

NAVSEA S5090-B1-MMO-01B

**STOWAGE AID BOOKLET
FOR
DAMAGE CONTROL EQUIPMENT**

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**29 NOVEMBER 1991
CHANGE B 5 SEPTEMBER 2003
NAVSEA S5090-B1-MMO-01B**

**CHANGE B
SUMMARY OF CHANGES
SECTIONS 2, 3 AND 4**

<u>PAGE</u>	<u>NAME</u>	<u>DESCRIPTION OF CHANGE</u>
2-14	List of Material/Equipment for CBR-D IPE and MCU-2P Equipment	New table
2-15	CBR-D IPE Compartment Stowage; View #1 – Overhead View	New sketch
2-16	CBR-D IPE Compartment Stowage; View #2 – 3D View	New sketch
2-17	CBR-D IPE Stowage in Berthing Compartment; View #1 – Overhead View	New sketch
2-18	CBR-D IPE Stowage in Berthing Compartment; View #2 – 3D View	New sketch
2-19	MCU-2P Mass Stowage; View #1 – Overhead View	New sketch
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3-31	CBR-D IPE Stowage Rack System	New sketch
3-32	MCU-2P Stowage Plan; Berthing Area	New sketch
3-33	MCU-2P Stowage Plan; Workstation	New sketch

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4-138	CBR-D IPE Stowage Rack; Track System – Horizontal Mount (Bulkhead)	New sketch
4-139	CBR-D IPE Stowage Hook	New sketch
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NAVSEA S5090-MMO-010

LIST OF EFFECTIVE PAGES

Dates of Original and Changes Pages are:

Original 0 29 November 1991
 Change A 16 November 1992
 Change B 5 September 2003

Insert latest change pages; dispose of superseded pages.

NOTE: On a changed page, the portion of the text affected by the latest change is indicated by a vertical line in the outer margin of the page. Changes to sketches are indicated by miniature pointing hands.

Total number of pages in this publication is 218 consisting of the following:

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Change B Summary of Changes	B	4-11	A
#List of Effective Pages	B	4-12 through 4-13	0
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#Pages are printed single-sided.

*Zero in this column indicates an original page.

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RECORD OF CHANGES

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EXECUTIVE SUMMARY

Naval Sea Systems Command (NAVSEA) prepared this Stowage Aid Booklet for Damage Control (DC) equipment in response to an action item from the Chief of Naval Operations Damage Control/Fire Fighting/CBR Working Group. This document aids shipboard personnel in identifying possible layouts and stowage devices and provides a reference for information on DC equipment and Chemical, Biological and Radiological-Defense (CBR-D) Individual Protection Equipment (IPE) stowage. This stowage aid booklet also provides a valuable reference document for:

1. Ship Design Managers and Ship Builders - To illustrate alternatives for stowage of DC and CBR-D IPE equipment.
2. Ship Builders - To assist in the design and layout of new ships with examples of DC and CBR-D IPE stowage for equipment.
3. Various NAVSEA Technical Codes - To provide a reference tool as guidance on DC and CBR-D IPE equipment stowage alternatives.
4. Training Commands - To train personnel to effectively stow DC and CBR-D IPE equipment.
5. SIMA and Tender Activities - To provide a reference tool for work packages involving DC and CBR-D IPE equipment stowage.

The information in this booklet is presented in four sections:

1. Section 1 provides background information of DC and CBR-D IPE equipment stowage philosophy and the interrelationship within the supply system, i.e., Allowance Equipage List (AEL) and National Stock Number (NSN).
2. Section 2 describes deck plan layouts of DC Repair Stations, including the Unit Locker and Passages, Decontamination Stations and compartment stowage options for CBR-D IPE.
3. Section 3 illustrates acceptable passageway stowage of DC equipment, organized by functions such as fire fighting, dewatering and desmoking, and stowage options for CBR-D IPE.
4. Section 4 provides examples of stowage devices, brackets, racks, hooks and lockers that are currently used fleetwide for DC and CBR-D IPE equipment.

This booklet will be updated via change pages as new stowage devices are developed and to reflect new equipment and equipment improvements. Recommendations are welcome and encouraged and will be presented annually to the Damage Control/Fire Fighting/CBR Working Group.

