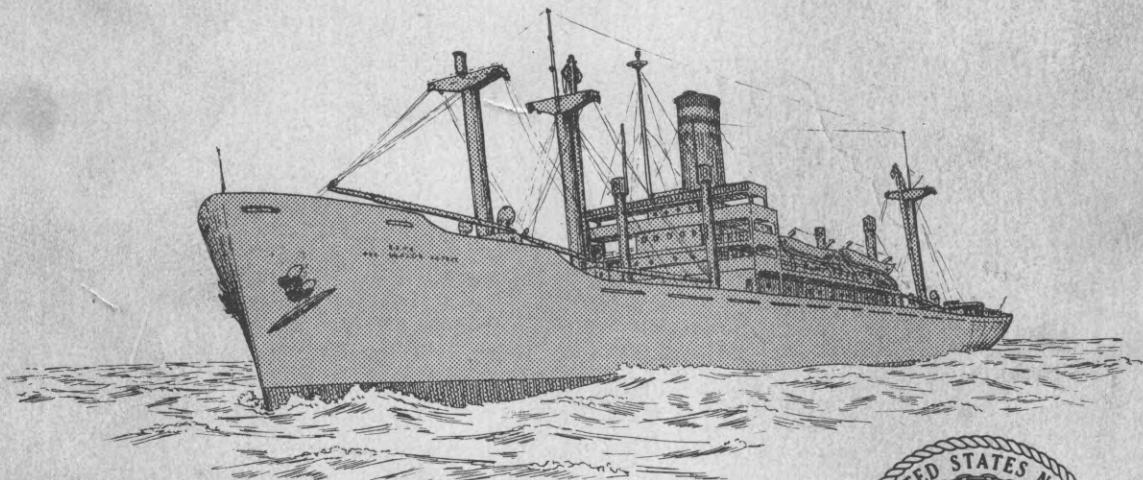


MSTSPACAREA *SHIP* *MAINTENANCE* *MANUAL*



FOR USE IN SHIPS OF
MILITARY SEA TRANSPORTATION SERVICE
PACIFIC AREA

MSTSPAC INSTRUCTION P4700.3B

DEPARTMENT OF THE NAVY
MILITARY SEA TRANSPORTATION SERVICE, PACIFIC AREA
FORT MASON
SAN FRANCISCO, CALIFORNIA

MSTSPAC P4700.3B
P4R1B-P4R1X
25 May 1961

MSTSPAC INSTRUCTION P4700.3B (CH-1 through CH-12 entered)

From: Commander Military Sea Transportation Service, Pacific Area
To: Distribution List

Subj: MSTSPACAREA Ship Maintenance Manual

1. Purpose. To promulgate the MSTSPACAREA Ship Maintenance Manual for use in in-service, civil service-manned (USNS) ships.

2. Cancellation. MSTSPAC Instruction 4700.3A, 5330.1C and 9410.1 are canceled and superseded by this instruction.

3. Directive.

a. Masters shall review current shipboard maintenance practices and establish procedures consistent with those outlined herein.

b. Comments and recommendations to improve the practices prescribed or to increase the effectiveness of the ship maintenance program shall be submitted to COMSTSPACAREA.

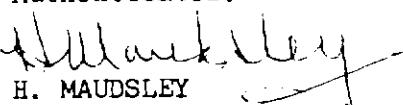
E. B. McKINNEY

DISTRIBUTION: (MSTSPACINST 5215.2C)
SNDL 41F, T-100 (MSTSPACAREA Activities)
USNS HARRIS COUNTY
USNS ALATNA
PMR SHIPS

REVIEWED AND APPROVED 2 Oct. 1964

Copy to:
41D, 32Q
COMSTS
COMSTSLANTAREA
COMSTSFEAREA

O. B. MURPHY
Chief of Staff

Authenticated:

H. MAUDSLEY
Directives Control

RECORD OF CHANGE

TABLE OF CONTENTS

<u>Chapter No.</u>		<u>BUSHIPS MANUAL Applicability</u>
1	General	Yes
	Section A - Scope	
	Section B - Organization	
	Section C - Administration	
2*	Publications*	No
3*	Finance*	No
4	Allowances, Surveys and Requests for Material	Yes
5*	Cognizance*	No
6	Records, Reports and Inspections	As Noted
	Section A - Records and Reports	
	Section B - Inspections	
7	Docking Instructions	Yes
8	Trials	No
9	Readiness and Care of Ships in Inacti- vated Status	As Noted
11*	Hull Structure*	No
12*	Hull Fittings*	No
13*	Armor Protection*	No
14*	Deck Coverings	No
15	Gasoline Stowage and Equipment	No
16	Access Openings	Yes
17	Booms and Cranes	As Noted
18	Rigging	As Noted

*Not included herein.

<u>Chapter No.</u>		<u>BUSNIPS MANUAL Applicability</u>
19	Painting	As Modified
	Section A - Painting Instructions	
	Section B - Unpainted Surfaces	
	Section C - Care and Control of Painting Equipment	
	Section D - Assignment of Painting Areas	
20	Winches and Capstans	As Modified
21*	Hydraulic Gears*	No
22	Steering Gear	Yes
23	Industrial Gases	Yes
24	Ship Control Equipment	As Modified
25	Towing Gear	Yes
26	Moorings and Appliances	Yes
29	Weights, Stability and Integrity	As Noted
30	Stowage of Safe, Semi-Safe and Dangerous Materials	Yes
31	Spare Parts	Yes
33	Living and Berthing Equipment	As Noted
34	Commissary Equipment	Yes
35*	Laundry*	Yes
36	Sanitation	Yes
37*	Medical and Dental Appliances*	Yes
38	Ventilation	Yes
39*	Thermal Insulation*.	Yes
40*	Tables of Technical Data	Yes
41	Main Propelling Machinery	As Noted

*Not included herein.

<u>Chapter No.</u>		<u>BUSHIPS MANUAL Applicability</u>
42	Reduction Gears	Yes
43	Bearings and Shafting	Yes
44*	Propellers*	Yes
45	Lubricants and Lubrication Systems . . .	Yes
46	Condensers and Air Ejectors	As Noted
47	Pumps	Yes
48	Piping	Yes
49	Compressed Air Plants	Yes
50*	Auxiliary Steam Turbines*	Yes
51	Boilers	As Noted
53	Forced Draft Blowers	
55	Fuel Oil Stowage and Equipment	As Noted
56	Boiler Feed Water and Feed Water Apparatus	As Noted
58	Distilling Plants	As Noted
59*	Refrigeration Plants*	Yes
60	Electric Plant, General	As Noted
61	Electric Generators and Voltage Regulators	Yes
62	Electric Power Distribution	As Noted
63*	Electric Motors and Controllers*	Yes
64	Lighting	Yes
65*	Interior Communications*	Yes
66*	Searchlights*	Yes
67	Electronics	As Noted

*Not included herein.

Chapter
No.

BUSHIPS MANUAL
Applicability

69*	Electrical Measure and Test Instruments*	Yes
70*	Flags and Bunting*	No
71*	Fire Control Installations*	
72*	Turrets*	Yes
74*	Anti-aircraft Batteries*	Yes
76*	Depth Charges*	No
77*	Chemical Defense Equipment*	No
78	Ammunition Handling and Stowage	No
81	Mine Protection - Shipboard Degaussing . .	Yes
82	Boats and Life Floats	As Noted
83	Elevators	No
85*	Motion Picture Equipment*	Yes
87	Mechanical Measuring Instruments	As Noted
88	Damage Control	As Noted
91	Work Shop Equipment in Ships	Yes
92	Welding and Allied Processes	Yes
93	Firefighting	As Noted
94*	Salvage*	No
95	Gaskets and Packing	As Noted

APPENDIX A

Routine Duties and Responsibilities of
Officers and Key Personnel Page A-1

Second Officer A-3
Third Officer A-5

*Not included herein.

<u>APPENDIX A Cont'd</u>	<u>Page</u>
Fourth Officer	A-7
Boatswain	A-9
Carpenter	A-11
Second Engineer (W)	A-15
Second Engineer (EW)(P2 Ships Only) . . .	A-19
Third Engineer	A-21
Third Engineer (or Fourth Engineer) . . .	A-25
Licensed Junior Engineer (or Engine Utilityman)	A-29
Engine Utilityman (Oil King)	A-33
Chief Electrician	A-35
Electrician	A-37
Refrigeration Engineer	A-41
Machinist	A-43
Plumber	A-45
Chief Steward	A-47
Second Steward	A-49
Third Steward	A-51
Chief Cook (Enlisted Man Cook)	A-53
Chief Baker	A-55
Chief Pantryman	A-57
Butcher	A-59
Laundryman	A-61
Radio Officer	A-63

APPENDIX B Page

Monthly Preventive Maintenance Schedule
and Electrical Check-Off Lists B-1

APPENDIX C

Bunkering Ocean Vessels C-1

ALPHABETICAL INDEX

25 MAY 1961

CHAPTER 1

GENERAL

Section A - Scope

1.1 Scope.

a. This manual applies to all in-service, civil service-manned (USNS) ships of MSTSPACAREA. Its objectives are

1. To provide guidance in the organization and administration of ships' maintenance programs.
2. To implement and supplement directives issued by COMSTS and other higher naval authorities, the U. S. Coast Guard, the American Bureau of Shipping and others having cognizance.
3. To standardize preventive maintenance procedures in all ships to effect economies in operating costs.
4. To establish a maintenance program for MSTSPACAREA ships at a parallel with similar programs in the modern maritime industry.

b. The format and chapter numbering of the Bureau of Ships Manual is followed in this manual for the convenience of the addressees. Chapters of the BUSHIPS Manual not applicable to in-service (USNS) ships are so indicated in the appropriate chapters or in the table of contents.

1.2 Standards.

Maintenance and repair work shall comply with standards established by the following:

1. Bureau of Ships Manual (BUSHIPS Manual). This publication is developed primarily for the use of commissioned (USS) ships by the Navy Department Bureau of Ships, however, it serves as a reliable reference for the operation and maintenance of in-service (USNS) ships.

