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NAVAL SHIPS' TECHNICAL MANUAL

CHAPTER 583 - VOLUME 1

BOATS AND SMALL CRAFT

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CHAPTER 583

VOLUME 1
BOATS AND SMALL CRAFT

SECTION 1

ADMINISTRATIVE POLICIES

583-1.1 INTRODUCTION

583-1.1.1 BOATS AND SMALL CRAFT. Chief of Naval Operations (CNO), OPNAVINST 4780.6 (series), provides policy for boats of the U.S. Navy. Chapter 583 discusses the administrative procedures which follow CNO policy, including acquisition, description, maintenance, handling equipment, and repair of boats. In addition, operating procedures, safety precautions, testing and inspection requirements are covered to provide convenient reference and reduce interpretation errors concerning boats, boat handling and stowage systems.

OPNAVINST 4780 series states “b”. “Boats (1) Commander Naval Sea Systems Command (COMNAVSEASYSCOM) shall purchase, procure, acquire or otherwise obtain all boats including boats required by the Military Sealift Command for operational use.” The only exceptions are boats that are part of the Cargo Offshore Transfer System (COTS) and boats procured with non-appropriated funds for the Morale, Welfare, and Recreation (MWR) program. Boats procured by Naval Facilities Engineering Service Center (NFESC), Port Hueneme, CA to support the Navy’s Oil Spill Response Program are assigned Navy Hull Registry Numbers and maintained in the Craft and Boat Support System (CBSS).

583-1.2 GENERAL INFORMATION

583-1.2.1 DEFINITION OF A NAVY BOAT. Navy boats are military equipment and are centrally procured, managed, and tracked, by Program Executive Office, Ships, Program Management, Ships 325 (PEO SHIPS PMS325). The boat may be assigned to and carried on a ship as a ship’s boat or assigned to an expeditionary command, shore station or fleet operating unit. PEO SHIPS PMS325 and NAVSEA 05D have designated Naval Surface Warfare Center, Carderock Division, Detachment Norfolk, Combatant Craft Division (CCD) as their engineering agent, in accordance with NAVSEAINST 5400-57D Engineering Agent Selection, Assignment, Responsibility, Tasking And Appraisal. As such, CCD is responsible to act for and with PMS325 for matters involving Boat Inventory Management (BIM), boats in service, operational requirements definition and allowance changes for ashore activities.

Although in most cases, U.S. Navy boats are designed and fabricated to requirements that meet or exceed United States Coast Guard (USCG), ABYC, and other regulatory agencies, U.S. Navy boats need not meet any such requirements. USCG documentation, inspection or certification is not required for U.S. Navy boats.

583-1.2.2 BOAT CORRESPONDENCE. All correspondence related to boats must cite the boat’s unique/specific U.S. Navy hull registry number, but it is permissible to also include the local number assigned by the command, ship, or station.

583-1.2.3 COMMERCIAL-OFF-THE-SHELF (COTS) BACKGROUND INFORMATION. Commercial-off-the-shelf (COTS) products are an acceptable alternative when military products cannot meet real time operational requirements. Integration of COTS allows for faster and lower cost production of defense equipment and supplies through the use of commercial manufacturing and technologies which are crucial if the nation has to expand

production to reconstitute forces in response to threats. While the integration allows for real time acquisition it introduces complexities and risks into the development, acquisition, budgeting, engineering, and support processes including risks imposed by the rapid pace of technological changes and the lack of complete design disclosure. Integration of COTS requires extensive knowledge of the “best practices” for the development, acquisition, modernization, and maintenance of systems utilizing commercial items. The changes in technology require NAVSEA and the affiliated PEO to plan and budget for the future replacement and modernization of COTS products throughout the life cycle of deployed equipment.

a. It reduces acquisition time and costs in addition to reduced boat production costs.

b. It enables expansion of the industrial base of COTS boats capable of meeting valid operational requirements.

c. It minimizes contractual risk to the government.

d. It incorporates minimum acceptable commercial standards (USCG regulations, ABYC standards, etc.) for boat construction.

e. It expands the type of boats available to meet valid operational requirements.

583-1.2.4 COMMERCIAL-OFF-THE-SHELF (COTS) PROCUREMENT POLICY. Navy boats are centrally procured and managed by PMS325 in accordance with OPNAVINST 4780.6 (series). This policy achieves two important goals for the Navy:

a. It ensures each boat has a requirement minimizing redundancy and waste.

b. It allows for combining requirements to take advantage of economies of scale while ensuring each boat meets its operational requirements.

Activities are not authorized to procure boats without specific written authorization from PEO SHIPS PMS325 regardless of the cost.

583-1.2.5 PROPER BOAT MAINTENANCE. Proper boat maintenance is the responsibility of the User Command/Activity. Support Commanders are responsible for funding the operation and maintenance of boats assigned to their subordinate activities. If inspection of a boat reveals that it was not properly maintained, PEO SHIPS PMS325 is authorized to request, via the chain of command, that the User Command/Activity identify funding to return the boat to a serviceable condition. Boats shall be maintained in accordance with the Planned Maintenance System (PMS), as defined in OPNAVINST 4790.4 (series).

583-1.3 STANDARD ALLOWANCE OF BOATS

583-1.3.1 CNO AND PEO SHIPS PMS325 ESTABLISHED BOAT LIST. The allowance of boats for forces afloat is established by the CNO Resource and Requirement Office and for shore activities by PEO SHIPS PMS325, according to OPNAVINST 4780.6 (series).

583-1.3.2 CHANGES IN BOAT ALLOWANCE. Any request for a change in the boat allowance should be the subject of a written request (letter, eMail, message) clearly stating the reasons for the change. This request should be addressed to CNO or PEO SHIPS PMS325 as appropriate and forwarded through the requester’s chain of command for endorsement. The CNO will determine if the allowance change is approved or disapproved, and

will issue necessary instructions and funds to PEO SHIPS PMS325. The request for an increase or establishment of a boat allowance should cite the boat allowance type, nominal length and intended end use, operational requirements, and justification.

583-1.3.3 BOATS ASSIGNED TO FLAGS AND COMMANDS. Boats for Flag Officers and Commands will be authorized only by CNO. When assigned, these boats are not part of any ship's allowance but are in the custody of the flag. Boats assigned for personal use of flag officers are referred to as barges. Boats assigned for personal use of Chiefs of Staff, Squadron, Group, and Division Commanders, not of flag rank, and for Commanding Officers are referred to as gigs. When referring to such boats in correspondence addressed to PEO SHIPS PMS325, they should be designated by Navy hull registry number. Assignment and management criteria for barges and gigs are set forth in OPNAVINST 4780.6 (series). By definition the user command is responsible for the administration, operation, manning, safety, security, development and submission of the budgets needed to within current policy and guidelines.

583-1.3.4 HOW BOATS ARE OBTAINED. Boats are PEO SHIPS PMS325 special material and are not subject to standard requisitioning procedures. Under normal conditions, boats are obtained by written request to PEO SHIPS PMS325 citing the justification, operational requirements, and intended end use. In an emergency, requests may be submitted by naval message or telephone. Telephone requests should be confirmed by a follow-up message.

583-1.4 TRANSFER OF BOATS

583-1.4.1 PEO SHIPS PMS325 AUTHORITY FOR TRANSFER OF BOATS. Boats should not be transferred, unless an emergency exists, without specific authority from PEO SHIPS PMS325. Custodians may assign boats on sub-custody to neighboring activities when a temporary need arises. When transfers must be made without prior approval, PEO SHIPS PMS325 shall be given full details at the earliest date by letter or message.

583-1.4.2 TRANSFERRED WITH A FLAG. Boats assigned for personal use of flag officers afloat or their staffs, may be transferred from ship to ship, with the flag, without specific authority of PEO SHIPS PMS325. However, PEO SHIPS PMS325 should be advised of the date of the transfer by letter or message citing the names of the ships involved and hull registry numbers of each.

583-1.4.3 TRANSFERS TO SPECIAL PROJECTS AND TEMPORARY LOANS. Boats may be assigned by PEO SHIPS PMS325 to special projects such as disaster relief or environmental cleanup efforts. These boats may be operated by other government agencies or commercial corporations. The recipient (temporary boat custodian) is responsible for restoration of the boat to as-issued condition upon return to U.S. Navy custody. Receipt of U.S. Navy boats shall be reported by the most expeditious record means within five days of boat arrival at the new custodial activity. A completed Boat Inspection Report (NAVSEA 9583/3) (Figure 583-1-1) shall be completed by a PEO SHIPS PMS325 designated boat surveyor before turn back/acceptance. This completed form will be used by PEO SHIPS PMS325 to determine the financial liability of the user custodian from funds allotted to the special project.

Navy Streamlined Boat Inspection Report (BIR):

Navy Hull Registry #:	Activity/UIC:
Other ID: (Mfr's HIN, Local Name, etc.)	Inspection POC:
	Phone/DSN:
Inspection Date:	Email:

Inspection Findings:
Describe (in words) the condition of the boat in the blocks below & provide **digital photos** (approx 100 kb each) of Hull Registry Number marking and photos as needed to depict the boat's overall arrangement and current condition. Include exterior & interior photos; above & below deck, and in accessible compartments (e.g., console interior; machinery spaces; cabin interior). Include photos of the engine(s) & other equipment, piping & wiring. Include photos showing damage or poor condition. Photos of the boat out of the water are preferred, if this is practicable.

Hull Exterior (overall):	Boat Interior (overall):
Transom/Bow/Sheer/Collar/Guard Rail:	Windows/Deck Covering/Cox'n Station:
Shafting/Rudder/Outdrive/Jet:	Interior Outfitting (seats, grab rails, etc.):
Interior Spaces/Structure (i.e., metal or fiberglass 'skeleton' of the boat):	Electrical Systems:
Bilges/Bilge Piping:	Navigation/Comms Equipment & Systems:
Engine/Marine Gear (include engine type/model, qty & operational status):	Mechanical & Piping Systems:
Weapon Mounts or Other Mission Systems:	Trailer/Cradle:
Remarks (additional info on boat condition or other features such as dive door, cabin, security equipment, etc.):	
Overall Boat Rating: (1 = good condition; 2 = operational, but needs grooming – or – not operational, but can be economically repaired; 3 = not operational, needs significant repair/overhaul)	

Figure 583-1-1. Boat Inspection Report

583-1.4.4 REPORTING TRANSFERS AND RECEIPTS. All receiving custodial commands shall report all boat transfers and receipts to PEO SHIPS PMS325 within 5 days of the transaction. This is necessary to accurately maintain inventory accountability. Correspondence is required with attention to PEO SHIPS PMS325 and may be accomplished by formal letter, naval message, or facsimile (FAX) transmission of DD Form 1348 (Issue Release/Receipt Document) (properly completed). Reports are not to be used for recording changes in status of boat condition (that is, under repair or not onboard).

583-1.4.4.1 Changes in Custody Status. All stocking activities shall promptly report changes in custody status of boats to PEO SHIPS PMS325 by marking up a copy of the PEO SHIPS PMS325 authorizing letter or message, or by forwarding a copy of DD Form 1348 as a turn-in document. The date reported shall be the exact date of the change, not the date mailed. The authority for the change in status shall be cited.

583-1.4.4.2 Transfers. All transfers and to whom issued shall be reported to PEO SHIPS PMS325.

583-1.4.4.3 Receipts. All receipts and from whom received shall be reported. The submission of these receipts shall be made promptly and shall not be delayed until the submission of NAVSEA 9583/3, Boat Inspection Report, Figure 583-1-1.

583-1.4.4.4 Disposition. Boat disposition is the responsibility of the custodian. The custodian is responsible for requesting Disposition Instructions via written request to PEO SHIPS PMS325. PEO SHIPS PMS325 will evaluate the request, including the Boat Inspection Report and determine the boat's disposition. Boat disposition includes turn-in to stock, transfer to another Navy custodian or disposal.

583-1.4.4.5 Repairs. Repairs are the responsibility of the custodian. Repairs are completed to ensure the boat is in a Ready-for-Issue condition.

583-1.4.5 BOAT SURVEYS. When a boat is in poor material condition or is damaged such that a U.S. Navy intermediate or depot level repair activity cannot affect economical repairs, the Commanding Officer may submit a Request for Disposition Instructions with Replacement including a boat inspection report, as defined in paragraph 583-1.5 (Turn-In Procedures). The completed letter and report shall be forwarded to PEO SHIPS PMS325 for authorization.

583-1.5 TURN-IN PROCEDURES

583-1.5.1 PEO SHIPS PMS325 AUTHORITY FOR TURN-IN OF BOATS. Turning in a boat for stock or disposal has specialized requirements, which are the responsibility of the custodian. General authority and reporting requirements are given in paragraph 583-1.3.

583-1.5.2 SURVEY REQUIREMENTS. Before turn-in, a Boat Inspection Report (BIR) must be performed. The Boat Inspection Report, NAVSEA 9583/3, Figure 583-1-1, will be submitted by the boat custodian to PEO SHIPS PMS325. Based on this survey, PEO SHIPS PMS325 will determine whether the boat is to be turned in for stock or for disposal, and will issue specific disposition instructions to the custodian activity.

583-1.5.3 TURN-IN FOR STOCK. Boats that do not qualify for disposal due to age and condition shall not be turned in for stock until they are in a Ready For Issue (RFI) condition. It is the responsibility of the custodian to ensure the boat is in RFI condition prior to turn in. Major spares, such as shafts, rudders, struts, or propellers, shall be turned in with the boat.

583-1.5.4 PREPARATION FOR TURN-IN. Whether turning in a boat for stock or for disposal it is the responsibility of the custodian activity to ensure that a lack of preservation or presence of environmentally hazardous materials onboard does not impose an additional burden on the receiving activity.

583-1.5.4.1 Removal of Hazardous Materials. All batteries, fire extinguishers, and fuel shall be removed and the bilges shall be dry and free of petroleum products before turn-in.

583-1.5.4.2 Preservation. The custodian activity shall preserve the boat in accordance with section 9 before turn-in. Additional shipping, hazardous material removal, and preservation costs resulting from rejection or noncompliance with turn-in procedures of a boat for turn-in will be the responsibility of the custodian activity.

583-1.5.5 RECEIPT INSPECTIONS. The receiving activity will inspect boats delivered for turn-in to ensure they comply with all turn-in procedures.

NOTE

The receiving activity may refuse receipt if the boat has not been properly prepared for turn-in or a signed “Boat Ready for Turn-In Certification Form” has not been provided.

Additional shipping, hazardous material removal and preservation costs resulting from rejection or noncompliance with turn-in procedures of a boat for turn-in will be the responsibility of the custodian activity.

583-1.5.6 REACTIVATION. The reactivation of boats that have been determined to be in excess, beyond economical repair, beyond service life, or otherwise disposed of, via Defense Reutilization and Marketing Office (DRMO), or by other means shall not be reactivated without first obtaining concurrence from PEO SHIPS PMS325.

583-1.5.6.1 Responsibilities. Commands reactivating boats with concurrence of PMS325 are responsible for compliance with all processes, procedures, and responsibilities contained within this NSTM, and all other DOD, OPNAV or NAVSEA instructions addressing the safe operation, maintenance, and administration of U.S. Navy boats.

583-1.6 ALTERATIONS

583-1.6.1 CHANGES TO AUTHORIZED BOAT CONFIGURATIONS. All configuration changes shall be based on the procedures described herein. Boat configuration changes to U.S. Navy boats are often necessary for user boat custodians to accomplish assigned tasks in their geographic location. Alterations may affect characteristics such as speed, displacement, cargo capability, passenger capacity, or outfit to support special functions such as diving or salvage. A Boat Alteration Record (BOATALT) (NSWCCDDN FORM 583-BASF [6-02]) is developed and issued by PEO SHIPS PMS325 for specific classes of boats or individual boats with special requirements. If the basic boat configuration is unchanged, e.g. no structural modifications or equipment changes, then no BOATALT is necessary. Before a boat alteration action can be initiated, an alteration authorization request (Figure 583-1-2) must be forwarded to PEO SHIPS PMS325 via the pertinent chain of command. The request must justify the need for the change; citing safety, logistics problems, increased capabilities, reduced operating cost, and a cost benefit analysis. PEO SHIPS PMS325 will review the alteration request and will determine if the alteration is economically and operationally justified. The analysis shall include:

a. Technical Feasibility Study. Evaluate the technical feasibility of the proposed change. Specifically:

   1. Validate the current configuration.
   2. Investigate alternatives.
   3. Estimate weight change.
   4. Estimate effect on weight, center of gravity and evaluate stability impact.
   5. Evaluate structural impact.
   6. Evaluate system impact.
   7. Finalize weight impact.
   8. Report results.
   9. Evaluate interface impact.

b. Cost Benefit Analysis. Evaluate the cost feasibility of the change by performing a Cost of Ownership Analysis (COA) and completing a Justification/Cost form (NAVSEA FMP Manual refers). The COA compares the cost of the existing configuration with the replacement or new configuration. Total cost of ownership includes:

   1. Performance cost and saving (e.g., increase and decrease in fuel cost; reliability of the equipment).
   2. Maintenance cost and saving (e.g., changes to manuals, training, provisioning, Planned Maintenance System (PMS), etc.).
   3. Cost of installation of the new configuration.
   4. One time cost of the new configuration (e.g., COA, BOATALT, prototyping, testing and evaluating).
   5. Intangible costs and benefits (performance, safety, maintainability, etc.).
   6. Evaluation of the remaining life of the boat proposed for the installation (survey via correspondence and on-site; review maintenance and performance records).
   7. Calculation of the Total Cost of Ownership of the new configuration versus the existing configuration, based on the remaining life of the boat.

If justified by the analysis, PEO SHIPS PMS325 will prioritize, fund, and direct development of the proposed alteration. If available program funding is insufficient, the requesting activity may assume the cost of the development of the alteration. Unfunded approved alterations will be deferred and considered in the next POM cycle. Alteration authority may be issued by Boat Alteration (BOATALT), Alteration-Equivalent-To-Repair (AER), or PEO SHIPS PMS325 authorizing letter, depending upon the magnitude of the proposed configuration change.

Alteration of a boat, to any extent not shown on the approved NAVSEA drawing, is not permitted without prior authorization from PEO SHIPS PMS325 regardless of the funding source. In certain circumstances, minor configuration changes may be authorized by type commanders as Type Commander Issued Alterations (TIA). Alterations of any type will not be approved which would result in a net adverse stability condition, increase the weight of a ship's boat causing the Safe Working Load of the assigned davit to be exceeded, or result in design mission capability degradation. Changes in design mission require prior approval of the Chief of Naval Operations in most circumstances.

DATE: _____

BOAT ALTERATION REQUEST FORM

BOAT HULL NO: _____ **PRIORITY CLASS:** ☐ A ☐ B ☐ C

TITLE OF ALTERATION RECOMMENDATION: _____

REASON FOR REQUEST:

- ☐ SAFETY
- ☐ IMPROVED CAPABILITY
- ☐ REDUCED MAINTENANCE
- ☐ INADEQUATE DESIGN
- ☐ ENVIRONMENTAL
- ☐ MAINTENANCE PROBLEM
- ☐ HUMAN FACTORS
- ☐ EQUIPMENT UNAVAILABILITY
- ☐ OTHER (EXPLAIN)

AREA OF BOAT AFFECTED:

- ☐ HULL
- ☐ MECHANICAL
- ☐ ELECTRICAL
- ☐ ELECTRONIC

SKETCHES ILLUSTRATING PROPOSED CHANGE:

- ☐ YES (INCLUDE WITH FORM)
- ☐ NO

VENDOR INFORMATION: (IF APPLICABLE)

PART NUMBER _____
CATALOG NUMBER _____
VENDOR DOCUMENTATION _____

BRIEF DESCRIPTION OF PROPOSED ALTERATION: _____

_____
_____
_____
_____
_____
_____
_____
_____
_____

POINT OF CONTACT:

_____

NAME **POSITION/GRADE/RANK/RATE** **TELEPHONE**

NSWCCDDN FORM 583-BASF (6-02)

Figure 583-1-2. Boat Alteration Request Form

583-1.6.2 BOAT ALTERATION (BOATALT) RECORDS. The BOATALT record describes in detail the configuration change that is authorized. Engineering sketches are provided with alteration material lists (AML), quality assurance, and integrated logistics support requirements. Maintenance, special tools and test equipment, billet and supporting technical documentation changes are identified. Boat custodians are responsible for requesting PMS documentation changes and reporting completion of alteration work on standard OPNAV 4790/2K CSMP forms, as well as reporting configuration changes to the responsible Configuration Data Manager (CDM) via OPNAV 4790/CK, and by letter to the boat In-Service Engineering Agent (ISEA) designated by PEO SHIPS PMS325 and NAVSEA 05D. BOATALT application by registry number or boat type mark (such as all 13mPEs) is usually annotated on the first BOATALT page. The Liaison Action Record (LAR) document (Figure 583-1-3) provides the boat custodian with documented request to ISEA or the planning yard for maintenance and engineering issues support for non boat alteration issues.

583-1.6.2.1 Numbering. The BOATALT identification consists of the boat length, abbreviated two-letter boat type, the alteration four-digit serial number, and an accomplishment priority letter (Example: 11RX/0102 A). A revision to a basic BOATALT carries a letter sequence designation (Example: Rev D for the fourth revision). If an alteration has application to several different types of boats, then it will carry a GENERAL designation with the serial number, an accomplishment priority letter, and the sequential revision letter designation.

583-1.6.2.2 Boat Alteration. The BOATALT class indicates the relative importance for accomplishment. The priorities are defined as follows:

a. Class A: MANDATORY ACCOMPLISHMENT. Usually for safety reasons or compliance with effective public laws, regulations or court decisions.

b. Class B: ESSENTIAL FOR ACCOMPLISHMENT. Provides a needed improvement in boat capabilities.

c. Class C: DESIRABLE ACCOMPLISHMENT. A useful improvement in boat capabilities.

Example: BOATALT RECORD 11RX/0002A is the second alteration approved for the 11M RIB boat, which has first priority for accomplishment because of safety or mission essentiality.

583-1.6.3 ACCOMPLISHMENT. A BOATALT with a low sequence number should be checked for application. Boat types of the same class with a hull number year indicator later than the approval date of the BOATALT should be examined for application to the construction contract date and the type and mark of the boat. The Historical Boat Alteration Listing is published in June of each year by the Planning Yard and given wide distribution to boat custodians, repair and overhaul activities, and operational and administrative commanders. This annual listing summarizes effective boat alterations by boat type and annotates BOATALT cancellations. This cancellation list should be examined for application to boat alteration records. Cancelled BOATALTs need not be retained for reference purposes in ship or shore station files. Accomplishment of all BOATALTs shall be recorded on the boat's BOATALT label plate.

583-1.6.3.1 Stock Boats. Class A and B BOATALTs may be accomplished during depreservation or repair of a boat before issue, if funds are available. Priority C BOATALTs will be accomplished only if deemed necessary and if funds are available.

LIAISON ACTION RECORD

From:				**Priority:** ___ Emergent (24 hour) ___ Urgent (5 working days) ___ Routine (10 day)
To: **Naval Surface Warfare Center** Carderock Division Det Norfolk 2600 Tarawa Court, Suite 200 Norfolk, Va. 23521-3239				**Originator Number**
Attention: Robert Bradford (fax 757-462-3856)				
Originator:	**Telephone**	**Dept/Code**	**Date**	**Action No:**
Planner:				
Alteration (BOATALT, AER, ORDALT, etc)				**SWAB/ESWBS**
Subject:				
Request/Problem 1.	**Originator FAX No:**	**Ship:** **Hull:**	**UIC:**	
Submitting Authority Signature				**Date**
References: (A)				
Reply/Resolution 1.				
Completed By: **Code:** **Telephone** **E-Mail**	**Approved By (Branch Head):** **Signature**			**Date**

Figure 583-1-3. Liaison Action Request (LAR) Form

583-1.6.3.2 Active Boats. Class A BOATALTs should be accomplished at the next scheduled Intermediate Maintenance Activity (IMA) repair availability. Ship's force or the supporting organization level maintenance organization should complete an A priority BOATALT as soon as possible. A Class B BOATALT should be accomplished within one year of the approval date on the BOATALT. The elective C class BOATALT may be accomplished at the earliest convenience of the boat custodial activity. Navy Operation and Maintenance funds (OMN) administered through the major fleet commanders to subordinate activities are the usual source for BOATALT material acquisition and commercial contractor installation services, if required. BOATALTs installation may be accomplished by organization or intermediate level maintenance activities during assigned repair availabilities.

583-1.6.3.2.1 Repair Activities. Repair activities should maintain active files of approved BOATALTs and AERs and LARs by boat type. The files should be updated annually within thirty days of receipt of the Historical Boat Alteration Listing described in paragraph 583-1.6.4 and canceled BOATALTs deleted from the active files. BOATALTs, AERs, and LARs not on file should be requested, using the replacement directions provided in the Historical Boat Alteration Listing. The BOATALT completion label plate should be examined for accuracy during assigned boat repair availabilities or overhauls and compared to the BOATALT, AER, and LAR file for the type boat under repair. A review of the technical specifications for each applicable BOATALT, coupled with a boat inspection, will identify which BOATALTs, AERs, and LARs were not completed or only partially completed for the specific hull under repair. The boat custodial command should be advised of discrepancies for entry into his CSMP (Current Ship's Maintenance Project) for subsequent repair availability planning purposes.

