MSTSPAC

SHIP MAINTENANCE MANUAL

FOR USE IN SHIPS OF
MILITARY SEA TRANSPORTATION SERVICE
PACIFIC

MSTSPAC INSTRUCTION P4700.3C

DEPARTMENT OF THE NAVY
MILITARY SEA TRANSPORTATION SERVICE, PACIFIC
N.S.C., OAKLAND, CALIFORNIA 94625

MSTSPAC P4700.3C
P-4E4
27 January 1969

MSTSPAC INSTRUCTION P4700.3C

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

Subj: MSTSPAC Ship Maintenance Manual

1. Purpose. The purpose of this Instruction is to promulgate the MSTSPAC Ship Maintenance Manual.

2. Cancellation. MSTSPAC Instruction P4700.3B is superseded.

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 COMSTSPAC.

R. KEFAUVER

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REVIEWED AND APPROVED 24 JANUARY 1969
In Accordance with SecNavInst 5600.16:

Authenticated:

S. A. WILSON
Directives Control

R. A. HUBBARD
Chief of Staff

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*Not included herein.

Chapter No.		NAVSHIPS Manual Applicability	NAVSHIPS Manual Chapter
19	Painting	As Modified	9190
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20	Winches and Capstans	As Modified	9200
21*	Hydraulic Gears*	No	9210
22	Steering Gear.	Yes	9220
23	Industrial Gases	Yes	9230
24	Ship Control Equipment	As Modified	9240
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26	Moorings and Appliances.	Yes	9260
27*	Wire Rope*	Yes	9270
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30	Stowage of Safe, Semi-Safe and Dangerous Materials.	Yes	9300
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34	Commissary Equipment	Yes	9340
35*	Laundry*	Yes	9350
36	Sanitation	Yes	9360
37*	Medical and Dental Appliances* . .	Yes	9370
38	Ventilation.	Yes	9380
39*	Thermal Insulation*.	Yes	9390

* Not included herein.

Chapter No.		NAVSHIPS Manual Applicability	NAVSHIPS Manual Chapter
40*	Tables of Technical Data	Yes	9005
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49	Compressed Air Plants.	Yes	9490
50*	Auxiliary Steam Turbines*. . . .	Yes	9500
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54*	Gas Turbines*.	Yes	9540
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59	Refrigeration Plants	Yes	9590
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* Not included herein.

Chapter No.		NAVSHIPS Manual Applicability	NAVSHIPS Manual Chapter
62	Electric Power Distribution.	As Noted	9620
63*	Electric Motors and Controllers* . .	Yes	9630
64	Lighting	Yes	9640
65*	Interior Communications*	Yes	9650
66*	Searchlights*.	Yes	9660
67	Electronics	As Noted	9670
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72*	Turrets*	Yes	9720
74*	Anti-aircraft Batteries*	Yes	9740
76*	Depth Charges*	No	9760
77*	Chemical Defense Equipment*.	No	9770
78	Ammunition Handling and Stowage. . .	No	9780
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83	Elevators.	No	9830
85*	Motion Picture Equipment*.	Yes	9850
87	Mechanical Measuring Instruments . .	As Noted	9870
88	Damage Control	As Noted	9880
91	Work Shop Equipment in Ships	Yes	9910

* Not included herein.

Chapter No.		NAVSHIPS Manual Applicability	NAVSHIPS Manual Chapter
92	Welding and Allied Processes .	Yes	9920
93	Firefighting	As Noted	9930
94*	Salvage*	No	9940
95	Gaskets and Packing.	As Noted	9950

* Not included herein.

Effective with the Quarterly Changes dated 15 July 1963, the Naval Ship System Command and the Naval Ship Engineering Center have been renumbering individual chapters in the NAVAL SHIPS TECHNICAL MANUAL. Under this system, all chapters will be part of the 9000 series. The following listing identifies all chapters by both numbering systems as a guide:

New Designation	Present Designation	New Designation	Present Designation
Ch. 9000	Ch. 1	Ch. 9450	Ch. 45
Ch. 9001	Ch. 2	Ch. 9460	Ch. 46
Ch. 9002	Ch. 3	Ch. 9470	Ch. 47
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Ch. 9170	Ch. 17	Ch. 9630	Ch. 63
Ch. 9180	Ch. 18	Ch. 9640	Ch. 64
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Ch. 9200	Ch. 20	Ch. 9660	Ch. 66
Ch. 9210	Ch. 21	Ch. 9670	Ch. 67
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Ch. 9240	Ch. 24	Ch. 9710	Ch. 71
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Ch. 9270	Ch. 27	Ch. 9760	Ch. 76
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Ch. 9310	Ch. 31	Ch. 9820	Ch. 82
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Ch. 9340	Ch. 34	Ch. 9850	Ch. 85
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Ch. 9360	Ch. 36	Ch. 9880	Ch. 88
Ch. 9370	Ch. 37	Ch. 9900	Ch. 90
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Ch. 9440	Ch. 44		

APPENDIX A

APPENDIX A (Cont'd)

RECORD OF CHANGE

Change No.	Date Entered	Change Made By:

CHAPTER 1

GENERAL

Section A - Scope

1.1 Scope.

a. This Manual applies to all in-service, civil service-manned (USNS) ships under the administrative control of COMSTSPAC. 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 MSTSPAC ships at a parallel with similar programs in the modern maritime industry.

b. The format and chapter numbering of the NAVSHIPS Manual is followed in this manual for the convenience of the addressees. Chapters of the NAVSHIPS 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. NAVSHIPS 250-000 Technical Manual (formerly BUSHIPS Manual). This publication is developed primarily for the use of commissioned (USS) ships by the Navy Department, Naval Ships Systems Command (hereinafter designated as NAVSHIPSYSCOM), however, it serves as a reliable reference for the operation and maintenance of in-service (USNS) ships. Hereinafter this publication will be designated as NAVSHIPS Manual.

2. American Bureau of Shipping (ABS).

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

(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 MSTS in-service (USNS) ships to be certified by the Coast Guard, where possible. Some ships such as the AKV class carriers, which cannot be certified due to configuration or other conditions are operated as public vessels, but are maintained and inspected in accordance with USCG Rules and Regulations. 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 Society for Testing and Materials (ASTM).

(4) American Bureau of Shipping (ABS).

(5) United States Coast Guard (USCG).

(6) Technical Bureau of the Navy Department.

(7) Military (JAN or MIL) specifications.

(8) 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.

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.

MAINTENANCE

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.