Section 1

**BACKGROUND INFORMATION
ON THE NEW DAMAGE CONTROL
STOWAGE PHILOSOPHY**

BACKGROUND

This Stowage Aid Booklet provides recommended Damage Control (DC) equipment and Chemical, Biological and Radiological-Defense (CBR-D) Individual Protection Equipment (IPE) stowage information and includes options that should be considered for particular ship configurations.

Shipboard fires, smoke, flooding and CBR agents can threaten crew safety and the ultimate survival of the ship. Damage control tactics, training, equipment and stowage are the tools used to combat these threats to a ship's ability to fight.

Distribution of equipment is an important element of damage control to improve reaction time, reduce injury to personnel and increase survivability of the ship.

Lessons learned from past casualties and DC scenarios have led to improvements and additions to repair party equipment. However, proper distribution and stowage of DC equipment has not received the attention it deserves.

Today, there is a renewed emphasis on how and where to stow DC equipment to improve the response time of repair teams and thus reduce loss of life and ship damage. Shipboard casualties on USS STARK (FFG 31), USS SAMUEL B. ROBERTS (FFG 58), USS PRINCETON (CG 59), USS TRIPOLI (LPH 10) and USS COLE (DDG 67) have proven that when the command disperses equipment and personnel within a repair station's area of responsibility, improved reaction time and survivability are achieved.

Elements of the DC equipment stowage philosophy are as follows:

1. The DC deck is designed to be the primary staging area for DC repair parties. The damage control organization disperses equipment within the repair station's area or zone of responsibility according to the equipment's function, i.e., fire fighting, desmoking and dewatering. Functionally grouped and stowed equipment provides immediate access so that repair teams can respond quickly and positively to a casualty.
2. Equipment currently crammed inside the repair locker, such as fire extinguishers, casualty power cables, general quarters gear, oxygen breathing apparatus, portable fans and canisters, should be relocated to the passageways in a functionally organized and logical manner.
3. Large DC equipment should be located in the passageway with its functional group near power and exhaust sources.
4. Teams and equipment are dispersed port and starboard, fore and aft and above and below deck (Refer to section 2, sketch 001). This allows flexibility, survivability and improved response by repair party personnel to combat the casualties as soon as they are reported.
5. Adjustable shelving in repair station stowage bins will increase space for new equipment.

6. Use "dead areas" of the ship for stowage shelving and brackets. Examples include areas behind doors and hatches, storerooms, voids and bulkheads in berthing areas.
7. Use stowage devices that are flexible enough to accommodate equipment improvements and changes.

Implementation of the concepts within this booklet will:

1. Decrease the possibility of a single weapon hit destroying an entire repair party organization.
2. Minimize the amount of initial confusion since equipment is already strategically dispersed.
3. Eliminate the bottleneck of personnel at the repair locker compartment entrance when General Quarters is sounded.
4. Improve the equipment setup and response times of repair party teams combating casualties.
5. Limit the extent of damage to a ship.

Damage control in the Navy is exceptional. With personnel and material at risk, we must continuously seek improvement and eliminate all potential hazards. Our training is outstanding and our equipment is first rate. The stowage features presented herein will distribute DC and CBR-D IPE equipment most effectively throughout the ship, thus allowing repair party personnel to respond more quickly to casualties.

Additional resources for information on DC/fire fighting/CBR-D IPE equipment include the following:

1. NWP 3-20.31, Surface Ship Survivability
2. NSTM Chapter 074, Volume 3, Gas Free Engineering
3. NSTM Chapter 079, Volume 2, Practical Damage Control
4. NSTM Chapter 555, Volume 1, Surface Ship Fire Fighting
5. NSTM Chapter 555, Volume 2, Submarine Fire Fighting
6. NSTM 077, Personnel Protection Equipment
7. Training Aid Booklet for Damage Control Equipment
8. Safety and Survivability Video, "The Value of Proper Damage Control Equipment Stowage"
9. Damage Control Allowance Equipage Lists (AEL), 2-880044200 through 2-880044299 series.