583-1.6.4 BOATALT ISSUANCE AND CANCELLATION. The BOATALT and AER file is reviewed annually by PEO SHIPS PMS325 and the Planning Yard to identify candidates for cancellation. Periodic cancellation summaries are issued to a wide distribution list during the year, using the first page of the BOATALT form. The annual Historical Boat Alteration Listing recaps cancellation listings for reference. BOATALTs and AERs are approved by NSWCCD or the Planning Yard. LARs are approved by the ISEA or planning yard. Distribution is subsequently made by the Planning Yard to boat custodial commands, repair activities, and operational and administrative commanders. A list of BOATALTs may be found at www.boats.dt.navy.mil.

583-1.6.5 AUTHORIZATION. BOATALTs issued are to be accomplished either by forces afloat or by an Intermediate Maintenance Activity (IMA). Occasionally, BOATALTs are issued of such a complex nature that they will have to be accomplished at a depot level repair activity.

583-1.6.6 FUNDING. BOATALT, AER, and LAR accomplishment is funded by the boat's custodian.

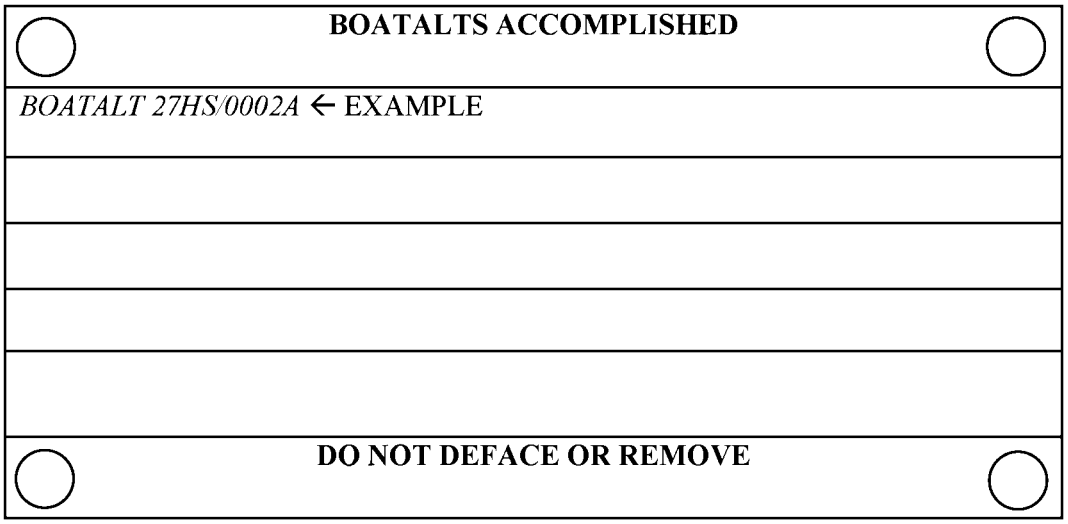
583-1.6.7 EXPENDITURE OF FUNDS FOR UNAUTHORIZED ALTERATIONS. Unauthorized alterations, regardless of funding source, are strictly prohibited and could result in formal administrative review procedures, particularly when funds are required to restore the boat to its original configuration.

583-1.6.8 DISTRIBUTION. The BOATALTs will be distributed under cover letter by the Planning Yard approval. An approved distribution list is provided with the boat alteration. Distribution is limited to boat custodians affected by the configuration change, boat repair activities, support commanders, and OPNAV sponsor.

583-1.6.8.1 Distribution Requests. Addition or deletion change requests for the distribution list should be directed to the planning yard for boats:

Naval Surface Warfare Center
Carderock Division, Detachment Norfolk
2600 Tarawa Court
Suite 303
Norfolk Virginia 23521-3239
Or access website www.boats.dt.navy.mil

583-1.6.9 COMPLETION RECORD. Upon completion of an authorized BOATALT, a 316L CRES plate shall be installed or updated with permanent lettering by the installing activity including completion information as depicted in Figure 583-1-4. Boat custodians shall comply with applicable OPNAVINST 4790 (series) reporting instructions, using OPNAV 4790/CK forms for recording BOATALT and AER completions in the Weapons System File. Accomplishment of BOATALT or AER installation shall also be reported by letter to the Planning Yard. Boat custodians are required to weigh assigned boats upon completion of weight impacting alterations in accordance with paragraph 583-2.1.2. Scale weighing at time of receipt is advisable to establish a base line reference for future weight growth. Boat weighing by various boat construction yards has been noted to be in error by 15 percent or more because of faulty scales or weight calculation errors by the accepting contract activity.



BOATALT LABEL PLATE

MATERIAL: 3/32" MINIMUM 316L STAINLESS STEEL SHEET –
ABOUT 6" WIDE BY 3 ½" HIGH –
WITH ¼" ENGRAVED BLACK-FILLED LETTERS.
BOATALT INFORMATION MAY BE STAMPED.

Figure 583-1-4. Boat Alteration Label Plate

583-1.6.10 REQUESTS FOR BOATALT ACCOMPLISHMENT BY BOAT CUSTODIANS. Boat custodians, both afloat and ashore, scheduling an applicable Boat Alteration Record for accomplishment should obtain support commander approval when funding does not derive from local unit fund operating or special project funds.

583-1.6.11 CONVERSIONS. When authorization is requested to change the standard U.S. Navy design configuration for a specialized function, such as work boat conversion to support diver operations, technical authorization is obtained from PEO SHIPS PMS325. NSWCCD will be tasked to develop a Boat Alteration Record. During engineering development, special equipment installation requirements are reviewed for impact on boat weight and stability, and a standard installation method is established which identifies installed equipment removal and special tool requirements, provides detailed engineering drawings or sketches, and describes installation techniques, test methodology and standards, lists concurrent boat alterations to be accomplished, provides a material list with MILSPEC or MIL STD identification, and summarizes logistics support and technical documentation requirements. After signature approval, the authorizing Boat Alteration Record is distributed by the Planning Yard to various boat custodians, repair activities, and administrative commanders for conversion planning and funding.

583-1.6.11.1 Conversion Without BOATALT. In those cases where a partial or full conversion has been accomplished to a standard U.S. Navy boat design in the absence of an authorizing BOATALT Record, PEO SHIPS

PMS325 will document the technical changes to the boat, analyze the impact on weight and stability, and direct corrective action where the installation varies from U.S. Navy technical standards. A technically authorizing BOATALT will be promulgated for the information of repair activities, support commanders, and boat custodians to apprise them of current special function boat conversion opportunities and disseminate the standard installation method and material lists.

583-1.7 INSPECTION

583-1.7.1 NEW BOATS. Most new boats are delivered to a U.S. Navy Inventory Control Point (ICP) pending assignment to new construction, assignment to meet emergent requirements, or replacement for existing boats. An inspection is accomplished by PEO SHIPS PMS325 upon arrival at the ICP to ensure compliance with contract requirements and identify any shipping damage which may have occurred. In some cases where new construction boat delivery schedules are not in consonance with new construction ship delivery requirements, boats may be shipped directly from the building boat yard to the cognizant ship construction activity in care of the resident U.S. government inspection activity or the construction yard as government furnished equipment.

583-1.7.1.1 Warranty. Each new boat and its associated equipment are covered under warranty. The boat manufacturer is responsible for the construction of the boat and the installation of equipment. Individual pieces of equipment are warranted by their own manufacturer. In the event of equipment failure contact the specific equipment manufacturer for repair under warranty. Some boats may be held at Navy Inventory Control Points for extended periods of time for new construction ships or for shore based activities. Generally, boats and their major propulsion components are considered new for warranty purposes until received by the user activity. Some minor equipment warranties may have expired while in storage; e.g., VHF radios. For assistance with warranty start dates contact NSWCCD-Det Norfolk, Code 236 Integrated Logistics Support Branch, Boat Inventory Management (BIM). For assistance with claims contact NSWCCD-Det Norfolk, Code 234 Life Cycle Management and Sustainment Engineering Branch. These points of contact can be found at http://boats.dt.navy.mil/organization-.asp. The length of warranty varies by boat and equipment manufacturer. This information can be found in the manuals provided with the boat. Be sure to fill out the registration cards provided and return them to the equipment manufacturers.

Before shipment, these boats receive a special inspection to identify deficiencies in outfit and for damage incurred in storage. Inspection deficiencies including the effects of weathering are usually corrected at the receiving point. Defects in workmanship or initial parts failure should be referred to PEO SHIPS PMS325 for resolution. PEO SHIPS PMS325 and the cognizant support commanders have resources upon which to effect corrective action. It is imperative that the boat custodian conduct a receipt inspection using the Boat Check List (Table 583-1-1) to identify deficiencies to PEO SHIPS PMS325 and the support commander.

583-1.7.1.2 Boat Receipt Inspection. All custodians of new boats are requested to perform an immediate inspection upon receipt using the Boat Check List (Table 583-1-1). Notify PEO SHIP PMS325 if the boat is preliminarily acceptable. Boat hoisting equipment shall be verified to ensure the Hoisting Label Plate specifies the design hoisting weight of boat to be hoisted. If the boat's actual hoisting weight exceeds the design hoisting weight, notify PEO SHIPS PMS325 immediately.

Table 583-1-1. Boat Check List

BOAT TYPE:				**HULL NO.:**	
SHIPPING ACTIVITY		**RECEIVING ACTIVITY**		**DESCRIPTION**	**REMARKS**
SAT	UNSAT	SAT	UNSAT	HULL EXTERIOR	
				Bow/Stem	

Table 583-1-1. Boat Check List - Continued

BOAT TYPE:				**HULL NO.:**	
SHIPPING ACTIVITY		**RECEIVING ACTIVITY**		**DESCRIPTION**	**REMARKS**
				Port Gunwale	
				Port Side	
				Port Rub rail	
				Port Chine	
				Port Bottom	
				Stbd Gunwale	
				Stbd Side	
				Stbd Rub rail	
				Stbd Chine	
				Stbd Bottom	
				Transom	
				Transom Corners	
				Transom Extension	
				Propeller	
				Water Jet	
				Rudder	
				Shaft	
				Strut	
				Strut Brg	
				Stuffing Box	
				Anodes (zinc)	
				Ramp	
				Ramp Hinge	
				Ramp Gasket	
				Paint	
SAT	UNSAT	SAT	UNSAT	HULL INTERIOR	
				Bulkheads	
				Battery Boxes	
				Cargo Plat	
				Coxswain Plat	
				Cushions	
				Door	
				Hatches	
				Hand/Grab Rails	
				Lifting Pads	
				Lockers	
				Manholes	
				Seats	
				Swim Platform	
				Voids	
SAT	UNSAT	SAT	UNSAT	HULL TOPSIDE	
				Cabin Top	
				Cabin Sides	
				Canopy	

Table 583-1-1. Boat Check List - Continued

BOAT TYPE:				**HULL NO.:**	
SHIPPING ACTIVITY		**RECEIVING ACTIVITY**		**DESCRIPTION**	**REMARKS**
				Chocks	
				Cleats	
				Coamings	
				Decks	
				Deck Coverings	
				Windows/Ports	
				Window/Shield Frame	
				Window/Shield Glass	
				Wipers/Wiper Motor	
				Bow Rails	
				Handrails	
				Lifelines	
				Taffrails	
				Toe Rails	
				Pilothouse	
				Ammo Boxes	
				Access Panels/Doors/Hatches	
				Paint	
				Tow Posts	
				Strobe/Loudspeaker/Hailer Mounts	
				Radar Mast	
				Antenna Mounts	
				Gun Mounts	
SAT	UNSAT	SAT	UNSAT	MAIN PROPULSION	
				Engine	
				Reverse	
				Decks	
				V-Drive	
				Outboard	
				Outdrive	
				Transmission	
				Water Jet	
				Starter	
				Alternator	
				Pump FW	
				Pump SW	
				Heat Exchanger	
				Raw water strainer	
SAT	UNSAT	SAT	UNSAT	PIPING SYSTEM	
				Bilge Pipe	
				Bilge Valve	
				BWOD	
				FW Pipe	

Table 583-1-1. Boat Check List - Continued

BOAT TYPE:				**HULL NO.:**	
SHIPPING ACTIVITY		**RECEIVING ACTIVITY**		**DESCRIPTION**	**REMARKS**
				FW Valves	
				SW Pipe	
				SW Valves	
				LO Pipe	
				FO Pipe	
				FO Valves	
				FLOCS	
				Exhaust System	
				Mufflers	
				Keel Cooler	
				Strainers	
				Filter LO	
				Filter FO	
				Hoses	
				Seacocks	
				Accumulators	
				Hyd Pipes/Hoses	
				Hyd Reservoir	
				Tanks	
SAT	UNSAT	SAT	UNSAT	ELECTRICAL SYSTEM	
				Wiring	
				Distribution Panels	
				Lights Navigation	
				Lights Int	
				Battery Cables	
				Battery Charging System	
				Horn	
				Spot Lights	
				DC Converter/Inverter	
				Deck/Work Lights	
SAT	UNSAT	SAT	UNSAT	NAVIGATION SYSTEMS	
				Radio/Antenna	
				Radar/Mast	
				Global Positioning System (GPS)/Mount	
				Compass	
SAT	UNSAT	SAT	UNSAT	INSTRUMENTS/GAUGES	
				Ammeters	
				Oil Pressure, Engine	
				Oil Pressure, Reservoir	
				Oil Temperature	
				Water Temperature	
				Hydraulic Pressure	

Table 583-1-1. Boat Check List - Continued

BOAT TYPE:				**HULL NO.:**	
SHIPPING ACTIVITY		**RECEIVING ACTIVITY**		**DESCRIPTION**	**REMARKS**
				Hydraulic Temperature	
				Tachometer	
				Fuel Gauges	
				Tilt/Trim Switch	
				Hourmeter	
SAT	UNSAT	SAT	UNSAT	AUXILARY EQUIPMENT	
				Air Compressor	
				Windlass	
				Capstan	
				Cranes	
				Fire Pumps	
				Fire Extinguishing System	
				MG Set	
				Diesel Generator	
				Winches	
				Steering Gear	
				Heating System	
				Air Conditioning System	
				Bilge Pumps	
				Spares	

583-1.7.1.3 Unsatisfactory Inspection. If the boat is not considered to be preliminarily acceptable, recipients are requested to:

a. Notify PEO SHIPS PMS325 of any shipment damage observable, furnishing photographs if practical.

b. Notify PMS325 of any boats received that are unsatisfactory, defective, or deficient due to improper manufacturing or equipment installation. It is recommended that, in addition to the initial inspection, all new boats be inspected at intervals during the warranty period as to allow for proper detection and timely reporting of defects that might occur during the guarantee period.

583-1.7.1.4 Acceptance Notification. Notification of preliminary acceptance shall be by letter and in no case shall the initial inspection be delayed for a period in excess of five days from the date of receipt of the boat. All boats receive extensive tests and trials under the terms of the contract. Accomplishment of additional tests and trials on new boats received is not mandatory but may be conducted if deemed advisable.

583-1.7.1.5 Estimating Costs. Only those representatives designated by PEO SHIPS PMS325 having knowledge of fleet requirements, standards of workmanship required in naval boats, and of the details cited in applicable plans and specifications for various materials and equipment incorporated, shall inspect boats for nonconforming deficiencies or for estimating repair costs. Refer to paragraph 583-1.10.2.

583-1.7.2 BOATS IN STORAGE. Initial inspection of boats received in stock is performed by PEO SHIPS PMS325.

583-1.7.2.1 Pre-Issue Inspection. Before issuing a boat from storage, an inspection of the boat shall be made. If deficiencies exist, or required alterations have not been accomplished, these deficiencies shall be reported to PEO SHIPS PMS325 for further instructions. Depreservation and starting instructions shall be available to guide the recipient of the boat. If the boat has been stored for a year or more and the condition is not known, a trial run shall be made unless otherwise directed by PEO SHIPS PMS325.

583-1.7.2.2 Post Issue Rejection. Rejection of a boat after issue and shipment to the ship or shore station should be carefully considered because of time delays that can occur in identifying and shipping another suitable boat. If an RFI boat is received and discrepancies are found and indicated on a boat check list, forward a copy the check list along with the receiving report to PEO SHIPS PMS325. However, the following factors shall not be cause for rejection by ships and shore stations:

a. Incomplete inventory of spares. Notify PEO SHIPS PMS325 immediately in the event of an imminent deployment where full Boat Allowance List (BAL) and required Coordinated Shipboard Allowance List (COSAL) load lists are necessary as deployment spares.

b. Slight variations in hull painting schemes caused by fading or touch-ups.

c. Waterline saltwater discoloration caused by initial operations testing at the building yard. Hull bottoms are usually scrubbed and hull dings touched up at the building yard before shipment.

d. Slight rusting on metallic parts, which can be readily cleaned and preserved.

e. Incomplete outfitting discrepancies, which should be immediately described to PEO SHIPS PMS325 for correction.

f. Cosmetic blemishes correctable by buffing or light sanding and road hazard dings occurring during surface delivery.

583-1.7.2.3 Non-RFI Issue. Because of budgeting constraints and scheduling requirements, a non-RFI boat may be offered by PEO SHIPS PMS325 to boat custodians requesting turn-in and replacement of damaged boats or boats which are not economical to repair. A newer boat of later design but with prior fleet use may be offered on an as-is basis. Usually an inspection opportunity is offered to the receiving boat custodian before acceptance. The following factors are not cause for rejecting a non-RFI boat when it is received alongside:

a. Lack of complete hull painting.

b. Slight cracks or dished-in hull areas not affecting hull integrity or strength.

c. Oxidized metallic areas that can be preserved.

d. Absence of original outfit items and repair parts.

e. Lack of technical documentation such as Boat Information Book, Technical Manuals, and operating records. Technical documentation can be obtained from publications stocking activities.

f. Deformation of hull parts such as the hull beading or bilge keels.

It is recommended that non-RFI hulls accepted by boat custodians receive immediate repair availability to restore the boat to an acceptable condition of readiness and appearance.

583-1.8 PREPARATION FOR SHIPMENT

583-1.8.1 SHIPMENT DESTINATIONS. Unless otherwise specified, boats shipped from stock or for transfer shall be prepared for delivery as follows:

a. Local destination. Boats issued locally shall be delivered in the as-is or as stored condition. All items not installed should be secured against movement. Unprotected equipment openings shall be sealed to prevent entrance of dirt or water. Attach depreservation instructions to the equipment involved. Refer to paragraphs 583-9.4 through 583-9.4.3.2 for engine starting instructions.

b. Destination not local. Boats shipped beyond the local area shall be preserved as required by paragraphs 583-9.2 through 583-9.2.4.

583-1.9 SHIPMENT OF BOATS

583-1.9.1 PEO SHIPS PMS325 SHIPMENT ORDER. Shipment of boats will normally be accomplished by shipment order prepared by PEO SHIPS PMS325.

583-1.9.2 SHIPMENT PRECAUTIONS. The following precautions shall be observed when loading boats for shipment:

a. Cradle cross members (chocks) shall be rigidly braced to prevent collapse.

a. Towing padeyes or other fittings installed on the boat shall not be used as tie down points.

c. Strongbacks shall not be tensioned to such a degree that the chocks deform the hull.

d. Bumpers shall be installed where the ends or sides of the boat may be damaged during shipment.

e. Snubbing of boats so that the forces received during transit are transmitted to the stem or transom end is not permitted.

f. The weight of the boat shall be borne by the keel supports, not the side bunks. Side bunks for plastic and steel boats should be at least 10-inches wide and should be located opposite a frame or bulkhead, or where weights are concentrated, such as the engines. In case the boat does not have structural type keel, full strength supports shall be installed opposite the interior longitudinal bilge stringers.

g. Bilge plugs shall be removed and attached to the steering wheel at the coxswain’s station.

h. Ensure that the engine cooling and piping systems are drained or protected from freezing.

i. Batteries shall be disconnected.

j. Fuel tanks shall be drained.

k. Consideration should be given to temporary storm cover over windows.

l. Secure all mast and antennas.

m. Secure all doors and hatches against leaks and damage.

583-1.10 REPLACEMENT OF BOATS IN SERVICE

583-1.10.1 SERVICE LIFE FOR NAVY BOATS. Obsolescence factors, including material obsolescence, operational obsolescence and environmental obsolescence are not applicable factors to be considered in the determination of service life. The service life of any boat is dependent on a number of other factors, such as age, usage, operational demands, etc. The service life of a Navy Standard 7-meter Rigid Inflatable Boat (RIB) and a Navy Standard 11-meter Rigid Inflatable Boat (RIB) is 12 years, other boats have an expected service life of 10 years when routinely operated at less than 1000 hours per year, and 7 years for those which have 24/7 operational requirements. Examples are the Antiterrorism/Force Protection, with an increased operational tempo, which will have a reduced service life. Some steel and aluminum boats have service life expectancies of up to 25 years. Requests for replacement should be submitted through the appropriate chain of command with a completed copy of the Boat Inspection Report.

583-1.10.2 REPAIR COST ESTIMATES. Estimates of repair costs to boats shall be made by a designated representative of PMS325. A boat needing repairs beyond the capability of ship's force or station personnel shall be made the subject of a work request to a repair activity in the availability period. The size, type of boat and its U.S. Navy hull registry number shall be given.

583-1.10.3 TYPE OR AREA COMMANDER'S FUNDS FOR REPAIR. The repair of boats shall be funded with Type or Area (Support) Commander's funds and shall be accomplished without reference to NAVSEA, unless deemed to be beyond economical repair or beyond the expected service.

583-1.10.4 REPAIRABILITY OF BOATS. No in-service standard Navy designed boat will be considered for replacement until it has reached the expected service life or has encountered a major catastrophe that renders it unusable or unserviceable. If the repair activity, Type, or Area Commander considers the cost of repair to be excessive, the responsible activity shall complete and submit NAVSEA 9583/3 (Figure 583-1-1) and forward to PEO SHIPS PMS325. If PEO SHIPS PMS325 decides the boat is repairable, repairs shall be made and funded with Type or Area Commander's funds. The feasibility of repairing or replacing the boat will be determined solely by NAVSEA.

583-1.10.5 ENGINE STATUS. The NAVSEA 9583/3 (Figure 583-1-1) shall include a statement as to whether or not the engine is serviceable or warrants repair.

583-1.10.6 PREPARATION OF BOATS TURNED IN FOR REPAIR OR STOCK. Whenever a boat is turned in for repair or for stock, the fuel tanks shall be drained and the bilges cleaned. Ensure that the engine cooling system is drained or protected from freezing and that necessary preservation is accomplished. There shall be no cannibalization of the boat or propulsion system. The technical manuals, spare propellers, and shafts shall be turned in with the craft. Boats are to be turned in on a suitable storage cradle. Custodian activity is responsible for any expenses associated with failure to properly prepare the boat for shipment to its destination and turn-in as stock. Each boat turned in to stock as authorized by the Boat Inventory Manager (BIM) must be turned in on an appropriate shipping cradle (Figure 583-1-5) or trailer (Figure 583-1-6). Shipboard boat dollies are not a suitable replacement for a shipping cradle or trailer unless specifically authorized by the BIM. Shipboard boat dollies are part of the ships equipment handled by the cognizant Planning Yard.

Figure 583-1-5. Boat Cradle

Figure 583-1-6. Boat Trailer

583-1.11 STOCK CLASSIFICATION, LEVELS, AND DISTRIBUTION

583-1.11.1 STOCK CLASSIFICATION. Stock boats are divided into three categories. As noted below, stock boats shall be placed in one of these categories only because of inspection by qualified personnel who complete NAVSEA 9583/3 (Figure 583-1-1).

583-1.11.1.1 Issuable (Ready for Issue) (A Condition). Any boat that can be made operational and seaworthy with a minimum amount of productive labor time and without expenditure of funds for major alterations or repair other than depreservation, varnishing, painting, minor caulking, testing, and electrical or mechanical adjustments. These items shall be accomplished after the boat is issued. The presence of miscellaneous outfit items, such as life jackets, boat hooks, life ring, mooring lines, etc., which are part of the ship's Allowance Equipage List (AEL) for the boat, is not required for a boat to be considered issuable.

583-1.11.1.2 Repairable (F Condition). Any boat not in usable condition, for which a determination has been made that it is economically feasible to repair the boat to usable condition, refer to paragraph 583-1.10.3.

583-1.11.1.3 Beyond Economical Repair (X Condition). Any boat considered too costly (refer to paragraph 583-1.10.4 for definition) to place in usable condition.

583-1.11.2 STOCK LEVELS. The total number and types of boats to be carried in inventory at ICPs will be determined by PEO SHIPS PMS325.

583-1.11.2.1 Minimum Stock Levels. Minimum stock levels of issue boats are no longer being established. Stock boats will be repaired to meet near term requirements as directed by PEO SHIPS PMS325, within available funds.

583-1.11.2.2 Uneconomical Repair to Stock Boats. Stock boats which are considered to be uneconomical to repair, based upon the latest Inspection Report may be held in stock because of a critical shortage or because no substitute boat can be utilized. When it is determined by PEO SHIPS PMS325 that the special status of the boat no longer exists, disposal will be directed by PEO SHIPS PMS325.

583-1.11.2.3 Stock Boat Repairs. Repairs to stock boats shall not be accomplished unless specifically authorized by PEO SHIPS PMS325. Preference will be given at all times to those boat types having the highest rate of issue and the largest requirement of mobilization. Selection of boats for repair to issuable condition shall be made from existing inventory.

583-1.11.3 STOCK DISTRIBUTION. Selection of boats for issue shall be on the first-in first-out basis whenever practical and shall be made from existing stocks of issuable boats.

SECTION 2
DIMENSIONS, WEIGHTS, AND CHARACTERISTICS

583-2.1 STANDARD NAVY BOATS

583-2.1.1 DIMENSIONS, WEIGHTS AND CHARACTERISTICS. These measurements of U.S. Navy standard boats can be found in the CBSS.