2. American Bureau of Shipping (ABS).

(a) MSTSPACAREA ships shall be maintained in class with American Bureau of Shipping at all times, except only as specifically exempted by COMSTS.

25 MAY 1961

(b) To correlate its standards with certain phases of Navy operation, the ABS will accept Navy-inspected material in lieu of ABS-inspected material. ABS will accept also certain repair practices, i.e., repair of tail shafts by welding, which is not normally acceptable under classification standards. (For such work, repair personnel shall be fully qualified and the end result shall have been proved successful in the naval service.)

(c) To maintain classification, ships shall be kept in such material condition as to pass ABS annual surveys, ABS special surveys, ABS loading surveys and, where reefer cargo is carried, all required refrigerating machinery surveys (semi-annual, intermediate and special periodical).

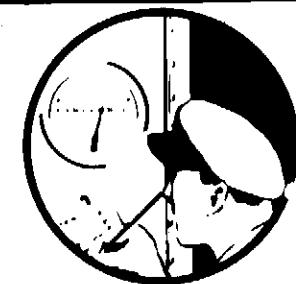
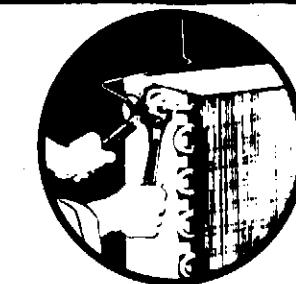
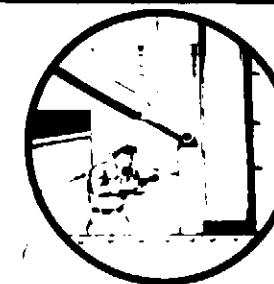
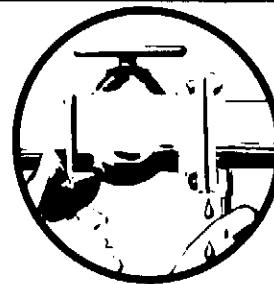
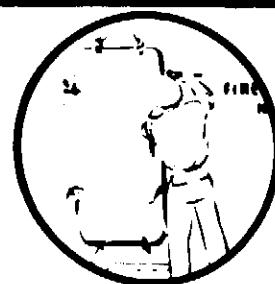
3. U. S. Coast Guard (USCG). MSTS ships are public ships and as such are not required by law to carry U. S. Coast Guard Certificates of Inspection. COMSTS policy, however, requires all MSTS in-service (USNS) ships to be certificated by the Coast Guard. Special requirements for life saving equipment and boat capacity requirements for Troop Transport Ships are reprinted in Chapter 6.

4. Standards for materials and equipment.

(a) Materials and equipment meeting the approval or requirements of the following may be used:

- (1) American Society of Mechanical Engineers (ASME).
- (2) American Institute of Electrical Engineers (AIEE).
- (3) American Bureau of Shipping (ABS).
- (4) Technical Bureau of the Navy Department.
- (5) Military (JAM or MIL) specifications.
- (6) National Military Establishments (NME) and federal specifications for military projects.

(b) Materials and equipment, not in an emergency category, may be used when non-availability of acceptable material will hinder the scheduled conversion of a ship and/or jeopardize the military effort of the MSTS fleet. Such necessary deviations from acceptable standards shall be recorded and reported to COMSTS. Non-standard material or equipment shall be observed closely for rapid deterioration and/or mal-operation and corrective action taken.



SHIP MAINTENANCE OFFICE

FIRST OFFICER

CHIEF ENGINEER



**CARPENTERS • REFRIGERATION ENGINEERS • PLUMBERS
BOATSWAINS • ELECTRICIANS
DECK ENGINEERS**

Fig. 1-1

ORGANIZATION -- DECK DEPARTMENT

CG refers to USCG Inspection Manual.

S- numbers refer to chapter numbers of BuShips Manual and Maintenance Office Filing System.

Personnel responsible for Work Books should be familiar with the referenced chapters.

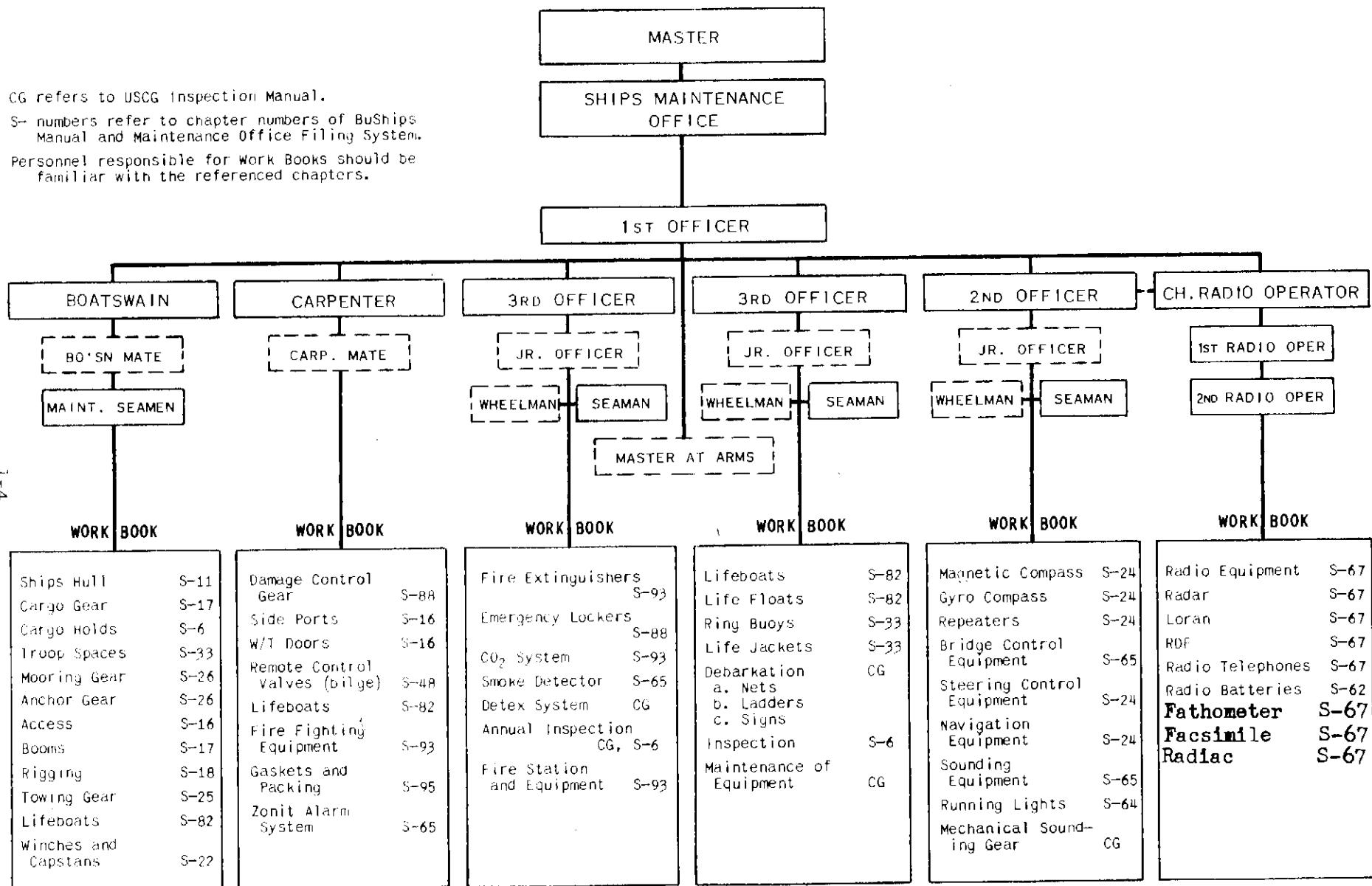


Fig. 1-2

ORGANIZATION -- ENGINE DEPARTMENT

CG refers to USCG Inspection Manual.
 S- numbers refer to chapter numbers of BuShips
 Manual and Maintenance Office Filing System.
 Personnel responsible for Work Books should be
 familiar with the referenced chapters.

