118 5450 | | ELC |
| Life Rafts | Life Raft, 8-Person “Ocean” | | EA | | GSA | |
| | Life Raft, 8-Person “Coastal” | | EA | | GSA | |
| | Life Raft, 25-Person (Packed) | | EA | 4220-01-083-8535 | | ELC |
| | Life Raft, 25-Person (Container Only) | | EA | 4220-01-095-6091 | | ELC |
| Lines | Rescue Line Throw Bag | 237P | EA | | | PV (LSC) |
| | | 70″ x 3/8″ Poly./Kern | EA | | | PV (DSP) |
| | | | EA | | | PV (MAR) |
| | | 0700 Rescue Rope | EA | | | PV (CO) |
| | | I021 (70 feet)<br>I022 (100 feet) | EA | | | PV (SI) |
| Litters | Stokes Litter | | | | | LSC* |
| | NATO hoist sling | | | 1670 01 226 5300 | GSA | |
| | Manila tending line | | | 4020 00 289 8616 | GSA | |
| | Sail twine | | | 4020 00 231 5886 | GSA | |

| Group | Nomenclature | | P/N | U/I | PGC/NSN/FSS | SOS | Source |
|---|---|---|---|---|---|---|---|
| Personal Flotation Devices | Type I (Survivors) | | 600 | EA | 4220 01 485 1135 | PV/GSA | LSC/MRV/AMR |
| | | | 600-1 | EA | 4220 01 485 1138 | PV/GSA | LSC/MRV/AMR |
| | Type III | | MV3128 (d35) | EA | | PV/GSA | MUS |
| | Type III | | MV1254 (Mesh) (d35) | EA | | PV/GSA | MUS |
| | Type III | | I465 (d35) | EA | GS-07F-0078H | PV/GSA | LSC |
| | Type III | | I424 (Mesh) (d50) | EA | GS-07F-0078H | PV/GSA | LSC |
| | Abandon Ship | | Stearns I375 | EA | 4220-01-487-2932 | FSS/PV | LSC |
| | | | Mustang MD2020 NV | EA | 4220-01-487-2932 | FSS/PV | LSC |
| | Type II (Low Profile) | PFD | MD3183 v22 | EA | | GSA | |
| | | Inflator | MA7214 v22 | EA | | | |
| | | Pocket | MA6000 | EA | | | |
| | PFD, LPSV | | 485-CG | EA | | GSA | LSC |
| | PFD, Pro Lite Vest | | 481-CG or 481-CGM | EA | | GAS | LSC |
| | PFD | | MD0450 v22 | EA | | GSA | MUS |
| | PFD | | TFSS-5326 (O) | EA | | PV | |
| | Coat, Type III | | MJ6214 v22 | EA | | PV/GSA | |
| | Coat, Type III | | I077 | EA | | PV/GSA | |
| Pumps | Dewatering Pump | | CG-P6 | EA | | ELC | |
| Radios | Personal Locator Beacon | | FastFind | EA | | | |
| Restraints | Boat Crew Safety Belt (34-44) | | 218 | EA | GS-07F-0078H | PV | LSC |
| | Boat Crew Safety Belt (27-36) | | 218-S | EA | GS-07F-0078H | PV | LSC |
| Survival Vests | Boat Crew Survival Vest, Reg | | | EA | 8415-01-432-5893 | ELC | |
| | Boat Crew Survival Vest, Large | | | EA | 8415-01-432-5896 | ELC | |

| Group | Nomenclature | | P/N | U/I | PGC/NSN/FSS | SOS | Source |
|---|---|---|---|---|---|---|---|
| Swimmer Equipment | Booties, Neoprene | | NB30Z | PR | | | HA |
| | Dry Suit, Swimmers | | MSD560 | EA | | | MUS |
| | Rapid Don Rescue Suit | Mustang | IC9000 | EA | | | MUS |
| | | Stearns | 341 | EA | | | LSC |
| | Fins | | | PR | 4220 01 015 6762 | GSA | |
| | Gloves, Neoprene | | NG50Z | PR | | | HA |
| | | | 476 | | | | LSC |
| | Harness Flotation Vest | | 486-CG | EA | GS-07F-0078H | | LSC |
| | Harness and Tending Line | | 202 | EA | | | LSC |
| | Mask | Mask | PF1202C | EA | | | SV |
| | | Prescription Mask | SV1202C | | | | SV |
| | Snorkel | | SN1200C | EA | | | SV |
| | Surf Cap | | CGH30V | EA | | | HA |
| | Wet Suit | Shorty | CG-630MB | EA | | | HA |
| | | Full | CG-853MB | EA | | | HA |
| Signaling Devices | Floating Electric Marker Light | | SM2 | EA | | | ACR |
| | | | 314 | EA | | | LSC |
| | Distress Marker Light, (Strobe) | | Firefly III | EA | | PV | ACR |
| | Signal Mirror (2x2) | | | EA | 6305 00 105 1252 | PV | |
| | Personal Marker Light | | | EA | | PV | |
| | Whistle | | Fox 40 | EA | 8465-21-912-7031 | ELC | |

*Known Sources: Note that the listing of these sources is not meant to limit competition, and other sources may be available. For purchases not exceeding $2500, one quote is acceptable if deemed reasonable priced. Such purchases must be equally distributed among qualified suppliers. For purchases in excess of $2500, the request must be submitted to your servicing Contracting Officer for processing.