583-2.1.2 WEIGHT REPORTING. All standard Navy boats and craft are weighed prior to delivery and this weight is recorded as the Contract Acceptance Weight. For ships' boats, a Design Hoisting Weight is established which includes the Contract Acceptance Weight, the weight of the authorized crew members at 165 pounds each, full fuel tanks, outfitting items, and an allowance for onboard engineering consumables. The hoisting slings and fittings are rated by an engineering evaluation of their mechanical component breaking strengths and failure levels. The weight of the boat should never exceed the Safe Working Load rating of the davits.

583-2.2 REFERENCE FOR OPERATING PERSONNEL

583-2.2.1 IMPORTANT CHARACTERISTICS. Table 583-2-1 furnishes a ready reference for operating personnel of the important characteristics of most Navy boats and craft. The hoisting weights given in this table are not to be used for testing boat-handling davits. All weights given in Table 583-2-1 are average weights and all boats are glass reinforced plastic, unless otherwise noted.

Table 583-2-1. Characteristics for Navy Boats and Craft

Boat/Craft	Overall Length	Beam	Engine (HP)	Height w/o Cradle	Fuel Capacity (gals)	Designed Hoisting (lbs)	Maximum Disp (lbs)
4M RX Rigid Inflatable Non Std	11.8 ft	5.5 ft	9.9/75		3		135,000
5M RX Rigid Inflatable Non Std	22.3 ft	8.3 ft	200		36		
6M RB Rigid Inflatable Boat	22.3 ft	9 ft	250		34	4,500	
6M RX Rigid Inflatable Non Std	19.17 ft	7.67 ft	135		40		
7M RB Rigid Inflatable Boat	24.25 ft	9 ft	210/230		34	5,600	
7M RX Rigid Inflatable Non Std	24.25 ft	9 ft	Inboard 227		35		
7M RX Rigid Inflatable Non Std	24.25 ft	9 ft	Outboard 135		35		
7M UB Utility Boat	26.75 ft	9 ft	135		100	6,600	
7MMM Marine Mammal			175		185		
8M HS Harbor Security	28.77 ft	9 ft	135		100	7,000	
8M PE Personnel Boat	26.25 ft	9.33 ft	180		52	8,800	
9M LH Line Handling Boat	30.67 ft	10.83 ft	315		100		
9M RX Rigid Inflatable Non Std	32.35 ft	10.6 ft	225		225	10,000	

Table 583-2-1. Characteristics for Navy Boats and Craft - Continued

Boat/Craft	Overall Length	Beam	Engine (HP)	Height w/o Cradle	Fuel Capacity (gals)	Designed Hoisting (lbs)	Maximum Disp (lbs)
10M HS Harbor Security	33 ft	10.6 ft	315		200	13,600	
10M PE Personnel Boat	32.78 ft	11 ft	220		100	15,700	
10M UB Utility Boat	33.42 ft	11 ft	115		90	11,000	
11M RX Rigid Inflatable Non Std	39 ft	11.83 ft	380		265		
11M RB Rigid Inflatable Boat	w/cabin 36.10 ft	11.53 ft	380		265	17,637	19,000
11M RB Rigid Inflatable Boat	w/o cabin 39 ft	11.83 ft	380		280	17,637	22,000
11M PL Landing Craft, Personnel (Light)	36.02 ft	12.17 ft	Inboard Die-sel		200	19,850	
12M PE Personnel Boat	40.21 ft	12.08 ft	220		151	19,320	
15M UB Utility Boat	50.25 ft	14.83 ft	180		170	24,000	
15M WB Work Boat	50.25 ft	14.42 ft	220		490	56,400	
18M RX Rigid Inflatable Non Std	25 ft	8 ft	100				
19’ BB Barrier Boat	19 ft	10 ft	6BTA5.9 260		180	22,000	
19’ BB Barrier Boat	19 ft	10 ft	QSB5.9300		180	22,000	
22’ UB Utility Boat	22.25 ft	8.5 ft	Honda 150	6 ft	90		
22’ UB Utility Boat	22.25 ft	8.5 ft	Mercury 135	6 ft	90		
22’ NS Non-Standard	22 ft	8.5 ft	115		126		
22’ BB Barrier Boat	22 ft	11 ft	260	x	120	31,000	
23’ MM Marine Mammal	23 ft		175		100		
23’ UB Utility Boat	23 ft	8.5 ft	115/150		60		
24’ BH Boom Handling	24 ft	7.92 ft	260	8 ft	130	10,500	10,500
24’ HS Harbor Security	27 ft	8 ft	115/225	9.33 ft	68	6,420	6,808
24’ DS Dive Support	24 ft		130				
24’ NS Non-Standard	24 ft	8 ft	75 OB		20		
24’ RB Rigid Inflatable Boat	23.75 ft	9 ft	165/175	6.75 ft	35	5,300	7,300
24’ RX Rigid Inflatable Non Std	24.5 ft		150/175				
24’ UB Utility Boat	26 ft	8.5 ft	115/225		180	6,200	
12M PE Personnel Boat	40.21 ft	12.08 ft	220		151	19,320	
25’ DS Dive Support	26.9 ft	8.5 ft	135/150		145		
25’ PB Patrol Boat	25 ft	8 ft	225		165	10,000	
25’ UB Utility Boat	28 ft	8.5 ft	115/150		100	7,250	
25M PB Patrol Boat	91 ft	23 ft	2735		3510	181,000	
26’ MW Motor Whale Boat	26.08 ft	8.25 ft	25	6.67 ft	30	6,200	9,900
26’ PE Personnel Boat	26.5 ft	9.41 ft	250	8.58 ft	80	11,690	13,550
26’ UB Utility Boat	26 ft	8.5 ft	115/200		120	6,880	
26’ WB Work Boat	26 ft	8.33 ft	150		95	7,360	
27’ DS Dive Support	27 ft		250		212		
27’ MC	27 ft		250				
27’ AP	27 ft		225	x			
27’ SC	27 ft		225				

Table 583-2-1. Characteristics for Navy Boats and Craft - Continued

Boat/Craft	Overall Length	Beam	Engine (HP)	Height w/o Cradle	Fuel Capacity (gals)	Designed Hoisting (lbs)	Maximum Disp (lbs)
27’ HS Harbor Security	61.5 ft	10.17 ft	Inboard 355		75	8,280	11,320
27’ HS Harbor Security	31 ft	10.5 ft	OB		100	7,200	10,240
27’ UB Utility Boat	33 ft	10 ft	150		100	7,832	
28’ OP Oil Pollution	28 ft	8 ft	60/130		24	6,900	
28’ HS Harbor Security	35 ft	11.92 ft	225		200	13,800	
28’ WB Work Boat	30 ft	8 ft	150		160		
29’ BB Barrier Boat	30.5 ft	14 ft	285		360		
30’ BB Barrier Boat	30 ft		285		360		
30’ BP Boom Patrol	36 ft	10 ft	115/150		150	9,875	
30’ WB Work Boat	32 ft	12 ft	225				
30’ OP Oil Pollution	30.3 ft	8 ft	60		35	6,900	
32’ IB Inshore Boat	32 ft		370				
33’ RA Riverine Assault	33 ft		440		250		
33’ PE Personnel Boat	33.75 ft	11 ft	220	12.25 ft	100	15,700	16,000
33’ UB Utility Boat	33.41 ft	11 ft	100	8 ft	100	11,000	1,668
34’ PB Patrol Boat	34 ft	11.92 ft	425		200		
36’ PB Patrol Boat	37.5 ft	13.8 ft	380		300	20,000	
36’ PL Landing Craft, Personnel (Light)	36.25 ft	12.17 ft	Inboard Diesel	9.67 ft	200	22,400	24,630
38’ RP Riverine Patrol	38 ft		440		300		
39’ BB Barrier Boat	40.5 ft	18 ft	455		1600	110,000	
40’ PE Personnel Boat	41.25 ft	11.75 ft	220	12.5 ft	150	22,000	26,000
40’ PR Plane, Personnel & Rescue Boat	41.08 ft	11.75 ft	253	15.08 ft	380	26,600	28,900
40’ UB Utility Boat	40.25 ft	12.08 ft	174	9 ft	112	17,000	27,700
40’ WB Work Boat	44.83 ft	14.42 ft	670		575	40,000	
42’ PR Plane, Personnel & Rescue Boat	42 ft	11.41 ft	243	17.92 ft	498	25,000	29,000
44’ ST Sail Training Craft	44.3 ft	12.5 ft	56		65		
45’ WB Work Boat	45 ft		455		1600		
49’ RC Riverine Command	49 ft	12.42 ft	850		580		
50’ DW	50 ft	14.17 ft	173	18.33 ft	418	87,800	80,300
50’ WB Work Boat	50.25 ft	14.41 ft	200	15.67 ft	490	56,400	95,000
50’ UB Utility Boat	50.25 ft	14.83 ft	174	10.5 ft	170	24,000	74,100
70’ PE Personnel Boat	69.67 ft	20.67 ft	228	15.75 ft	400	78,000	85,000
74’ CM	74 ft		Diesel 8V927A				
85’ TR Torpedo Retriever	85 ft	18.67 ft	850	20 ft	2400		135,000
87’ PB Patrol Boat	86.9 ft	19 ft	1500				
135’ CU	139.75 ft	30.08 ft	500	16.33 ft	3460	492,800	904,960
180’ NS Non Standard	180 ft		1200				

583-2.3 PAINT PUNT PURCHASE DESCRIPTION

583-2.3.1 PAINT PUNT. The punt is a non-powered craft used to inspect the waterline area of a ship while at anchor or in port. The punt is manhandled from its stowed position, and then lowered from the deck to the water

by rope pendants secured to the bow and stern handles. Up to three persons with painting or other gear board the punt from the ship's access ladders. The punt is propelled by paddles or positioned using the pendants. Lightweight, stability, resistance to swamping and durability are valued characteristics for the application.

a. General form: the punt shall be a flat bottom, transom-ended punt or jon boat with bow, center and stern bench seats.

b. Dimensions:

(1) Length: 13.5 to 14.5 feet (4.1m to 4.4m)

(2) Overall beam: at least 55 inches (1.4m)

(3) Chine beam (bottom width): at least 36 inches (0.9m)

(4) Depth: at least 17 inches (0.43m) measured vertically (punts designed to accommodate outboard motors may have transom cutout of not less than 15 inches (0.38m) depth

(5) Weight: shall not exceed 200 pounds (90.9kg)

c. Materials and construction: the hull and structural components shall be manufactured of 5000 or 6000 series aluminum alloy suitable for use in seawater, except that stainless steel fasteners may be used. Use of wood shall be limited to plywood suitable for exterior exposure, where necessary for backing plates, reinforcement of transoms designed for outboard motors, and similar components. The punt shall be fitted with a minimum of two handles on each end of the punt (four handles total). Handles shall be well rounded to prevent injury to or undue stress on hands. Handles shall be secured to the punt with through-bolts or solid rivets, or may be integral to the hull. Tubular rivets, pop rivets, or self-tapping screws shall not be used to secure handles. Handles shall, as a minimum, be strong enough to support the entire weight of the punt when suspended from a single handle.

d. Stability and load capacity: the punt shall have a capacity of at least three persons and a total load capacity of at least 600 pounds (persons and gear). The punt shall provide level flotation and a load capacity plate installed in accordance with the requirements of 33CFR183.

e. Acceptable products are: Alumacraft 1436 lite, Alumacraft 1436, Alumacraft 1442, Lowe 1436. However, due to the possibility of manufacturing changes, the specifications of the product shall be verified against the requirements of this purchase description before procurement.

SECTION 3

REGISTRY NUMBERS AND IDENTIFICATION MARKINGS

583-3.1 REGISTRY NUMBERS

583-3.1.1 PMS325 ASSIGNED REGISTRY NUMBERS. Each boat is assigned a Navy hull registry number by PMS325. The registry number can usually be found on the transom of each craft. Hull registry numbers consist of the boat length in feet, boat type, and serial number. The first numerals in the boat's identifying numbers signify boat length (in feet or meters) followed by letters identifying boat type. The final series of numbers indicate year of contract and boat number (in sequence of its completion) starting with 01 or 1. This number should be used in all correspondence concerning the boat.

EXAMPLE: 28HS0201 is the first harbor security boat delivered under a 2002 boat acquisition contract. Under the new metric system for measuring boats, 11MRX0002 is the second 11-meter Rigid Inflatable Boat delivered under a 2000 boat acquisition contract.

583-3.1.2 REQUEST FOR REGISTRY NUMBER. In case a boat is found to be without a registry number, contact PMS325 to determine hull registry number or to have one assigned.

583-3.2 IDENTIFICATION MARKINGS

583-3.2.1 STANDARD MARKINGS. The U.S. Navy hull registry numbers (Figure 583-3-1) shall be clearly marked on the transom of each boat. Hull registry number marking is approximately three inches in height (75 mm) and applied on the transom in a location that provides readily visible identification.

Boat markings beyond the Navy Hull Registry Number and associated markings described herein, such as local names (e.g. "UB-1", "Protector", etc.) or other personalization can be applied if approved by the Commanding Officer of the custodial command.

a. a. Paint used for numbers and letters should conform to MIL-PRF-24635C. See NSTM Chapter 631, Preservation of Ships In Service-Surface Preparation and Painting, for additional information.

b. Letters and numbers may not be shaded.

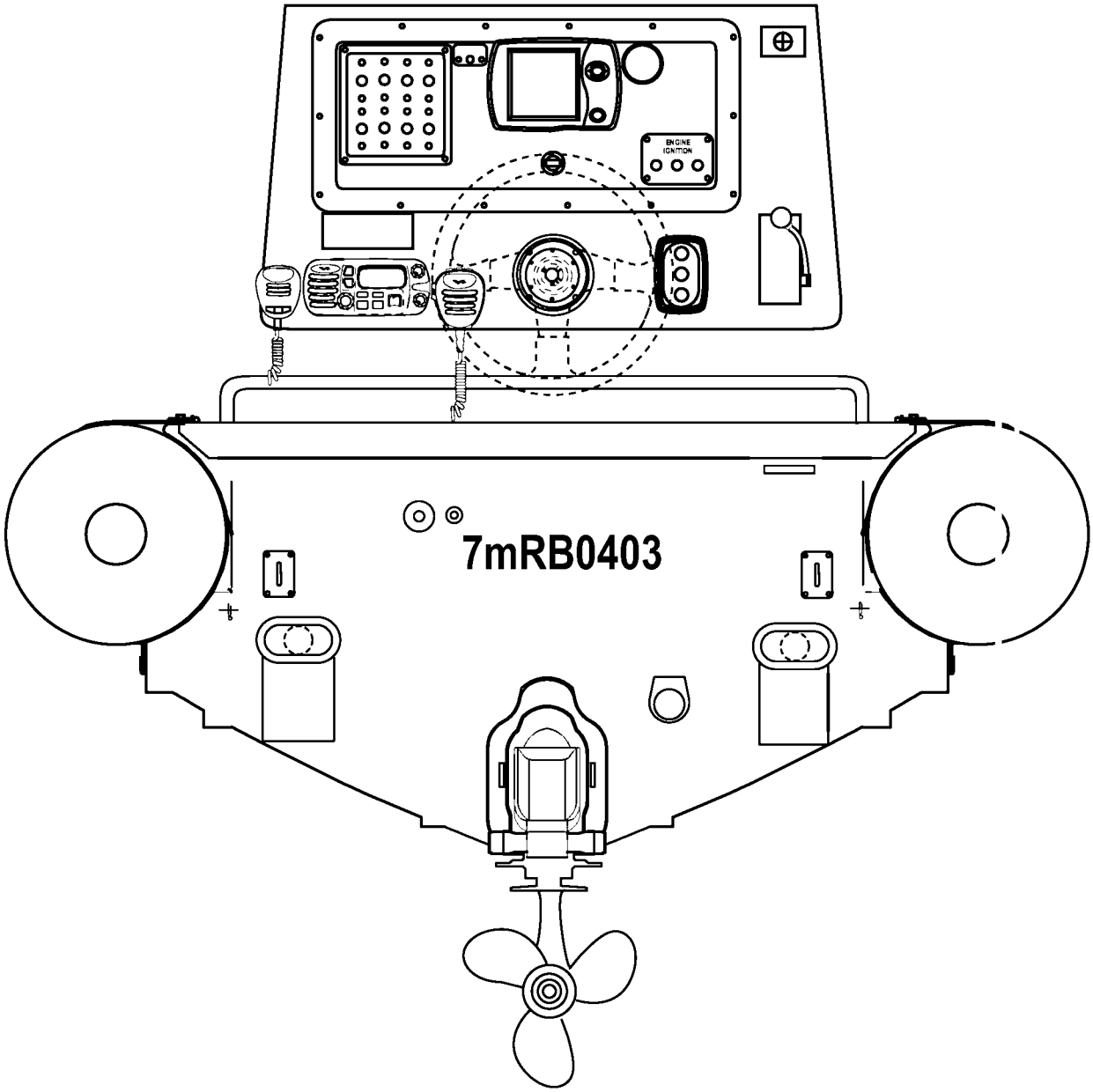


Figure 583-3.1. Hull Registry Numbers

583-3.2.1.1 Flag Officer. Flag Officers' barges shall be marked as follows:

a. Chrome stars shall be fitted on the bow according to the arrangement on the admiral's flag. The stars shall be of the size and spacing shown on Standard Boat Detail, Sheet 21 (C&R Drawing 220598).

b. The official abbreviated title of the command shall appear on the transom in gold leaf decal letters (for example, Surface Force, Atlantic (SURFLANT)).

583-3.2.1.2 Unit Commander. The insignia on boats assigned for the personal use of unit commanders not of flag rank, shall be as follows

a. Broad or burgee command pennants, as appropriate, shall be fitted on the bow, with the squadron or division numbers superimposed, together with chrome arrows according to Standard Boat Detail, Sheet 7 (C&R Drawing 258943).

b. The official abbreviated title of the command shall appear on the transom in gold leaf decal letters (for example, Destroyer Squadron TWO (DESRON 2).

583-3.2.1.3 Chief of Staff. The gig for a Chief of Staff, not of flag rank, shall be marked with the official abbreviated title of the command in chrome letters with an arrow running fore and aft through the letters. The letters shall be according to Standard Boat Detail, Sheet 21 (C&R Drawing 220598). Other boats assigned for staff use shall be similarly marked except that the arrows shall be omitted and the letters shall be brass (bright).

583-3.2.1.4 Commanding Officer. Boats assigned to Commanding Officers of ships shall be marked on the bow with the ship type or name (refer to paragraph 583-3.2.2.3) and number in chrome letters and numerals with a chrome arrow running fore and aft through the markings. Officers' boats shall be similarly marked except that the arrow shall be omitted and the letters shall be brass (bright). The ship's name, abbreviated name, or initials may be used in place of the ship's type. An assigned boat number may be used in place of the ship's name.

583-3.2.1.5 Ships' Boats. Other ships' boats shall be marked on the bow with either the ship's type and number, followed by a dash, and the boat number, such as CV 68-1, or the ship's name, abbreviated name or initials, followed by a dash, and the boat number, such as NIMITZ-1. These markings should also appear on the transoms of all boats, except whale boats. Letters and numbers shall be of brass, and may be painted black or chrome plated. Type commanders shall designate which of the above methods of markings shall be used on the boats assigned to ships under their command. The method of marking shall be uniform for all ships of the same type assigned to the same command.

583-3.2.1.6 Miscellaneous. Painted boat numerals shall be used on miscellaneous small boats such as line handling boats and punts. Refer to Section 10, Table 583-10-2 for recommended colors for painting the barges and gigs.

583-3.2.2 BOATS AND CRAFT ASSIGNED TO SHORE STATIONS. Naval Base Commanders may assign blocks of numbers to the individual activities within their district for permanent assignment to the boats allotted to the various activities. The activity may assign, to each allowed boat, a consecutive number.

583-3.2.2.1 Shore Station. As an alternative to the foregoing, individual shore stations may use the name or abbreviated name of the station, on each bow followed by a number commencing with one and running consecutive through the total number of boats assigned.

Example: NS KEYWEST 1, NS KEYWEST 2, and so forth.

583-3.2.2.2 Shore Based Command. Personnel boats for shore-based commands will normally carry the same command insignia prescribed for forces afloat on each bow. In addition, they will carry the command abbreviation and location of the command neatly lettered on the transom. Personnel boats assigned names will carry the name displayed on each bow, and the command abbreviation and geographical location of the command on the transom. Gigs will carry the abbreviated name of the command in chrome letters, struck through with a chrome arrow on each bow and the location of the command on the transom in gold leaf decals. Refer to Section 10, Table 583-10-2 for recommended colors for barges and gigs

583-3.2.2.3 Letters and Numeral Location. The locations, bevels, and proportions of letters and numerals shall be as indicated on Standard Boat Detail, Sheet 21 (C&R Drawing 220598). Brass letters on personnel boats should be chrome plated.

583-3.2.3 IDENTIFICATION MARKINGS FOR COMBATANT CRAFT. Combatant craft will have applicable numbers painted at bow location port and starboard and at centerline of stern.

583-3.2.3.1 Painting. Color of numbers shall be such as to provide nominal contrast with the craft color scheme, acceptable to the individual command.

SECTION 4

BOAT CAPACITY, OPERATING INSTRUCTIONS AND SAFETY PRECAUTIONS

583-4.1 BOAT CAPACITY

583-4.1.1 BOAT REGISTRY AND BOATALT LABEL PLATES. Every boat in the naval service should be fitted with a label plate, which provides data concerning its design, manufacture, and maximum capacity. The maximum capacity designated on the label includes the boat crew and assumes that all passengers are in the cockpits and are seated. A BOATALT label plate (Figure 583-1-4) shall be provided according to paragraph 583-1.6.9. Boat Information Books (BIB's) are provided with most U.S. Navy boats and craft. The BIB provides general configuration, operational, and maintenance information. It contains guidelines on the safe operation and proper maintenance of the specific boat or craft. The BIB is designed for use at the organizational level to support boat and craft crews.

583-4.1.1.1 Registry Plate Format. Boat registry plates on standard boats will be of sheet 316L CRES grade, approximately 6 inches by 2-1/4 inches with engraved letters approximately 5/16 inch high, filled with black sealing wax. The data on the label plates will be formatted as follows (the exact data to suit the particular boat):

Length, Boat Type, Hull Registry Number (HRN) built for the United States Navy, Builder, City, Month, Year, Contract Number, Crew Persons, Capacity Persons (including crew).

583-4.1.1.2 Drawing Numbers.

a. Formal Procurement: The Naval Sea Systems Command (NAVSEA) drawing number shall be the general arrangement plan from which the boat was built. In case the inboard profile, deck, and sections are not all on the same drawing, the drawing number of the inboard profile should be used. The general arrangement or inboard profile drawing will refer to the other drawings of the set.

b. GSA Acquisition: Commercial-Off-The-Shelf (COTS) Boat Drawings. Boat builders provide drawings for use and are not assigned a NAVSEA number, but are listed by drawing number and title in the Boat Information Book (BIB).

583-4.1.2 DETERMINATION OF PERSONNEL CAPACITIES. The carrying capacity (established by NAVSEA) of a pulling boat is determined by calculating the internal volume of the boat in cubic feet and allowing 10 cubic feet of such volume for each man carried. It is assumed that each man will be wearing a lifejacket and 165 pounds will be allowed for each man so equipped. Boats used to support Vessel Boarding Search and Seizure/Maritime Interdiction VBSS/MIO duties shall not be overloaded.

583-4.1.3 7-METER RIB WEIGHT CONSIDERATIONS The Navy Standard 7-meter and/or 24' RIB maximum weight (Full Load Condition) consists of the carrying capacity, which is 1,350 kg (2,970 lbs), or the equivalent of eighteen persons (including crew) at 75 kg (165 lbs) each plus full fuel and slings.

The Navy Standard 7-meter (24') RIB maximum hoisting weight (Hoisting Condition) consists of 375 kg (825 lbs), or the equivalent of five persons (including crew) at 75 kg (165 lbs) each plus full fuel and slings. Maximum Hoisting Condition reflects the Lifeboat (also called: Man Overboard, Search and Rescue) Party load-out. Lifeboat Party consists of full fuel, stokes litter for injured person, security package (Small caliber automatic weapon and ammunition), slings and five persons at 75 kg (165 lbs) each as follows:

a. Coxswain

b. Bow Hook/Swimmer/Corpsman

c. Stern Hook/Engineer

d. Boat Officer

e. Rescued Individual

CAUTION

In the case of the Navy Standard 7 meter RIB and the Navy Standard 11 meter RIB, there will be instances when the boat must be launched from a ship while the ship is underway. In such instances, it is imperative the boat's engine(s) be started during the launch phase and in advance of the boat's water entry in order for the boat coxswain to safely accelerate the boat to a speed approximately equal to that of the ship. This operation requires that each engine's sea water impeller run dry for a short period. Each engine sea water system is equipped with an auxiliary hose connection to allow the boat to be started in its shipboard stowage to ensure the crew of its reliability and ensure the seawater impeller is operating properly and the boat is, in all respects, ready for any launch.

Maritime Interdiction/Vessel Boarding Search and Seizure Operations, Security operations Anti-Terrorism/ Force Protection - MIO/VBSS or AT/FP Party loadout consists of the maximum carrying capacity of 1,350 kg (2,970 lbs) or the equivalent AT/FP party (including equipment and crew) plus full fuel and slings.