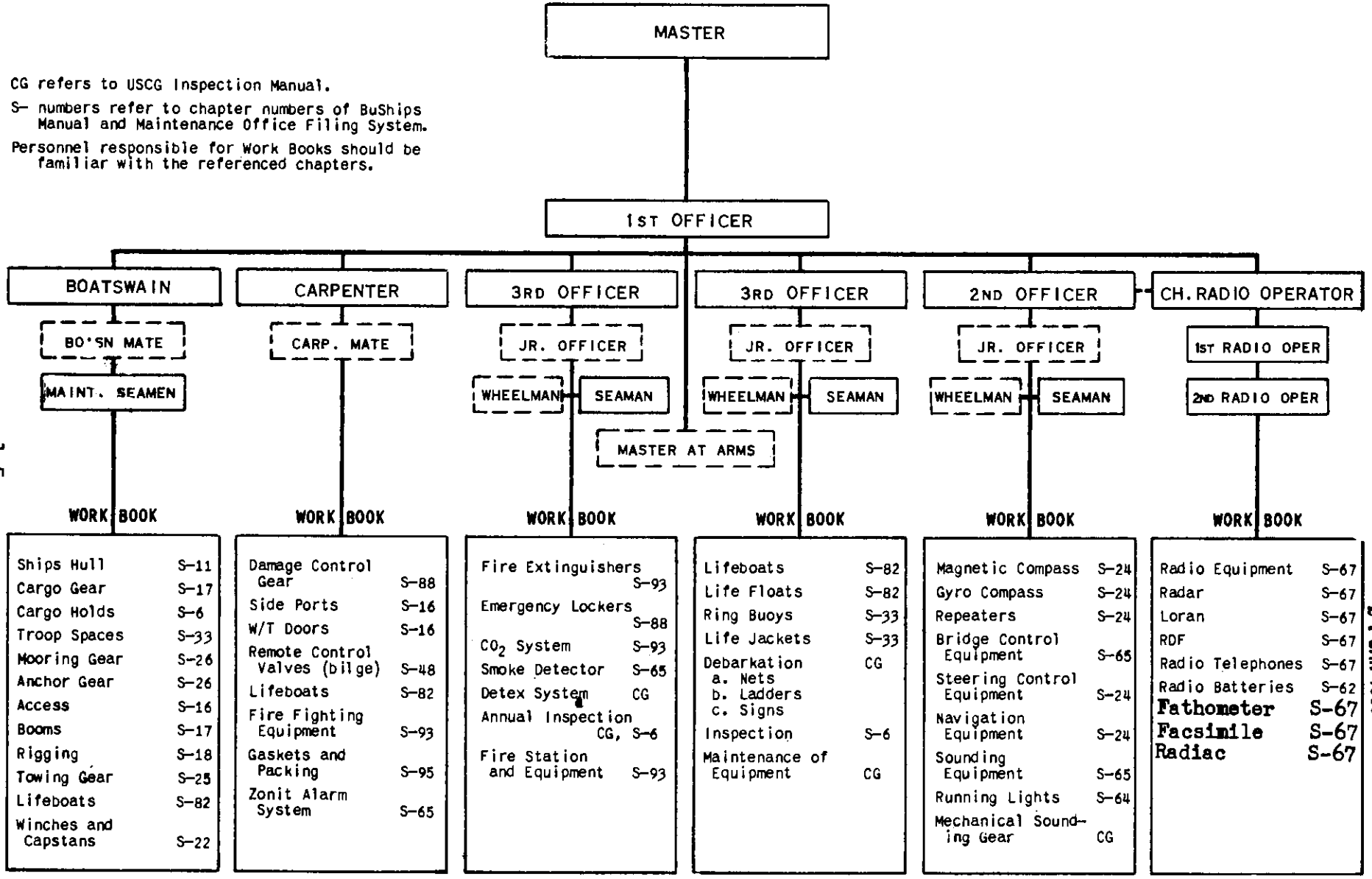

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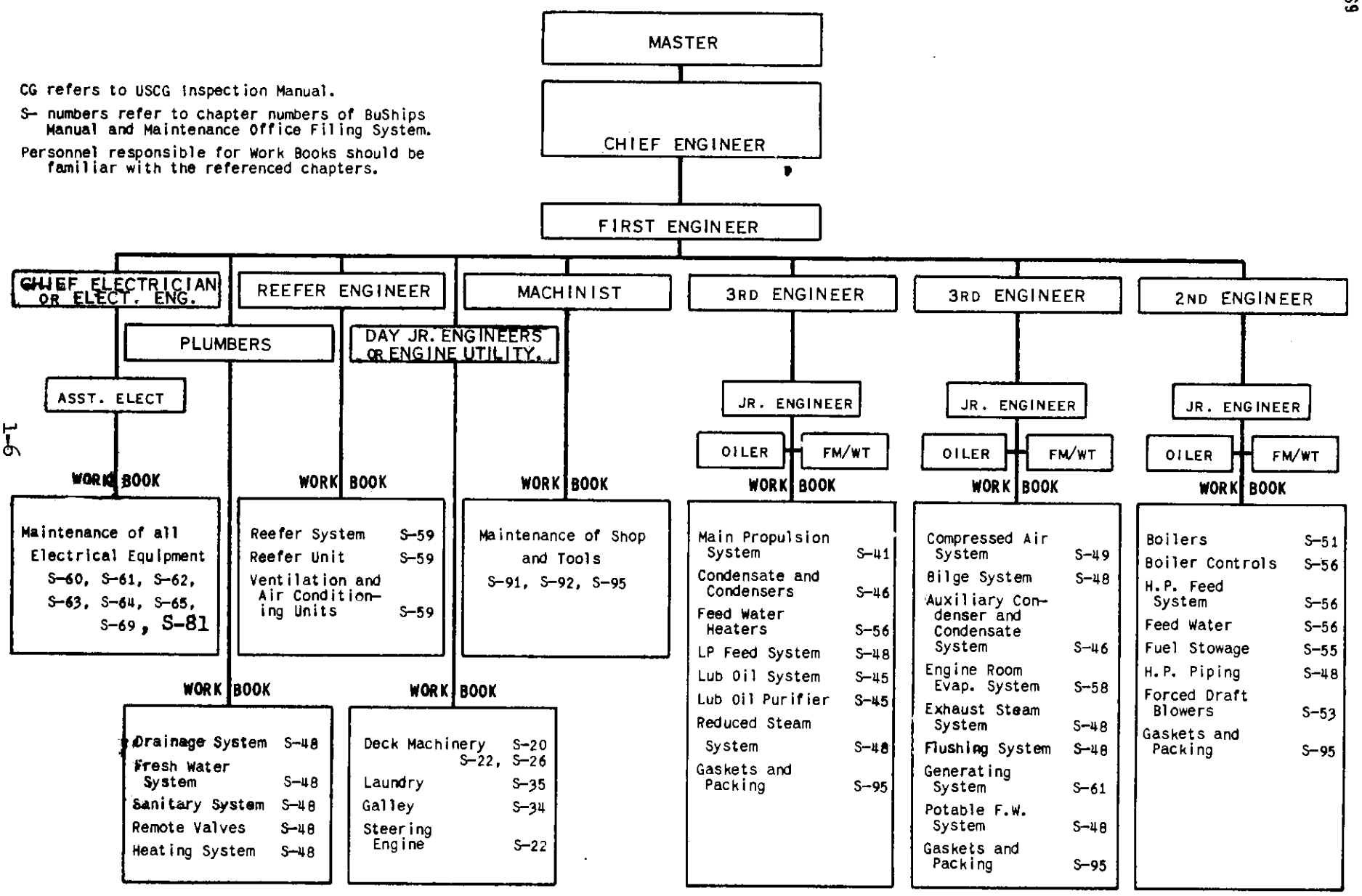
Fig. 1-2

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.



1-6

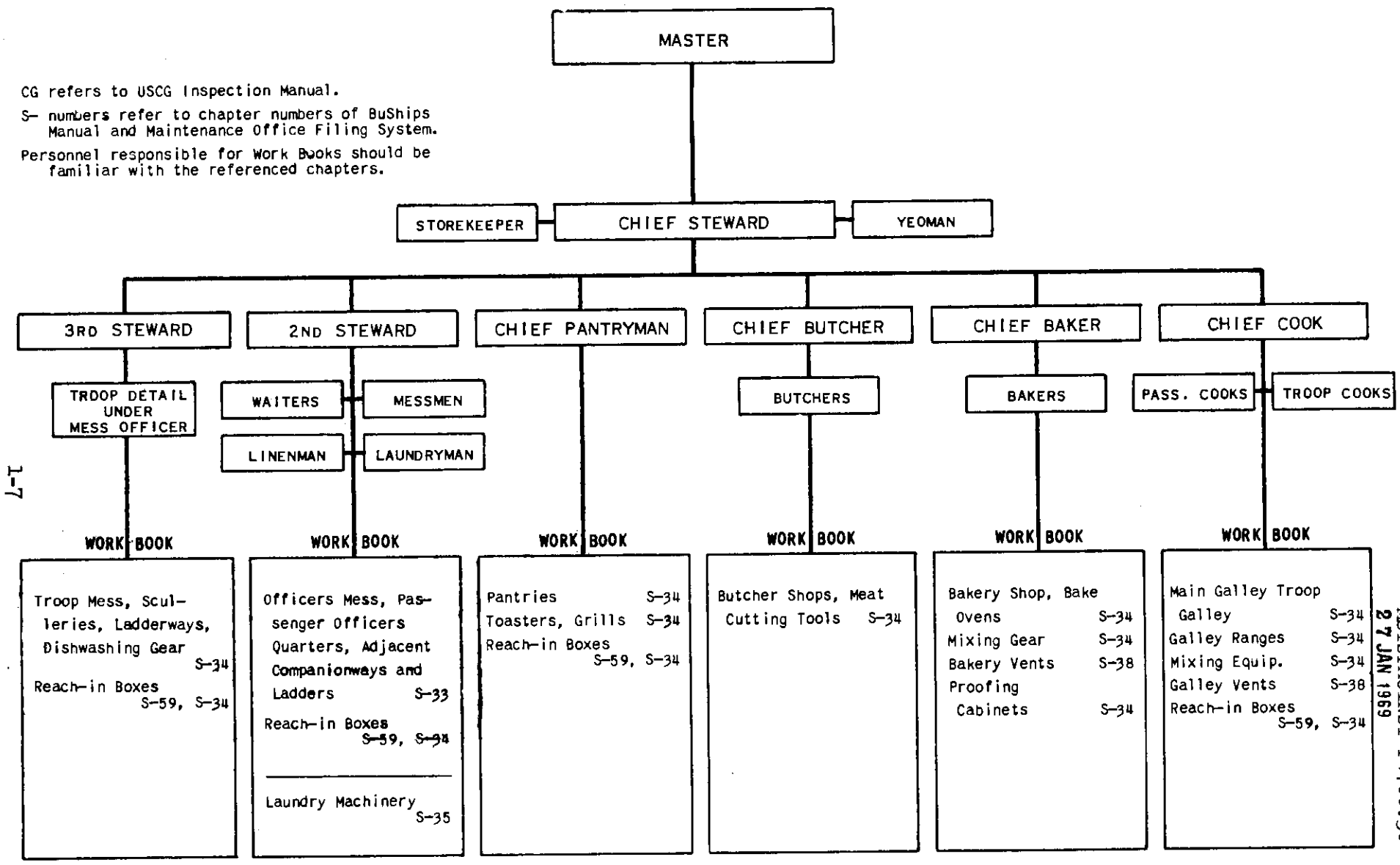
Fig. 1-3

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.