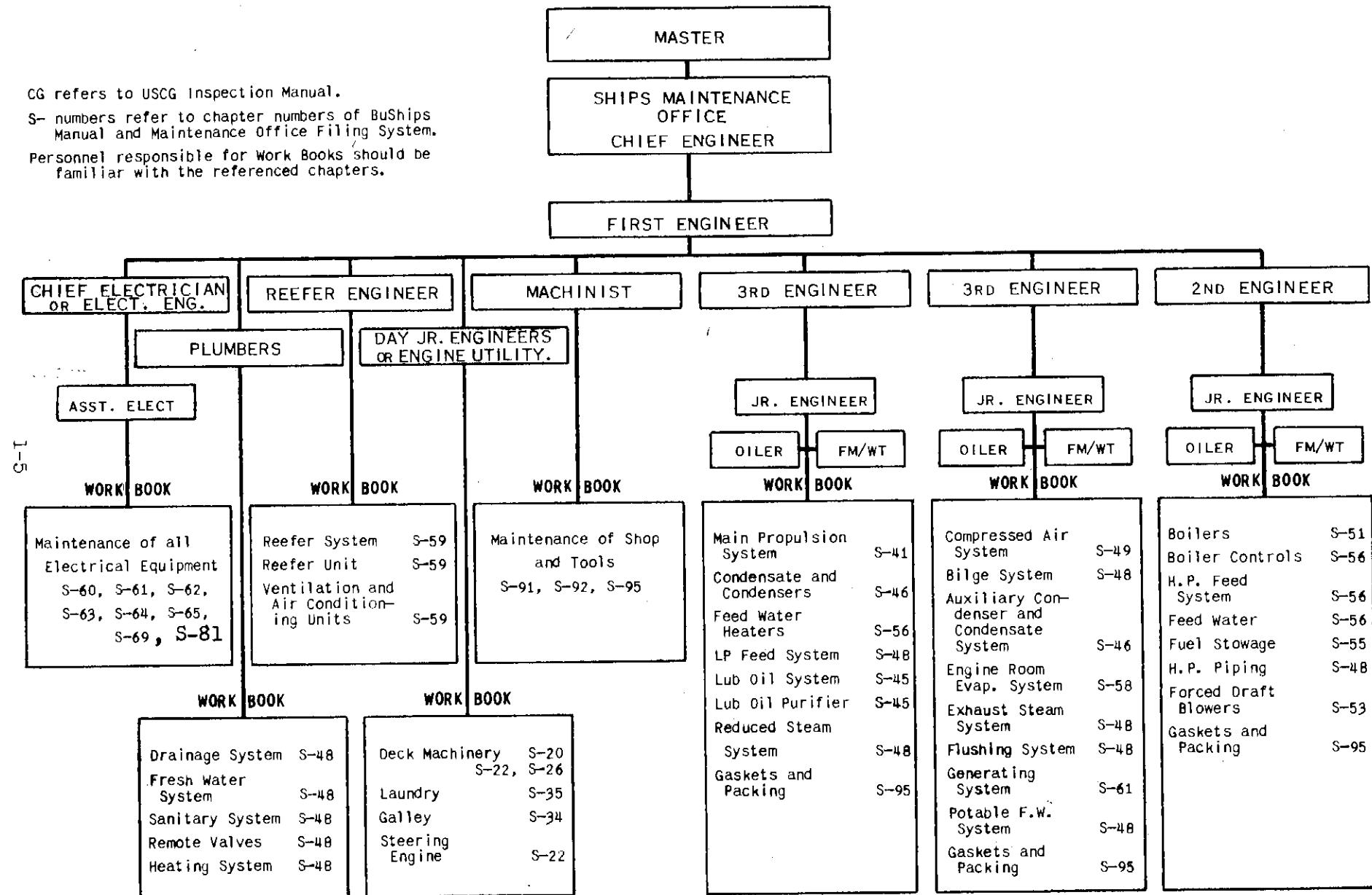


Fig. 1-3

ORGANIZATION -- STEWARDS DEPARTMENT

CG refers to USCG Inspection Manual.

S- numbers refer to chapter numbers of BuShips Manual and Maintenance Office Filing System.

Personnel responsible for Work Books should be familiar with the referenced chapters.

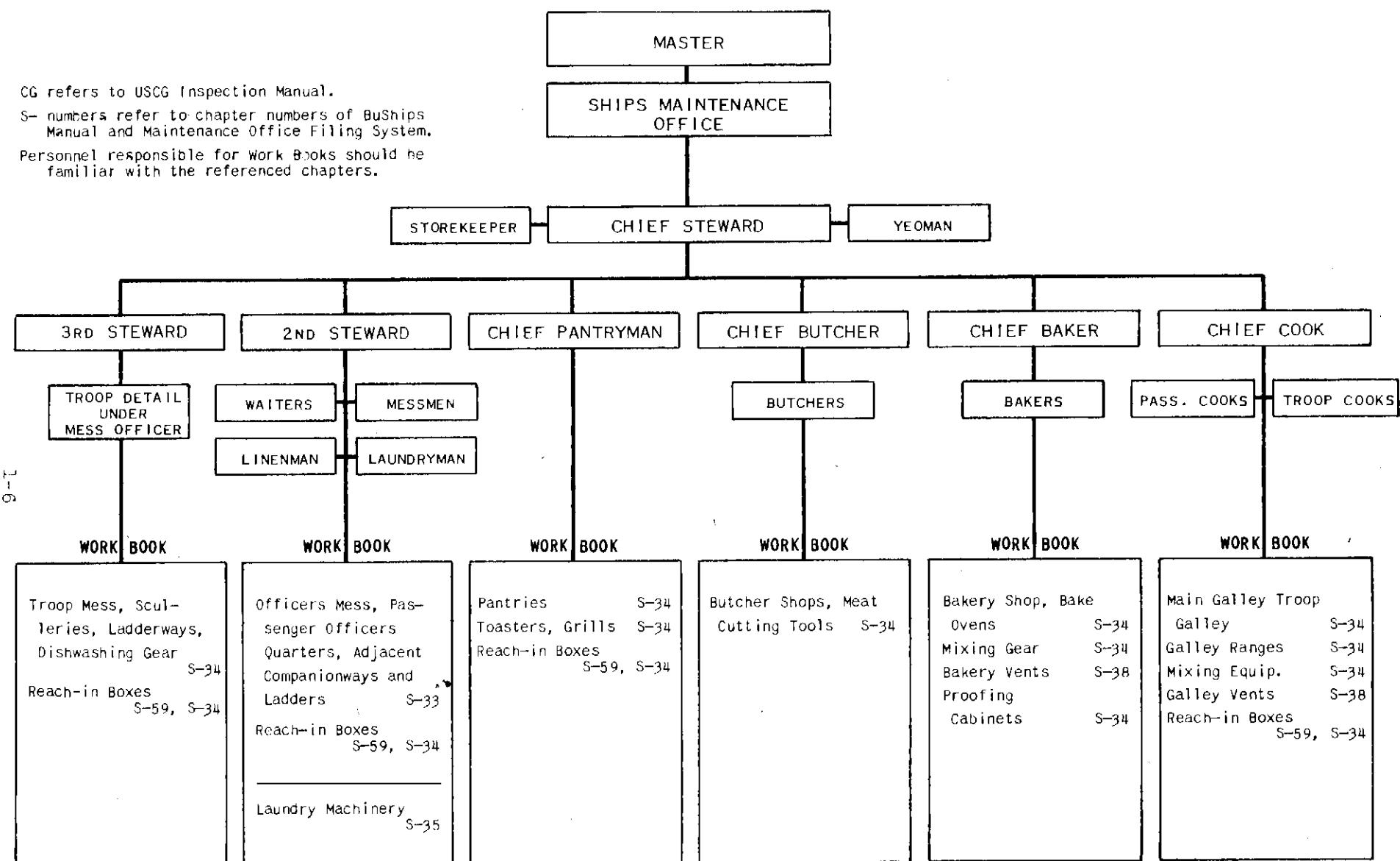


Fig. 1-4

25 MAY 1961

Section B - Organization

1.3 Master.

a. The master is responsible for the safe navigation and technical operation of his ship and has paramount authority over all persons on board. His responsibility for the overall organization and administration of the ship includes ship maintenance.

b. Figures 1-1 thru 1-4 show the ship's organization for maintenance as set up under the master.

1.4 Repair Officer.

The chief engineer is designated the ship's repair officer. He shall coordinate all repair activities aboard, provide guidance where maintenance procedures are concerned and screen all work requests before they are submitted on voyage repair lists.

1.5 Heads of departments.

Heads of departments shall organize their departments for maintenance in accordance with the applicable organization chart, Figures 1-2 thru 1-4, shown in this chapter.

1.6 Specific responsibilities.

Maintenance responsibilities of officers and key personnel are outlined in the appendix of this manual.

Section C - Administration

1.7 Ship's maintenance office.

a. Whenever practicable, one maintenance office shall be established for the use of the deck and engine departments to ensure close coordination and cooperation.

b. If individual offices are used, care shall be exercised to prevent duplication of work and records. In such instances, all files shall be kept in the chief engineer's office with the exception of the Material History Cards pertaining to hull and electronics.

1.8 Files.

Maintenance office files shall include the following documents:

1. Material History.

(a) Material History consists of Machinery History, Hull History and Electronic History and shall be maintained in loose leaf binders. The responsibility for these histories is assigned as follows:

(1) Chief Engineer, for Machinery History on cards, NAVSHIPS 527, NAVSHIPS 527A, NAVSHIPS 531 and NAVSHIPS 533.

(2) First Officer, for Hull History on card, NAVSHIPS 539.

(3) Radio Officer, for Electronics History on card, NAVSHIPS 536.

(b) Identification and information, i.e., index number, model, nameplate data, etc., shall be filled in completely in the spaces provided.

(c) An appropriate card will be used for each item in the Machinery Index, each compartment or area, hull fittings, major pieces of equipment such as boats, lifefloats and ground tackle and each item in the ship's electronic inventory. Judgment shall be used when establishing the Material History to keep the loose-leaf binders from being filled with cards on items which will normally show no repairs throughout their lifetime.

(d) Where there is duplication of items such as lifefloats, one card may be used showing the total number of lifefloats and their

MATERIAL HISTORY RECORD

DEPARTMENTAL EQUIPMENT RESPONSIBILITY

STEWARD'S DEPT.

LAUNDRY EQUIPMENT
GALLEY RANGES
PASSENGER AREAS

ENGINEER'S DEPT.

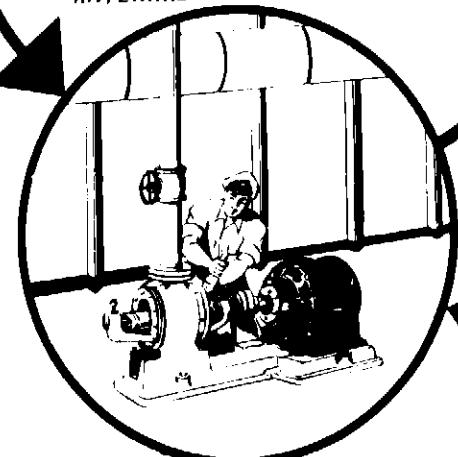
BOILERS AND ELECTRICAL
PUMPS - ALL MACHINERY
MAIN ENGINES

DECK DEPT.

RIGGING
CARGO GEAR
LIFE BOAT GEAR

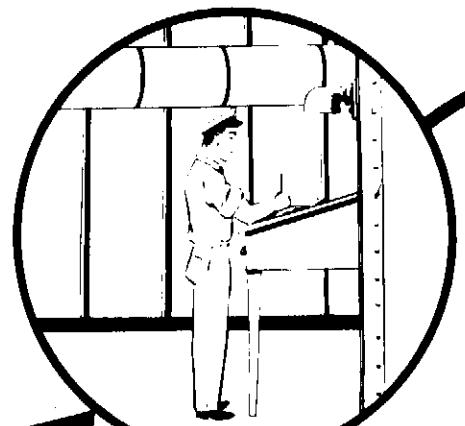
RADIO DEPT.