583-4.1.4 CAPACITY NOT TO BE EXCEEDED. When carrying liberty or boarding parties (VBSS/MIO), the designated carrying capacity should never be exceeded. In carrying stores or boarding parties, the load in pounds, including crew and stores or gear, should never exceed the maximum allowable cargo load, as given on the boat label or as listed in Table 583-2-1. In motorboats, the practice of carrying passengers, stores, or baggage on the topsides should be prohibited. When it is necessary to carry stores or baggage, a corresponding reduction in maximum number of passengers should be made.

583-4.1.4.1 Flotation Material. The installation of flotation material shall not be considered as relieving operating personnel from exercising sound judgment in the loading of boats or providing of lifejackets when conditions warrant. Since the amount of flotation material to be installed is limited by the space available in the boat, it has been possible to provide a reserve buoyancy of only 22 pounds per man. In rough seas, the boat should be loaded to less than capacity so that this margin of reserve buoyancy will be somewhat greater. Twenty-two pounds will support a seated man submerged in water approximately to his armpits. With water this high, there will be a tendency for passengers to stand up, which could result in the sinking or capsizing of the swamped boat. If lifejackets are worn, personnel near the sides may take to the water and hold onto the gunwale. Other personnel should remain seated to avoid overcrowding around the outside.

583-4.1.5 HANDLING OF STORES. Limited availability of ships' boats frequently renders it necessary (for purposes of economy) for stores and liberty parties to be carried together. For the benefit of personnel, and particularly coxswains, the following example is presented.

Example: Assume that the coxswain of a 26-foot motor whaleboat (MK11) is ordered to make a shore trip to pick up stores weighing approximately 2,000 pounds, and to pick up a liberty party. The rated capacity of a

26-foot motor whaleboat (MK11) is 22 men, or, in terms of pounds of stores, 22 times 165 or 3,630 pounds. The coxswain should, therefore, pick up the stores (approximately 2,000 pounds) and bring back not more than eight persons as passengers for: (3,630 - 2,000)/165 = 9.9 or 10-2 crew = eight passengers.

Operating personnel should be familiar with the designated carrying capacity of the boat and be able to calculate the load and regulate the number of passengers accordingly.

583-4.1.6 REDUCTION IN CAPACITY. The rated capacity designated on the label plate, represents the maximum capacity under normal weather conditions in sheltered waters. Reduction of capacity is always necessary for extreme weather conditions or in the open sea. Frequently, conditions will be such as to greatly reduce this rated capacity (refer to Table 583-2-1).

583-4.2 OPERATING INSTRUCTIONS FOR EMERGENCY USAGE

Safe boat operations depend on a number of factors. Coxswain skills, environmental conditions and the specific boat performance capabilities all have a significant impact on operational safety. Qualified coxswain with adequate operator training and good seamanship skills are necessary for safe, secure boat operations.

In general, small boats (less than 20 meters or 65') are able to operate safely in a Sea State 3 and survive a Sea State 4 (Ref: Pierson-Moskowitz Sea Spectrum). Most other boat performance characteristics are typically described in the applicable Boat Information Book (BIB) or Operator's Manual and other technical manuals provided with each boat.

"Maximum", "Safe", or "Optimum" speed for any particular boat is dependent on a combination of factors, including mission, passengers, loading, environmental conditions, visibility, boat condition (structure and systems), hull form (displacement, planning, catamaran, etc.) and propulsion system power.

Operational limitations for some boats and craft are the result of real engineering and design limits that the operators must acknowledge and avoid to prevent inadvertent operational problems. Examples of design constraints include hoisting weight limits, tow load limits and electrical load capacity limits. During mission execution it is left to the operational commander to ensure the boat is not operated beyond design limitations or beyond the skills and abilities (or limitations) of the boat crew and passengers.

Each boat type provides a needed mission capability that will be used in a wide range of operational circumstances. Only a few limited scenarios require the full capability inherent in the boat. Boats are procured to ensure they are inherently safe to the extent possible within the operational requirements. For example, engine horsepower and associated top speed is limited to that needed to meet the validated operational requirements. Engine upgrades are not driven by the capability of a particular boat model to accept higher horsepower engines. Engine upgrades are only approved if the higher horsepower is supported by an OPNAV-validated operational mission requirement and if the risk and additional operation and support cost associated with larger engines is justified to achieve the mission.

583-4.2.1 INTERNAL BUOYANCY. Open boats, to be acceptable for use as life rafts under the U.S. Coast Guard Regulations, shall be provided with internal buoyancy according to the Code of Federal Regulations. Title 46; Chapter 1, Shipping; Subchapter Q, Subspecification Part 160.035, Lifesaving Equipment.

583-4.2.2 LIFE PRESERVERS STOWED IN BOATS. Except for landing craft, which are not fitted to stow life preservers for passengers, life preserver stowage in boats is established upon 50 percent allowance of maximum boat capacity. This is based on the following:

a. Suitable stowage space is not available for 100 percent allowance.

b. The maximum number of persons permitted to be carried is a matter of ship's administration based upon the boat's loading and boating conditions. One life preserver for each crewmember shall be aboard before embarking. When conditions warrant, boat passengers shall be issued life preservers before embarking.

c. The number of life preservers shall be drawn from the regular ship's allowance. Conditions under which life preservers are carried may vary to a considerable degree; thus, they have not been included as items of boat outfit.

d. Boats issued to shore and expeditionary commands other than ships will have the required type and quantity of life preservers for the operating crew identified on the outfit Allowance Equipage List (AEL) for the boat. It is the responsibility of the operating unit to provide additional life preservers for passengers.

Boat personnel should frequently (particularly after wet weather, or when spray has entered the boat) break out all stowed life preservers for drying and airing out.

583-4.3 BOATS AND SMALL CRAFT FIRE HAZARDS

583-4.3.1 LIST OF FIRE HAZARDS. A fire is serious at any time, but in a gasoline or diesel powered boat; it has a more fatal aspect. Boats are equipped with firefighting devices; but the best safeguard to those concerned with the handling of boats is recognition of the hazard and knowledge of the cause. This information may then be used to prevent conditions leading to a fire. The following is a list of fire hazards that exist. Each will be discussed in detail.

a. Gasoline

b. Clothing and oily waste or rags

c. Fuel leaks

d. Ventilation

e Fueling

f. Bilges and sumps

g. Exhaust pipe

h. Dirty engines

i. Defective electric wiring

j. Battery charging

k. Smoking

583-4.3.2 GASOLINE. As gasoline vapor is highly combustible when mixed with air, the use of gasoline for cleaning the engine or bilges is strictly prohibited. A spark, caused by smoking or various other sources, may ignite the fumes and cause a dangerous fire.

583-4.3.2.1 Containers. Inspect portable gasoline containers periodically for any leaks. If leaky containers are found, transfer their contents immediately to a tight container. Leaky, defective gaskets and plugs should be replaced. Water should not ordinarily be introduced into a gasoline drum but if a leaky container cannot be made tight by tightening up on the filling and vent plugs, or repairs are required involving the application of heat, the drum should first be filled with water, emptied, and blown through with a steam or air jet to eliminate any vapor present. Repairs to gasoline drums or containers are not ordinarily required to be made by ships' force as they

are repaired at their distribution depots. Before making shipment of empty containers, inspect them carefully to see that they are tight and that all plugs are tightly secured. Unless this is done, empty containers constitute a fire hazard to the carrier. Refer to NSTM Chapter 542, Gasoline and JP-5 Fuel Systems.

583-4.3.3 CLOTHING AND OILY WASTE OR RAGS. Keep engine room clear of clothing. Cleaning rags and waste shall be kept in a closed container and disposed of in accordance with the hazardous material guidelines. Clean engines, clean engine rooms, and clean bilges are requisites of efficient boat engineering.

583-4.3.4 FUEL LEAKS. The presence of fuel in the bilges or in a free state in a boat is dangerous. The fumes may be ignited easily and fire results. Free fuel may come from leaks in the fuel lines or units of the system, or result from filling the fuel tanks too full. Fumes shall be disposed of by proper ventilation.

583-4.3.4.1 Shutoff Valves. Fuel lines, connections, and fittings shall be kept tight. Follow manufacturer's recommendations and instructions for sealing connections and fittings. Fuel lines in all cases, shall be fitted with shutoff valves installed near the fuel tank and so fitted as to be readily accessible for closing in an emergency. Shutoff valves are to be fitted with extension rods and operating hand-wheels so that they may be operated from a convenient location outside of the probable fire area.

583-4.3.4.2 Fuel Tanks. Fuel tanks shall be tested and inspected annually especially in boats where access to the tanks is limited.

583-4.3.4.3 Components of the Fuel System. Components of the fuel system include, but are not limited to, connections, electrical connections and wiring, hoses, piping, sending units, valves, and mounting hardware. Components should be inspected prior to operation of the boat or fueling.

583-4.3.4.4 Stowages. Anchors or other heavy items should not be stowed near fuel lines because of the danger of them striking lines or fittings and causing leaks. Lightweight items, such as lifejackets, should not be stowed on top of fuel lines, since such stowage interferes with inspection.

583-4.3.5 VENTILATION. The importance of proper ventilation to expel all fuel fumes cannot be overemphasized.

583-4.3.5.1 Leakage. On various craft using gasoline as fuel, there exists danger of explosion and resulting fire due to carburetor flooding, leaky gasoline lines, strainers or tanks, and overflow during fueling. This involves a very serious fire hazard and is as dangerous as other explosives aboard ship.

583-4.3.5.2 Gasoline Vapor. Gasoline is a highly volatile liquid, which will give off a flammable vapor if left exposed to the air. Gasoline vapor is about three times as heavy as air and the highest percentage is found in the lowest places. The mixture will gradually spread throughout the whole boat. The mixture, formed by gasoline vapor and air, is highly explosive in character and only needs a slight spark or flame to cause a violent explosion and fire.

583-4.3.5.3 Vapor in Bilges. All personnel are to strictly observe the safety precautions relating to the use and handling of gasoline. Practically all fires can be traced to the presence of explosive gasoline vapors in the bilges. Evidence shows that this condition frequently occurs immediately after taking on fuel.

583-4.3.5.4 Explosive Sparks. In a gasoline engine installation, there is the possibility of gasoline vapors being present continuously, especially in the lower spaces. The danger of a spark necessary for an explosion is always present and cannot be eradicated. A spark, so minute as to be invisible to the eye, may be formed by striking a nut with a wrench, by arcing of the brushes of a motor or generator, by grounds or shorts in electric circuits, by opening or closing electric switches, by static electric charges formed by the rubbing of two surfaces together, or by nails in shoes hitting or rubbing metal. Sparks may be produced in so many ways that the only insurance against explosion and fire is to take every precaution to prevent the accumulation of gasoline vapors in the boat and this can be done with proper ventilation.

583-4.3.6 FUELING. Except in emergencies, gasoline boats should not fuel unless in the water, with engines stopped, clear of other boats, and where possible, near enough to the ship to receive aid if needed.

583-4.3.6.1 In the Skids. In an emergency, if it is necessary to fuel a boat in the skids, the following safety precautions, in addition to those described in paragraph 583-4.3.6.8 shall be observed.

a. Adequate firefighting equipment shall be provided at the scene.

b. An Aqueous Film Forming Foam (AFFF) system shall be activated and an AFFF hose shall be charged and laid out at the scene. If an AFFF hose is unavailable, an acceptable alternative is a fire hose rigged with an AFFF in-line eductor at the fireplug with a minimum of three 5-gallon containers of AFFF concentrate.

c. If practical, a rubber hose, thoroughly grounded to the supply tank or drum and the boat's tanks, should be used for transferring gasoline.

d. Where the use of a grounded rubber hose is not practical, and a separate container will be used to pour gasoline into the boat's tanks, the supply tank or drum should be interconnected by a flexible conduction wire of sufficient length. After emptying portable containers, inspect them to ensure that all gasoline has been drawn off and then close them tightly by setting up on the filling and vent plugs.

583-4.3.6.2 Passengers Aboard. Boats shall not be fueled with passengers aboard.

583-4.3.6.3 At Night. Except in emergencies, boats shall not be fueled at night.

583-4.3.6.4 Heat Producing Sources. No smoking and no naked lights (such as produced by oil lanterns, candles, matches, lighters, exposed electric switches, slip rings, commutators of a dynamo, or by any burning material involving heat) shall be permitted in the vicinity while fueling in a compartment containing a gasoline engine or a bilge, or elsewhere within 50-feet of gasoline storage tanks or of gasoline vapor.

583-4.3.6.5 Drums and Containers. Gasoline shall not be transferred to a boat from a drum or portable container unless the container has been removed from the proximity of other containers, except in the cases of vessels where drums are stowed in quick releasing racks. In this case, the drum shall be left in its rack when fueling boats. An adapter shall be provided with a standard iron pipe screw thread on one end to fit the opening in a standard gasoline drum; the other end to be fitted with a Navy standard hose thread to take a standard 1-1/4-inch inside diameter flexible metallic hose covered with rubber fabric. Hose will be furnished in 25-foot lengths having couplings and nozzles with Navy standard threads. Standard gasoline filling hose nozzles are the wet hose type releasing gasoline only when the operating lever is gripped and will automatically cut off the flow when the lever is released. Due to this instantaneous control of the flow, the over filling of tanks can be readily avoided.

Overflow of the tank should be avoided, especially on boats where the filling is located inboard. In decked over boats and motor launches, the filling fitting is located on deck and overflow gasoline will pass overboard and not into the bilges.

583-4.3.6.6 Grounding Wire. To avoid danger of ignition of gas from a static spark, the filling hose nozzle may have a grounding wire fitted at the end with a spring clip. This clip should be clamped on the screw provided in the deck flange of the filling connection for grounding the hose nozzle, before unscrewing the cover of the filling connection. This connection will equalize electric potential. The ground should be maintained throughout the fueling operation and until the hose has been withdrawn and the filling flap closed. The use of a funnel increases the danger from sparks. It is preferable to insert the nozzle of the grounded hose directly into the filling opening. When fueling funnels are used, they shall be fitted with 40-mesh wire gauze strainer.

583-4.3.6.7 Passing a Drum to Boat. It is not considered good practice to pass a gasoline drum to a small boat for the purpose of fueling. The boat presents an unstable platform and spilling of gasoline is almost inevitable. When such an arrangement is considered necessary due to prevailing conditions, care should be taken that the nozzle of the hose is entered into the filling pipe before gasoline is released.

583-4.3.6.8 Fueling Procedures. The following procedures should be observed when fueling a boat:

NOTE

Before beginning, brief each member on the correct procedures that must be observed while fueling.

a. See that no passengers are on board.

b. Close all engine covers to prevent vapors from entering.

c. Inspect tanks and filling pipes and hoses. Do not fuel unless fittings are tight at the connection points.

d. Close shutoff valves at tanks.

e. Close all doors, hatches, windows, and other openings to ensure that fuel vapor does not enter or become trapped in closed compartments.

f. Attach the spring clip on the end of the hose ground wire to the screw provided on the deck flange of the filling pipe (refer to paragraph 583-4.3.6.6). The grounding screw is not required on diesel engine boats.

g. One member of the boat crew shall be tasked to stand by with a portable dry chemical fire extinguisher ready for use. Extinguisher is not to be returned to stowage position until fueling is completed and engine is operating satisfactorily.

h. Remove the filling pipe cap. Sound the tank to determine the approximate amount of fuel required to fill the tank.

i. Insert the hose nozzle into the fill point. Open the nozzle valve and begin filling the tank.

j. If for any reason the hose nozzle is withdrawn from the fill point during fueling and the ground wire becomes detached from the grounding screw, the grounding wire shall be reattached to the screw before the nozzle is inserted into the fill point. (Diesel boats do not have the grounding screw but may be required to attach a grounding clip.)

k. The nozzle shall be manned and kept under control to ensure that the fuel flow rate is acceptable to prevent overfill and spilling at all times. Diesel oil passes through the strainer more slowly than gasoline.

l. When the tank is filled, withdraw the nozzle from the fill point and secure the cap as applicable.

m. Detach the ground wire.

n. If fuel spill has occurred wash/wipe down in accordance with current policy and guidelines.

583-4.3.6.9 Before Starting Engine. Before starting the engine, it is particularly important to clear the boat compartments and bilges of any gasoline vapor that may be present from the fueling operation.

WARNING

Operate exhaust fans for at least 4 minutes before starting engine, and check engine compartment bilge for gasoline vapors.

The following procedures should be observed before starting engines:

a. On boats having an enclosed engine compartment, open the engine covers to permit circulation of air to dissipate fuel vapors. The same precautions apply if gasoline vapor is noticed in the boat while underway. Gasoline fires have occurred through ignition by sparks from some part of the electrical equipment while the engine is turning over. It is safer for both personnel and material to stop and clear out gasoline vapor and to remove its cause rather than to continue running the engine. When stopped for this purpose, one of the crew should stand by ready to operate the fire extinguishing equipment. This is particularly important with motorboats having closed engine compartments. This is particularly important with motorboats having closed engine compartments.

b. If gasoline is spilled during fueling and runs into the bilges, the bilges should be washed down, pumped, wiped out, and aired thoroughly before the engine is started.

583-4.3.6.10 Shore Station Fueling. The same general precautions should be observed when fueling from shore stations. Serious fires have occurred due to the absence of grounding connections. Before permitting a gasoline engine boat to fuel, an inspection of such stations should be made by the officer or petty officer in charge of the boat to see that grounding connections are provided either by the boat or by the station. These grounding connections should be of wire or solid metal and care should be taken to see that the contacts are positive. Wrapping wire around the metal parts of the filling hose is not sufficient and the use of chains is not considered a positive method.

583-4.3.6.11 Flame Screen. Tank wire gauze in the filling connection is a flame screen designated to minimize possibility of a flame flashing into the tank from some outside source (Figure 583-4-1). It should always be kept in place.

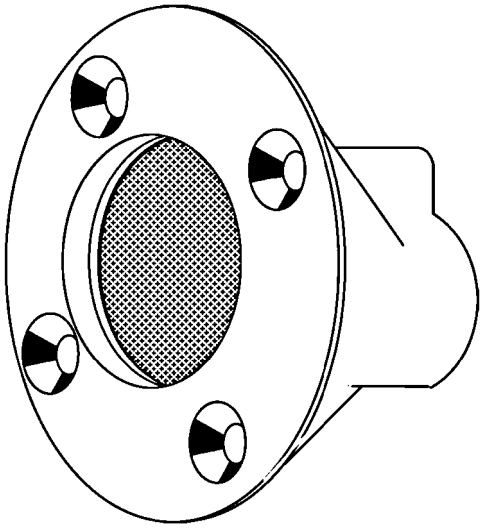


Figure 583-4-1. Gas Tank Vent

583-4.3.7 BILGES AND SUMPS. Bilges and sumps shall be kept dry and frequently washed out to clear them of fuel and oil. They should be washed before hoisting into the boat skids. The space directly under the engine can be readily washed down by using hot water or a steam hose. This method will carry heavy oil and grease over into the sump from which it can be pumped. Oily bilge water should be pumped to a location where the oil can be separated from the water rather than pumped over the side of the ship. Frequent inspections of engine room bilges should be made to ensure that residue is not present. The forward and after engine space bulkheads should be inspected for tightness in the bilges in order that liquid and gas may be prevented from passing over into adjacent compartments.

583-4.3.8 EXHAUST PIPE. Improper insulation of the dry exhaust pipe, where it passes through the hull, may set the boat on fire. A poorly insulated exhaust pipe may set fire to nearby objects or ignite gas fumes if the hot pipe is exposed to gas in the engine room. Any defects of this type should be corrected immediately. Exhaust pipes should be properly insulated with refractory felt, covered by glass cloth, and attached with nonconductive fittings.

583-4.3.9 DIRTY ENGINES. Greases and oil with which an engine becomes encrusted are sources of danger if not cleaned at regular intervals. These petroleum products will feed a fire, enabling it to get out of control rapidly.

583-4.4 SAFETY PRECAUTIONS

583-4.4.1 GASOLINE VAPOR. Most gasoline fires and explosions in boats occur when engines are started which is due to an accumulation of gasoline vapor in the bilges. Exercising proper safety precautions can prevent such fires and explosions.

WARNING

No list of precautions can provide for every conceivable situation that might arise. The only adequate safety precaution is a constant awareness of the hazards and a consistent application of common sense to situations that arise.

583-4.4.2 CLOSED ENGINE ROOM. Except in an emergency, a boat with a closed engine room should not be operated without the engineer being onboard at his station.

583-4.4.3 ELECTRIC CONNECTIONS. At least once a day during periods when the boat is in use and preferably just prior to getting underway, visually inspect as practicable, all connections are satisfactory and secured mechanically. Electric cabling shall be secured with clamps to prevent movement and resultant wear of any cable in contact with metal surfaces and the attendant danger of short circuits. The inspection should be made any time the operator has reason to believe the cable or connections may have been loosened by operating conditions, passengers or cargo.

583-4.4.4 FUEL PIPING AND TANK FITTING. At least once a day, during periods of operations and at any time the operator has reason to believe damage may have occurred, the fuel lines, strainers, and tank fittings should be inspected for possible leaks and loosening of tanks in the saddles. Fueling connections shall be tight in the tank and the filling cap in place. Any opening in the top of the fuel tank through which fuel may slop out due to rolling or pitching, or through which fuel vapor may be forced out during fueling operations, shall be tightly plugged. Any defects discovered during inspection shall be remedied immediately.

583-4.4.5 WIRE GAUZE SCREENS. At least once a day, during periods when the boat is in use, inspect to see that wire gauze screens are intact and clean. On gasoline engines, screens over carburetor and breather pipe connections shall be securely clamped so they cannot be blown loose in case of backfire or crankcase explosion. Backfire screens shall be installed according to the latest NAVSEA instructions.

583-4.4.6 BILGES AND SUMPS. Bilges and sumps should always be inspected before the engine is started. If they are not dry and free from fuel, vapor, and oil, they should be pumped and dried out. If gasoline is spilled in the boat during fueling, the bilges should be flushed down with water, pumped, and wiped dry before starting the engine.

583-4.4.7 VENTILATION. On gasoline engine boats, ventilation is of prime importance at all times. All spaces subject to accumulation of gasoline vapor shall be inspected and thoroughly ventilated. Before the engine is started, every precaution should be taken to ensure that the bilges are open to ventilation, and that any gasoline or gasoline line vapors in bilges and sump are removed. Explosion proof exhaust fans are required on all gasoline engine boats and should be run at least four minutes before the engine is started, intermittently for at least one additional hour daily, and at any time the presence of gasoline vapor is suspected. At any time gasoline is spilled, the exhaust fans shall be run sufficiently to remove all gasoline fumes. On boats with enclosed engine compartments, after each fueling and before starting, open the cover of the engine compartment for ventilation to remove gasoline vapor. Diesel engine boats with ventilation fans shall follow the guidelines in this paragraph also.

583-4.4.8 SAFETY INSTRUCTIONS. Safety instructions posted in all gasoline-powered boats shall include the following requirements:

a. The bilges should be inspected for the presence of gasoline and gasoline vapor immediately before each starting of the engine.

b. Before starting the engine, the engine cover should be lifted exposing the top of the engine for not less than four minutes while the bilge exhaust blower is operating, if applicable.

c. The engine cover should not be closed until after the engine is started and operating satisfactorily.

d. All fire extinguishers should be in place and charged.

In performing the foregoing inspection, special attention should be given to boats that have been out of service for several days or subjected to overhaul. For additional information, refer to NSTM Chapter 233, Diesel Engines, for diesel-powered boats.

583-4.4.9 LIQUIFIED GAS. The use of liquefied gas (propane) for any purpose is prohibited.

583-4.4.10 SIGNALING FLARES. All powered boats are to carry a signaling device such as signaling flares.

583-4.4.11 FIRE RESISTANT HOSE. Fire resistant hose is now available for use on Navy boats and craft fuel and lubrication systems. As existing hose needs to be replaced, fire resistant hose should be utilized as follows:

a. Where hose is used for connections between the engine and fuel service system, within the fuel service system and for engine and transmission lubricating oil service, that hose shall be flexible, fire resistant, compatible with all petroleum products, with brass plated steel wire reinforcement, and shall be suitable for operating pressures up to 400 pounds per square inch. End fittings shall be reusable, flange or swivel, corrosion resistant 316 steel and shall be secured to the hose by threaded wedge action.

b. The above requirements are known to be met by Aeroquip Corporation FC series Hose and Fittings and Stratoflex Corporation 5219 HSP Hose. Additional information regarding hose type identification will be found in the Allowance Parts List (APL) for specific boats and craft.

SECTION 5

EQUIPMENT AND REPAIR PARTS

583-5.1 GENERAL

NAVSEAINST 4790.8 (series) requires implementation of the Maintenance and Material Management (3M) system, in accordance with OPNAVINST 4790.4 (series), for all NAVSEA boat assets with the following exceptions:

"Civilian operated and maintained ships, small boats, and service craft, unless specifically included as a requirement in a Base Operating Contract (BOC) or other similar document. Civilian contracts may include 3-M support if applicable)."

583-5.1.1 BOAT EQUIPMENT AND OUTFIT. The allowance of equipment required to operate and maintain a given boat is set forth in Allowance Parts List (APL) and Allowance Equipage List (AEL).

Boat APLs and AELs are provided to the ship or other activity's Configuration Data Manager (CDM) by the ISEA upon issue of a boat to a custodian for inclusion in the operating command's COSAL. Activities not having access to COSAL may request APLs or AELs electronically via the World Wide Web at: HTTP://www.navicp.navy.mil/apael/index.htm. If assistance is required to identify applicable APLs or AELs for a specific boat, contact PEO SHIPS PMS325, or the designated ISEA. Boat APL numbers can be found in CBSS.