1-7

Fig. 1-4

Section C - Administration

1.7 Ship's maintenance files.

a. Care shall be exercised to prevent duplication of work and records. All files shall be kept in the chief engineer's office with the exception of the Material History Cards pertaining to hull and electronics.

b. 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 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.

MATERIAL HISTORY RECORD

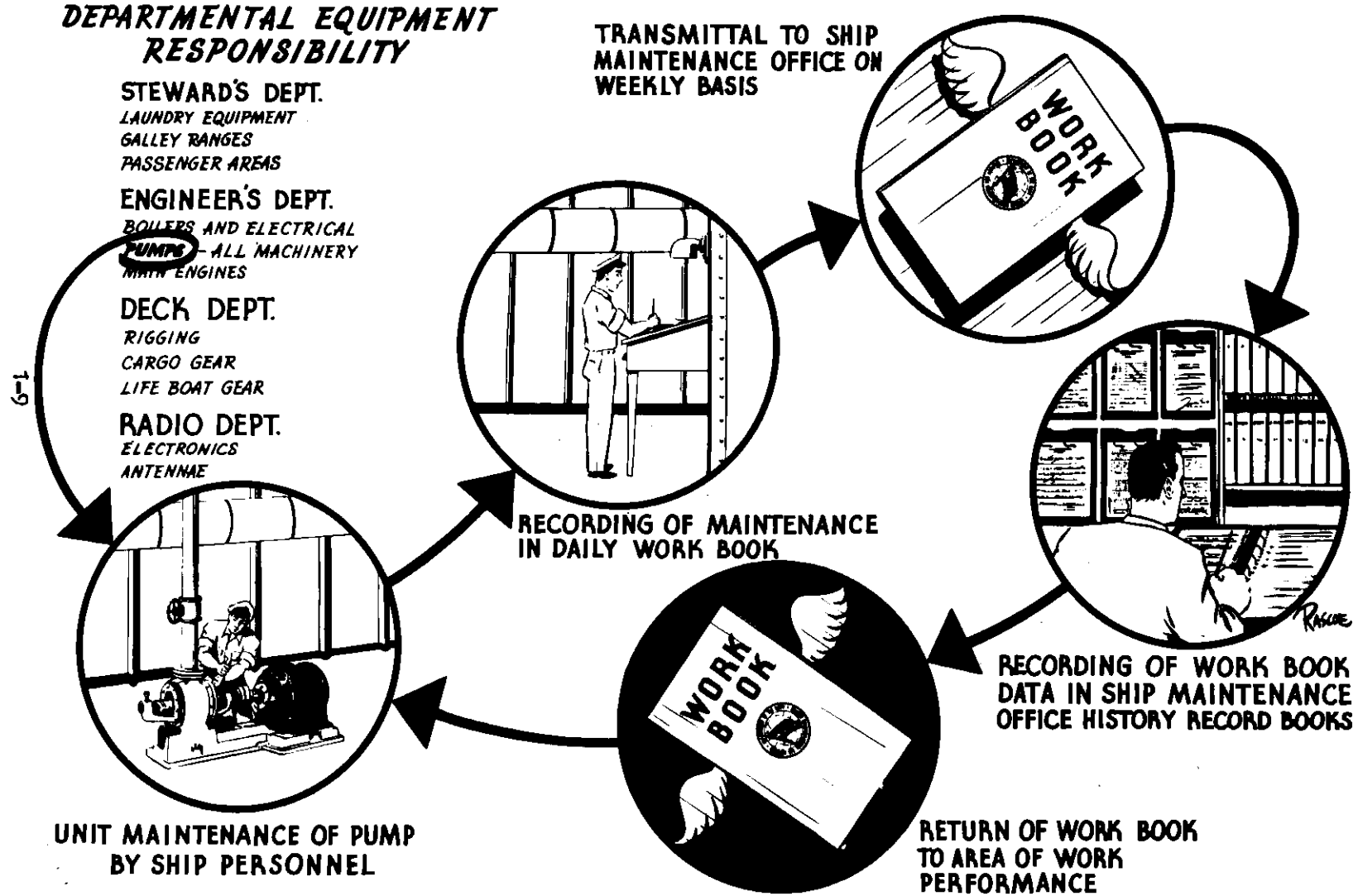


Fig. 1-5

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(e) Entries shall cover repairs effected, derangements 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 shipboard 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 ships plans shall be filed, either in the "S" group or three-digit order as applicable, with a master index located in the front of the first group.

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

1.8 Test - Inspection - Maintenance Log

To insure periodic inspections of ship's spaces, machinery, and equipment as to maintenance, material readiness, cleanliness, and preservation the following standard procedures are established:

(a) MSTS Form 4730/10 (Fig. 1-5) shall be used for each item requiring test/inspection action. The form is constructed for use in a loose-leaf binder which will be maintained by individual engineering officers as shown in Fig. 1-6. Fig. 1-7 indicates flow and description of actions associated with this procedure.

TEST-INSPECTION-MAINTENANCE LOG

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MSTS FORM 4730/10

UNIT/ITEM

FREQUENCY

ACTION REQUIRED

RECORDING REQUIRED

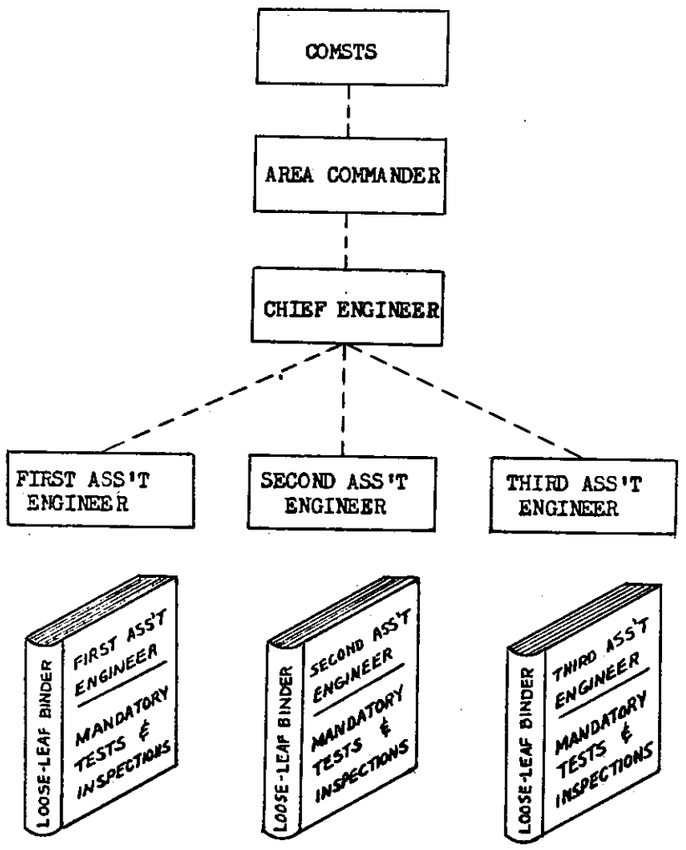
DATE/TIME	ACTION TAKEN/REMARKS	SIGNATURE	CH. ENG. INITIALS

Fig. 1-5

(b) Fig. 1-8 outlines procedures for the use and maintenance of the Engineers Work Book. The Repair Request Work Order (Fig. 1-15) shall be prepared as required for each item by the appropriate officer and forwarded to the Chief Engineer. If the item is within the capability of the ship's force, the Chief Engineer will indicate the priority, add any appropriate information to the form for inclusion in the Work Book (loose-leaf binder). As each work item is completed, appropriate notations shall be made on the sheet and forwarded to the Chief Engineer for disposition. Additionally, recurring maintenance items are also prepared on MSTS Form 4730/10 (Fig. 1-5) and included in the work book. Entries are made when maintenance work is performed at the appropriate intervals indicated on the form. As sheets are completed they are removed and forwarded to the Chief Engineer for disposition. Figs 1-6, 1-7, and 1-8 are intended to show general procedures only, consequently all ratings involved in the system are not shown.