ELECTRONICS
ANTENNAE

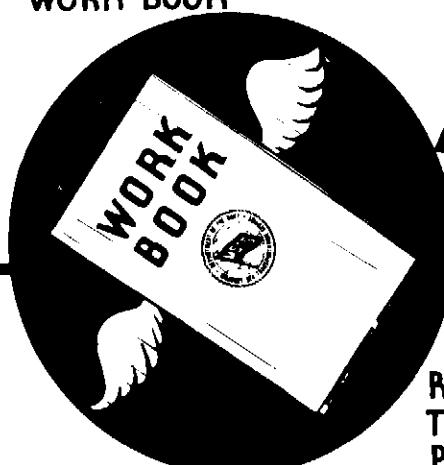


UNIT MAINTENANCE OF PUMP
BY SHIP PERSONNEL

TRANSMITTAL TO SHIP
MAINTENANCE OFFICE ON
WEEKLY BASIS



RECORDING OF MAINTENANCE
IN DAILY WORK BOOK



RECORDING OF WORK BOOK
DATA IN SHIP MAINTENANCE
OFFICE HISTORY RECORD BOOKS



RETURN OF WORK BOOK
TO AREA OF WORK
PERFORMANCE

locations. One card may be used for all staterooms in one area and entries made to show the room in which the work was done.

(e) Entries shall cover repairs effected, arrangements experienced, alterations and field changes made, tests conducted and such information as is considered pertinent for a complete Material History. Entries shall be made under the direct supervision of the department head concerned.

(f) Routine cleaning and operation shall not be recorded.

2. Correspondence. Correspondence will be filed in accordance with SECNAV INSTRUCTION P5210.11, and will necessarily be confined to maintenance matters. (Correspondence is normally filed in the ship's central files.)

3. Machinery Index. Machinery indices have been superseded by the MSTS Allowance Lists. When ship board equipment is replaced, removed, or added NAVSHIPS Form 4380 shall be submitted indicating all pertinent data and recommended list of spare parts.

4. Instruction books. Instruction books for all machinery and equipment on board shall be filed in the order of "S" groupings. A master index listing shall be filed in the front of the first drawer. Each individual book or pamphlet shall contain its "S" group number under Scotch tape to facilitate its return to the proper location.

5. Plans. All ship's plans shall be filed in the "S" group order with a master index located in the front of the first group.

6. Directives. All current instructions and notices concerning ship maintenance shall be filed numerically in binders.

1.9 Work books.

a. The work book is actually a rough history book. One shall be maintained for each individual responsible for shipboard equipment, as shown on the organization charts. Figure 1-5 shows the flow of information by work book to the history cards.

b. The first page of the work book shall contain specific instructions concerning the use of the book (example, Figure 1-6). Subsequent pages shall list the duties and responsibilities assigned the employee to whom the book is issued, i.e., periodic tests and inspections to be conducted and the method for making entries, equipment for which he is responsible, etc. Typical instructions and work schedules for the various job categories are shown in the appendix.

25 MAY 1961

SAMPLE

WORK BOOK INSTRUCTIONS

This ship is operated in accordance with the standard maintenance program for MSTS ships.

You have been issued this work book to enable you to keep a record of all maintenance work you do in connection with the spaces and equipment for which you are responsible. Entries shall include the following information:

Index No. Name of Unit Location Date Work Accomplished

This work book shall be returned each Friday at 1300 to the ship's Maintenance Office so that information contained therein can be transferred to the Material History.

You are expected to fully understand the operation and maintenance procedures concerning the equipment listed in this book. Manufacturer's instruction books and other reference publications are available in the ship's Maintenance Office.

Preventive maintenance is a systematic series of operations performed at regular intervals on equipment to eliminate major breakdowns and unwanted interruptions in service, and to keep equipment operating at top efficiency. The list of inspections and services for which you are responsible is included as an enclosure. Compliance will constitute your part in the Ship's Preventive Maintenance Program.

Figure 1-6

25 MAY 1961

1.10 Operating instructions.

a. Procurement. The Department Heads shall assure that the Operating Instructions posted at each major unit on board the ship are maintained in a conspicuous place, close to the equipment, and that they are at all times sufficiently legible in order that they may be easily read. When operating instructions become damaged, deteriorated or illegible, cognizant department heads shall requisition new copies from the Philadelphia Naval Shipyard. Instructions shall be ordered by number, with the number being taken from the old copies of the Operating Instructions being replaced.

b. Posting and dissemination requirements.

1. Operating instructions, suitably mounted, shall be posted on or near each piece of machinery or equipment.

2. The master shall ensure that ship's personnel are familiar with Operating Instructions pertaining to their watch stations and their assignments in the ship. New personnel shall be indoctrinated in the correct operating procedures prior to actual assignment to machinery or equipment. Monthly instruction meetings shall be conducted for all personnel and duly recorded in the log.

1.11 Safety precautions.

a. Preparation. Safety precautions shall be prepared by cognizant Department Heads based on the BUSHIPS Manual, manufacturers' pamphlets and instruction books, pertinent correspondence and plans.

b. Posting.

1. One copy of the poster, Instructions for Resuscitation of Personnel Apparently Drowned, Shocked or Asphyxiated, shall be posted conspicuously in the ship in each of the following places:

- (a) Each main distribution board
- (b) Emergency generator distribution board.
- (c) Radio room.
- (d) Pilot house.
- (e) Battery charging station.
- (f) Ship's main bulletin board.
- (g) Any other space where danger of accidental electrical shock or asphyxiation exists.

25 MAY 1961

2. Electrical safety precautions applicable to electrical equipment shall be posted at the main distribution board, emergency distribution board, battery charging stations and other areas having major electrical equipment installed.

3. Safety precautions pertinent to fuel oil and boilers shall be posted at the main operating platform location.

4. Safety precautions concerning the charging of batteries shall be posted at the battery charging station.

5. Safety precautions applicable to radio and electronics equipment shall be posted in the vicinity of such equipment.

6. Safety precautions pertaining to fire, swinging of heavy doors, explosives and pyrotechnics, the handling of boats, etc., shall be posted conspicuously in appropriate locations.

c. Dissemination to ship's personnel. The master shall ensure that all personnel are familiar with safety precautions. Personnel shall be required to familiarize themselves with safety precautions applicable to their watch stations and their over-all responsibilities. Safety meetings shall be conducted for instructing personnel on all phases of safety at least semi-monthly and such meetings shall be recorded in the log. Particular attention shall be given new personnel reporting aboard.

1.12 Small job orders (Transports only).

a. The Ship's Force Job Order (MSTSPAC Form 4700-6), Figure 1-7, shall be used to facilitate the handling of small job orders throughout the ship. Individuals normally originating job requests shall retain a supply of the job order forms. The supply source for the forms is the administrative commander.

b. When requesting work to be done, the job order will be completed as directed and submitted to the ship's Maintenance Office. An entry will be made in the Job Order Log, with a brief description of the work requested and assigned a number. Numbers will be in consecutive order and preceded by a code letter: P-plumber, C-carpenter, E-electrician, etc.

c. The job order will be picked up by the person to whom the work is assigned. Upon completion of the job, he will make notation of the parts used, the time required and any other pertinent remarks, on the form before returning it to the ship's Maintenance Office. Maintenance Office personnel will extract such information as the parts to be reordered, material history, etc., before marking the Job Order Log entry "completed."

25 MAY 1961

d. The foregoing method for processing small job orders is recommended because it eliminates duplicate copies of information and provides a permanent record as well as a follow-up system. Job orders received which can not be accomplished by the ship's force will be set aside for the repair availability.

1.13 Table of Departmental Responsibilities.

a. The Table of Departmental Responsibilities, Figure 1-8 and 1-9 shall be used as guides for defining areas of responsibility in work assignments. The following symbols are used to designate department/division responsibility:

D - Deck department	Stw - Steward department
E - Engine department	Med - Medical division
P - Purser department	Rad - Radio Office
SS - Shore service	

() - departmental responsibility for periodic testing and logging of equipment. Where two symbols are shown for one unit, the first symbol indicates the department having major responsibility.

b. The column headings are defined, as follows:

1. Lube (lubrication). Department heads shall utilize lubrication information contained in manufacturer's instruction books. The chief engineer will provide technical advice as required. Electrical equipment and electric motors, except those assigned to the radio office, shall be lubricated by electricians.

2. Oper (operation). The department designated responsibility is responsible for its correct operation, in accordance with manufacturer instructions and the BUSHIPS Manual.

3. Maint (maintenance). Maintenance is a continuing program - daily, weekly, monthly - of keeping equipment in a state of cleanliness and readiness. It includes lubrication and is closely associated with operation. When referring to a space or compartment, cleaning is included. Maintenance also includes making entries in the history cards.

4. Rep (repairs). If the repair required is beyond the capacity of the department designated, the chief engineer will accomplish the repair or submit it with a repair list.