583-5.1.1.1 Boat Equipment. Boat Equipment is defined as systems, equipment or components permanently installed, or intended to permanently accompany the boat. An example of the latter is the flagstaff. These systems or equipment are referred to as boat equipment, as differentiated from boat equipage or outfit. Logistically significant boat equipment will be either included on, or listed as an accessory item on the applicable boat APL. In general, logistically significant boat equipment consists of:

a. Propulsion system and components.

b. Electrical system and components.

c. Fendering and collars

d. Electronic systems and components (permanently installed).

e. Dewatering systems and components.

f. Fuel systems and components.

g. Fire extinguishing systems (built-in).

h. Steering system and components.

i. Ventilation systems and components, including ventilation systems for gasoline engine compartment ventilation applications.

j. Security systems and components.

k. Gray and black water systems and their components.

l. Boat Trailers.

583-5.1.1.2 Allowance Parts List (APL). When each boat or group of identical boats under a procurement contract are accepted by the Navy, boat APLs are developed for each boat. The boat APL is characterized by hav-

ing “72” as its first two characters. This hull registry number specific APL is the primary supply support configuration document for the boat. The boat APL identifies allowances for repair-by-replacement parts and identifies APLs for accessory items. For example, the engine, marine gear, and outdrive will have individual APL numbers. APLs are issued by NAVICP and may be incorporated into an activity’s Coordinated Shipboard Allowance List (COSAL) or Coordinated Shore Based Allowance List (COSBAL).

583-5.1.1.3 Outfit Items. Outfit items, also known as equipage for boats, are defined as required equipment that is not permanently installed onboard the boat or craft, and may include required safety-related items. Examples of this type of equipment include, but are not limited to:

a. Ropes.

b. Boat hooks.

c. Fiberglass or inflatable tube repair kits.

d. Starting or other batteries.

e. Anchors, anchor line, and lines.

f. Canopies, canopy bows, covers and cushions (Initial outfit only - Local support thereafter).

583-5.1.1.4 Allowance Equipage List (AEL). The AEL identifies, and lists the allowance of equipage required for safe operation of a given boat. Individual AELs are developed for each boat class, and may be found listed in the Accessory APL portion of the applicable boat APL. Copies of AELs are available from Naval Inventory Control Point (NAVICP), Mechanicsburg PA, or at the URL listed in paragraph 583-5.1.1 above.

583-5.1.2 PROCUREMENT OF OUTFIT AND MAINTENANCE PARTS. Although some maintenance parts may be provided with a boat upon initial issue, it is the responsibility of the boat custodian to procure equipage and parts as defined in the activity’s COSAL or COSBAL. Outfit and corrective or preventive maintenance parts are to be requisitioned in accordance with NAVSUP P-485, CURRENT EDITION. Although some equipage may be provided with a boat upon initial issue, it is the responsibility of the boat custodian to procure and maintain the equipage identified on the AEL in accordance with Planned Maintenance System requirements, per OPNAVINST 4790.4 (series). NSNs can often be obtained by referring to the applicable APL or AEL in the custodial activity’s COSAL or COSBAL. Materials supporting PMS procedures can be found in the Standard PMS Materials Identification Guide (SPMIG).

583-5.1.3 DISPOSITION OF OUTFIT AND MAINTENANCE PARTS. All ships, shore activities, and other activities shall dispose of maintenance parts in accordance with NAVSUP P-485. Outfit items shall accompany the boat, unless otherwise specified in the disposition instructions provided by the PMS325 assigned Boat Inventory Manager (BIM).

SECTION 6

PREVENTION OF COLLISIONS AT SEA

583-6.1 COMMAND RESPONSIBILITY

The command operating and owning the asset is responsible to conduct all maintenance in accordance with OPNAVINST 4790.4 and applicable PMS program policy and guidance.

583-6.2 NAVIGATION RULES (RULES OF THE ROAD)

583-6.2.1 INTERNATIONAL AND INLAND NAVIGATION RULES. Navigation Rules shall be followed as set forth in U.S. Navy Regulations, Article 1120, Rules for Preventing Collision.

Comments and information should be addressed to Commandant, U.S. Coast Guard, (G-NSR-3).

a. Prevention of collisions is the primary goal of the navigation rules. Navigation lights, day shapes, and sound signaling devices are a major part of the rules, indicating type and size of vessel, the movement of such vessels, the work a vessel is doing and the privileges and responsibilities of vessels.

b. The adoption of the Inland Navigation Rules Act, 1980 (also referred to as UNIFIED RULES) on the inland waters, western rivers, and the Great Lakes has eliminated much of the confusion that previously existed between the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS) and the U.S. Rules. With the exception of the maneuvering signals and some special rules for the western rivers and the Great Lakes, the rules are now truly uniform.

c. The COLREGS have been in effect since 1977 and vessels fitted with the lights prescribed by these rules comply with the Inland Rules.

d. Unless operating exclusively in an area where the Inland Rules apply, vessels must be outfitted with navigation lights required by the COLREGS.

e. Since January 1, 1983, each self-propelled vessel on inland waters 39.4 feet (12 meters) or more in length must carry onboard and maintain a copy of the INLAND RULES for ready reference.

f. The penalty provisions of the COLREGS and the INLAND RULES allow for a civil penalty.

g. For information on the technical details regarding sound signaling devices and the placement of lights, obtain a copy of the U.S. Coast Guard booklet, “Navigation Rules, International-Inland (COMDTINST M16672.2A)” Request stock number 050-012-00-407.2. The COMDTINST are available from the:

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
Or visit website: www.gpoaccess.gov

SECTION 7
HOISTING SLINGS AND FITTINGS

583-7. GENERAL REQUIREMENTS

Navy Crane Center letter 11262 Code 09W3 Series 99-153 waives the requirements of NAVFAC P-307for all Navy Boats and Craft. The basic requirements for design and construction are provided here. The design of each hoisting system, including boat hoisting structure, hoisting fittings, and hoisting slings shall be approved by NAVSEA prior to fabrication. Requests for approval shall be submitted through PMS 325.

583-7.1 NAVSEA REQUIRED SAFETY FACTORS

583-7.1.1 BOATS AND CRAFT ASSIGNED TO SHIPS. Because of the dynamic nature of boat hoisting loads and the potential for large accelerations, it is the policy of the Naval Sea Systems Command (NAVSEA) to require safety factors as follows for all boats and craft normally assigned as ships' or boats to be lifted into shipboard stowages:

a. All parts, including the boat structure, hoisting fittings and hoisting slings are to be designed to a minimum safety factor of six, based on the ultimate strength of the material.

b. Sling shackles are to be in accordance with Federal Specification RR-C-271D, IV A, Class 3, bolt type anchor shackles. Unthreaded pins are not acceptable and are to be replaced with a threaded pin or bolt, nut, and stainless steel cotter pin.

c. Wire rope sling sockets are to be in accordance with Federal Specification RR-S-550D, open end sockets. Unthreaded pins are not acceptable and are to be replaced with a threaded pin or bolt, nut, and stainless steel cotter pin.

d. Welded parts such as links and rings, if used, must meet requirements above standard industry supplied components. The weld filler material for new welded master links, welded master link assemblies, welded rings, and welded sling links (pear links) shall be in accordance with AWS specification 5.5 or 5.28. The welded area shall be RT inspected in accordance with NAVSEA Technical Publication T9074-AS-GIB-010/271 with acceptance criteria to MIL-STD-2035 class 3 for welds prior to initial use only. Additional radiographic inspection is not required as part of periodic recertification testing.

583-7.1.2 BOATS AND CRAFT ASSIGNED TO SHORE STATIONS AND NON-SHIP EXPEDITIONARY COMMANDS. For boats and craft not designed to be routinely hoisted aboard ship, such as Landing Craft, and those permanently assigned to shore stations, the minimum factor of safety shall be five. Such hoisting gear is considered to be logistical only. Logistical lifts shall not be made with personnel onboard. The hoisting condition for logistical lifts may be further restricted to exclude variable load items other than fuel, such as weapons, ammunition, miscellaneous mission gear, etc. This category of boats includes extensively reconfigured craft where the specialized nature of the craft, as modified, precludes its being returned to service requiring shipboard hoisting (such as LCM's to diving tenders, work boats, and so forth) as well as other specifically designed craft. In addition:

a. All parts, including the boat hoisting structure, hoisting fittings and hoisting slings are to be designed to a minimum safety factor of five, based on the ultimate strength of the material.

b. Sling shackles are to be in accordance with Federal Specification RR-C-271D, IV A, Class 3, bolt type anchor shackles. Unthreaded pins are not acceptable and are to be replaced with a threaded pin or bolt, nut, and stainless steel cotter pin.

c. Wire rope sling sockets are to be in accordance with Federal Specification RR-S-550D, open end sockets. Unthreaded pins are not acceptable and are to be replaced with a threaded pin or bolt, nut, and stainless steel cotter pin.

d. Welded parts such as links and rings, if used, must meet requirements above standard industry supplied components. The weld filler material for new welded master links, welded master link assemblies, welded rings, and welded sling links (pear links) shall be in accordance with AWS specification 5.5 or 5.28. The welded area shall be RT inspected in accordance with NAVSEA Technical Publication T9074-AS-GIB-010/271 with acceptance criteria to MIL-STD-2035 class 3 for welds prior to initial use only. Additional radiographic inspection is not required as part of periodic recertification testing.

583-7.1.3 HOISTING CONDITION WEIGHTS. The design and testing of all components related to hoisting are based on the design hoisting weight of the boat. The design hoisting weight generally includes hull, machinery (wet), full fuel, full outfit (boat hook, fire extinguishers, etc.), crew, and a growth margin. The design hoisting weight is specified on the hoisting test data plate generally located near the coxswain's station. General information on design hoisting weights is given in Table 583-2-1. Only the weight indicated on the hoisting test data plate shall be used for the baseline weight for determining the overload weight for tests. Should the hoisting test data label plate be missing or illegible, the applicable Hoisting Arrangement and Details drawing shall be consulted to determine the correct design hoisting weight. If the drawings do not provide the information, contact the PMS325/NAVSEA 05D designated ISEA.

583-7.1.4 GALVANIZING OF PARTS. Ferrous (i.e., ordinary steel) chain, shackles, sockets, links, rings; equalizing thimbles attached to wire rope, and chains shall be galvanized.

583-7.2 MANUFACTURE OF HOISTING SLINGS, BAILS, AND FITTINGS

583-7.2.1 TESTING FACILITY. Any repair activity that has the capability of testing slings, bails, hoisting shackles, rods, pins, chain links, and rings is authorized to manufacture such equipment according to applicable drawings, EXCEPT for Aramid fiber (Kevlar) slings which shall not be obtained from any source other than those given on the applicable drawing.

Manufacture shall not be accomplished if the equipment is available as a standard stock item. Testing, inspections, marking, and record keeping shall be accomplished in accordance with the further provisions of this section.

CAUTION

Aramid fiber (Kevlar) rope slings require specialized manufacturing process controls to maintain safety standards. Slings shall not be obtained from any source other than those designated on the approved drawings.

583-7.3 INSPECTIONS

583-7.3.1 GENERAL. All slings, bails, and hoisting fittings shall be visually inspected for proper assembly and condition at least once a month or before each lift and in accordance with PMS requirements. They shall not be used if signs of deterioration are noted. Sockets and shackles shall be checked to ensure the intended pins are used. Before conducting any hoisting test, a careful inspection shall be made of all hoisting fittings, slings, or bails to determine whether the parts are in proper condition. After any load test, inspect all components for signs of permanent deformation, cracking of any of the components or supporting boat structure, elongated holes, or bent shackle or socket pins.

583-7.3.2 WIRE ROPE SLINGS. Wire rope slings shall be inspected for broken or damaged strands, crimps, kinks, cuts, and corrosion. Inspection and removal shall be in accordance with NSTM Chapter 613.

583-7.3.3 WEBBING SLINGS. Webbing slings shall be inspected for abrasion, tears, cuts, snags, punctures and fraying of the webbing and stitching. Slings exhibiting any of the following shall be removed from service:

a. Acid or caustic burns.

b. Melting or charring of any part of the sling.

c. Snags, punctures, tears, or cuts.

d. Broken or worn stitches.

e. Distortion of fittings.

f. Wear or elongation exceeding amount recommended by manufacturer.

g. Other apparent defects that cause doubt as to the strength of the sling.

h. Loading of the sling beyond its rated capacity.

i. Exposure of Red Guard warning yarn.

j. Paint present on any part of webbing.

Since new webbing exhibits different stretch characteristics from older webbing, the entire sling should be disposed of in lieu of replacing only the bad sling legs. Tying knots in webbing slings will dramatically reduce the strength of the webbing and is not allowed. Paint will also reduce the strength of the webbing and should not be used for stenciling.

583-7.3.4 ARAMID FIBER (KEVLAR) SLINGS. Slings should be inspected for cuts, abrasions, snagging and badly worn areas in the outer jacket. Extensive damage to outer jacket could indicate damage to inner load bearing core. Slings exhibiting any of the following shall be removed from service:

a. Core has been cut or damaged.

b. Slings have been exposed to excessive heat (greater than 150 degrees Fahrenheit).

c. Slings have been loaded beyond their rated capacity.

d. Distortion of fittings.

e. Other apparent defects that cause doubt as to the strength of the sling.

f. Abrasions or cuts on the jacket, which prevent the jacket from providing sufficient protection for the core.

Since new Aramid Fiber (Kevlar) rope exhibits different stretch characteristics from older Aramid Fiber (Kevlar) rope, the entire sling should be disposed of in lieu of replacing only the bad sling legs. Tying knots in the slings will dramatically reduce the strength of the sling and is not allowed.

583-7.3.5 LIFTING FRAMES, INSPECTION. Lifting frames shall be inspected for cracks, deformation, corrosion, crimping, and loose fasteners. Frames that contain cracks, deformation, corrosion, or crimping shall be taken out of service. Loose fasteners and similar discrepancies shall be corrected before the bail is placed into service.

583-7.4 TESTING

583-7.4.1 HOISTING SLINGS LOAD TESTS. Job orders or contracts for manufacture of boat slings shall require that the sling and associated hardware not permanently attached to the boat be tested as indicated under the heading of Test Procedures on the respective Hoisting Arrangement and Details drawings. The number for this drawing can usually be found on the hoisting label plate located near the coxswain's station or in the Boat Information Book. Test loads are intended to be 100 percent in excess of the design-working load of the part. Sling tests shall be performed in load testing equipment designed for that purpose. One hundred percent overload tests are never performed in the boat. Unless specifications call for testing slings in the same configuration as used, one or more legs may be tested at a time using the straight line pull method at 100 percent overload based on the design load for each leg. In general, all slings used in shipboard boat hoisting applications must be tested and recertified every 18 months. Hoisting slings shipped with new boats shall be marked prior to use, and recertified at 18 month intervals from being placed in service. Hoisting slings for boats assigned to non-ship expeditionary commands or shore stations shall be subjected to a 100 percent overload test and recertification every 24 months. Refer to the applicable Maintenance Index Page (MIP) for the exact recertification periodicities for your boat.

583-7.4.1.1 Wire Rope Sling Load Test Periodicity. All wire rope slings used in shipboard boat hoisting application require testing and recertification every 18 months. Wire rope slings shipped with new boats shall be marked prior to use, and recertified at 18 month intervals from being placed in service. Wire rope slings for boats assigned to non-ship expeditionary commands or shore stations shall be subjected to a 100 percent overload test and recertification every 24 months. Refer to the applicable MIP for the exact recertification periodicities for your boat slings. Wire rope slings shall be maintained in accordance with Planned Maintenance System (PMS) requirements.

583-7.4.1.2 Webbing Sling Load Test and Replacement Periodicity. All webbing slings used in shipboard boat hoisting application require testing and recertification every 18 months. Webbing slings shipped with new boats shall be marked prior to use, and recertified at 18 month intervals from being placed in service. Webbing slings for boats assigned to non-ship expeditionary commands or shore stations shall be subjected to a 100 percent overload test and recertification every 24 months. Refer to the applicable MIP for the exact recertification periodicities for your boat slings. Webbing slings shall be maintained in accordance with PMS requirements. Webbing slings must be stored in a clean 5 gallon plastic container with a sealable top, such as a 5-gallon bucket when not in use.

583-7.4.1.3 Aramid Fiber (Kevlar) Sling Load Test and Replacement Periodicity. All Aramid fiber slings used in shipboard boat hoisting application require testing and recertification every 18 months. Aramid fiber slings shipped with new boats shall be marked prior to use, and recertified at 18 month intervals from being placed in service. Aramid fiber slings for boats assigned to non-ship expeditionary commands or shore stations shall be subjected to a 100 percent overload test and recertification every 24 months. Refer to the applicable MIP for the

exact recertification periodicities for your boat slings. Aramid fiber slings shall be maintained in accordance with PMS requirements. Aramid fiber slings must be stored in a clean 5 gallon plastic container with a sealable top, such as a 5-gallon bucket when not in use.

583-7.4.1.4 Retesting of New Slings. The time interval after which the first periodic testing is required for new slings received from stock or shipped with new boats is taken from the date the slings were placed in service as indicated on the in-service tag. If no in-service tag is present, the retesting period is taken from the date on the certification test markings. If no test markings are present, the sling certification shall be assumed out of date and the slings shall be retested.

583-7.4.2 LIFTING FRAME LOAD TESTS. Rigid bails and or lifting frames are similar to other permanently installed hoisting fittings in that they are less prone to wear and damage than wire rope, webbing or Aramid Fiber (e.g. Kevlar) slings. Lifting frames shall be load-tested upon completion of a new boat or after any repairs to the bail. The rigid bail and or lifting frames shall be tested by weighting the boat 50 percent in excess of its normal design hoisting weight and lifting it, using the bail, just clear of the water or shop floor for 10 minutes. When conducting the 50 percent overload test, it is absolutely necessary that the correct weight be used. The design hoisting weight is specified on the hoisting test data plate. Only the weight indicated on the hoisting data plate shall be used for the baseline weight for the 50 percent overload test. The added weight shall be distributed, one half forward and one half aft, as near the hoisting fittings as possible, care being taken not to place any significant added weight amidships.

583-7.4.3 HOISTING FITTING LOAD TESTS. Hoisting fittings permanently attached to the boat shall be load-tested upon completion of a new boat or after extensive repairs have been made to a boat in service. The fittings do not require periodic testing. The boat's lifting slings or lifting frame shall be inspected before conducting this test to ensure their adequacy for the test load and to verify that they have been load tested within the required certification period. The boat's hoisting fittings shall be tested by weighting the boat 50 percent in excess of its normal design hoisting weight and lifting it by its hoisting slings or bail just clear of the water or shop floor for 10 minutes. For boats that have fittings for both sling lifting and davit lifting, the overload test shall be conducted for both configurations. When conducting the 50 percent overload test, it is absolutely necessary that the correct weight be used. The design hoisting weight indicated on the hoisting data plate shall be used for the baseline weight for the 50 percent overload test. The added weight shall be distributed, one half forward and one half aft, as near the hoisting fittings as possible, care being taken not to place any significant added weight amidship.

583-7.4.4 FIT TESTS. Before finally accepting newly issued, repaired, or altered hoisting slings or bails, ships shall test them for fit by hoisting the boat using the method that normally will be used in service. The boat shall be lifted by its slings and suspended for at least 10 minutes, just clear of the water, deck, or stowage, to minimize damage in case of failure.

583-7.5 MARKING

583-7.5.1 GENERAL. Slings are not designed to be interchangeable between different boat types and/or a variant of the boat. Due to differences in the details of the design, slings for a given boat are not always suitable for use on all other boats of the same type. For these reasons, identification markings must be placed on all slings. Slings shall not be issued without test markings attached. If unmarked slings are found in stock or if slings or bails have been repaired, they shall be retested and marked. Naval shipyards receiving boats with hoisting slings that are uncertified may use these slings before recertification testing to hoist the boat within the shipyard if the following steps are adhered to:

a. The sling is verified as having previously been tested to the correct load from the test bands installed on the sling.

b. The wire rope or webbing and fittings are visually inspected for damage, wear, corrosion, or other defects.

c. If the above inspections determine that the sling is satisfactory, the boat should be secured to the sling and hoisted just clear of all other support and held for a minimum period of 10 minutes by the sling. The sling is then reinspected for evidence of failure or permanent deformation.

NOTE

Aramid Fiber (Kevlar) slings shall be marked in accordance with the MIP.

583-7.5.2 WIRE ROPE SLINGS. When slings are manufactured and after the load test has been satisfactorily completed, a copper or stainless steel band shall be fitted to each sling leg, identifying the leg (for example, aft-port), indicating the test has been made and giving the name of the certifying activity, the contract number (if applicable), the registry number of the boat for which manufactured (for example, 26MW9001), the government inspecting office (if applicable), and the date of the test. If the sling is being returned to service after periodic testing, the bands shall be marked with the test date and name of the testing activity. If, for any reason, slings are assigned to another boat of like design (type and mark), the boat number on the band shall be changed accordingly.

583-7.5.3 WEBBING AND ARAMID FIBER. When slings are manufactured and after the load test has been satisfactorily completed, an etched leather tag shall be sewn to each sling leg, identifying the leg (for example, aft-port), indicating the test has been made and giving the name of the certifying activity, the contract number (if applicable), the registry number of the boat for which manufactured (for example, 24RB9101), the government inspecting office (if applicable), and the date of the test. If the sling is being returned to service after periodic testing, the tags shall be marked with the test date and name of the testing activity. If, for any reason, slings are assigned to another boat of like design (type and mark), the boat number on the tag shall be changed accordingly.

583-7.5.4 LIFTING FITTINGS. New boats shall be delivered with a hoisting test data label plate which identifies the design hoisting weight of the boat, the weight of the boat for the 50 percent overload test. Repair activities shall update the hoisting test data label plate by stamping or engraving the data and activity certifying subsequent overload tests of the boat's lifting fittings. If there is no hoisting test data label plate, a new label plate may be fabricated in accordance with the applicable Hoisting Arrangement and Details drawing and installed in the vicinity of the coxswain's station. This includes the lifting frame.

583-7.5.5 IN-SERVICE TAGS. Slings shipped with new boats or received from stock should be marked by the receiving activity to indicate the date the slings are actually put into service. This is done to avoid unnecessary retesting when new slings, which were load tested during manufacture, have been kept in storage before issue. The date placed in service should be engraved or punched on the in-service tag provided with the sling. If no tag is provided, an in-service tag may be fabricated by the receiving activity and attached to the lifting ring in a manner that does not interfere with any of the working surfaces of the sling. The in-service tag should indicate the date placed in service and the activity placing the sling in service. The original load test tag shall not be removed. The in-service date is the date the sling is placed on a boat aboard ship or begins use by a shore facility. For new ship construction, service begins when the slings are first used for handling the boat after delivery to the shipbuilder.

583-7.6 RECORDS OF INSPECTION AND TESTS

583-7.6.1 CRAFT LOG. Boat operators or the ship's force concerned shall maintain a record of inspections and test of hoisting fittings, lifting frames, shackles, rings, and slings. Records shall show the date, and shall describe the condition of the parts inspected and tested. These records shall be kept as a part of the normal craft log.

583-7.6.2 REPAIR ACTIVITIES' RECORD OF INSPECTIONS AND TESTS. Repair activities shall keep a record of inspections and tests of hoisting fittings, rigid bails, shackles, rings, and slings. Records shall show the date and boat registry number, and shall describe the condition of the parts inspected and tested. Results of these inspections and tests shall be entered in the material history of the boat by the ship or other cognizant activity concerned.

583-7.7 SIDE GUYS

583-7.7.1 GENERAL. Side guys (steadying lines for slings) are required on certain boats where the hoisting fittings are below the center of gravity. Their purpose is to prevent the boat from rolling to one side while being hoisted. Wire rope shall not be used. These guys are not intended to take any part of the weight of the boat in lifting; therefore, no separate load test is required. However, side guys shall be properly installed prior to conducting overload tests on the boat's hoisting fittings.

583-7.7.2 RIGGING FIBER LINE SIDE GUYS. The following procedure should be used in rigging side guys:

a. Secure a fiber guy to each padeye or cleat intended for its use.
b. While the boat is onboard ship, take a strain on the slings, adjust length of side guys so that they will not take the hoisting strain.
c. Secure side guy with a rolling hitch backed up by a half hitch and marry the bitter end of each side guy to the standing part with a length of marline.

SECTION 8
MAINTENANCE

583-8.1 INTRODUCTION

Proper maintenance is the responsibility of the boat custodian.

583-8.1.1 PLANNED MAINTENANCE SYSTEM. Preventive maintenance for all boats shall be in accordance with the requirements of OPNAVINST 4790.4 (series). Planned Maintenance System (PMS) preventive maintenance shall be conducted in accordance with the applicable Maintenance Index Page (MIP) and Maintenance Requirement Cards (MRCs).

583-8.1.1.1 Maintenance Support Documentation. Technical manuals from the manufacturer and the U.S. Navy should be used to support the performance of all maintenance. In the event of conflicting procedures, PMS MRC instructions take precedence.

583-8.1.1.2 Camouflage Paint Requirements. Boats carried on the exterior of the ship must be painted in accordance with NAVSEA Technical Manual (TM) S6360-AG-MAN-010, Camouflage Manual for Surface Ship Concealment, section 2.3.2.9. Currently boat bottoms are painted black and the recommended concealment color is ocean gray. Hardware and glossy boat surfaces will be painted in accordance with section 2.3.2.2 of TM S6360-AG-MAN-010. Hardware or equipment that cannot be painted will be covered by gray canvas while underway. The new painting standards for surface ships and their small boats will be provided in MIL-PRF-24267 “Paint System, Anticorrosive and Antifouling Ship Hulls” and in revisions of NSTM Chapter 631.