(c) The first page of the Test/Inspection/Maintenance Log shall contain specific instructions concerning the use of the book for recording data. 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.

TEST AND INSPECTION PROCEDURES



ARRANGEMENT OF EACH BOOK

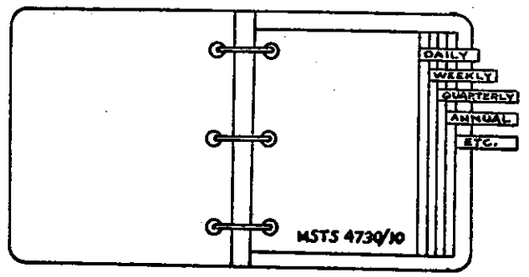


Figure 1-6

Test and Inspection Flow Chart

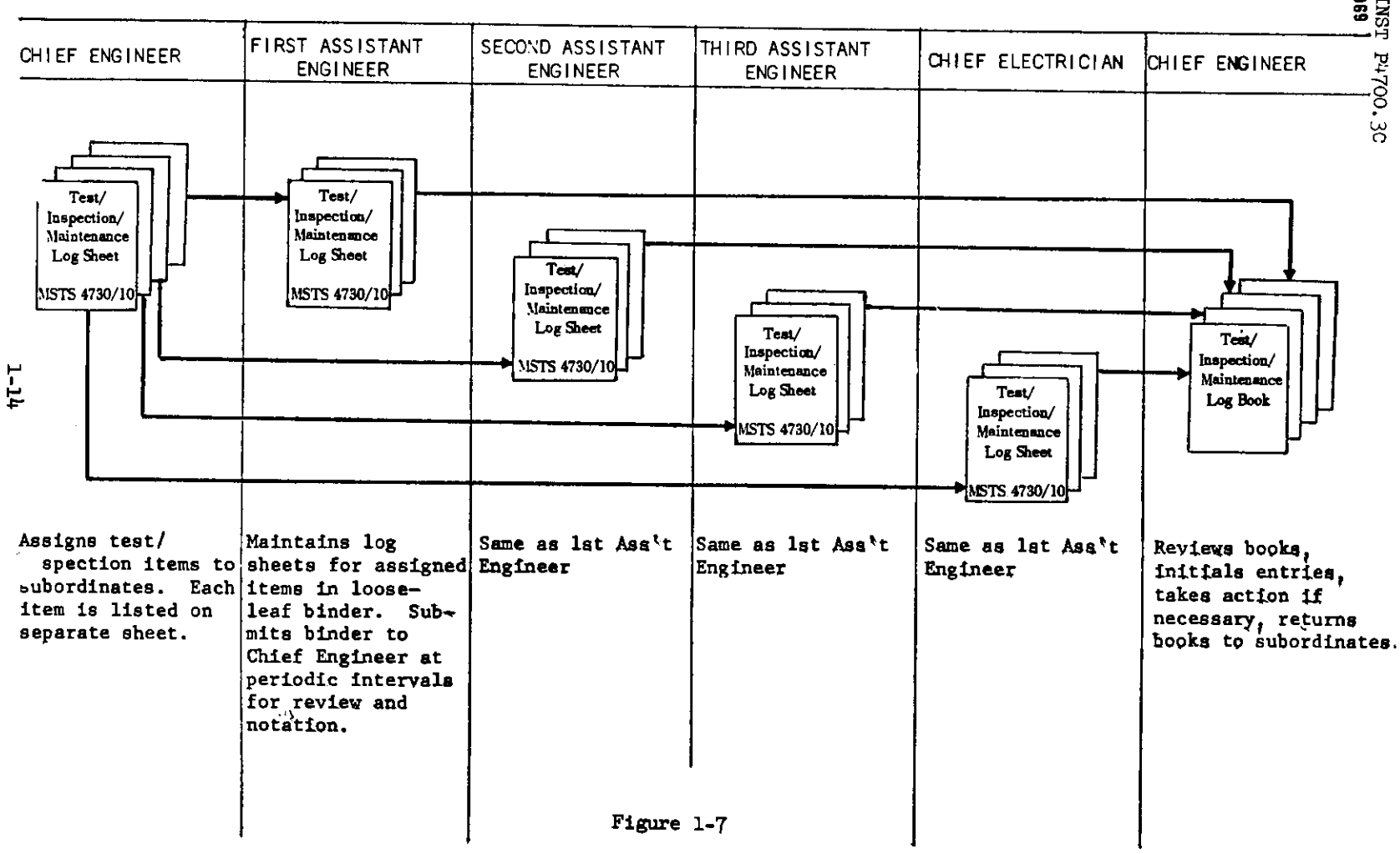


Figure 1-7

Engineer's Work Order Book Flow Chart

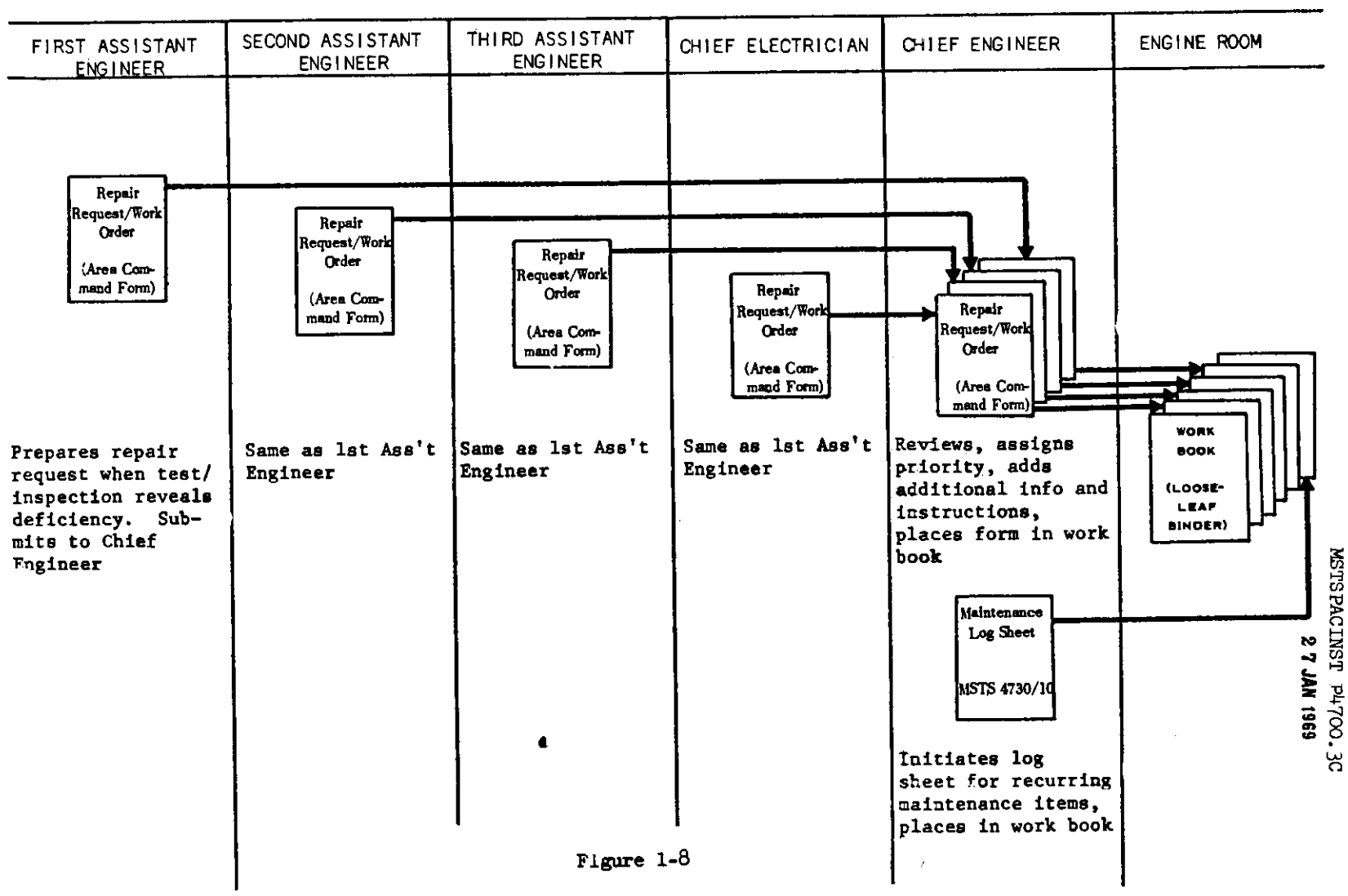


Figure 1-8

1.9 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.