5. Insp (inspection). If safety or fire equipment is concerned, entry shall be made in the log book.

6. Paint (painting). Chapter 19 of this manual is applicable.

SAMPLE

DATE OF REQUEST

DESCRIPTION OF REPAIR

WORK REQUESTED:

(ATTACH SKETCHES OR USE REVERSE OF SHEET FOR ADDITIONAL SPACE)

LOCATION: COMPARTMENT OR ROOM NO. _____
OR DECK _____ FR _____

JOB ORDER		ORDER NO.
		GROUP NO. "S"
SHOP	EST MAN HOURS	

INSTRUCTIONS (IF BEYOND CAPACITY OF SHIP'S FORCE, GIVE REASON)

PARTS USED

OFFICE USE ONLY

COMPLETED (DATE) _____

ENTERED ON VOYAGE
REPAIR RECORD

ENTERED ON CSMP

ENTERED ON
MACHINERY HISTORY

Figure 1-7

1-15

TABLE OF RESPONSIBILITIES

<u>Chapter Number and Subject</u>	<u>Lube</u>	<u>Oper</u>	<u>Maint</u>	<u>Rep</u>	<u>Insp</u>	<u>Paint</u>
7-DOCKING (underwater)	-	-	SS	SS	DE	SS
Painting	-	-	-	-	DE	-
Repairs	-	-	-	-	E	-
11-HULL (structural)	-	-	D	E	D	D
Fittings	D	D	D	E	DE	D
14-DECK COVERINGS	-	-	D	D	D	D
15-WATER TANKS and VENTS	-	-	E	SS	E	D
16-ACCESS						
Voids	-	-	E	SS	DE	SS
Fathometer wells	-	-	D	SS	DE	SS
16-PORT LIGHTS						
Passage and quarters	Stw	-	Stw	D	D	-
All others	D	-	D	D	D	-
18-RIGGING and CANVAS	D	D	D	DE	D	D
19-PRESERVATIVE COATINGS						
Superstructure and deck spaces	-	-	D	-	D	D
Engineering spaces	-	-	E	-	E	E
Steward spaces	-	-	Stw	-	Stw	Stw
Balloon House	DE	-	D	D	D	D
20-WINCHES and CAPSTANS	D	D	D	E	DE	D
Bathythermograph Winch	DE	D	DE	E	DE	D
20,38-AUXILIARY MACHINERY						
Fan rooms	-	-	E	E	E	E
On deck	E	D	E	E	E	D
Winch resistor rooms	E	E	E	E	E	E
Enclosed spaces	E	E	E	E	E	E
22-STEERING GEAR and EQUIPMENT						
Steering engine	E	E	E	E	(E)	E
Telemotor	E	D	E	E	E	(DE)
Emergency steering	E	D	E	E	(DE)	DE

Figure 1-8

25 MAY 1961

<u>Chapter Number and Subject</u>	<u>Lube</u>	<u>Oper</u>	<u>Maint</u>	<u>Rep</u>	<u>Insp</u>	<u>Paint</u>
24-SHIP CONTROL						
Gyro compass	D	(D)	DE	DE	DE	D
Gyro room	-	-	D	D	D	D
Sounding machine	D	(D)	D	E	D	D
Fathometer	Rad	(D)	Rad	Rad	SS	SS
Navig. lights	-	(D)	E	E	DE	D
Whistle and control gear	D	(D)	D	E	DE	D
Radar room	-	-	D	-	D	D
Radar and loran	Rad	(D)	Rad	Rad	SS	SS
Facsimile	Rad	D	Rad	Rad	SS	SS
26-MOORING EQUIPMENT	D	D	D	D	D	D
Anchor chains	D	D	D	D	D	D
Fairleads and rollers	D	D	D	D	D	D
Windlass	D	D	(DE)	E	DE	D
30-STORE ROOMS and SPACES						
Occupied by deck	-	D	D	-	D	D
Occupied by engine	-	E	E	-	E	E
Occupied by steward	-	Stw	Stw	-	Stw	Stw
Spare parts, when issued to deck	D	-	D	D	D	D
to engine	E	-	E	E	E	E
32-OFFICE and OFFICE EQUIPMENT						
Furniture	-	-	DE	DE	P	Stw
Typewriters	All	All	All	SS	P	-
33-LIFE PRESERVERS	-	-	D	-	D	-
33-LIVING and BERTHING						
Crew rooms	-	-	All	All	All	All
Officer rooms	-	-	Stw	SS/Stw	Stw/D	Stw
CPO rooms	-	-	Stw	SS/Stw	Stw/D	Stw
Passenger rooms	-	-	Stw	SS/Stw	Stw/D	Stw
34-MESSING						
Galley gear	-	Stw	Stw	E	Stw	Stw
Galley ovens	-	Stw	Stw	E	E/Stw	Stw
Meat saws	-	Stw	Stw	E	E/Stw	Stw
Steam equipment	-	Stw	E	E	E	Stw
Electrical equipment	E	Stw	E	E	E	Stw
Ranges	E	Stw	Stw	E	E	Stw
35-LAUNDRY EQUIPMENT	E/Stw	Stw	E/Stw	E	E/Stw	Stw

Figure 1-8 (Cont'd)

25 MAY 1961

<u>Chapter Number and Subject</u>	<u>Lube</u>	<u>Oper</u>	<u>Maint</u>	<u>Rep</u>	<u>Insp</u>	<u>Paint</u>
37-MEDICAL AREAS Medical gear	- Med	- Med	Med Med	E E	Med Med	Med Med
38-VENTILATION and HEATING Interior vent ducts (USCG, Sub. G)	- - DE	E E (DE)	ED ED DE	E E ED	E E DE	ED DE -
Fire dampers						
Steam piping	-	E	E	E	E	-
Vent cowls (cargo)	D	D	D	E	D	D
Vent cowls (engr.)	E	E	E	E	E	D
Galley vents	-	Stw	Stw	E	Stw/D	Stw
Weather closure vents	D	D	D	D	D	D
Manual vent dampers	D	(D)	D	D	D	D
39-INSULATION and LAGGING On piping and in engine spaces	-	-	E	E	E	E
On compartment bulkheads	-	-	D	D	D	-
In passenger and steward departments	-	-	Stw	E	Stw	-
Interior paneling	-	-	D	DE	D	-
41-MAIN UNIT PROPULSION	E	(E)	E	E	E	E
42-REDUCTION GEARS	E	E	E	E	E	-
43-MAIN SHAFTING	E	E	E	E	E	E
44-PROPELLER	-	E	E	SS	E	-
45-LUBRICATION EQUIPMENT	E	(E)	E	E	-	-
46-CONDENSING EQUIPMENT	E	E	E	E	E	E
47-PUMPS	E	E	E	E	E	E
48-PIPING and VALVES Cargo drains	E D	E D	E D	E E	E D	ED D
Remote valves (bilges and cargo)	D	(D)	DE	E	D	-
Remote valves (fuel and ballast)	E	(E)	E	E	E	-
Roseboxes in holds	-	-	D	E	D	-
Fire main valves	D	D	D	E	D	D

Figure 1-8

<u>Chapter Number and Subject</u>	<u>Lube</u>	<u>Oper</u>	<u>Maint</u>	<u>Rep</u>	<u>Insp</u>	<u>Paint</u>
48-PIPING and VALVES (cont'd)						
Hand bilge pump (chain locker)	D	(D)	D	E	D	E
Steam smothering	E	DE	DE	E	DE	D
CO ₂ fixed	-	E	E	E	E	-
Troop heads						
49-AIR COMPRESSORS	E	E	E	E	E	E
Portable (on deck)	E	D	E	E	E	D
51-BOILERS	E	E	E	E	E	E
52-UPTAKES	E	E	E	E	E	E
53-BOILER BLOWERS	E	E	E	E	E	E
55-FUEL OIL						
Fuel tanks	E	E	E	E	E	E
Deck fuel vents	E	(E)	E	E	E	D
Internal FO valves	E	(E)	E	E	E	-
Deck fittings (fuel oil)	E	(E)	E	E	E	D
56-FEED WATER EQUIPMENT	E	E	E	E	E	E
Feed tanks and vents	-	-	E	SS	E	D
57-DIESEL OIL and STOWAGE	E	S	E	E	E	E
58-DISTILLING PLANTS	E	E	E	E	E	E
Medical distiller	-	Med	Med	E	Med	-
59-REFRIGERATION (mechanical)	E	E	E	E	E	E
Ice boxes	-	Stw	Stw	ED	Stw	Stw
Domestic and reach-in units	E	E	Stw	E	E	Stw
Ice makers	-	E	Stw	E	E	Stw
Reefer alarm	-	Stw	E	E	(Stw/E)	-
60-GENERATING SHIP SERVICE	E	E	E	E	E	E
Emergency generator	E	(E)	E	E	E	E
Generator (motor, diesel or turbine), controls and switching gear.*	E	E	E	E	E	*

*All 60 cycle, 400 cycle or other special A/C or D/C power to basic distribution panels including those for project instrumentation loads is the responsibility of the Engine Department.

Figure 1-8 (Cont'd)

<u>Chapter Number and Subject</u>	<u>Lube</u>	<u>Oper</u>	<u>Maint</u>	<u>Rep</u>	<u>Insp</u>	<u>Maint</u>
60-GENERATING SHIP SERVICE (Cont'd)						
Motor-generator gyro	E	D	E	E	E	E
Batteries (Ex. radio)	-	E	E	E	E	-
62-POWER DISTRIBUTION	E	E	E	E	E	E
Gen. batteries storage	-	E	E	E	E	E
Radio and RDF	-	Rad	Rad	E	Rad	-
Life boats	-	E	E	E	E	-
64-LIGHTING	-	E	E	E	E	E
Search lights	D	(D)	DE	E	DE	D
Cargo lights	-	D	E	E	DE	-
Debark lights	D	D	D	E	D	D
Emergency portable lights	-	DE	E	E	DE	-
Emergency lighting system	E	E	E	E	E	-
65-INTERIOR COMMUNICATION	E	E	E	E	E	E
P.A. system	E	DE	E	E	E	-
Dial telephone	E	E	E	E	E	-
Sound power tel.	DE	DE	DE	E	E	-
General alarm	E	(D)	E	E	DE	-
Engine room telegraph	E	(DE)	E	E	DE	-
L.O. alarm	E	(E)	E	E	E	-
Settler alarm	E	(E)	E	E	E	-
Salinity indicator	E	E	E	E	E	-
Entertainment system (pass)	Mil	Mil	Mil	Mil	SS	SS
Entertainment system (cargo)	Rad	D/Stw	Rad	Rad	SS	SS
67-ELECTRONIC APPARATUS						
Radio equipment	Rad	(Rad)	Rad	Rad	SS	SS
RDF	Rad	(D)	Rad	Rad	SS	SS
Radar and loran	Rad	(D)	Rad	Rad	SS	SS
Lifeboat radio	Rad	(Rad)	Rad	Rad	SS	SS
Signal lights	D	(D)	D	E	DE	-
Batteries (radio)	Rad	Rad	Rad	E	Rad	-
RADIAC	-	Rad*	Rad	SS	Rad	-
Facsimile	Rad	D	Rad	Rad	SS	SS
81-MINE PROTECTION						
Degaussing	E	DE	E	E	DE	E

*ABC officer in ships with one (1) radio operator.