NOTE

Insist on good housekeeping at all times.

583-8.2 ALUMINUM BOATS

583-8.2.1 GENERAL. Special requirements for maintaining aluminum boats are described in the following paragraphs:

583-8.2.1.1 General Characteristics. Aluminum is a lightweight material. It is for this reason that it is used for boats and craft. It is strong, weldable, and has excellent general corrosion resistance when proper marine alloys are employed. In the past, most interior spaces of naval boats were left unpainted in aluminum construction. There are some precautions in the handling of aluminum, however, that shall be observed if the full corrosion resistance capability of aluminum is to be achieved. As with many materials, although mild acidic solutions cause slight damage, it is necessary to avoid caustic solutions of any sort, such as sodium hydroxide, sodium carbonate, or sodium phosphate as they cause severe etching of the aluminum, possibly resulting in perforation.

CAUTION

Stringent precautions shall be taken in the case of mercury. The presence of mercury, even in small amounts, causes severe corrosive attack and under no circumstances are the two metals to be permitted to come in contact with each other.

By observing these precautions, routine maintenance can be kept to a minimum.

583-8.2.2 GALVANIC CORROSION. Galvanic corrosion caused by dissimilar metal contact with aluminum is a problem that can occur. In marine applications, aluminum and its alloys are frequently the anodic metal and could corrode in preference to most other common contacting metals except zinc and magnesium. For galvanic corrosion to occur, the following conditions must be satisfied:

a. A cell is present, consisting of at least two metals having different solution potentials and in electrical contact with each other (no matter how indirect).

b. A conductive medium (electrolyte) is present between the metals.

583-8.2.2.1 Galvanic Corrosion Locations. Galvanic corrosion normally occurs with different metals, while crevice corrosion (another form of galvanic action produced by ion concentration) can take place with improper joint design involving different members of the same alloy. In addition, the metallic compounds in a copper bearing or mercury bearing antifouling paint applied to an aluminum hull can result in a galvanic type of attack. Antifouling paints currently specified for aluminum boats do not contain copper or mercury. It is important to recognize that the amount of corrosion resulting from galvanic action is not a criterion of the metal's inherent resistance to corrosion. The extent of galvanic corrosion will vary greatly with the type of dissimilar metals involved and the nature of the corrosive environment. For example, the rate of galvanic corrosion in atmospheric exposures is far less than that under immersed conditions because of the substantial absence of an electrolyte or its low conductance when present. In immersed conditions, particularly in seawater, a strong electrolyte is present continuously and serious galvanic corrosion can result. For this reason, the use of dissimilar metals below the exterior and interior water line shall be avoided. Three applications account for most galvanic corrosion situations:

a. Connections of aluminum deck house bulkheads to a steel boundary bar.

b. Attachment of steel or brass fittings to an aluminum structure.

c. Dissimilar metal components such as rudders and propellers on an aluminum hull.

583-8.2.3 CLEANLINESS. Cleanliness is always important. Dirty, wet bilges or accumulations of dirt and water anywhere, are to be avoided. A freshwater rinse on a regular basis is generally sufficient. Adherent soil and greasy deposits can be removed using cleaners conforming to MIL-C-22230. Painted areas retain a good appearance for a long period. Regular wash down is all that is needed to maintain appearance.

583-8.2.4 FORMING ANNEALED ALLOYS. Forming 5086 and 5456 alloys at temperatures in the range of 150 to 400°F may lower resistance to corrosion and stress corrosion cracking, particularly if the stock is being held at these temperatures for prolonged periods. If the starting stock is in the annealed temper, forming at temperatures in excess of 400°F or reannealing after forming at lower temperatures is recommended. The primary advantage to hot forming annealed stock is to reduce the rate of strain hardening.

583-8.2.5 FORMING STRAIN HARDENED ALLOYS. Forming the foregoing alloys in strain hardened tempers pre¬sents a little different problem, since the effects of temperature on mechanical properties, as well as corrosion characteristics, shall be considered. A satisfactory compromise is to form in the temperature range of 400 to 450°F. Heating stock to 450°F for 30 minutes results in approximately 5 percent reduction in the tensile and yield strength. Hot forming is beneficial in processing the alloys in question in the strain-hardened tempers.

583-8.2.6 REFORMING DAMAGED PARTS. Formed parts of a boat that have been damaged shall not be reformed using heat. When possible, it is suggested that the damaged part be replaced by new material formed for the job. Distorted plates whether caused by damage or the heat of welding, shall not be straightened by flame quenching (torch heating followed by spray cooling). The method does not work well and can result in overheating or melting as described previously. If the distortion does nothing more than detract from appearance, it should be left alone. Distortion in shapes should be straightened cold, using jacks as necessary. Distortion in plate panels may be relieved either cold or by making a saw cut in the center of the panel and rewelding it. The normal shrinkage associated with aluminum welding will tend to remove the distortion.

583-8.2.7 PAINTING. Aluminum marine alloys under proper care are resistant to salt-water corrosion. In some cases commercial aluminum hull boats have been in saltwater service for several years with the hull left unpainted but with proper cathodic protection. Corrosion, from any source, will attack at the point of least resistance. It is important therefore, that proper maintenance be given to painted systems. It should also be noted that properly applied paint films have excellent adhesion to aluminum and that problems of spalling, cracking, rust streaks, and chipping, prevalent in steel and wood construction, are greatly minimized with aluminum. Additional information can be found in NSTM Chapter 631, Volume 1 - S9086-VD-STM-010, Volume 2 -S9086-VD-STM-020, and Volume 3 - S9086-VD-STM-030.

583-8.2.7.1 Underwater Hull on Boats That Require an Antifouling Coating System. The underwater hull should only be coated with an approved non-copper bearing antifouling system as directed by NAVSEA. Direct application of copper antifouling will severely damage the aluminum hull plating. Antifouling materials used in aluminum underwater hull coating systems are toxic. Personnel engaged in the application of antifouling coatings are cautioned to follow all safety procedures specified for the application of this material by the paint manufacturer and appropriate Maintenance Requirement Cards (MRC). Additional information can be found in NSTM Chapter 631.

583-8.2.8 CATHODIC PROTECTION. Most metal boats are equipped with sacrificial anodes to offset adverse effects of dissimilar metal connections, stray electrical currents, improper grounding, and other sources of electrolytic corrosion. These anodes provide a continuous flow of protective current to corrosion susceptible areas but are sacrificed in doing so. In addition to external hull anode protection, some installations contain anodes that are provided for protection in bilge areas, ballast tanks, sea chests, and overboard discharges.

583-8.2.8.1 Anodes. Certified pure zinc anodes are installed on boats to provide cathodic protection. Aluminum and magnesium anodes may be used on some applications such as outdrives or outboard engines, but are not authorized for use on U.S. Navy boat hulls. Anodes shall be replaced in accordance with PMS instructions. If sufficient anode material, as defined by applicable PMS inspections procedures remains to provide protection until the Planned Maintenance anode inspection and/or replacement, or the next scheduled overhaul, the anode should be retained but the active surface should be power brushed to remove any calcareous buildup and improve the anode output. All coatings or plastic wrappings on anodes shall be removed.

583-8.2.8.2 Depleted Anodes. All depleted anodes shall be replaced with certified 100 percent pure zinc anodes only. Magnesium anodes are highly active chemically with a large electrical potential difference. Alkaline conditions can be generated which will attack aluminum hull welds and plating. Aluminum anodes frequently become inoperative after installation.

CAUTION

Magnesium and aluminum anodes shall not be used on aluminum hulls.

583-8.2.8.3 Installation. The following instructions provide the necessary supplementation to Naval Sea Systems Command Drawing 805-921865 for installation of zinc anodes on aluminum hull boats.

CAUTION

Anode faces shall not be coated or covered in any manner except for masking while painting adjacent surface.

a. All anodes shall be installed directly on the hull, over the hull coating, and attached with aluminum studs welded to the hull and CRES locknuts. To eliminate binding between the nuts and studs, use an acceptable antiseize compound (a compound consisting of equal parts by weight of petrolatum and zinc dust of 200 mesh fineness may be used).

b. Where thickness of the hull is not considered adequate to support the attaching studs and anodes, a double plate should be coated with the same paint system as the hull and installed before attaching the anodes.

c. ZTS anodes can be modified for stud attachment by drilling a 3/8-inch hole centered 1/2 inch from each core end.
   1. An 11-inch center-to-center stud location is necessary.
   2. Aluminum studs, 1/4-inch minimum diameter should be used.

d. Distribute anodes about the hull similar to steel hull ships (see NSTM Chapter 631), one-third in the stern area, and the remaining anodes equally divided port and starboard approximately amidships.
   1. ZHS and ZHC anodes shall be bolted with the long axis fore and aft.
   2. ZTS type anodes shall be bolted with the long axis fore and aft.

e. Anodes shall not be installed in locations interfering with the operation of struts, propellers, propeller shafts, or rudders. Installation in paths of high velocity waterflow should be avoided whenever possible.
   1. Anodes shall be installed in the vicinity of dissimilar metal junctions.
   2. Anodes shall be installed in locations always submerged (light ship condition) while the ship is not moving.

f. On aluminum high-speed boats in which the bow rises from the water, anodes shall be installed in areas that rise out of the main flow. Anodes shall be installed so that they are submerged when the boat is moored.

g. Internal bilge anodes shall be installed in locations where the anode is submerged whenever water is present,

generally near the bilge pump input. A zinc anode shall be installed in each area where water is held or trapped. All stringers shall be provided drain holes (large enough to avoid clogging) that drain into the immediate keel area.

583-8.2.9 SEACOCKS. Seacocks are usually bronze or aluminum. If bronze, they will be fitted to the hull with some type of insulation such as neoprene gaskets and PVC ferrules and should be checked periodically for their integrity. If an insulation pad is used, it should be checked for signs of crazing or cracking. Some systems may incorporate a waster piece or an anode as part of the seacock installation. It should be routinely checked and replaced when necessary.

583-8.2.9.1 Lubricating Aluminum Fittings. Aluminum body valves should be checked periodically for signs of freezing. Some assemblies use aluminum-to-aluminum moving parts which can gall. Where possible, moving aluminum parts should be lubricated or replaced with a compatible metal. Some aluminum fittings and valves may require periodic breakdown for inspection, replacement of anodic waster pieces, rerouting systems, and so forth. It is important that all aluminum fittings be reassembled with an approved thread lubricant. A mixture of 50 percent zinc dust in 50 percent mica flour in silicone grease or molybdenum disulfide is a suitable vehicle which will perform an antiseize function. The viscosity of the compound is such that it remains within the joint and forms a tight seal. It should also be non-hardening to facilitate disassembly. The product should be free of lead, tin, or graphite.

583-8.2.9.2 Pipe Hangers. Aluminum piping systems are normally supported by aluminum hangers and brackets and should pose no particular problem. If installed in areas such as ballast tanks, bilges, void spaces, and other areas of high humidity or contaminant concentrations, the hangers should be checked periodically for signs of crevice corrosion of the pipe under the hanger clamp. Some systems may be installed with a layer of rubber or fiberglass tape surrounding the pipe before being fastened to the hanger. Such installations minimize vibration with a subsequent reduction in sound levels. These should be checked for corrosion.

583-8.2.9.3 Propeller Shafting. Propeller shafts are generally stainless steel or monel. If replacement is necessary, they should be replaced with equal type material. When pulled, the area within the shaft log and stuffing box should be inspected.

583-8.2.9.4 Shaft Buildup. In cases where a shaft has excessive scoring in way of the shaft strut bearings and shaft log seals, the deteriorated or worn area can be refurbished by a thermal spray process. After the worn areas have been machined to sound metal, the spray process applied according to MIL-STD-1687 (Thermal Spray Processes for Naval Ship Machinery and Ordnance Applications) can be used to build up the shaft to the required diameter. The buildup process does not replace the strength of the removed metal; therefore, the shaft shall not be machined below minimum diameter requirements.

583-8.2.10 MOORING AND TOWING DECK FITTINGS. Most aluminum naval craft have aluminum mooring and towing fittings. These are welded directly to an aluminum doubler pad or insert plate. Fittings and weld areas should be inspected periodically for beginning signs of cracking or other failures due to overload conditions.

583-8.2.10.1 Dissimilar Metal Fittings. If dissimilar metal fittings are used, they will be bolted through the deck. The bolting arrangement should consist of insulated bolts and insulation of the fitting base from the deck.

If such a system has been installed, care should be taken to maintain the sealing bead around the outside of the fitting. A polysulfide product can be formed into a fillet around the outside to prevent seawater from seeping beneath the fitting.

583-8.2.10.2 Deck Equipment Reinstallation. If it is necessary to remove a piece of deck equipment, care should be taken to reinstall it with proper insulation. If gasketing material is used between the faying flanges, it should be replaced with a similar kind. Under no circumstances should red lead, canvas, or any other wicking type material be used as an insulation gasket. Synthetic rubber is acceptable; the material selected, however, should not be subject to cold flow, cracking, or creeping. A new gasket should be used whenever possible.

583-8.2.11 ADDITIONAL REQUIREMENTS. Additional requirements for maintenance of aluminum boats are contained in the following paragraphs:

CAUTION

The nature of aluminum hull boats merits special attention for mooring location, particularly next to steel ships, buoys, and piers. Under these conditions, it is essential that non-conducting mooring lines be used, as well as insulating camel sections, to prevent electrical contact of the aluminum hull with a steel structure, since this could result in galvanic corrosion of the aluminum hull.

583-8.2.11.1 Mooring. Since aluminum is more electrochemically active than other materials of construction used in marine hulls, it is necessary to avoid direct metal coupling of aluminum hulls to steel hulls, buoys, and docks. For example, when tying aluminum craft to a common buoy to which steel hulled craft are tied, lines or hawsers should be made of a non-conducting material such as nylon or manila hemp. In the event a metallic chain or cable is used, it is essential that there be an insulation line or break in the chain or cable. This can be effected by an insert of a nonmetallic non-conducting segment.

583-8.2.11.2 Shore Power. Shore power should be taken aboard the craft either through a Galvanic Isolator or a 1:1 Isolation Transformer via the craft's shore power receptacle. The system utilizes the Galvanic Isolator or Isolation Transformer to conductively separate the shore feeder conductors from the electrical load circuits on the boat. The shore-grounding conductor is used to ground the noncurrent carrying parts of the isolation transformer but is conductively separate from the boat ground. The Isolation Transformer or Galvanic Isolator effectively separates the aluminum hull from all other hulls on a common grounding circuit.

583-8.2.11.3 Gangways and Welding Machines. Gangways with metal runners can be a connecting path. They should be electrically insulated from the hull during docking. The electrolysis corrosion caused by welding and associated operations resulting from improper grounding, can be overcome by proper design in grounding of the welding machines and accessory equipment. These grounds should be as outlined in NSTM Chapter 074, Volume 1, Welding and Allied Processes.

583-8.2.11.4 Isolating Welding Sets. All DC cable for welding motor generator sets including resistors should be installed on the craft where the welding is to be done. A welding generator on one craft, grounded to that craft, shall not be used to perform welding on another craft. If it is not possible to install the welding machine onboard, it should be installed on shore in a location as close as possible to the craft. The generator shall be grounded

directly to the craft in which the welding is being done. Care should be taken to ensure that no intermediate contact of the lead and ground cables is made between the generator and the craft. No ground connections shall be made between the craft and the shore or adjacent craft, for welding. Care should be taken to avoid cables hanging or sagging between the craft and shore.

583-8.2.11.5 Battery Chargers. Battery chargers shall be located aboard the boat being serviced during the charging operation, or the batteries should be removed and charged on shore.

583-8.2.11.6 Bilge Flush. Bilges and voids should be inspected periodically for signs of corrosion. Periodic fresh water rinsing and cleaning of bilges will minimize heavy concentration of undesirable contaminants. In the absence of freshwater rinsing, clean saltwater rinses are acceptable. The bilges should be pumped dry after rinsing and kept as dry as possible thereafter.

583-8.2.11.7 Drydocking. Inspection of aluminum boats for corrosion is usually confined to the interior structure, particularly the bilge area, and the underwater outside surface of the hull.

583-8.2.11.7.1 Bilge Area. The bilge areas, unless properly protected and maintained by good housekeeping techniques, may be subject to pitting type corrosion where bilge water and sediment remain in long time contact with the aluminum. In the event corrosion does occur, it will probably be found in the area where the bilge water is retained for the longest time.

583-8.2.11.7.2 Bilge Zinc Anodes. The condition of galvanic anodes used to suppress bilge area corrosion should be checked to assure continued protection by the anodes. Anodes that have been consumed should be replaced with new material, and those not consumed should be cleaned by stainless steel wire brushing at periodic intervals

583-8.2.11.7.3 Exterior Hull Surface. The exterior surfaces of the hull should be examined to assess the con¬dition of the antifouling paint systems and to look for localized corrosion resulting from galvanic attack between aluminum and non-aluminum components such as those found in the through hull fittings, the bearing housing, and struts for the shaft and propellers. Also check for pitting corrosion on the transom in the vicinity of the exhaust. Examine all structural welds; especially in the aft bottom area; to confirm there has been no cracking within the welds or in the plate adjacent to the welds as the result of vibration or fatigue

583-8.3 STEEL BOATS

583-8.3.1 PAINTING, SAND-BLASTING, AND SCRAPING. Painting and scraping of steel boats shall be done according to NSTM Chapter 631. Critical coating requirements specified by NSTM Chapter 631 are not applicable to craft covered by Chapter 583, Volume 1 unless otherwise requested by the craft custodian.

583-8.3.2 CATHODIC PROTECTION. Cathodic protection of steel boats shall be done according to paragraph 583-8.5.

583-8.3.3 STRAY CURRENT PROTECTION. Welding equipment hook up and grounding connections shall be done according to NSTM Chapter 074, Volume 1.

583-8.4 GLASS REINFORCED PLASTIC BOATS

583-8.4.1 GLASS REINFORCED PLASTIC BOAT HULLS. Glass Reinforced Plastic (GRP) (also referred to as fiberglass) boat hulls generally require little maintenance other than cosmetic painting, except in cases of severe damage. Maintenance of cathodic protection, if installed, is done in accordance with PMS procedures.

583-8.4.2 GLASS REINFORCED PLASTIC BOAT CONSTRUCTION. The following is a brief description of procedures followed in fabricating GRP boats. The majority of the hulls are fabricated in female molds, the interiors of which are sprayed with a gel coat resin before lay-up of the hull commences. This results in a smooth outer hull surface. To this gel coat, layers of glass reinforcement, coarsely woven cloth (woven roving) or other forms, are laid in the mold and impregnated with resin.

583-8.4.3 GLASS REINFORCED PLASTIC BOAT CONSTRUCTION TYPES. There are two basic types of construction used in fabricating glass reinforced plastic (GRP) Navy boats: single skin and sandwich. Boats with single skin construction are generally laid up with one ply of mat adjacent to the gel coat and varying numbers of plies of reinforcement to attain required design hull thickness. Sandwich construction is generally achieved by the use of mat and glass reinforcement skins sufficiently strong and firmly bonded to a thicker, lightweight foam. This type of construction increases the strength and rigidity of the flat panel without the use of a solid laminate. The bond strength between the GRP skins and core is extremely important to the panel performance.

583-8.4.4 PAINT REMOVAL. Old paint coats on plastic boats shall not be removed by applying heat. Mechanical means of paint removal must be used carefully to avoid removing the gel coat. Details on painting are contained in applicable Boat Information Books (BIB's) and NSTM Chapter 631. Additional guidance on inspection and maintenance of plastic boats is contained in NAVSEA 0900-LP-006-0010, Reinforced Plastics Preventive Maintenance and Repair Manual, for guidance.

583-8.4.5 PREVENTIVE MAINTENANCE. Preventive maintenance for all boats is imperative, particularly for GRP boats, since extensive deterioration can develop if delaminations, punctures, and cracks go uncorrected. For this reason the following guidance applies to GRP boats. Refer to NAVSEA 0900-LP-006-0010, Reinforced Plastics Preventive Maintenance and Repair Manual, for guidance on repairs.

583-8.4.5.1 Inspection. GRP hulls are normally smooth and fair. Abnormal indentations, bulges, cracks, or craze marks should be closely examined on both the exterior and interior of the hull, whenever possible, in accordance with PMS procedures.

555-8.4.4.2 Loose Fastenings. Fastenings penetrating the GRP structure should be regularly checked for tightness. Loose bolts will result in elongated holes, sheared-off fastener heads, and localized stresses causing cracks, fractures, or delaminations. Fastenings for cleats and handrails are particularly susceptible to loosening and should be checked and tightened regularly. Door hinges, deck plates, cabin fans, and machinery fastenings also have tendencies to work loose and should be checked regularly.

555-8.4.4.3 Propeller, Shaft, and Strut. While the boat is stowed in chocks (not waterborne) the propeller shaft should be checked for nicks, bends, and evidence of erosion, corrosion, or electrolysis. If necessary, the propeller should be removed and repaired or replaced. Work the propeller shaft by hand to check its fit in the strut bearing. If side play is considered to be excessive and causing vibration, the strut bearing should be replaced.

583-8.5 CATHODIC PROTECTION OF BOATS

583-8.5.1 ZINC ANODES INSTALLATION. Zinc anodes shall be installed on all steel and aluminum boats and on some types of wood or plastic boats having large amounts of electronic equipment installed, such as torpedo retrievers, air rescue boats, and minesweepers. All zinc anodes shall conform to MIL-A-18001, and shall be installed according to NAVSEA dwg 805-921865. Instructions regarding anode quantities and installation are detailed in NSTM, Chapter 633.

555-8.6 ENGINE MAINTENANCE GENERAL

The following instructions apply to all Cummins "Quantum" Series Diesel engines. "Quantum" series engines are easily identifiable by the "Q" prefaced in their model type (e.g. QSB, QSC, QSL, etc.). A metal (stainless steel or aluminum) label plate shall be installed in a clearly visible location on the engine valve cover, engraved as follows: "WARNING! The fuel pump, high-pressure fuel lines, and fuel rail contain very high-pressure fuel. NEVER loosen any fittings while the engine is running or within 15 minutes after the engine is shut down. Personal injury and property damage may occur. Refer to the applicable engine technical manual for fuel system servicing."

583-8.6.1 ENGINE MAINTENANCE. Engines installed in Navy boats must be operated and maintained at the highest practical level to provide maximum reliability, readiness, and efficiency. Engine maintenance requirements are provided in several publications such as:

a. Planned Maintenance System documentation

b. The engine manufacturer's technical manuals

c. NSTM Chapter 233, Diesel Engines

d. NSTM Chapter 220 Volume 3, Corrosion and Contamination Control for Diesel Engine Cooling Water Systems

e. Applicable Boat Information Book

583-8.6.2 ENGINE MAINTENANCE RESPONSIBILITY. Engine maintenance is performed by the activity to which the boat is assigned. Daily maintenance check off by boat crews is of particular importance. Utilize the Planned Maintenance System (PMS) to properly maintain the engine.

583-8.7 GUIDANCE FOR FLEET PERSONNEL ON PREVENTIVE MAINTENANCE AND REPAIR OF BOATS AND LANDING CRAFT

583-8.7.1 INITIAL INSPECTIONS. On new boats in use, visual inspections should occur frequently during the initial 6 months' use period. As service experience is gained following this use period, periodicity between inspections should follow the PMS card requirements.

NOTE

PMS periodicities are the maximum interval between maintenance actions. Activities may perform maintenance actions more frequently if required by the boat's operating tempo or conditions.

583-8.7.2 REFERENCE MATERIAL. Boat custodians must use PMS documentation for boat preventive maintenance. Additional information is available in the Boat Information Book (BIB), applicable U.S. Navy Technical Manuals, and commercial technical manuals from the equipment manufacturers for maintenance scheduling and repair techniques.

SECTION 9

PRESERVATION, STORAGE, AND DEPRESERVATION OF BOATS ASHORE

583-9.1 INTRODUCTION

583-9.1.1 STOCK BOATS. All stock boats, except LCM's, that are in repairable or usable condition shall be provided to the maximum extent possible and within funds provided with a shelter. It is imperative that there be no delay in affording shelter to repaired and repairable boats, to new boats received for stock, to boats awaiting shipment, or boats being held for ships. Boat shelters shall be of a design approved by PEO Ships PMS325. Boats returned to stock are refurbished to RFI condition using available rehabilitation funds provided to PEO Ships PMS325 by the OPNAV sponsors. During REHAB, approved priority A and B BOATALT's for each boat type, are usually accomplished during industrial repair availabilities. Priority C BOATALT's would only be accomplished on stock boats under unusual circumstances because of funding limitations.

583-9.1.2 REPAIRABLE OR ISSUABLE STOCK BOATS. All repairable or issuable stock boats, their equipment, and machinery shall be prepared for turn-in or storage according to the applicable procedures outlined in paragraphs 583-9.1.4 and 583-9.2.1 through 583-9.2.4. It is essential that there be no delay in accomplishing these procedures once a boat is designated for return to storage. Deviations from the procedures described in this chapter shall not be undertaken without prior PEO Ships PMS325 approval.

583-9.1.3 REMOVAL OF ENGINES FROM STOCK BOATS. The removal of engines from boats in stock and from boats received for stock shall not be accomplished unless specifically directed by PEO SHIPS PMS325. The installation of engines in stock boats having unserviceable engines, or in stock boats having engines removed according to previous policy, shall be deferred until such time as the boats are scheduled for repair by PEO Ships PMS325.