1.10 Safety precautions.

a. Preparation. Safety precautions shall be prepared by cognizant Department Heads based on the NAVSHIPS 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.

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.

1.11 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."

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.

1.12 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
E - Engine department
P - Purser department
Stw - Steward department
Med - Medical division
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 NAVSHIPS 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.

SHIP'S FORCE JOB REQUEST/ORDER
MSTSPAC FORM 4700-6 (5-56)

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 _____

SAMPLE

JOB ORDER

ORDER NO.

GROUP NO. "S"

SHOP

EST MAN HOURS

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

PARTS USED

SAMPLE

OFFICE USE ONLY

COMPLETED (DATE) _____

☐ ENTERED ON VOYAGE REPAIR RECORD
☐ ENTERED ON CSMP
☐ ENTERED ON MACHINERY HISTORY

Figure 1-9

TABLE OF RESPONSIBILITIES

Chapter Number and Subject	Lube	Oper	Maint	Rep	Insp	Paint
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 1-10

Chapter Number and Subject	Lube	Oper	Maint	Rep	Insp	Paint
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 EQUIP.						
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 1-10 (Cont'd)

Chapter Number and Subject	Lube	Oper	Maint	Rep	Insp	Paint
37-MEDICAL AREAS	-	-	Med	E	Med	Med
Medical gear	Med	Med	Med	E	Med	Med
38-VENTILATION and HEATING	-	E	ED	E	E	ED
Interior vent ducts (USCG, Sub. G)	-	E	ED	E	E	DE
Fire dampers	DE	(DE)	DE	ED	DE	-
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	E	E	E	E	E	ED
Cargo drains	D	D	D	E	D	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 1-10 (Cont'd)

Chapter Number and Subject	Lube	Oper	Maint	Rep	Insp	Paint
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	DE	DE	E	DE	D
Troop heads	-	E	E	E	E	-
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	E	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	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 1-10(Cont'd)

Chapter Number and Subject	Lube	Oper	Maint	Rep	Insp	Maint
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 1-10 (Cont'd)

Chapter Number and Subject	Lube	Oper	Maint	Rep	Insp	Paint
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	Mil*	Mil	Mil	SS	SS
Projectors (cargo)**	E	E	E	E	SS	SS
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	D	D	E	D	D
Engineering shop	E	E	E	E	E	E
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 1-10 (Cont'd)

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 1-11

CHAPTER 4

ALLOWANCES, SURVEYS AND REQUESTS FOR MATERIAL

4.1 Applicability of the NAVSHIPS Manual.

Chapter 9003, NAVSHIPS 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.

CHAPTER 6

RECORDS, REPORTS AND INSPECTIONS

Section A

Records and Reports

6.1 Applicability of the NAVSHIPS Manual.

Chapter 9004, NAVSHIPS 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, 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 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 lists.

(a) The repair lists, as illustrated 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 home port at least thirty days prior to the ship's arrival. Following the mailing thereof, additional, urgent repair items, if any, shall be submitted by message. Repair lists for annual drydockings and overhauls shall be submitted at least one trip prior to the availability so that the items can be signted by the port engineer and planners one trip in advance of the overhaul or drydocking availability.

(b) Upon arrival in port, 25 copies of the repair lists shall be made available, in the office of the chief engineer, to representatives of the staf 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 lists have been submitted, the Supplementary Repair Lists 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.

6. Emergency Repairs in other than Home Port. When repairs are required at ports other than home port where port personnel cannot avail themselves of applicable ship's plans, instructions books or allowance lists prior to the arrival of the ship, message request shall give complete descriptive data. This shall include, but not be limited to, nameplate data, dimensions if required, or any other information that will assist the office concerned to accomplish the repairs.

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

VOYAGE REPAIR LIST - VOYAGE #4

Submitted by _____
M. I. BLUE, CHIEF ENGINEER

Approved by _____ DATE _____
LEE SHORE, MASTER MONTH DAY YEAR

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

Figure 6-1

SAMPLE

Item No.	Priority	Subject and description	
(2)	2	Subject:	Motor for Ventilation System S-71
		Nameplate Data:	Mfr. General Electric Co. Mod. #5825h 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
		Location:	Boat deck, Frame 86 port side
		Condition:	Armature grounded, megger tests show zero ground on armature with brushes lifted.
		Quantity:	One (1)
		Recommendation:	That motor be disassembled, armature be rewound and reinstalled, commutator trued up and reinstalled, and motor tested for design operation.
(3)	2	Subject:	Refrigerator Ship's Bake Shop
		Location:	C-Deck, Port Side
		Condition:	Evaporator continuously out of service due to pin hole leaks.
		Quantity:	One (1)
		Recommendation:	Renew evaporator.
			Evaporator consists of:
			Nine double rows of ½ inch tube, inlet and outlet at same end.
			The unit is 38 inches long, 16 inches wide and 7 inches deep.
			70 cooling fins each length of tube.

Figure 6-1 (Cont'd)

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
			ELECTRONICS
(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:	Radio Receiver 8506B
		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)

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 pumps within the capacity of the ships force.

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, e.g., 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 NAVSHIPS Manual.

12. Main and Auxiliary Boilers. Cleaning firesides, watersides, and uptakes; minor repairs to brickwork, sootblowers; hydrostatic test and minor casing repairs.

13. Bilges. Cleaning, scraping, and paint (red Lead or Wetsall Red).

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 refitting of brushes, inspections and testing as prescribed in NAVSHIPS 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.

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 Engineering 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. Immediately upon discovery of a deficient or defective item which was not apparent at the end of the performance period of the contract, masters shall submit complete details of deficiency (ies) by speedletter to COMSTSPAC. This report shall include:

(1) Name of the contractor.
(2) Specification number.
(3) Item number.
(4) Sufficient details as to wherein the work is deficient or defective
(5) General appraisal of the contractor's overall performance.

A preliminary report (MSTSPAC 4365-1) will be made by message if it is the opinion of the master that a speedletter will not reach COMSTSPAC promptly. In this event a follow-up speedletter with ample details will be made upon arrival at the next port. If the ship is in the San Francisco Bay Area at the time the deficiency is discovered, the ship shall report immediately by telephone to the Superintending Port Engineer and follow up the telephonic report by a letter giving complete details.

6.9 "Wholesale overhaul" requests.

When requests for "wholesale overhaul" of pumps, force 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 is 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,

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.

(g) Weight and height above base line (if available).

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"

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:

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

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

fuel each grade. 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 Decimally" (in port). Carry out to two decimal points only.

IN PORT (Lube Oil) section: Enter gallons and symbol for lube oil.

AT SEA (Fuel Oil) section:

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

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

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

AT SEA (Lube Oil) section: Enter gallons and symbol for lubrication oil.

c. Ships engaged 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

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 each grade for main engine and auxiliary purposes in the "TOTAL CONSUMED" boxes.

2. In the column headed "Auxiliary Diesel Oil" enter fuel used, each grade, 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

Engine Room Log Books are designed for the following ships and shall be maintained in accordance with the instructions contained therein:

a. Gear Turbine Drive (MSTS Form 9410/1) (Rev. 7-65)

b. Diesel Propulsion (MSTS Form 9410/2) (Rev 5-65)

c. Turbo-electric (MSTS Form 9410/3) (Rev 1-66)

d. Diesel Electric (MSTS Form 9410/4) (Rev 1-66)

6.14 Engineer's Bell Book (MSTS Form 5211/3)

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. The Bell Book shall be maintained in accordance with the instructions contained therein.

Section B - Inspections

6.15 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 U. S. Coast Guard rules and regulations. Uncertificated civil service-manned (USNS) ships are subject to inspections and surveys identical to those of certificated ships and performed by a MSTSPAC 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.

SAMPLE

DECK DEPARTMENT PRE-INSPECTION REPORT
(MSTSPAC Report 9030-2)

1. Are the current USCG rules and regulations in proper order and filed in the ship's Maintenance Office?

2. Does the ship currently meet USCG requirements?

3. Are all deficiencies, which need to be corrected to meet USCG requirements, entered in the ship's repair list for accomplishment prior to the annual inspection?