* In utilizing other sources, ensure required salient characteristics are met. If utilizing FSS, solicit vendors whose products meet these characteristics. Brand name or equal with listed salients may be used for open market purchases.

| RSSM Section Reference | Code | Name | Address | Phone | Web Page |
|---|---|---|---|---|---|
| | ACR | ACR Electronics | 5757 Ravenswood Road Ft Lauderdale, FL 33312 | (813) 645-2748 | http://www.acrelectronics.com/ |
| | AMR | AMRON International Diving Supply | 1380 Aspen Way Vista, CA 92081 | (760) 208-6500 | http://www.amronintl.com/ |
| | BOL | Bolle | 3890 Elm Street Denver, CO 80207 | (303) 321-4300 | http://www.bolle.com/ |
| | CO | Cascade Outfitters | 145 Pioneer Parkway East Springfield, OR 97477 | (503) 747-2272 | http://www.cascadeoutfitters.com/ |
| | DSP | Down Stream Products Inc | 20916 209th Ave. S.E. Monroe, WA 98272 | (360) 805-9799 | http://www.riverpeople.com/lifeline.htm |
| | GEN | Genfoot America Inc | Montée de Liesse Montréal, QC H4T 1P1 | (800) 341-3950 | http://www.kamik.com/ |
| | HA | Henderson Aquatics Inc. | 301 Orange Street Millville, NJ 08332 | (800) 222-0347 | http://www.hendersonusa.com/ |
| | LSC | Lifesaving Systems Corp | 220 Elsberry Road Apollo Beach, FL 33572 | (813) 645-2748 | http://www.lifesavingsystems.com/ |
| | MAN | Manzella Productions, Inc. | 80 Sonwil Drive Buffalo, NY 14225-2425 | (800) 645-6837 | http://www.manzella.com/ |
| | MAR | MARSARS Great Eastern Marine, Inc. | 155 Myrtle Street Shelton, CT 06484 | (203) 924-7315 | http://www.marsars.com/ |
| | MUS | Mustang Survival | 3870 Mustang Way Bellingham, WA 98226 | (360) 676-1782 | http://www.mustangsurvival.com/ |
| | MRV | MARVEL Underwater Equipment Inc | 7100 Airport Highway Pennsauken, NJ 08109 | (856) 488-4499 | http://www.mar-vel.com/ |

| RSSM Section Reference | Code | Name | Address | Phone | Web Page |
|---|---|---|---|---|---|
| | OR | Outdoor Research | 2203 1st Avenue South<br>Seattle, WA 98134 | (800) 421-2421 | http://www.orgear.com/ |
| | SV | Sea Vision USA | 4399 35th Street North<br>St. Petersburg, FL 33714 | (727) 525-6906 | http://www.seavisionusa.com/ |
| | SI | Stearns Inc. | PO Box 1498<br>St. Cloud, MN 56302 | (800) 697-5801 | http://www.stearnsinc.com/ |
| | SPX | SPEX USA | 2330 Newport Boulevard<br>Costa Mesa, CA 92627 | (949) 548-1235 | http://www.spexusa.com/ |
| | US | USIA | 1600 Railroad Avenue<br>St. Helens, OR 97051 | (800) 247-8070 | http://www.usia.com/ |

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# Appendix B Standardization Determinations and Findings

**Introduction**

This appendix provides Determinations and Findings for Standardization of the Rescue and Survival Equipment. Copy this appendix to the procurement file when procuring listed items. No current D&F on file.

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# APPENDIX C: Rescue & Survival Systems/Equipment Maintenance Log

**ITEM:** _____ **MODEL:** _____ **S/N:** _____ **IN-SERVICE DATE:** _____

| Inspection Date | Inspection Type | Signature | Inspection Facility | Remarks |
|---|---|---|---|---|
| | W M Q S A P O MX | | | |
| | W M Q S A P O MX | | | |
| | W M Q S A P O MX | | | |
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| | W M Q S A P O MX | | | |

## Lot Numbers & Sub Assembly Serial Numbers

| ITEM | LOT | ITEM | LOT |
|---|---|---|---|
| | | | |
| | | | |

**ITEM:** _____ **Page** _____ **of** _____