583-9.1.4 STOCK BOATS CHECK-OFF LIST. Applicable check-off lists outlined in paragraphs 583-9.2.1 through 583-9.2.4shall be used for each boat placed in storage and for conducting routine and preservation inspections. This check-off list shall be used to ascertain whether a boat and the boat components are properly stored, and this should be entered on the boat record card. The boat checklist (Table 583-1-1), a copy of the boat record and a copy of the boat inspection report (NAVSEA 9583/3, Figure 583-1-1 are to be placed in a watertight clear plastic bag and attached to the top of the engine by the custodian activity turning in the boat. Include available information indicating total operating hours on engine since installation or last major overhaul and all available maintenance record data.

583-9.2 PRESERVATION PROCEDURES

583-9.2.1 CUSTODIAN RESPONSIBILITIES FOR PRESERVATION. It is the responsibility of the custodian activity to comply with procedures for turn-in of boats as outlined in paragraphs 583-1.5.3 through 583-1.5.5 and provisions for preservation as outlined in paragraph 583-9.2. Prior to shipment and/or delivery of a boat to a storage facility, the custodian activity shall ensure the following has been accomplished. Upon receipt of a boat (new or used), the storage facility should check the following items for all boats including wood, steel, aluminum, and fiber-reinforced plastic (FRP) construction

a. Fuel tanks, drain tanks, expansion tanks, potable water tanks, and sanitary water tanks are dry or preserved for storage. If applicable, the connection to these tanks shall be broken at the lowest point and the system

completely drained. Waterproof tags shall be attached to all broken connections, closed or open valves, filling connections, and to the helm or tiller to indicate the necessity for reconnection or replacement of plugs before filling tanks. Secure openings to fresh water tanks after draining to prevent contamination.

b. The engine cooling and exhaust system has been drained and the engine and accessory equipment have been preserved. Refer to paragraphs 583-9.2.2 through 583-9.2.2.1 for procedures on preserving engines.

c. All exterior surfaces; cabins, lockers, holds and bilges have been cleaned and limber holes and scuppers are unobstructed.

d. All fittings, piping, shafting, propellers, and bearings have been preserved with a coating of MIL-PRF-16173E, water displacing soft film (NSN 8030-00-244-1296).

e. All fresh water has been removed from piping, freshwater tanks, engines, pumps, exhausts, and bilges. All drain plugs have been removed and attached in a packet to the steering wheel or tiller. The boat is properly trimmed on it's cradle/trailer to facilitate drainage.

f. Check to be sure batteries have been removed after preservation is completed.

g. Propellers less than 24 inches in diameter, and those, whose blades protrude beyond the keel line, are removed and stored within the boat. Shaft keys, propeller nuts, cotter pins, and other parts shall be replaced on shaft and secured as necessary. Do not apply contact preservative to rubber. Propellers larger than 24 inches in diameter and not protruding beyond keel line need not be removed from the shafts.

h. The hull registry number is either molded on the transom or otherwise legibly marked on the hull of the boat. If a hull registry number, which is only painted on the hull, is removed during repairs, it shall be replaced immediately after repairs to that area are completed.

i. All boats that PEO SHIPS PMS325 has declared excess or that PEO SHIPS PMS325 has advised are beyond economical repair, shall be plainly marked with the letter D either on the bow or on the transom. The letter shall be approximately 12 inches high and made with yellow paint.

j. All dunnage, lifejackets, and rope shall be removed. All canopies shall be removed, dried and stored separately in a dry secure location on the boat or packaged in water resistance packaging and stored in areas exposed to the weather on the boat.

k. In-service layup of boats shall be accomplished in accordance with PMS procedures. :

583-9.2.2 BOAT ENGINE, REVERSE GEAR, AND PROPULSION UNIT PRESERVATION. The instructions for preservation of engine, reverse gear, and propulsion unit shall be accomplished in accordance with PMS procedures and the manufacturer's recommendations. Manufacturer's recommendations are found in the Commercial-Off-the Shelf manuals and data provided with the boat. Additional guidance can be found in appropriate MIP. Preservation methods shall displace dirt, water, and oil, and leave a continuous protective film on surfaces. Excess preservative is to be drained off to prevent the formation of stagnant pools that may, with age, tend to solidify and complicate putting an engine back into service.

583-9.2.2.1 Motoring Engine. If it is feasible to turn the engine over by motoring, the following steps are to be followed:

a. Thoroughly drain the engine and reduction gear of all water, lubricating oil, and fuel oil. Use forced air to blow-dry seawater and freshwater systems. In addition, completely drain and air-dry the exhaust system.

b. Remove engine and reduction gear oil cartridge and spin-off type filter elements and clean the interiors of all strainer and filter housings. Install new oil filter elements.

c. Remove the raw water pump impeller, place in a plastic bag and affix to top of engine. Release tension on all belt-driven devices. Affix caution tag to steering wheel stating belts must be tightened and impeller installed prior to engine start-up.

d. Flush the engine seawater system with fresh water, air dry, fill the system with soluble oil MIL-I-24453A and circulate throughout the system (soluble oil, Kutwell-40 may be obtained from Convoy Oil Corp. 1412 N. Front St. Philadelphia, PA 19122). Drain the entire system including block.

e. Fill freshwater system with P10, Grade 30 preservative by connecting a supply line to the drain connection for the system. Cause system to overflow from expansion tank vent to ensure that all surfaces are coated with preservative. Drain the preservative from the system and close drain connections.

f. Fill the engine and reduction gear lubrication system to normal capacity with P10, Grade 30 preservative.

g. Activate engine shut-down device(s) to keep the engine from firing.

h. Motor engine sufficiently to circulate the preservative through the engine lubrication systems. Several minutes (total time) should be adequate but visual checks should be made to ensure that the compound is reaching all points. If an electrical starting motor is used for turning the engine, runs should be limited to 30 seconds each to prevent overheating the motor, and at least two minutes should elapse between runs.

i. Disconnect the fuel inlet line at the strainer and circulate PE 10 preservative through the strainer, fuel supply pump filter, and injectors until undiluted preservative oil flows from the fuel return line. To lubricate valves, pistons and liners, and combustion chamber surfaces on mechanically controlled engines, place the throttle in full fuel position and motor the engine until vaporized oil emerges from the exhaust manifold or riser opening. If an electrical starting motor is used for turning the engine, runs should be limited to 30 seconds each to prevent overheating the starting motor, and at least two minutes should elapse between runs.

CAUTION

To prevent possible hydraulic lock, do not exceed two minutes of cranking total time.

j. Drain the preservative oil from all systems, paying particular attention to low spots, pockets, and exposed piping in which the compound could collect. Save drained compound for future use.

k. Reconnect all lines for normal operation.

l. Seal all openings into the engine to prevent entrance of dirt or water. A blank metal or other non-porous material plate shall be installed between the exhaust manifold or turbocharger outlet and exhaust hose fitting to prevent moisture from seeping back into the engine. Leave a minimum 1 lip exposed on the blank plate. Install a waterproof tag on the blank plate with a warning stating, remove blank plate prior to starting engine or equipment damage may occur.

m. Using grade 2 compound, MIL- PRF-16173E, spray or brush over all external unpainted areas. If the engine will be exposed to the weather, grade 1 compound should be used for this purpose. Spray or brush P10, Grade 30 preservative on internal surfaces of mild steel fuel tanks after all fuel and moisture has been removed.

n. Attach a waterproof tag to the top of the engine indicating that the fluid systems have been treated with preservative, raw water pump impeller removed, drive belts loosened and a blank plate installed in the exhaust outlet. Remove the engine start fuses and tag fuse box and fuses; enclose fuses with startup instructions. The tag shall include the date on which the engine was treated, a statement that the engine is not to be turned over until ready to be put into operation (as turning over may impair the protective film), a statement that the procedure specified in paragraph 583-9.4.3 shall be followed before placing the engine in service, and that the lubrication, cooling, and fuel systems shall be filled before operating.

583-9.2.3 STEEL HULLS. In addition to the PMS requirements and general items, the following shall be checked for on steel hulled boats:

a. LCM's or other boats that are exposed to the weather when stored are to be protected from entrance of water, dirt, or contaminants into the interior spaces. Vents shall remain open for air circulation. Engine exhausts shall be plugged with damage control type wood plugs. Engines shall be preserved as detailed in paragraph 583-9.2through 583-9.2.2.1 or applicable MIP and MRCs.

b. Drainage has been accomplished by trimming the boat, opening the existing drain plugs, or drilling drain holes.

CAUTION

Drain bilges under guidance of local regulations for HAZMAT.

583-9.2.4 FIBER REINFORCED PLASTIC HULLS. In addition to the PMS requirements and general items, special care shall be taken to make certain that the weight of the boat rests upon the keel support, not the side bunks (chocks).

583-9.3 INVENTORY CONTROL POINT (ICP) RESPONSIBILITIES FOR STORAGE

It is the responsibility of the Stock Point to certify that turn-in and preservation procedures have been satisfactorily accomplished by the Custodian Activity. Once a boat has been accepted for turn-in, it is the responsibility of the Stock Point to accomplish the following storage requirements:

a. Adequate shelter has been provided with sufficient side protection to prevent the accumulation of rain or snow. There should be no leaks in the cover. Evidence of this is the absence of fresh water accumulation on the decks or in the bilges.

b. Boat is rigidly supported by keel blocking timbers (6-inch by 8-inch) placed beneath the keel at maximum intervals of 6-feet, or by a cradle or trailer designed for the boat.

c. Side bunks (chocks) are used for preventing racking and not bearing weight as evidenced by absence of local hull deformation.

d. Deformation of the hull by overhang at the stem and the transom ends is prevented by rigid supporting tim¬bers and adequate padding to prevent damage to the plating or planking.

e. Frost heaving or settling of the ground has not caused racking of the hull or deformation of the hull planking or plating at the side bunk (chocks).

583-9.4 DEPRESERVATION

583-9.4.1 INVENTORY CONTROL POINT (ICP) RESPONSIBILITIES FOR DE-PRESERVATION. Prior to releasing a boat to a receiving activity, the stock point is responsible for preparing the boat for issuable condition.

583-9.4.2 CUSTODIAN OR RECEIVING ACTIVITY RESPONSIBILITIES FOR DEPRESERVATION. Once released from the Stock Point, the receiving activity shall ensure all depreservation procedures have been accom-

plished and, in addition, ensure that receipt procedures and depreservation procedures have been accomplished as detailed in paragraphs 583-9.4 through 583-9.4.3.2 and the COTS manuals.

583-9.4.3 STARTING DIESEL ENGINES AFTER DEPRESERVATION.

CAUTION

Prior to commencing depreservation procedures, install the raw water pump impeller and tighten loose drive belts.

583-9.4.3.1 Fuel System. The compound will be removed from the fuel system during the normal operation of the engine.

583-9.4.3.2 Cooling System. The following procedure should be adhered to for removing rust preventive compound from the cooling system:

CAUTION

Dispose of waste water under guidance of local regulations for HAZMAT.

NOTE

Cooling System procedure shall not be used in systems containing aluminum.

NOTE

Run engine for five minutes during each flushing. The lubricating oil and water should be checked for contamination after a few hours of operation, then drained and replaced, if necessary.

1. Fill with fresh water and operate the engine for five minutes to ensure that no leaks are present in the cooling system.
2. Secure engine and drain water.
3. Fill the cooling system with RESTORE PLUS (Acid Radiator Cleaner-NSN 6850PCC2610). NEEDS NEW INSTRUCTIONS BELOW
4. Start engine and operate (underload if possible) for 2 hours, keeping solution temperature at 160°F.
5. Drain cleaning solution from cooling system.
6. Flush four times with fresh water to remove all traces of cleaning solution. Break several hose connections and examine waterside to ensure that it is clean.
7. If the engine is not clean, reassemble, refill with cleaning solution, and repeat cleaning and flushing operations.

SECTION 10
BARGES AND GIGS

583-10.1 CONVERSION OF STANDARD BOATS

583-10.1.1 STANDARD ITEMS APPROVAL AND INSTALLATIONS. All conversions of Navy standard boats to barges and gigs shall be accomplished in a cost effective manner.

583-10.2 STANDARD ITEMS

583-10.2.1 CONVERSION OF STANDARD BOATS TO BARGES AND GIGS. Barges and gigs, as outlined in paragraph 583-1.3.3, are authorized for installation of standard items listed in Table 583-10-1. Installation of these items shall be approved by type and fleet commanders for afloat commands and by the immediate senior in command for shore commands. In no instance shall installation of standard items and conversions be accomplished which will increase weight to exceed the hoisting weight shown on the boat's hoisting label plate or impair operational and performance characteristics or result in a decrease in safety. Installation of items on gigs beyond the standard items is not authorized.

583-10.2.2 STANDARD ITEMS APPROVAL AND FUNDING. Conversion of standard boats to barges and gigs, will be funded by Type or Fleet Commanders. Serviceable items or components not in conformance with Table 583-10-1, already installed in assigned boats, will be required to be removed when item is no longer serviceable. Buffed and polished CRES fittings, molding, and strips should be used wherever chrome-plated items are permitted, particularly if the item is commercially available at reasonable prices.

583-10.2.3 PAINTING OF BARGES AND GIGS. It is recommended that barges and gigs be painted in accordance with Table 583-10-2 using polyurethane or epoxy-type paint for decks, hull and boot top stripe, and antifouling bottom paint below the boot top stripe. It is also recommended that barges and gigs which are in continual use (not hoisted at frequent intervals) receive two coats of antifouling paint on the underwater body.

Table 583-10-1. Standard Items for Barges and Gigs

Standard Items	Barges	Gigs
Deck and engine cover caulked 2		
Cabin trim		
If wood-varnish finish		
If metal or plastic-white painted finish		
Linoleum on flats or suitable indoor/outdoor carpeting (fire retardant 3)		
Seat cushions and curtains		
Ladders, wood, varnish finish		
Kick plates and treads, CRES, polished		
Water closet		
Galley		
Swimmer's platform		
Chrome plate 4		
Handrails		
Flagstaff, jackstaff, and mast		
Sockets		

Table 583-10-1. Standard Items for Barges and Gigs - Continued

Standard Items	Barges	Gigs
Sockets		
Bow lettering, nocks, arrowheads, and stars 5		
Portable rings		
Interior lighting fixtures		
Fire extinguisher bracket		
Chain plate		
Taffrail and bow rail		
Cleats		
Beading and stem band 6		
Horn, windshield fittings (less wipers)		
Chocks		
Towing post (if metal)		
Engine control		
Steering wheel (metal portions)		
Searchlight		
Deck vents and fuel covers		
Chafing plate 7		
Hatch moldings and fittings		
Door and ladder fittings		
Emergency tiller plate		
Bell, bracket, and stand		
Appropriate communications equipment 8		

NOTES:
1. Boats converted and used as barges and gigs generally are standard U.S. Navy designs. Non-standard com¬mercial boats may also be assigned for flag officer's use as barges. Those items which are welded or otherwise affixed to the hull in such a manner that excessive expenditures would be required for their removal and replacement shall not be chrome-plated.
2. Barges are authorized to have herringbone decks of unvarnished teak or herringbone decks consisting of var¬nished mahogany margins, king plank, and filler pieces with Alaska cedar or mahogany strakes. Caulked decks, if installed on standard craft being modified as gigs, shall not be removed.
3. Vinyl tile may be used in place of linoleum. Color is to be in harmony with cabin interior.
4. Where applicable, only the exposed portions of the items designated shall be chrome-plated. Stainless steel fittings shall not be chrome-plated as the purpose for the installation of these fittings is to avoid the cost of chrome-plating. Stainless steel fittings shall be polished.
5. Chrome-plated bow letters, nocks, and arrowheads may be installed on any boat used as a gig.
6. Polyurethane fenders are installed on new personnel boats and are selectively back fit by BOATALT on older boats. Maintainability is improved over the traditional white oak with stainless steel bar beading. The urethane fenders shall not be removed when a standard boat is issued as a barge or gig.
7. Chafing plate is non-standard equipment which should be installed on transom corner angles (badgers).
8. Equipment may be installed, permanent, or portable, to allow sufficient communications for command and safety purposes within the boat control station for the barge and gig operators.

Table 583-10-2. Recommended Colors for Barges and Gigs

Barges		Gigs	
Deck	White/Off White	Deck	Standard Navy Grey
Hull	Black	Hull	Standard Navy Grey

Table 583-10-2. Recommended Colors for Barges and Gigs - Continued

Barges		Gigs	
Boot top	3 White Stripe 1 Above Waterline	Boot stripe	3 Red Stripe 1 Above Waterline
Bottom	Medium Green or Tropical Green	Bottom	Black

SECTION 11

ANTI-TERRORISM/FORCE PROTECTION AND SPECIAL MISSION BOATS AND CRAFT

583-11.1 GENERAL INFORMATION

The changing mission and mission environment that the U.S. Navy supports, require different types of boats and small craft. Since 2001, the Navy began procurement of Commercial-Off-The-Shelf (COTS) boats and craft that are used to support harbor patrol and security efforts, drug interdiction, search, air, and rescue (SAR), line handling duties, barrier tending, and escort duties.

583-11.2 FORCE PROTECTION/ANTI-TERRORISM BOAT TYPES

583-11.2.1 HARBOR SECURITY (HS) AND PATROL BOATS (PB). Boats used to perform patrols, surveillance, and security related functions as required. Hull lengths and types will vary.

583-11.2.2 LINE HANDLING BOATS. This type of boat supports missions in harbors and ports as directed.

583-11.2.3 BARRIER BOATS (BB). Barrier boats are small tugs used to deploy and retrieve barriers in ports and harbors.

583-11.2.4 ESCORT BOATS. Escort boats provide protection for ships and submarines entering and exiting ports and harbors.

583-11.3 FORCE PROTECTION/ANTI-TERRORISM HULL CONSTRUCTION

Boats and craft used as force protection or anti-terrorism assets may be constructed from aluminum, fiber reinforced plastic (GRP), or steel.

583-11.3.1 COLLAR TYPES. Certain hulls may be fitted with an inflatable air chambered collar or a sheath that contains foam surrounding an air filled tube, or a foam filled collar mechanically attached to the hull at the sheer. Information specific to the tube fitted will be found in the Boat Information Book (BIB).

583-11.4 ENGINES

Individual boats will be fitted with inboard diesel engines or outboard gasoline engines. The type and size of engine depends on craft type and mission.

a. Gasoline Outboard Engines: Two-or four-cycle-COTS engines.

b. Inboard Diesel Engines: will be four-cycle COTS engines.

583-11.4.1 PROPULSION UNITS. Boats must be fitted with a means of propulsion and maneuvering. Outdrives or water jets will be fitted on inboard engine configurations.

SECTION 12

LIFE RAFTS AND ABANDON SHIP BOAT

583-12.1 INTRODUCTION

583-12.1.1 GENERAL. An inflatable life raft is one constructed of a coated fabric and inflated to its design shape by air or other gas. The raft is stowed aboard ship for use only in an emergency, as a life raft, when and as directed by the Commanding Officer.

583-12.1.2 TYPES OF INFLATABLE LIFE RAFTS. There are three basic Navy type inflatable life rafts for use throughout the fleet for ships and craft using life rafts with capacities of at least 25 persons. Some craft requiring smaller capacity life-saving devices may use USCG approved life rafts or inflatable buoyant apparatus' as required by mission parameters. The three types of Navy life rafts used are:

a. Mark-6 (MK-6), 25-person, being phased out.

b. Mark-7 (MK-7), 25-person, replaces the MK-6.

c. Mark-8 (MK-8), 50-person

583-12.1.3 LIFE RAFT SPECIFICATIONS. The following military specifications and instructions apply for the construction of these rafts:

a. MK-6, MIL-L-24489 (inactive) which includes:
   1. Inflation Equipment, MIL-I-24490.
   2. Rigid container, MIL-C-24491.
   3. Inflation cylinder MIL-C-24604.

b. MK-7, Commercial Off-The-Shelf (COTS), U.S. Coast Guard approved with modifications provided in U.S. Navy designed container, Contract Number N00104-00-D-ZD00.

c. MK-8, COTS, U.S. Coast Guard approved with modifications provided in U.S. Navy designed container, Contract Number N00104-01-D-ZD07.

583-12.1.4 ABANDON SHIP BOAT. The ship shall designate one of its boats as the abandon ship boat for marshalling life rafts and recovering survivors during abandon ship situations. An abandon ship boat gear locker shall be installed near the boat. An abandon ship survival bag that contains the equipment shown in Table 583-12-1 and the following items shall be stowed in the abandon ship boat gear locker:

a. Four boat oars (NSN 4220-00-268-9261)

b. Twenty fathoms (120-feet) of 2-inch circumference nylon rope (NSN 4020-00-753-2887)

c. Boat cover colored rescue orange with rigging for boats not having a fixed canopy. Shall be approximately 8 feet by 10 feet in size, 18-ounce vinyl or polyurethane coated fabric, UV resistant, heat sealed seams, with grommets installed around its periphery.

The locker shall be similar to NAVSEA drawing number 53711-671-5107293 Survival Equipment Locker for Abandon Ship Boat. The locker will have a label plate inscribed with “Abandon Ship Equipment - Load in boat upon hearing Abandon Ship Signal” attached to the locker.

Table 583-12-1. Abandon Ship Survival Bag Equipment[1]

ITEM	QUANTITY	REMARKS	ORDERING INFORMATION
Bag, Abandon Ship Survival	1	Kwik Tek Inc. Denver, Co	Dry Tek ASSB-1 (Blue)
Bailer, Plastic 2-Quart Capacity	1	Rubbermaid #2885 64-ozs	Commercial
Batteries, Alkaline “D” cell	4		6135-00-835-7210
Blanket, Casualty	4		7210-00-935-6666
Dimenhydrinate, 50 mg Tablets	100		6505-00-116-9660
First Aid Kit	1		6545-00-168-6893
Flashlight, Type II, Style A	1		6230-00-299-3035
Food Packet	10		8970-01-434-3192
Knife, Pocket	1		5110-00-162-2205
Mirror, Signaling Type II	1		6350-00-261-9772
Sea Marker, Fluorescent	1		6850-00-270-9986
Water Emergency Drinking	30	500-ml plastic bottle	8960-00-000-0170
Whistle, Signaling, Type II Plastic	1	Plastic, Type II	8464-00-254-8803

[1]The abandon ship survival bag equipment shall be inspected every 60 months in accordance with NAVSEA drawing 583-5108335. The bag shall be sealed and marked with the ship hull number, date packed, and the name of the packing facility.

583-12.2 ALLOWANCES AND ISSUES

583-12.2.1 CORRESPONDENCE. All correspondence related to inflatable rafts shall cite type (for example, MK-7) and Mod number. Whenever the status of a life raft changes, the life raft database must be updated. This database can be queried via the Internet at https://www.boats.dt.navy.mil/liferaft. Report all changes to Naval Surface Warfare Center, Detachment Norfolk, Carderock Division.

583-12.2.2 STANDARD SHIPBOARD ALLOWANCE. The allowance of inflatable life rafts for in-service ships is as follows:

a. For ships with total accommodations greater than 295, life rafts shall be provided for 110 percent of accommodations, including surge or 110 percent of Manpower Authorization (MPA) whichever is greater. The number of rafts provided in excess of the number of rafts required to satisfy 100 percent of accommodations shall not exceed twelve 25-person life rafts or six 50-person life rafts.

b. For ships with total accommodations less than 295, life rafts shall be provided for 100 percent of accommodations, including surge, or 100 percent of MPA whichever is greater. The total number of life rafts shall be sufficient to retain life raft capacity for 100 percent of accommodations in the event that the largest cluster of life rafts is destroyed. A cluster is defined as life rafts being supported by a common structure. In calculating the number of life rafts required, any fractional value shall be increased to the next higher unit value.

583-12.2.3 CHANGES IN ALLOWANCE. Changes in allowance will be considered by Naval Sea Systems Command (NAVSEA) PEO Ships PMS325 only upon presentation of information documenting a Chief of Naval Operations directed change to ship's mission, or an official revised Ship's Manning Document, OPNAVINST 5320 (series) causing a change in the ship's accommodations.

583-12.2.4 HOW RAFTS ARE OBTAINED. MK-6 life rafts are being phased out of service. The transition from MK-6 to MK-7 life rafts will involve the inventory maintained by the life raft repair facilities. These life rafts shall be used to replace an inflatable life raft of ships allowance for reasons of loss, survey, or deferral for repair. MK-7 life rafts to replace the MK-6 may be available from the rotatable pool at the closest Navy life raft service facility. If adequate pool stocks are not available, replacement life rafts will have to be ordered. To obtain a new MK-7 or MK-8 life raft, submit the requisition as required by current requisition procedures to the Navy Inventory Control Point (NAVICP), Mechanicsburg, PA. The following National Stock Numbers (NSN) apply:

a. MK-7, NSN 4220-01-444-6260 (replaces the MK-6 life raft).

b. MK-8, NSN 4220-01-475-3185 (50-person life raft).

583-12.3 REPORTS

583-12.3.1 MAJOR REPAIR REPORTS. Major repair actions on life rafts shall be reported by certified repair facilities in accordance with NAVSEA S9008-AA-PRO-010 and forms listed therein. The repair shall be described briefly; it shall be identified and the date of release from shipboard and return to shipboard, shall be noted. These completed forms shall be kept on file at the repair facilities for review by the NAVSEA certification team.