4. Has all equipment been examined and requisitions submitted for items found defective?

5. Have provisions of USCG Regulations 78.47 and 78.50 or 94.37 and 95.37-50, as appropriate, been complied with as to numbering, marking and stenciling?

6. Are required official documents, i.e., load line certificates, classification certificates, admeasurement certificates, etc., and a complete file of ABS reports of survey and/or damage on board?

7. Are there any material waivers existing against the ship? If so, list each one.

8. Have requisitions been made for missing and unreadable data plates on boats, davits, winches, etc?

9. Are check lists for items inspected by the USCG prepared, showing location and number of each item?

10. Is there a list of all ventilation dampers, manual and fusible link types, available on board?

11. Have ship's officers been briefed as to the inspection and their respective duties?

To the best of my knowledge and belief, on the date shown below, this ship is in all respects in conformance with applicable ship's inspections laws and USCG rules and regulations, except as mentioned above.

Date:_____ Signature:_____
TYPE NAME AS SIGNED ABOVE
Master

Figure 6-2

MSTSPACINST P4700.3C
27 JAN 1969

SAMPLE

ENGINE DEPARTMENT PRE-INSPECTION REPORT
(MSTSPAC Report 9030-2)

1. Have all engine department officers reviewed the outline for USCG inspection, 840B Engine Inspection and 840H Drydocking?

2. Has the inspection check list been reviewed and is all listed equipment maintained in readiness for operational tests?

3. Are the latest chapters and amendments of the USCG regulations on board?

4. Are there any outstanding USCG deficiencies or waivers in the engine department.

To the best of my knowledge the engine department of this ship, on the date shown below, is in all respects in conformity with the applicable ship inspection laws and USCG rules and regulations, except as mentioned above.

Date:_____ Signature:_____
TYPE NAME AS SIGNED ABOVE
Chief Engineer

Figure 6-3

6.18 Inspection sequence (deck department).

a. Following is a guide for ship's officers of the routine followed by the USCG inspectors in the annual inspection of ships. Individual inspectors, however, may vary somewhat from the outlined procedure.

b. The inspectors will require checkoff lists giving the location and data on the following:

1. Boat davits, lifeboats and winches, all name plate data.
2. Fire extinguishers.
3. Fire hose and hydrants.
4. Number of life preservers on board and required.
5. Number of ring life buoys on board and required and type.
6. Number of fire axes on board and required.
7. Watertight doors below main deck.
8. Watertight doors above main deck.
9. Fire screen doors.
10. Draft stop doors.
11. Remote valve reach rods.
12. Air vents from fuel and other tanks.
13. Number and location of fixed CO_2 system.
14. Number and location of CO_2 control valves.
15. Number and location of steam smothering apparatus.
16. Fuel capacity and grade of fuel approved to carry.
17. Number of detex watchmen stations.
18. Number of Zonit fire detecting stations.
19. Number of Zonit fire detecting test stations.
20. Number of general alarm bells.
21. Number of CO_2 drain plugs.
22. Number of manual dampers and controls.
23. Number of fusible dampers.
24. Number sounding stations state whether double bottom, fresh water, bilge, etc.
25. Number of shore fire main connections.
26. Number of emergency light fixtures.
27. List emergency equipment.
28. List drain valves overboard and inboard drains.
29. Number logs, taffrail, leads, hand and deep sea.
30. USCG Stability letter.
31. Lead line certificate date of issue, endorsement and expiration date.
32. Deratization certificate, date of expiration and issue.
33. Certificate of ownership.
34. Ship characteristics information.
35. Anchor and chains certificate.

36. List of log book data on the following:

(a) Dates of fire and boat drills.
(b) Dates of firing Lyle guns.
(c) Date of and deepest draft of the ship.
(d) Date and place of last drydocking.

37. Station bill for examination.

c. Prior to boarding ship, the USCG inspector will check the name of the ship on bow and stern, the draft markings forward and aft, and the load line marks midships.

d. Upon boarding ship the inspector will proceed to the master's cabin where the plan of inspection will be arranged.

6.19 Inspection of boats and equipment.

The inspector will inquire into the status of the boats and equipment and will request the following equipment be assembled at a convenient location, to be inspected at the inspector's convenience.

1. Life preservers.
2. Fire extinguishers.
3. Ring buoys.
4. Fire axes.
5. Oxygen breathing apparatus.
6. Gas masks.
7. Flame safety lamps.
8. Emergency running lights.
9. Log, taffrail, lead lines.
10. Lyle gun and equipment.

6.20 Inspection of cargo holds.

Cargo holds will be inspected for the following equipment, and if steam smothering is used in holds, the inspector will require it to be put in operation for inspection:

1. Reach rods and guards.
2. Remote valve operation.
3. Strainer plates and roseboxes.
4. Access ladder.
5. Sounding tubes.
6. Scuppers and drains.
7. Electric wiring.
8. Steam and CO_2 lines.
9. Hatch coamings.
10. Hatch covers.

6.21 Lifeboat inspection.

The lifeboats will be lowered into the water and released to test the releasing gear. The boat will then be hoisted to stowed position to test the limit switches. This shall be done prior to the stripping of the boats and will be considered an operational test. Boats in the rotating pool which have not been on board a year need not be stripped, in accordance with instructions in Chapter 82. Upon completion of the

operational test, the inspector will check the following:

1. Outside of hull by hammer testing.
2. Inside of hull by hammer testing bottom and floors.
3. Thwarts.
4. Bands for holding tanks, plugs, row locks and air test tanks.
5. Test operate hand propelling gear.
6. Observe weight test of boats.
7. Provisions and rations.

6.22 Inspection of fire fighting equipment.

a. The inspector will observe the discharge of fire extinguishers soda acid and foam. The chemical shall be replaced. The inspector will request to see the spare charges required and the safety valves. The CO_2 certificate will be provided by the administrative commander upon completion of the inspection and weighing.

b. The inspector will check all fire stations, the operation of fire screen doors and observe the testing of fire hoses under pressure. The hoses shall be restowed by the ship or yard.

c. The inspector will observe operations of the watertight doors by power and manually. The inspector may elect to observe the general alarm system and fire detecting system for audibility and operation during this period.

6.23 Inspection of navigating equipment.

The inspector will inspect the following navigating equipment:

1. Test operate steering gear at all stations, including emergency steering.

2. Test operate air whistle and steam whistles.

3. Test operate signaling devices to include engine room telephone and telegraph, blinker and signal lights system.

5. Special equipment required by Rules of the Road, e.g., anchor balls, foghorn, fog bell, deep sea sounding apparatus, ship's name boards on side of wheelhouse, bridge pyrotechnics. A complete set of pyrotechnics as required for lifeboats shall be available on the bridge of the ship. The Lyle gun and equipment will be inspected for compliance with regulations. The stability letter will be checked.

6.24 Repair list.

a. When the master is notified that his ship is scheduled for a Coast Guard inspection, he shall compile a repair list for that availability. The list shall contain the following:

1. All known defects to hull, lifeboats, boilers, machinery and equipment, which will require repair in order to conform with Coast Guard requirements.

2. Items of work necessary to be ready for the Coast Guard inspection.

3. Items of repair necessary to maintain the ship in high state of readiness to perform its mission.

b. One trip prior to arrival for the inspection availability, the work list shall be submitted to the administrative commander. On arrival for the inspection availability, the repair list shall be resubmitted with any additional items covering deficiencies occurring or found since submission of the first list. New items shall be identified as such.

c. Repair items requested or required subsequent to the repair arrival conference shall be accompanied by a letter from the department head concerned, setting forth the following:

1. Condition of item requiring repair.
2. Reason condition was not known prior to arrival.
3. Steps taken prior to arrival to determine necessity of repairs.

6.25 General inspection items.

a. The inspectors will make a general inspection of the following:

1. Condition of superstructure.
2. Doors on main and boat decks.
3. Permanent ladders.
4. Test operation of anchor windlass.
5. Guards and rails at sides of ship.
6. Electric wiring.
7. Paint lockers for compliance, CO_2 or steam smothering.
8. Accessible voids, tanks, cofferdams and spaces.
9. Side ports, port lights for fit gaskets and dogs.
10. Ventilation dampers, manual and fusible link.
11. Debarkation ladders, lights and markings.

b. The safety of the ship is the primary concern of the annual

inspection. When testing hose, extinguishers and other safety features, ships shall not be stripped of equipment beyond the minimum required to handle emergencies. Fire lines shall be connected to shore mains as a precautionary measure and arrangements made for communication with the fire department located ashore.

c. Before undertaking repairs requiring the use of burning or welding, a Gas Free certificate shall be obtained in way of work performed and an adequate fire watch shall be maintained.