Figure 1-8 (Cont'd)

<u>Chapter Number and Subject</u>	<u>Lube</u>	<u>Oper</u>	<u>Maint</u>	<u>Rep</u>	<u>Insp</u>	<u>Paint</u>
82-LIFEBOATS	DE	-	D	DE	DE	D
Life rafts	D	-	D	DE	D	D
Davits	D	-	D	DE	D	D
85-MOTION PICTURE EQUIPMENT						
Projectors (pass)	Mil E	Mil* E	Mil E	Mil E	SS SS	SS
Projectors (cargo)**						
88-DAMAGE CONTROL						
Watertight doors (engine spaces)	E	(E)	E	E	ED	E
Watertight doors (all others)	D	(D)	D	E	DE	D
Fire screen doors	D	(D)	D	DE	D	-
Draft stop doors	D	(D)	D	DE	D	-
91-TOOL SHOP UPKEEP						
Carpenter shop	D E	D E	D E	E E	D E	D E
Engineering shop						
93-FIRE FIGHTING (USCG)						
Fire stations	D	D	D	DE	D	D
Fire stations in engine spaces	E	E	E	E	DE	-
CO ₂ smoke detector	E	(D)	E	E	DE	-
Zonit system	E	(DE)	DE	E	DE	-
CO ₂ bottles, portable 15#	D	-	D	D	D	D
CO ₂ room	-	-	D	DE	DE	D
CO ₂ alarm holds	E	D	DE	E	DE	D
CO ₂ bottles, engine spaces 15#	E	E	E	D	E	-
Oxygen B.A.	-	(DE)	DE	E	DE	-
Gas mask	-	DE	DE	DE	DE	-
Emergency locker	-	D	D	D	D	-
Foam proportioners in engine	E	E	E	E	E	E
Foam proportioners on deck	D	D	D	D	D	D
Steam smothering system	E	DE	DE	E	DE	D

* Must be a qualified projectionist.

** Any crew member who is a qualified projectionist may operate the projector.

Figure 1-8 (Cont'd)

25 MAY 1961

CLEANING BILL

This Cleaning Bill is incorporated into the Table of Responsibilities, Figure 1-8, under the column "Maint." The responsibility for maintenance includes cleaning when appropriate. Spaces of questionable responsibility are assigned as follows:

- a. Passageways within officers' and passengers' living spaces: steward department.
- b. Passageways within crew living spaces: department occupying the adjacent quarters.
- c. Doors and hatches, except those habitually closed: considered part of the compartment into which they swing.
- d. Doors, hatches, manholes and scuttles: considered part of the bulkhead or deck.
- e. Companion ladders: considered part of the space in which the foot of the ladder rests.
- f. Inside of trunk cargo hatches, intakes and uptakes: considered part of the compartment space they serve.
- g. Outside of trunk hatches, intakes and uptakes: considered part of compartment or space in which they are located.
- h. Electrical fixtures, fans and heaters throughout ship: department responsible for the compartment, except electrical panels and control boxes which are engine department responsibility.
- i. Canvas: department assigned to the section of ship in which it is located.
- j. Defrosting of reach-in boxes: weekly by steward department.
- k. Defrosting of ship's stores reefer boxes: steward department under supervision of the engine department, as necessary.
- l. Defrosting in cargo reefer ships: defrosting, cleaning and washing by deck department under joint supervision of the first officer and chief engineer.

Figure 1-9

CHAPTER 4

ALLOWANCES, SURVEYS AND REQUESTS FOR MATERIAL

4.1 Applicability of the BUSHIPS Manual.

Chapter 4, BUSHIPS Manual, is applicable to civil service-manned (USNS) ships. Wherever reference is made to the Bureau of Ships, it shall be interpreted to mean COMSTS or the administrative commander, as appropriate.

4.2 American Bureau of Shipping (ABS) minimum spare parts.

Without specific authority from the administrative commander, no ship shall have less spare parts than the minimum required by the American Bureau of Shipping Rules and Regulations.

25 MAY 1961

CHAPTER 6

RECORDS, REPORTS AND INSPECTIONS

Section A

Records and Reports6.1 Applicability of the BUSHIPS Manual.

Chapter 6, BUSHIPS Manual is applicable, except as noted below.

6.2 Engineering trouble reports.

a. Equipment failure report (NAVSHIPS 3621) shall be submitted in accordance with instructions on the form. In addition to the distribution indicated, one copy each shall be forwarded to COMSTS and the administrative commander.

b. Under "Remarks and Recommendation" a statement as to the probable cause of failure and the corrective action taken shall be included. Trouble reports shall be concise and complete and the reports shall be numbered consecutively during each fiscal year.

6.3 Ship's repair list.

The U.S. Naval Ship's Repair List shall consist of bona fide repair items beyond the capacity of the ship's force, approved alterations and alterations "equivalent to repair," and shall be prepared for submission at the repair conference by the chief engineer. Article 6.4 lists the repair items normally accomplished by the ship's force.

1. Preparation. Department heads will submit work items beyond the capacity of departmental personnel to the chief engineer. He will screen the items for those to be accomplished by engine department personnel and those properly classified "alterations." The remaining repair items will constitute Ship's Repair List. (Sample, Figure 6-1)

2. Priority. A priority shall be established for each repair item, based on the following definitions:

(a) Priority #1: Emergency repair, which must be accomplished before the ship can sail on her mission.

(b) Priority #2: Urgent repair, which should be accomplished to permit the ship to more safely complete her voyage, or repair

25 MAY 1961

which is essential for the health and safety of the crew and/or passengers. These items shall be designated as "Safety Item."

(c) Priority #3: Desirable repair, which will promote economy in operation of the ship or provide for more comfortable accommodations for the passengers and/or crew.

3. Information required. Sufficient detail shall be included so that accurate specification can be written and costs can be estimated as nearly correct as possible.

4. Electronic items. For electronic items, the following additional information shall be furnished:

(a) Specific repairs requested.

(b) Repair parts required, but not on board.

(c) Parts required which are available from ship's on-board allowance.

5. Submission of repair list.

(a) The repair list, as shown on the following pages, shall be prepared in quintuplicate and submitted as an enclosure to a letter from the master to the administrative commander and shall be mailed in sufficient time to insure its receipt at the home port at least five days before the ship's arrival. If air mail is not feasible, the urgent repair items shall be submitted by message.

(b) Upon arrival in port, 25 copies of the repair list shall be made available, in the office of the chief engineer, to representatives of the staff Maintenance and Repair Officer attending the arrival conference. If repair requests are submitted at a port other than the home port, a copy of the request shall be forwarded to the administrative commander.

(c) If additional repairs become necessary after the repair list has been submitted, the Supplementary Repair List shall be forwarded by message to the administrative commander at least four days before arrival at the home port - or as soon as communication restrictions permit.

(d) When urgent repair which necessitates the procurement of parts not ordinarily stocked is required, the administrative commander shall be notified promptly by message.

SAMPLE

USNS GENERAL I. D. KLINE (T-AP 500)

VOYAGE REPAIR LIST - VOYAGE #4

Submitted by M. I. BLUE, CHIEF ENGINEER

Approved by LEE SHORE, MASTER

Item No.	Priority	Subject and Description
----------	----------	-------------------------

(1)	1	<p>Subject: Main Condensate Standby Pump</p> <p>Nameplate Data: Mfr: Chicago Pump Co., Chicago, Ill. Type - Vertical Centrifugal Cap. 150 GPM @ 85 psi Serial 71328-14</p> <p>TURBINE Mfr: Coppers Steam Turbine Co., Worcester, Mass. Type - YLV HP - 15 @ 240# Steam Pressure RPM - 650 Serial A-1175</p> <p>Location: Lower Engine Room, Stbd, Side Frame 102</p> <p>Condition: Fails to keep hot well pumped out, impeller and case wearing rings worn beyond designed clearances.</p> <p>Quantity: One (1)</p> <p>Recommendation: Water end be opened for inspection and worn or defective impeller and case wearing rings be replaced to bring unit to designed capacity.</p> <p>Note: No spare parts carried on board ship.</p>
-----	---	--

Figure 6-1

SAMPLE

Item No.	Priority	Subject and description
(2)	2	<p>Subject: Motor for Ventilation System S-71</p> <p>Nameplate Data: Mfr. General Electric Co. Med. #58254 A 23 D C Shunt wound, 1150 RPM, 230 volts, 1.19 amps 3 HP, Duty Constant Temp. Rise 40° F, Type - B Serial #2031668</p> <p>Location: Boat deck, Frame 86 port side</p> <p>Condition: Armature grounded, megger tests show zero ground on armature with brushes lifted.</p> <p>Quantity: One (1)</p> <p>Recommendation: That motor be disassembled, arma- ture be rewound and reinstalled, commutator trued up and reinstalled, and motor tested for design opera- tion.</p>
(3)	2	<p>Subject: Refrigerator Ship's Bake Shop</p> <p>Location: C-Deck, Port Side</p> <p>Condition: Evaporator continuously out of service due to pin hole leaks.</p> <p>Quantity: One (1)</p> <p>Recommendation: Renew evaporator.</p> <p>Evaporator consists of:</p> <p>Nine double rows of $\frac{1}{2}$ inch tube, inlet and outlet at same end.</p> <p>The unit is 38 inches long, 16 inches wide and 7 inches deep.</p> <p>70 cooling fins each length of tube.</p>

Figure 6-1 (Cont'd)

SAMPLE

Item No.	Priority	Subject and Description	
(4)	3	Subject:	Chairs, Upholstered
		Location:	Dining Saloon, Prom Deck
		Condition:	Broken backs, arms and legs
		Quantity:	98
		Recommendation:	Pick up, repair and deliver to ship
<u>ELECTRONICS</u>			
(5)	2	Subject:	Loran, AN/SPN-7
		Location:	Chart Room
		Condition:	No traces on CRT. Blows fuses after short period of operation. High voltage transformer heats.
		Quantity:	One (1)
		Specific repairs requested:	Replace high voltage transformer, T401 and fuse F101
		Repair parts required:	High voltage transformer T401
		Repair parts in on-board allowance:	Fuse F101
		Recommendation:	Remove, make necessary replacements, adjust and reinstall.