NAVSEA's approach to achieving the goal of effectively stowing DC equipment and CBR-D IPE encompasses the following steps:

1. DC AELs have been reorganized by the number of repair stations (the "Parent AELs") and then subdivided into kits ("Kit AELs"), which are organized by equipment function.
2. NWP 3-20.31, Surface Ship Survivability, invoked the requirement for distributive stowage of DC kits throughout repair stations, resulting in the stowage of equipment by function in passageways or other suitable locations within a repair station's zone of responsibility.
3. The Navy has published the "Training Aid Booklet for Damage Control Equipment." This publication describes equipment in the DC inventory with illustrations, stock numbers and uses.
4. Photoluminescent marking has been successfully used to identify equipment and egress routes during DC and fire fighting operations.

The Navy is continually striving to improve DC capabilities through conferences, such as the Surface Warfare Commanders Maintenance Conferences, and the Chief of Naval Operations Damage Control/Fire Fighting/CBR Working Group.

Improvements are not limited to better equipment. One example is the development of a software package, Damage Control Action Management Software (DCAMS). This was developed primarily to provide shipboard DC personnel with an automated means of tracking the location and status of portable and consumable DC equipment. A secondary purpose is to allow shipboard and shore-based personnel to evaluate proposed changes in stowage locations for DC equipment and to ensure rapid and effective reaction to emergency conditions.

The Surface Warfare Officers School Damage Control Training Department completed a mockup of a DC repair station and passageways. The mockup illustrates distributive stowage to new damage control assistants, chief engineers and prospective commanding officers.

The display ship ex-USS BARRY (DD 933) at the Washington Navy Yard has a DC repair station mockup that design teams of new ship construction can study. The Navy tests and fine-tunes tactics for effective use of new DC equipment onboard ex-USS SHADWELL (LSD 15) in Mobile, Alabama.

CONCEPT OF DISTRIBUTIVE STOWAGE

1. Improve Repair Party Response Time
 - a. Disburse priority equipment from within the repair locker into surrounding area to prevent bottlenecks and confusion.
 - b. Disburse the following functional areas:
 - (1) Fire Fighting Dressout
 - (2) Dewatering
 - (3) Desmoking
 - (4) Fire Fighting Extinguishers
 - (5) Shoring
 - (6) Casualty Power
 - (7) General Quarters Gear
2. Increase Survivability

Disbursal of equipment diminishes consequences from loss of repair locker to damage.

FUNCTIONAL AREAS COMPOSITION

1. Fire Fighting Dressout
 - a. Fire Fighting Ensemble (six per station)
 - (1) Fire Fighter's Coveralls
 - (2) Fire Fighter's Boots
 - (3) Fire Fighter's Gloves
 - (4) Flash Gear
 - (5) MK II Helmets
 - (6) Fire Fighter's helmet lights
 - b. OBAs (6 Min)
 - c. OBA Canisters (36 Min)
2. Dewatering
 - a. P-250 Pump
 - b. Two or more Submersible Pumps
 - c. Peri-Jet and S-Type Eductors
 - d. Associated Fire, Suction, and Exhaust Hoses
3. Desmoking
 - a. Two Red Devil Blowers and/or Water-driven Blowers
 - b. Two 8-in Expandable Vent Ducts and/or 10-in Expandable Vent Ducts
 - c. One Tube Axial Fan
 - d. Three Smoke Curtains
 - e. Two OBAs (Min)
 - f. Twelve OBA Canisters (Min)

4. Fire Fighting Extinguishers
 - a. Two CO₂ Extinguishers
 - b. One PKP Extinguisher
5. Shoring
 - a. Steel Shoring
 - b. Wooden Shoring
 - c. Wedges
 - d. Patches, Box
6. Casualty Power
Cables and Racks
7. General Quarters Gear (Repair Party Personnel)
 - a. Gas Mask
 - b. Life Jacket with Antiflash Hood and Gloves

STOWAGE AID BOOKLET FOR DAMAGE CONTROL EQUIPMENT

GENERAL NOTES

1. All dimensions are in inches unless otherwise noted.
2. All stowage installations shall be as level as possible and parallel to the baseline of the ship unless noted otherwise.
3. All sharp or ragged edges shall be ground or sanded smooth to prevent damage to equipment and injury to personnel.
4. Each installation is unique. Detailed drawings shall be drawn and equipment templates developed and checked for fit on paper prior to fabrication of stowage equipment or modification of spaces.
5. For painting and deck covering, see ships painting schedule.
6. Material lists are provided as necessary.
7. Stowage arrangement dimensions may vary according to the geometry of spaces available.