6.26 Inspection sequence (engine department)

a. The sequence of the annual inspection in the engine department is usually determined by the boilers, therefore, work on boilers shall be expedited. The Coast Guard inspector will observe the boilers and do other inspecting as time permits. The chief engineer shall screen repair requests so that unnecessary jobs are not being accomplished that will interfere with the inspection.

b. The following check-off lists have been prepared to enable ship's personnel to make pre-inspection checks. The outline of CG 840-B, Annual Inspection Report, Boilers and Machinery of Steam and Motor Vessels, shall be reviewed in preparation for the inspection.

BOILERS (USCG Regulation 57.10-1)

1. Are firesides clean?
2. Are safety valve gags ready?
3. Is safety valve relieving gear connected?
4. Do you have a list of all repairs since last inspection?
5. Is complete boiler data available?
6. Is safety valve data available?
7. If ship is freighter: Is hydro required at this annual? See USCG Regulation 61.20. (Quadrennial for freighters.)
8. Are steam line blanks handy?
9. What is the thickness of main steam line? Are boiler gages accurate?

FUEL OIL

10. Are all vents and ball checks of all F.O. goosenecks in proper order?
11. Are internal F.O. valves free (routine logged)?
12. Is remote F.O. stop free (routine logged)?
13. Are all F.O. and air interlock valves in order?
14. Are F.O. samples maintained of each lot received?
15. Are all valves properly tagged and marked?
16. Are all sounding pipe self closing valves in order?
17. Are all oil drip pans in place?
18. Are areas clean of fire hazards?

FIRE FIGHTING EQUIPMENT (USCG Regulations 75.00 and 95.00)

19. Review Section 75.00 or 95.00, as applicable, to insure that all required equipment is in order.
20. Is sand box full and scoop in place?
21. Are two portable extinguishers available at firing platform?
22. Is fixed system in order? Have you checked it?
23. Are required fog nozzles and applicators in order?
24. Are all parts marked in accordance with USCG Regulation 78.47? Are extinguishers located in steering engine room, at emergency generators, etc.?
25. Are steam smothering cabinets in proper order?

EMERGENCY EQUIPMENT

26. Are all emergency operating connections for the main unit on board?
27. Is shaft alley W.T. door in order?
28. Is the submersible bilge pump in order?
29. Is the emergency generator in order?
30. Is the emergency fire pump in order?
31. Are alarms, bells and signals properly marked for identification, per USCG Regulation 78.47?
32. Have all circuits and alarms been checked for proper operation?
33. Has reefer alarm been checked?
34. Equipment, even if in excess of requirements, must be in operation.

ELECTRICAL

35. Are motors, generators and control boxes clean?
36. Have all resistor rooms and switchboard been checked for cleanliness and fire hazards?
37. When were crew and passenger quarters last checked for renewal of hazardous wiring?
38. Are all vapor globes in place throughout the ship?
39. Have all lights under floor plates been checked for proper operation, are globes and guards in place?
40. Are all lifeboat limit switches in order?
41. Have all signal circuits between engine room bridge, steering engine room, etc., been checked for proper operation?
42. Have all navigation lights been checked with the second officer?
43. Are all batteries (emergency, alarm, diesel, radio) in good condition, fully charged and properly installed in lead trays?
44. Are all switchboards fitted with non-conductive mats or gratings, front and rear.
45. Are recent megger readings for main motors on TE ships available?
46. Are all suitable boards and cubicles adequately protected by locks, signs, interlocks, etc., to prevent entry by unauthorized personnel?

LISTS REQUIRED

47. List of all relief valves, giving location, manufacturer and all operating data.
48. List of all available blue prints and instruction books.
49. List of all safety valves and boiler spares showing location.
50. List of all sea valves giving size, location and type of valve (for drydocking).
51. List of all non-fired pressure vessels giving manufacturing data and data stamped on shell giving location, per USCG regulation.
54.01. (Examination - biennially).

GENERAL

52. When were all stations of the steering gear last tested?
53. Are changeover instructions posted in steering engine room as required by the USCG?
54. Are log entries made as required by USCG Regulation 78.37?
55. Are all engineers' licenses posted as required?
56. Are all remote operated bilge valves in proper operation. When were they last tested and logged?

6.27 USCG life saving equipment requirements for MSTS ships*

OCEAN PASSENGER SHIPS

Item	Approved by	MSTS Ships	Regularly Inspected Ships
Lifeboats	CG	50% (minimum)	100%
Life floats	CG/USN	Sufficient to total 150% when added to percent accommodated in lifeboats	0
Buoyant apparatus	CG	0	
Life preservers:			
Adults	CG/USN	100%	
Children	CG/USN	10%	

OCEAN FREIGHT SHIPS

Lifeboats	CG	200%	200%
Life preservers	CG/USN	100%	100%

*Merchant Marine Safety Memo #28-52 (USCG)

6.28 Inspection and certification of work performed by private contractors.

COMSTSPAC is convinced that reductions in the cost of ship repair can be achieved through conscientious and energetic participation by the ship's personnel. These personnel are experienced officers and men who for many years have served MSTS in all types of ships. They use the ship's equipment and should be the most informed of its material and operable condition, both before and after repair. Moreover, since they are held strictly accountable for the condition of the equipment, they must be afforded the opportunity to certify as to satisfactory or unsatisfactory completion of the work request.

1. Job Orders. The Chief Engineer or the appropriate ship Department Head, as directed by the Master, and the assigned representative of the Engineering Office, accompanied by the Master at his discretion, will inspect and certify the acceptability of the work authorized on MSTSPAC Form 4710/8 (Completion Report for Work Accomplished under Master Ship Repair Contract). The Master, in appropriate cases, will inform the Engineering Officer in writing, whenever in his opinion, the contract work is not acceptable, including sufficient details to identify the unacceptable condition.

2. Service Orders. After appropriate inspection by the Chief Engineer or cognizant ship Department Head, verified by the Master at his discretion, the Master or Chief Engineer will certify the satisfactory or unsatisfactory accomplishment of service orders on MSTSPAC Form 4710/22 (Completion Report - Work Accomplished under Service Order Contract).

6.29 INSURV Board Material Inspections.

a. All civil service-manned (USNS) ships not certificated by U. S. Coast Guard are subject to periodic material inspections by the U. S. Navy Board of Inspection and Survey (INSURV Board) in accordance with statutory requirements.

b. Section II, Chapter 9004, NAVSHIPS Manual is applicable to these ships and all instructions contained therein shall be adhered to.

c. Appendix D contains an outline of the duties, procedures and requirements of the Board of Inspection and Survey.

CHAPTER 7

DOCKING INSTRUCTIONS

7.1 Preparation of the ship for drydocking

Drydockings are held annually as required by COMSTS instruction and are normally scheduled one year from the date of the last docking of the ship. Operational commitments may preclude rigid adherence to this schedule but the ship can normally expect a docking upon 12-month intervals. Upon notification of the possibility of drydocking by the cognizant port engineer, the master shall make every effort to bring the ship to an even trim for the convenience of the docking activity. The maximum acceptable trim by the stern by Pacific Coast drydocks is 5 feet.

7.2 Shifting of weight or ballast in ships in drydock.

No weight or water ballast shall be shifted, added or removed while the ship is in drydock unless specifically authorized by the docking officer. When permission to shift weight is given, the responsibility for keeping an accurate record of the amount and location of the change of weights rests with the master. In all cases, weights shall be so disposed as to insure having the ship lift from the blocks without taking a list.

7.3 Docking and undocking procedures

a. Immediately prior to the time the ship is to be docked, the master shall have all tanks sounded and a record of the soundings made.

b. Prior to undocking, all tanks shall again be sounded and the soundings compared with the pre-docking soundings to determine whether any change has taken place during the time the ship was in drydock. If it is determined from the comparison of the soundings that there has been a change effected, the docking officer shall be notified and a shift of water or oil will be made to effect a distribution of weight similar to that shown by the pre-docking soundings.

c. During the undocking the master shall station personnel throughout the ship to investigate and report immediately any leakage or flooding. Lines of communication will be maintained with the docking officer until the master is assured that the ship is safely waterborne.

7.4 Docking plan

Each ship will keep a docking plan on file in the Maintenance Office. Records concerning the last drydocking, including the location of the blocks, last underwater inspection and measurement of shaft and strut weardown, shall be kept current.