Figure 6-1 (Cont'd)

SAMPLE

Item No.	Priority	SUBJECT AND DESCRIPTION
(6)	2	Subject: <u>Radio Receiver 8506B</u>
		Location: Radio Room
		Condition: Very low sensitivity. Unable to copy MERCASTS
		Quantity: One (1)
		Specific repairs requested: Improve sensitivity
		Repair parts required: Exact requirements not known
		Repair parts in on-board allowance: Exact requirements not known
		Recommendation: Test and accomplish repairs indicated. Replace tubes and component parts required to place equipment in design operating condition.

Figure 6-1 (Cont'd)

25 MAY 1961

6.4 Repair Items for Ship's Force

The following items are considered to be within the capacity of the ship's force and normally shall not be included in the voyage repair lists:

1. Painting. Preparation and painting of all interior and exterior surfaces except those requiring special equipment or technique.
2. Inspections and Tests. Inspections and testing of all types of equipment unless such tests are required of the contractor. (Establishment of the repairs required is a responsibility of the ship's force.)
3. Fire Main and Piping. Testing, inspection, establishment of repairs required, flushing and minor repairs to piping and valves.
4. Sprinkling Systems. Testing, inspection, establishment of repairs required, flushing and minor repairs.
5. Valves. Repair and replacement of all valves and valve parts. If beyond the capacity of the ship's force, list type, size and service of each valve in the voyage repair request.
6. Watertight Doors and Air Ports. Maintenance of dogs, wedges, gaskets and knife edges; determination and need for structural repairs.
7. Small Pumps. Overhauling and repair of all small pumps within the capacity of the ship's machine shop.
8. Ventilation Systems. Cleaning of screens, degreasing of traps and vent duct interiors. Removal and replacement of supply filters to be cleaned and oiled by the maintenance shops, removal and replacement of exhaust grease filters.
9. Sheet Metal. Manufacture of small items, i. e., lockers, shelves, cabinets, etc.
10. Hooks, Brackets, Name Plates and Pad-eyes. Installation of articles of this nature, except for outside hull fittings.
11. Propulsion Units. Routine inspections of turbines as prescribed for ship's force in BUSHIPS Manual.
12. Main and Auxiliary Boilers. Cleaning fire and watersides, minor repairs to brickwork, scotblowers, hydrostatic tests and minor casing repairs.
13. Bilges. Cleaning and Painting.

25 MAY 1964

14. Auxiliary machinery. Minor repairs incident to routine maintenance.

15. Low pressure air compressors. Overhauling and repairing.

16. Distillers, condensers, coolers. Cleaning internally, renewing zincs, plugging of leaking tubes.

17. Electric motors and generators. Keeping interiors and exteriors clean and free of dirt, lint, water, oil, etc. Lubrication, cleaning and maintenance of journal bearings. Inspection of electrical connections, routine insulation of resistance readings, fitting or re-fitting of brushes, inspections and testing as prescribed in BUSHIPS Manual.

18. Switchboards, cable and control equipment. Keeping interiors and exteriors of electrical equipment clean and free of dirt, lint, oil matter, etc. Locating of grounds in cable, short or open circuits, renewing of short lengths of defective cable. Replacement of such minor electrical equipment as thermostats, switches, heating elements, solenoids, relays, etc. Inspections and tests to establish repairs required. Insulation resistance history to be included with repair requests as well as detailed information of condition of electrical equipment.

19. Electronics equipment.

(a) Radar antennas: lubricate, clean and paint.

(b) Electronics equipment: routine lubrication and cleaning.

(c) Generators and motors: routine cleaning, maintenance and minor repairs.

(d) Insulators: clean and replace as required.

(e) Jacks, phones, plugs, etc: replace and repair.

(f) Telegraph keys: replace, adjust and repair.

(g) LF, MF and HF communication receivers: all tests and repairs, except alignment.

(h) LF, MF and HF communication transmitters: all tests and repairs except major changes.

(i) Test instruments: all repairs except where special instruments or techniques are required.

(j) Vacuum tubes: test and replacement in all types of equipment.

(k) Loran, Radar and Fathometer: all tests, minor repairs and adjustments.

6.5 Maintenance & Repair Overtime for Ship's Force.

a. Work over and above that outlined in paragraph 6.4, work outside of normal working hours or work in areas below the floor plates may be requested to be performed on an overtime basis. Masters will submit all requests for overtime and premium pay to accomplish maintenance and repair work in triplicate on M&R Overtime Authorization Request Form (MSTS Form 5330-3 (6-62)). Each project shall be broken down into estimates of man-hours and funds required for the accomplishment thereof. Work shall not be begun until authorization is received.

b. Requests for projects of this type shall be specific and shall not encompass broad, indefinite work programs which are not readily identifiable to reviewing personnel.

c. Work which may be the subject of Maintenance & Repair Overtime funds is that type of work which, if not accomplished by ship's force, would have to be performed by a repair contractor. The object of granting the overtime is to defray Maintenance & Repair expense which would have to be undertaken if the ship did not accomplish the work. It is desired that these funds be expended for the overhaul and repair of any ship components to restore the same to proper operating condition, particularly pumps, winches, electric motors, fans, large valves, main engine and boiler parts.

d. It is desired to limit the amount of these funds which will be spent for routine cleaning and painting, for it is expected that these tasks can be accomplished on a straight time basis by normal watchstanding personnel and day-workers. The inspections which are required by COMSTS INSTRUCTION 4700.7 are also considered to be outside the scope of the Maintenance & Repair overtime concept.

e. Upon completion of each project, the master shall return one completed copy of the Overtime Authorization Request Form to COMSTSPAC, reporting the amount of money expended for the accomplishment of the project. All work will be subject to inspection for completeness and workmanship by the Deputy Maintenance and Repair Officer.

25 MAY 1961

6.6 Casualty and insurable damage repairs.

Requests for repairs to correct damage by storm, grounding or other casualty shall reference the serial of the master's report of such damage. If such a report was not submitted, a statement to that effect shall be included.

6.7 On return file.

A record of all items submitted for repair is kept in an "on return file" at the headquarters Maintenance and Repair Office. Previously deferred items need not be resubmitted as they will be included in repair schedules when most appropriate.

6.8 Contractor's guarantee period.

All work accomplished by contractors is subject to a 60-day guarantee period. If a failure occurs within the guarantee period a letter or message report (MSTSPAC Report 4365-1) shall be made immediately giving full particulars. If subsequent work requests are the result of such failures, reference shall be made to the initial report of failure.

6.9 "Wholesale overhaul" requests.

When requests for "wholesale overhaul" of pumps, forces draft blowers, generators and other machinery items are made without supporting description of deficiencies, it will be assumed that no particular defects exist and that this work is desired as a matter of routine inspection. Such requests indicate lack of knowledge and inspection of the equipment by ship's force and are of little value. Inspection to determine difficulties is considered a ship's force function. (If funds allocated for maintenance and repair are used for work that is normally within the capacity of ship's force, maximum repairs cannot be accomplished.)

6.10 Alterations.a. Definitions.

1. Alteration. An alteration is defined as any change in hull, fittings or equipment involving changes in design, materials, number, location or relationship of component parts of an assembly,

25 MAY 1961

regardless of whether it is undertaken separately or in conjunction with repairs. Changes in allowance lists are alterations and shall be handled accordingly.

2. "Alteration equivalent to repair." "An alteration equivalent to repair" is an alteration meeting any of the following conditions:

- (a) The substitution, without change in design, of different materials which have been previously approved by the Bureau of Ships for similar use and which are available from naval standard stock.
- (b) The replacement of worn out or damaged parts requiring renewal by those of later and more efficient design and previously approved by the Bureau of Ships.
- (c) The strengthening of parts which require repair or replacement in order to improve reliability, provided no other changes in design are involved.
- (d) Minor modifications involving no significant changes in design or functioning of equipment, but considered essential to prevent recurrence of unsatisfactory conditions.

b. Submitting alteration requests.

1. Alteration requests shall be submitted to the administrative commander by letter. Each alteration request shall be made the subject of a separate letter. The letter shall explain the proposed alteration and be as detailed as necessary to insure clear understanding. Where appropriate and in the interests of clearer understanding, the following guides shall be used:

- (a) Correct names, numbers and locations.
- (b) Reference plans (include sketch, if necessary).
- (c) Present equipment and condition. IMPORTANT - Include appropriate clearances, amount of wear, mils of vibration, depth of scoring or pitting, and other specific details as applicable.
- (d) Name, size, type of new equipment, if requested.
- (e) The additional load that would be placed on current power plants.
- (f) Ventilation alterations and installations of air conditioning units require information concerning supply and exhaust blowers and motors, temperatures and insulation of compartments.

21 MAY 1961

(g) Weight and moment change.

2. A copy of each alteration request shall be furnished for comment to other ships of the same general type assigned to the same administrative commander.

c. Action by ships receiving another ship's alteration request.

1. Upon receipt of another ship's alteration request, consideration shall be given the applicability and desirability of the proposed alteration to the ship. A letter commenting on the proposed alterations shall be forwarded to the administrative commander. Copies need not be furnished to the other ships unless they were specifically requested.

2. Since the administrative commander will consider the proposed alteration for all ships of the class in the light of comments received from each individual ship, masters shall insure that their comments include whether or not the alteration is applicable and/or desirable.

6.11 Unofficial alterations.

Masters shall insure that no unofficial alterations are made. Alterations to the ship or equipment made without authority are defined as unofficial alterations. Following are some examples:

1. Drilling holes through bulkheads or removing bolts from porthole frames for the purpose of installing private radio antenna and damaging the watertight integrity of the ship.