583-12.3.2 LIFE RAFT TURN-IN OR EXCHANGE. NAVICP Mechanicsburg does not maintain an inventory of life rafts. All life rafts shall be turned in at the nearest certified life raft repair facility for inclusion into the facility's pool for rotation.

583-12.3.3 RECEIPT OF NEW LIFE RAFT REPORT. Ships receiving new type life rafts will submit allowance Change Request/Report, NAVSUP Form 1220 to NAVSUP Form 1220 to NAVICP and NSWC Detachment Norfolk according to NAVSEAINST 4441.1.

583-12.4 DISPOSALS AND SURVEYS

583-12.4.1 DISPOSAL OF LIFE RAFTS. An inflatable life raft shall not be disposed of or surveyed by ships' force except as noted in the following paragraph. Rafts that are determined to be unrepairable by designated repair and certification facilities shall be disposed of or surveyed in accordance with NAVSEA S9008-AA-PRO-010, Inspection, Test, and Repair Procedures for Life Raft Inflatable MK-7 and MK-8.

583-12.4.2 REPLACEMENT AT END OF 25-YEAR SERVICE LIFE. As part of pre-inspection and inflation testing, any MK-7 or MK-8 life raft found to be 21 years or older prior to being repacked shall be considered unfit for further service and surveyed.

583-12.4.3 LOSS OF LIFE RAFT AT SEA. A raft lost at sea is considered surveyed.

583-12.4.4 CERTIFIED AND REPAIR FACILITIES DISPOSAL OF LIFE RAFTS. Disposals shall be made only by those designated repair and certification facilities listed in paragraph 583-12.11.1, in which case, all salvageable parts in good condition shall be removed and retained in local stock to be used again. The raft shall then be destroyed. The life raft database shall then be updated with an entry of the destruction.

583-12.4.5 LIFE RAFTS FROM SHIPS BEING DEACTIVATED. For ships being deactivated, refer to paragraph 583-12.3.2.

583-12.5 STOCK CLASSIFICATION, LEVELS, AND DISTRIBUTION

583-12.5.1 CLASSIFICATION. Stock rafts are divided into categories listed in paragraphs 583-12.5.1.1 through 583-12.5.1.4.

583-12.5.1.1 Condition A. Any raft ready for issue from a certified repair facility.

583-12.5.1.2 Condition F. Any raft economically repairable but not issuable without repair.

583-12.5.1.3 Condition H. Any raft that is uneconomical to repair. Rafts in this category are considered unserviceable and shall be surveyed according to paragraph 583-12.4 when directed by PEO SHIPS PMS325.

583-12.5.1.4 Condition M. Any raft in process of repair, in transition from Condition F to Condition A. Stock rafts shall be placed in the foregoing categories only as a result of inspection by qualified personnel of designated repair and certified facilities. Refer to paragraph 583-12.11.1 for designated repair and certified facilities.

583-12.5.2 STOCK LEVELS. Based on demand, minimum stock levels of issuable rafts, by types, will be established at stocking activities.

583-12.5.3 DISTRIBUTION. Selection of rafts shall be on a first in and first out basis of Condition A rafts only, of the type and Mod to suit the individual ship requirements. Types and Mods shall be approved by PEO SHIPS PMS325 if different from existing ship's rafts.

583-12.5.3.1 Repair Priority. Selection of rafts for repair to Condition A shall be from existing stocks of Condition F rafts determined to be most economical to repair, whenever possible.

583-12.5.3.2 Estimated Repair Costs. Estimated repair costs shall be reported on an approved NAVSEA Form and shall include (though separately identified from) costs to open and inspect.

583-12.6 IDENTIFICATION

583-12.6.1 LIFE RAFT REGISTRY NUMBER. Each raft is assigned a registry number for purposes of identification. The number is molded into the raft's identification label attached to the hull tube on MK-6 life rafts or printed on a label glued to the floor on MK-7 and MK-8 life rafts.

583-12.7 CAPACITIES, WEIGHTS, AND DIMENSIONS

583-12.7.1 LIFE RAFT CHARACTERISTICS. Normal operation of the life raft is accomplished by applying tension to the sea painter line that actuates the inflation cylinders. As inflation occurs, the brass securing bands on the container are broken as the life raft emerges. Should circumstances impede the normal inflation of the raft, the life raft can sometimes still be deployed. Any cutting instrument, for example the scissors from the first aid kit of a deployed life raft, can be used to sever the brass securing bands of the containerized life raft. Remove the upper container half and locate the inflation cylinders. Under some circumstances the inflation cylinders can be actuated manually by extracting the inflation cable. Table 583-12-2 lists characteristics for inflatable life rafts.

Table 583-12.2. Characteristics for Inflatable Life Rafts

RAFT TYPE	CAPACITY	WEIGHT (LBS)	DIMENSION INFLATED L W H	DIMENSION CONTAINER H WL
Mark 6	25-person	500	17’ 10 X 8’10 X 4’	27” X 56”
Mark 7	25-person	323	13’ 5-3/4” X 13’ 5-3/4” X 6’ 2-3/4”	27” X 56”
Mark 8	50-person	585	21’ 7-3/4” X 17’ 3-3/4” X 8” 6-3/8”	35” X 65”

583-12.7.2 CONTAINER DESIGN. The container design is detailed on NAVSEA drawing number 803-4382176 for the MK-6, manufacturers drawing number RFD-D-45132 for the MK-7, and NAVSEA drawing number 583-5106577 for the MK-8. The containers are capable of withstanding a free fall drop of 23 meters (65 feet) from stowage into the water.

583-12.8 EQUIPMENT AND REPAIR PARTS

583-12.8.1 SURVIVAL GEAR AND REPAIR PARTS FOR MK 6, MK 7, AND MK 8 LIFE RAFTS. With the installation of encapsulated life rafts, the survival gear and repair parts become raft allowance (stowed within the fiberglass container, inaccessible to the ship’s crew until the life raft is deployed).

583-12.8.2 LIST OF SURVIVAL GEAR FOR EACH TYPE LIFE RAFT. Table 583-12-3 lists the survival gear provided for each type of raft.

Table 583-12.3. Survival Gear

ITEM	DESCRIPTION	SPECIFICATION	NSN	QTY MK-7 MK-8
1	Food Packet (Individual Ration) or Food Packet, Survival Abandon Ship	A-A-20247	8970-00-299-1395-01-434-3192	25/50
2	Water, Plastic Container (500ml)		8960-00-000-0170	25/50
3	Manual Reverse Osmosis Desalinator (MROD)		4610-00-372-0592	1/1
4	Storage Bag, Drinking Water, Size A		8465-00-485-3034	2/2
5	Flashlight (2 Cell) Type II Style I, or Type III Style I		6230-00-269-3034 6230-00-299-3035	1/1
6	Battery, Dry, Flashlight Alkaline D		6135-00-835-7210	6/6
7	Sea Marker, Fluorescent		6850-00-270-9986	1/1
8	Mirror, Signaling, Type II		6350-00-261-9772	1/1

Table 583-12.3. Survival Gear - Continued

ITEM	DESCRIPTION	SPECIFICATION	NSN	QTY MK-7 MK-8
9	Sponge, Cellulose Type II Size 3, Porosity A		7920-00-240-2559	2/2
10	Knife, General Purpose, Pocket		5110-00-162-2205	1/1
11	Whistle, Signaling, Plastic, Type II		8465-00-254-8803	1/1
12	Motion Sickness Tablets Dimenhydrate, 50mg		6506-00-116-9660	3/6
13	Bailer, Pouch Type	Commercial		2/2
14	Kit, First Aid		6545-00-168-6893	1/1
15	Kit, Abandon Ship Signal		1370-01-366-0344	1/1
16	Kit, Fishing Survival		4220-00-125-8751	1/1
17	Flashlight Bulb (PR6)		6240-00-155-8675	2/2
18	Blanket, Combat Casualty (84 x55)	Commercial		12/25
19	Hand Pump, Air with Adapter	Commercial		1/1
20	Sealing Clamp, 3 inch		5340-00-720-8864	2/4
21	Sealing Clamp, 5 inch		5340-00-720-8863	2/4
22	Sealing Clamp, 7 1/2 inch		5340-00-720-8858	2/4
23	Oars , pair		2040-00-268-9261	1/2
24	Sea Anchor with Line Type 2Size 1		2040-00-368-2880	2/2
25	Rescue Line with Quoit		4220-01-006-6103	1/1
26	Valise, Survival Equipment	Commercial		2/3
27	Floatable Knife		4220-01-006-6102	1/1
28	Operation Manual		S9008-EA-INS-010	1/1

583-12.9 STOWAGE AND HANDLING

583-12.9.1 STOWAGE. Inflatable life raft stowages should be located to permit ready manual overboard launching into the water without hitting obstructions; to be clear of overhead obstructions; to avoid adverse effects of gun, missile and jet blasts and heavy seas; and to interfere as little as possible with normal shipboard activity. They shall be located, longitudinally, where they will provide the maximum practical distribution of life-saving facilities. The preferred orientation of the life raft in the stowage is with the seam of the upper and lower halves of the container positioned approximately parallel to the baseline of the ship and the sea painter line exiting the life raft container facing the aft end of the ship. Furthermore, all caution labels shall be plainly visible. They shall be provided and stowed in accordance with appropriate NAVSEA standard drawings.

CAUTION

On some craft such as the LCAC (landing craft, air cushion) it may be necessary to orient the sea painter end of the life raft container to face forward to move the sea painter away from the air intake of the lift fans.

583-12.9.1.1 Hydrostatic Release. Equipment for securing the rafts in their stowages shall include a hydrostatic release device. This device may be the can-type hydrostatic release device, NAVSEA DWG 803-5959322. The can-type hydrostatic release is not currently manufactured or in stock. When a hydrostatic release devices require replacement, a commercial design, Thanner model DK84.1M, NSN 1H-4220-01-493-9233 shall be used. The

can-type hydrostatic release devices permit release of the life raft from stowage at approximately 10-40 feet in event of the ship sinking. The Thanner DK84.1M hydrostatic release device will release the raft from stowage at a seawater depth of approximately 5-15 feet.

583-12.9.1.2 Sea Painter. The life raft sea painter shall be attached directly to the ship structure adjacent to the stowage location.

583-12.9.2 HANDLING. Care should be taken in handling inflatable life rafts during shipping, in and out of stowage, inspection, and transportation to and from repair facilities. To minimize damage to the life raft during transportation each life raft should be banded to a wooden pallet. The life raft should be lifted and carried using the molded handholds in the fiberglass container or an approved NAVSEA lifting sling as shown on Norfolk Naval Shipyard drawing 4712507 for the MK-6 life raft. Care shall be exercised to ensure that the sealing bands are not inadvertently cut or damaged.

583-12.9.2.1 Covered Storage. Storage areas for life rafts shall be dry and free from effects of weather and from heat concentrations such as steam pipes. Warehouses or other covered storage spaces shall be used wherever possible.

583-12.10 INSPECTION

583-12.10.1 TYPES OF PERIODIC MAINTENANCE. Inspections shall be made at the following levels of responsibility to ensure that rafts, stowages, handling equipment, survival gear, and rations are satisfactory for emergency use:

a. Organizational level (shipboard) includes inspection of the container, raft stowage, and handling equipment in accordance with the maintenance index page (MIP) and applicable maintenance requirement cards (MRCs).
b. Depot level (repair facility) will open and inspect the raft and the container contents replacing outdated survival gear and rations. Perform minor and major repair, tests, and repacking.

583-12.10.2 STOWAGE SECURING HARNESS. The stowage securing harness shall be inspected to ensure proper tension and that:

a. Stowages with the can-type hydrostatic or the Thanner type hydrostatic release without the spring tensioner shall be torqued 8 to 10 pounds foot.
b. Harnesses used on stowages with the Thanner type hydrostatic release shall be tightened until the life raft is securely seated in its cradle but so as not to damage the life raft container.

583-12.10.2.1 Hydrostatic Release. The hydrostatic release assembly shall be visually checked. Correct tightness of the securing harness (refer to paragraph 583-12.10.2) shall be ensured. The release assembly shall not be painted. In event the release assembly is painted, it shall be removed and replaced. Removed release assemblies shall be turned in to a repair facility for refurbishing and testing.

583-12.10.2.1.1 Hydrostatic Release Installation. The can-type hydrostatic release device shall be installed with the end bracket having the hairpin connected to the retaining harness and the open end of the can shield facing the aft-end of the ship. The hairpin shall be installed in a direction to facilitate removal. The Thanner DK84.1M

device has a safety pin to prevent inadvertent release, so the pushbutton of that device should face toward traffic for easy release provided it does not cause any safety hazard to those passing by the life raft stowage.

583-12.10.2.1.2 Securing Sea Painter. The sea painter line from the container shall be checked to ensure that it is securely tied directly to the ship's structure, and accessible to the person launching the raft. The end of the sea painter is dyed red to provide a visual indicator that the length has not been altered. If the red end of the sea painter of a recently recertified life raft is not visible prior to installation on the ship or craft, a certified life raft repair facility shall be contacted and repairs made.

583-12.10.2.1.3 Inspect The Stowage Location. The rigid container and stowage interface shall be visually inspected to ensure that the stowed raft is sitting snug in the cradle and not subject to shifting.

583-12.10.2.1.4 Inspection and Test. With the periodicity stated in the appropriate maintenance index page (MIP), the rafts shall be turned in to a certified repair facility for inspection and testing. The maintenance interval for Navy certified life rafts is 60 months. The maintenance interval for all other USCG approved life rafts and inflatable buoyant apparatus' (IBAs) is typically 12 months or as specified by applicable USCG regulations. Some Navy combatant craft may be equipped with extended-service IBAs requiring service every 30 months. These IBAs have Navy approval to have an extended service interval. The extended-service IBAs are serviced in commercial servicing stations authorized by the IBA manufacturer to service those types of devices.

583-12.10.3 DEPOT LEVEL. Inspection, major, or minor repair of the various rafts (paragraph 583-12.10.1) shall be accomplished by an approved certified repair facility (paragraph 583-12.11.1.1).

a. Conduct all applicable tests and inspections on raft, equipment, and systems listed in the appropriate technical manuals.

b. Make any major and minor repairs as necessary.

583-12.11 SERVICING AND MAINTENANCE

583-12.11.1 SERVICING. A facility that will provide service to Navy life rafts is any NAVSEA approved activity designated to accomplish minor and major repairs, inspection, maintenance, and survey of inflatable rafts. These facilities are annually certified by a NAVSEA certification team. The following designated activities are presently certified repair facilities:

a. Norfolk Naval Shipyard (NNSY), Portsmouth, VA.

b. Naval Ship Repair Facility (NSRF), Yokosuka, Japan.

c. Southwest Regional Maintenance Center (SWRMC), San Diego, CA.

d. RFD-Beaufort, Inc., (formerly Inflatable Survival Systems, Inc. (ISSI)), Sharon Center, Ohio, Original equipment manufacturer (OEM) for the MK-7 and MK-8 life raft.

583-12.11.1.1 Repair. A repair is the correction of a problem which, when completed, will restore a raft to a fully operable condition. Any fabric repair on an air retaining surface will require a reliability test.

583-12.11.1.2 Maintenance. Life rafts that require repair or recertification shall only be accomplished by an activity designated in paragraph 583-12.11.1 and in accordance with S9008-AA-PRO-010 and the various appropriate maintenance bulletins issued by NAVSEA.

583-12.12 RAFT CERTIFICATION AND EXCHANGE

583-12.12.1 INSPECTION, CERTIFICATION AND EXCHANGE. Upon receipt of ships' inflatable life rafts for inspection and recertification or repair, the depot level activities shall accomplish inspections, tests, and repairs as cited in paragraphs of this section.

583-12.12.2 TEST OF THE HYDROSTATIC RELEASE DEVICE. When the life rafts for a ship or craft are removed for servicing, the hydrostatic release device (HRD) must be tested. There are two types of HRDs in use, the can-type and the Thanner DK84.1M diaphragm type. The two types of HRDs use different test procedures.

583-12.12.2.1 Can-Type Hydrostatic Release Device. The can-type HRD is tested using dimensional checks. The can component is measured in length using calibrated, micrometer-dial calipers. Two measurements are taken approximately 90° apart along the longitudinal axis of the can. The can must measure at least 4.16 inches (10.57 cm) in length at both places to pass the test. Can-type HRDs which fail the test shall be disposed.

583-12.12.2.2 Thanner DK84.1M Hydrostatic Release Device (HRD). The Thanner HRD is tested using a manufacturer approved test apparatus. The HRD is secured in the pressure chamber of the test apparatus with a load placed on its release pawl. The cover to the pressure chamber is secured closed and air pressure is supplied to the chamber until the HRD releases. The HRD must actuate between 0.15 and 0.40 bar to pass the test. If the HRD passes the test, it is reset, tagged with the test date, and is ready to use. A Thanner HRD that fails the test can be repaired according to procedures in NAVSEA S9008-AA-PRO-010, retested, reset, and returned to service.

SECTION 13

SEARCH AND RESCUE (SAR)

583-13.1 READY SERVICE RESCUE BOAT

Every ship, while operating underway will designate one ship's boat as the Ready Service Rescue boat.

583-13.2 PROCEDURES FOR SEARCH AND RESCUE OPERATIONS

SAR procedures shall be in accordance with NTTP 3-50.1, NAVY SEARCH AND RESCUE MANUAL.

583-13.3 SAR EQUIPMENT

SAR equipment is required for both shipboard and boat SAR operations are specified in NTTP 3-50.1, NAVY SEARCH AND RESCUE MANUAL. This equipment is supported on an AEL in the ship's COSAL.

SECTION 14
BOAT TRAILERS

583-14.1 BOAT TRAILER

Most boats will include a trailer designed specifically for transporting the boat over the road. Boat trailers, when they are supplied with the boat, should be treated as part of the overall boat system.

All boat trailers transporting boats over public roads and highways must meet CFR Title 49, Chapter V, National Highway Traffic Safety Administration, Department of Transportation, Part 571, Federal Motor Vehicle Safety Standards (FMVSS) and CFR Title 49, Chapter III, Federal Motor Carrier Safety Administration, Department of Transportation, Part 393, Parts and Accessories Necessary for Safe Operation. All boat trailers, regardless of use, must be capable of safely conveying the combined load of the boat and its accompanying load.

583-14.2 BOAT TRAILER MAINTENANCE

Boat trailers should be periodically inspected in accordance with the trailer manufacturer's recommendations or a regimented program developed by the cognizant activity. NAVSEAINST 4790.8 (series) requires implementation of the Maintenance and Material Management (3M) system, in accordance with OPNAVINST 4790.4 (series), for all NAVSEA boat assets (which includes trailers) with the following exceptions:

"Civilian operated and maintained ships, small boats, and service craft, unless specifically included as a requirement in a Base Operating Contract (BOC) or other similar document. Civilian contracts may include 3-M support if applicable)."

583-14.3 BOAT TRAILER REPAIR AND MODIFICATION

As a result of the periodic inspections, it will be necessary to effect repairs upon the boat trailer. Repairs should be accomplished in accordance with the trailer manufacturer's recommendations using parts from an approved parts list. Approved parts lists are those parts lists provided by the trailer manufacturer or those parts that have been identified to comply with the requirements of CFR Title 49, Chapter V, National Highway Traffic Safety Administration, Department of Transportation, Part 571, Federal Motor Vehicle Safety Standards (FMVSS) and CFR Title 49, Chapter III, Federal Motor Carrier Safety Administration, Department of Transportation, Part 393, Parts and Accessories Necessary for Safe Operation and the intended service.

As with boats in general, all configuration changes shall be based on the procedures described herein. Boat trailer configuration changes to U.S. Navy boat trailers are often necessary for user boat custodians to accomplish assigned tasks in their geographic location. Alterations may affect characteristics such as strength, weight, cargo capacity, safety, or outfit to support special conditions. As the trailer is subsystem of the boat, a BOATALT is developed and issued by PEO SHIPS PMS325 for specific classes of boats' trailers or individual boat trailers with special requirements. If the basic trailer configuration is unchanged, e.g. no structural modifications or equipment changes, then no BOATALT is necessary. Before a boat trailer alteration action can be initiated, the same process as described in 583-1.6 shall be followed.

583-14.4 BOAT TRAILER INTERNAL AIR TRANSPORT

There are special design requirements for transporting boats and trailers on fixed wing aircraft. These requirements are found in MIL-HDBK-1791, Designing for Internal Aerial Delivery in Fixed Wing Aircraft, MIL-STD-209, Slinging and Tie-Down Provisions for Listing and Tying Down Military Equipment and DLAR 4500.25, DOD Engineering For The Transportability.

583-14.5 BOAT TRAILER EXTERNAL AIR TRANSPORT

There are special design requirements for transporting boats and trailers on rotary wing aircraft. These requirements are found in MIL-STD-913, Requirements For The Certification Of Sling Loaded Military Equipment For External Transportation by Department of Defense Helicopters, MIL-STD-209, Slinging and Tie-Down Provisions for Listing and Tying Down Military Equipment and DLAR 4500.25, DOD Engineering For The Transportability.

583-14.6 BOAT LAUNCH AND RECOVERY FROM TRAILERS

The following are standard practices for launching and recovering boats from trailers.

583-14.6.1 BOAT LAUNCH. Ensure that the ramp is 5-15 degrees slope and is long enough so the trailer will not fall off the end of the ramp before the boat floats off the trailer. Line up the trailer with the ramp. Ensure that the boat is prepared for operation. Insert and tighten all bilge plugs. Remove winch cable hook from boat's bow eye and remove tie-down straps between trailer and boat. With a coxswain on the boat, slowly back the trailer into the water until the boat hull is sufficiently submerged and nearly floating. Start the boat engines when the cooling water intakes (near the transom) are in clean water and slowly back the boat until it has cleared the trailer. Pull the trailer out of the water and clear of the launch ramp. The trailer should be rinsed with fresh water if it will not be used for several days. To prepare the trailer for road travel, test trailer lights and the trailer brakes.

583-14.6.2 BOAT RECOVERY. Ensure that the ramp is 5-15 degrees slope and is long enough that the trailer will not fall off the end of the ramp before the boat can land on the trailer. Attach the winch handle and unroll a few feet of cable from the winch to attach to the bow eye when the boat is on the trailer. Back the trailer into the water until it is sufficiently submerged for boat recovery. Position the boat on the trailer up to the forward bow stops. Attach the winch cable hook to the bow eye and tighten the cable. After powering, secure the engine and allow them to idle to cool. Slowly ascend the ramp. Ensure that the boat is sitting with its keel on the trailer's centerline and that the bow remains in contact with the forward bow stops. If the tow vehicle jerks the trailer out of the water, the boat may pull against the winch cable and move away from the bow stops. If that happens, back the trailer into the water to winch the boat against the bow stops again and ascend the ramp slowly. Check the bilges are not contaminated with oil and remove the boat drain plug to drain the boat when still on the ramp. (Bilges will not drain when trailer is level.) Move boat to level ground and set brakes on tow vehicle to prepare boat for transit. Lower and secure appendages on the boat such as arches, canopies, and radio antennas. Attach the cargo straps. Verify that the brakes are functioning properly by making several short starts and stops prior to entering the roadway. Wash the hull and trailer with fresh water as soon as possible. Concentrate on the wheel and brake assemblies.

APPENDIX A

TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)

NOTE

Ships, training activities, supply points, depots, Naval Shipyards, and Supervisors of Shipbuilding are requested to arrange for the maximum practical use and evaluation of NAVSEA technical manuals. All errors, omissions, discrepancies, and suggestions for improvement to NAVSEA technical manuals shall be reported to the Commander, NAVSURFWARCENDIV, 4363 Missile Way, Port Hueneme, CA 93043-4307 on NAVSEA/ SPAWAR Technical Manual Deficiency/Evaluation Report (TMDER), NAVSEA Form 4160/1. To facilitate such reporting, print, complete, and mail NAVSEA Form 4160/1 below or submit TMDERS at web site https://nsdsa2.phdnswc.navy.mil/tmder/tmder.htm. All feedback comments shall be thoroughly investigated and originators will be advised of action resulting therefrom.

TMDER / MAILER (ON CDROM)

Ref: NAVSEAINST 4160.3A NAVSEA S0005-AA-GYD-030/TMMP

NAVSEA/SPAWAR TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)

INSTRUCTIONS: Continue on 8 ½" x 11" page if additional space is needed.
1. Use this report to indicate deficiencies, problems and recommendations relating to publications.
2. For CLASSIFIED TMDERs see OPNAVINST 5510H for mailing requirements.
3. For TMDERs that affect more than one publication, submit a separate TMDER for each.
4. Submit TMDERs at web site https://nsdsa2.phdnswc.navy.mil or mail to: **COMMANDER, CODE 310 TMDER BLDG 1389, NAVSURFWARCENDIV NSDSA, 4363 MISSILE WAY, PORT HUENEME CA 93043-4307**

1. PUBLICATION NUMBER	2. VOL/PART	3. REV/DATE OR CHG/DATE	4. SYSTEM/EQUIPMENT ID

5. TITLE OF PUBLICATION	6. REPORT CONTROL NUMBER (6 digit UIC-YY-any four: xxxxxx-03-xxxx)

7. RECOMMEND CHANGES TO PUBLICATION

7a. Page #	7b. Para #	7c. RECOMMENDED CHANGES AND REASONS

8. ORIGINATOR'S NAME AND WORK CENTER	9. DATE	10. ORIGINATOR'S E-MAIL ADDRESS	11. TMMA of Manual (NSDSA will complete)

12. SHIP OR ACTIVITY Name and Address (Include UIC/CAGE/HULL)	13. Phone Numbers:
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