2. Removal of ship's desks, secretary bureaus and other furniture for storage or disposal without authorization.

6.12 Engine Department, Port and Voyage Abstract (MSTS 9400-1).

a. The instructions on the reverse side of the form MSTS 9400-1 shall be followed, except that four signed copies shall be forwarded to the superintending engineer at the port where the scheduled voyage terminates, if other than the home port. When the voyage ends at the home port, three signed copies shall be submitted.

b. Because of frequent misunderstandings, the following explanations are provided for the specific information requested on the front of the abstract:

AT SEA revolutions: Single screw ships shall enter total revolutions and revolutions per minute in the appropriate "Mean or Single Screw"

25 MAY 1961

boxes only. The remaining spaces in the two lines will be left blank. The boxes titled "Total Revolutions" and "Average RPM" shall be left blank on both single screw and twin screw ships.

AVERAGE RPM: The average rpm will be determined by using the actual running time in minutes of the main engine.

APPARENT AVERAGE SLIP: This is the difference in engine miles and observed miles divided by the engine miles. Multiply by 100 to express in percentages. Mark "Pos." for positive when engine miles are greater and "Neg." for negative when observed miles are greater.

$$\text{Apparent average slip: (percent)} = \frac{\text{Difference in miles} \times 100}{\text{Engine miles}}$$

AVERAGE SPEED: Determined as follows:

$$\frac{\text{Observation miles}}{\text{Days decimal} \times \frac{24}{24}} = \text{Knots. Calculate to two decimal points.}$$

DAYS DECIMALLY: All calculations of Days Decimally shall be carried out to three decimal points. This can be computed as follows:

$$\frac{(24 \times 60 \times \text{days}) + (60 \times \text{hours}) + \text{minutes}}{1440 \text{ (minutes in one day)}} = \text{Days Decimally.}$$

PORT TIME: Includes all time from arrival "Finished with Engines" until departure "Standby" order is given.

SEA TIME: Includes time in transit between outbound pilot station and inbound pilot station. All detention time (when engine is stopped) between these points shall be explained in detail in the space allocated for the "Chief Engineer's Remarks" on the reverse side.

IN PORT (Fuel Oil) section:

TOTAL-ARRIVAL: Refer to abstract from last leg of previous voyage (or last leg of this voyage), subtract fuel consumed maneuvering entering port from quantity listed under "Total Arrival - Pilot Station." Result is now entered on abstract in "Total-Arrival" column.

EVAPORATED OR RECEIVED: Enter amount of fuel received while in port.

TOTAL DEPARTURE: Fuel aboard when "Standby" order is given for departure to sea.

TOTAL CONSUMED: Add "Total Arrival" fuel to amount "Received," if

25 MAY 1961

any, and then subtract "Total Departure" fuel. This will result in the amount of fuel consumed in port (including fuel consumed alongside berth, at anchor and in shifting berth). The chief engineer's remarks shall specify what portion of this fuel was consumed in shifting berth. Show both actual soundings and meter readings. Base all calculations on actual soundings only.

CONSUMED/DAY: Divide "Total Consumed" (in port) by "Days Decimal-ly" (in port). Carry out to two decimal points only.

AT SEA (Fuel Oil) section:

ON HAND - AT OUT PILOT STATION: Subtract fuel consumed maneuvering leaving port from "Total Departure" (in port), and enter this figure.

TOTAL ARRIVAL IN PILOT STATION: Fuel aboard on arrival at in-pilot station of port which terminates this leg of voyage.

TOTAL CONSUMED: Difference in above two items; show both the actual soundings and meter readings. Base calculations on soundings only.

CONSUMED/MILE: Divide "Total Consumed" (at sea) by "Observed Miles." Carry out to three decimal points only.

CHIEF ENGINEER'S REMARK (on reverse side): Detention time, cause of detention, abnormal weather conditions, casualties and any other information pertinent to the voyage shall be mentioned. Times and fuel consumed entering port shall be recorded here as these figures will be required in starting the abstract for the next leg. Maneuvering time shall also be included in this section and shall consist of the following items:

Shifting of berth or anchorage: Time from "Standby" order until "Finished with Engines."

Leaving port: Time from "Standby" order until departure from out-pilot station.

Entering port: Time from arrival at in-pilot station until "Finished with Engines."

Consumption figures: Consumptions during all maneuvering time shall be included in the section adjacent to the respective times of maneuvering.

25 MAY 1961

c. Ships engage in routine voyage legs of less than 1,000 nautical miles will: Submit two copies of Port and Voyage Abstract (MSTS 9400-1) monthly to the Superintending Port Engineer with the following modifications:

1. Voyage description section:

Passenger and troops item: Omit

Cargo DW tons item: Omit

Ballast - Tons item: Indicate average salt water ballast carried.

2. Drafts and weights section: Omit

3. In port section:

Total arrival line: Substitute the figures applicable at the first of the month if the ship is in port at that time (0001, first of the month)

Total departure line: Substitute the figures applicable at the end of the month if the ship is in port at that time (2400, last day of the month).

4. At sea section:

On hand at pilot station line: Figures applicable if the ship is at sea on the first of the month.

Total arrival in pilot station line: Figures applicable if ship is at sea at the end of the month.

5. The balance of the form will reflect total monthly consumption rather than passage data.

d. To insure uniformity in the abstracts, all figures shall be given in whole numbers except when specifically directed to be carried out specific decimal points. In rounding off decimal

25 MAY 1964

quantity, the number shall be increased by one if the following number is five or greater.

e. Diesel-propelled ships.

1. In the column headed "Fuel Oil" enter the sum of the total fuel used for main engine and auxiliary purposes in the "TOTAL CONSUMED" boxes.
2. In the column headed "Auxiliary Diesel Oil" enter fuel used for auxiliary purposes only in the "TOTAL CONSUMED" boxes. These figures shall be entered as barrels to the nearest whole number.

6.13 Engine room log book.

- a. When necessary, the "USS" designation of a ship shall be changed to read "USNS."
- b. Where appropriate, the term "COMSTS" shall be substituted for the "Bureau of Ships" or "Bureau," particularly in relation to the transmittal of reports.
- c. Engine room log books are designed for the following ships and shall be maintained in accordance with the instructions contained therein:

1. Gear Turbine Drive (MSTS Form 9410-1)
2. Diesel Propulsion (MSTS Form 9410-2)
3. Turbo-electric Propulsion (MSTS Form 9410-3)

6.14 Engineer's Bell Book (NAVSHIPS (NBS) 116)

This book shall be maintained only during the period when maneuvering of the engines is expected, i.e., from standby to full ahead on departure, from standby to finished with engines on arrival, and during other periods when the engines are placed on standby for the purpose of rapid maneuvering in thick weather, crowded waters, etc.

1. Disregard printed instructions contained in the reverse side of the engineer's bell book (NAVSHIPS (NBS) 116).
2. Entry shall be made on a separate sheet for each shaft.
3. A separate sheet shall be used for each day that engine signals are recorded.
4. On the face side of the sheet, change U.S.S. to read

25 MAY 1961

U.S.N.S. by inserting a capital "N" before the last "S".

5. Delete "no. (s)" and in this space enter the designation of the shaft for which the particular bell book is being kept, i.e., port or starboard.

6. In column 1, the time shall be entered in four digit numbers, according to the standard Navy system, commencing with 0001 at one minute past midnight to 2400 the following midnight.

7. In column 2, the following symbols and abbreviations shall be used to record the meaning of each "bell" signal or order received:

Z - zero or stop		- slow back	
	- slow ahead		-- half back
	- half ahead		- full back
	- full ahead		- emergency or flank
	- emergency or flank ahead		F.W.E. - finished with engines
		S.B. - standby	

8. In column 3, the number of propeller rpm resulting from the action taken shall be entered.

9. Column 4, leave blank.

10. At the end of each watch during which engine orders have been entered in the engineer's bell book, the senior watch engineer in the engine space reporting shall sign his name and enter the date on the line directly below the last signal received during the watch, signifying to the correctness and accuracy of the recording above his name.

11. The chief engineer shall insure that the bell book is available at all times to the engineer on watch so that all engine signals from the bridge can be properly and accurately recorded.

12. Alterations or erasures are not permitted. Necessary corrections shall be made by a note written across blank lines of the record.

13. Semi-annually, the engineer's bell books shall be turned in to the administrative commander for retention.

25 MAY 1961

Section B - Inspections6.15 U. S. Coast Guard inspection.

a. Certificated civil service-manned (USNS) ships are subject to U. S. Coast Guard annual inspections and periodic surveys. These are conducted in accordance with the Coast Guard rules and regulations. Uncertificated civil service-manned (USNS) ships are subject to inspections and surveys identical to those of certificated ships performed by a MSTSPACAREA representative.

b. The following U. S. Coast Guard documents are used by the Coast Guard inspector during the inspections:

1. Annual Inspection Report, Hull and Equipment (CG 840-A)
2. Annual Inspection Report, Boilers and Machinery of Steam and Motor Vessels (CG 840-B).
3. The Ship Drydock Examination Report, Underwater Body and Outboard Fittings (CG 840-H).

c. The USCG inspector shall be provided with suitable space or area containing a desk and adequate sanitation and washing facilities.

6.16 Licensed officers' responsibilities.

a. Licensed deck and engine officers are required to have knowledge of all current Coast Guard rules and regulations and navigation laws affecting their departments. While staff inspection personnel are responsible for the coordination and inspection of work performed by contractors, they are not authorized to relieve the ship's officers of their responsibilities or shipboard duties. Ship's officers shall provide information and assist in the testing and operation of equipment, and shall be finally responsible for the material condition of their respective departments.

b. Officers and key personnel will not be granted leave from a ship due for an annual inspection until after the inspection is completed, except in emergencies.

c. To expedite the completion of inspections, the ship's force shall correct all known deficiencies prior to the inspection.

6.17 Pre-inspection Reports (MSTSPAC Report 9030-2).

Pre-inspection Reports shall be completed by the master for the deck department (Figure 6-2) and by the chief engineer for the engine department (Figure 6-3) and forwarded to the administrative commander. These reports shall be mailed in sufficient time to insure their receipt at least one month prior to the annual inspection.