CHAPTER 8

TRIALS

8.1 General.

MSTS ships are subjected to Bay Trials or Sea Trials after overhaul or major repairs to determine the operational reliability of machinery and the effectiveness of the repairs. However, MSTS ships may be subjected to Preliminary Acceptance Trials (PAT) or Final Acceptance Trials (FAT) conducted by the U. S. Navy Board of Inspection and Survey (INSURV BOARD), limited to the new construction preliminary trials and final guarantee period trials, or after major alterations and modifications.

8.2 Applicability of the NavShips Technical Manual.

During PAT or FAT Trials, the provisions of Chapter 9080 of NAVSHIPS MANUAL shall be closely adhered to.

8.3 Sea Trials.

Sea Trials are conducted to prove the effectiveness of repairs and the reliability of the ship under actual sea conditions. For this purpose, actual steaming conditions shall be adhered to when ever possible during trials. Main Propulsion plants shall be operated to the limits imposed by Chapt. 41 of MSTSPAC INSTRUCTION P4700.3C where applicable, for a sufficient period of time to positively ascertain continual operational reliability, however, in no instance for a period of less than four (4) consecutive uninterrupted hours at maximum RPM limitation. During this period, actual sea conditions shall exist, inclusive of, but not limited to operation of salt water evaporators, blowing of tubes in all boilers, changing over of duplicate machinery under full load conditions, etc.

During Sea Trials a log shall be maintained of all temperatures and pressures. Log sheets similar to the "Oilers Log" now maintained in most MSTS ships will be satisfactory for this purpose. Upon completion of trials, all log sheets maintained during trials will be forwarded to the cognizant Port Engineer.

In order to ascertain normal operating temperatures have been reached and to permit leveling of the heat balance of the main propulsion plant, actual Sea Trials shall not commence until a period of not less than two full hours of steaming under actual conditions has lapsed. After all operating temperatures have been established, and prior to the time actual trials commence, readings shall be taken on all thermometers and pressure gauges and logged in the official trial log. Readings shall be taken every half hour during actual trials.

8.4 Bay Trials.

On occasion Bay Trials may be substituted for Sea Trials when the extent and nature of repairs do not warrent extensive Sea Trials. During Bay Trials every effort shall be expended to adhere as closely as possible to actual sea conditions within the limitations imposed by steaming conditions in the bay. Bay Trials will be limited to the determination of the effectiveness of repairs to one or more particular items of machinery rather than the entire ship. Every effort shall be expended to subject the repaired item to full load conditions.

Bay Trials shall be of not less than two hours duration. During Bay Trials it will not be necessary to maintain trial logs or to operate machinery or equipment other than that which is required to satisfy the purpose of the Trials.

8.5 Builder's Trial Data.

Builder's Trial Data is available on board most MSTS ships. Some ships, however, have been converted or altered to such an extent that the Builder's Trial Data is no longer useful. In such cases, underway trials will be conducted to determine the water rate of boilers and equipment under present conditions. Such information, as available, will be forwarded to the individual ships concerned.

8.6 Collecting Trial Data.

a. Much useful information that will assist in the economical planning of repairs and assure dependable continuance of operation can be obtained by the operating engineer by periodically recording the normal steady steaming data, as follows:

1. Main feed pump rpm or strokes per minute
2. Condensate pump rpm main and auxiliary
3. F. D. blowers rpm
4. F. O. pump rpm or strokes per minute. (Unless the by-pass system is used).
5. Fuel in gallons per hour

b. Such data shall be obtained under similar conditions each time. Items as the taking of extra feed, operation of condensate or feed pumps recirculation shall be recorded. The close observance of this data at consecutive trials may lead to or may be a direct indication of difficulties to be encountered in the future. The following is cited as an example:

EXAMPLE: Two consecutive trials three months apart indicate that it is necessary to operate the main condensate pump at 200 rpm more to carry precisely the same load. The pump is known to be in good condition. Other readings are fairly consistent. This indicates condensate by-passing and could be a feed heater or drain cooler leak. A positive check can then be made by cutting out the suspected heater or drain cooler while observing the load on the condensate pump.

CHAPTER 9

READINESS AND CARE OF SHIPS IN INACTIVATED STATUS

9.1 Ships in reduced operational status

When ships are placed in reduced operational status (ROS), the following procedures shall be followed:

1. All possible topside closures shall be secured to reduce damp air from entering the ship.

2. Those compartments not actually in use shall be cleaned, thoroughly dried out and secured.

3. All machinery and electrical equipment shall be tested weekly. Equipment not essential to the current mission of the ship shall be kept operable and tested weekly unless approval has been granted to preserve the equipment in place.

4. Strip heaters shall be energized for 24 hours each week.

5. In areas where dampness is prevalent (close to electrical equipment), lamp banks shall be installed and energized.

6. Boilers not steaming shall be maintained completely full, including superheater.

9.2 Tests and records.

Weekly tests and inspections shall be maintained and logged while ship is in ROS.

9.3 Ships in Ready Reserve Status

When ships are placed in ready reserve status (RRS), the following basic procedures shall be carried out, however it is recognized that the procedures may vary in detail depending on circumstances of RRS requirements:

1. Boom and cargo gear

Grease boom rest and stow booms in horizontal stowage; stow manilla lines below.
Wire to be slushed down, heel-pins and blocks greased.

2. Smoke stack cover

Maintenance Shop will fabricate stack cover to be installed by Ship's force.

3. Tween deck hatches

Install hatch boards. Rig all safety chains.

4. Securing of Rudder

Rams shall be secured with rudder in amidship position.

5. Lifeboats

Remove boat compasses and stow in security locker. Release boat winches and take weight off falls. Lash and secure locking handle for davit arm keeper bars in stowed position.

6. Motors and Generators

Lift brushes off commutators, wrap commutator with paper. Leave emergency diesel plant in operating status.

7. Electric Switchboards

Switches and circuit breakers to be left in OFF position except where required for lighting.

8. Steam boiler

Boilers shall be emptied, flushed free of all sediment and thoroughly dried. Manholes are to be left open. Remove refractory in way of tube butt ends at headers and drums.

9. Evaporator

Open, up, clean, flush out, dry and leave manhole open.

10. Megger test

Take current readings. Furnish copy to Engineering Office

11. Stern gland

Check gland for leakage. Install additional turns of packing if required. Tighten gland to prevent leakage.

12. Sea valves

All sea valves shall be tightly closed and wired shut Report any valve known to be leaking. Install blank in all sea valves on inside. (Maintenance Shop will assist as required)

13. Refrigeration systems

Pump down. Secure expansion, suction, and discharge valves of both cargo and ship's refrigeration systems. Flush salt water sides with fresh water and secure.

14. Batteries

Check water and condition and report. Leave in place. Batteries will be charged at intervals during RRS.

15. Firemain

Drain system, remove plugs, blow out system with compressed air to remove pockets of water.

16. Weather deck openings

Take dimensions for canvas covers for deck openings. Submit dimensions to Engineering Office representative. Maintenance Shop will fabricate covers and ship's force shall install.

17. Fuel oil tanks.

Take soundings prior to arrival at RRS site and furnish copy to M&R representative.

18. Pilferable items

Stow in security locker and weld door closed. Maintenance Shop will assist if required.

19. Inflammables

Remove all inflammable material from ship.

20. Cleaning of compartments

Those compartments not actually in use shall be cleaned, thoroughly dried out and secured. Broom clean all areas of cargo and living spaces. Wire refrigeration doors open. Clean debris from bilge strainers and rose boxes.

21. Dampness

All possible topside closures shall be secured to reduce damp air from entering the ship. In areas where dampness is prevalent, such as near main generators and motors, strip heaters or lamp banks shall be installed and energized when necessary.

9.4 Tests and Records

All machinery and electrical equipment not deactivated shall be operated, tested and logged in accordance with the instructions in the notice placing the ship in RRS.

9.5 Ships in Deactivated Status

Ships being deactivated for layup in a Maritime Administration Reserve Fleet shall conform to the provisions outlined in MSA Order 64 (OPR-4), a chapter of the Federal Register, which defines the responsibility of the operator in connection with stripping and deactivation of ships prior to layup.

CHAPTER 12

HULL FITTINGS

12.1 Applicability of the NAVSHIPS Manual.

Chapter 9120, NAVSHIPS Manual, is applicable to civil service-manned (USNS) ships.

12.2 Hull fittings with deck closures.

Hull fittings with deck closures are maintained in accordance with American Bureau of Shipping and U. S. Coast Guard regulations. Log entry shall be made whenever air ports, side ports or garbage chutes below the weather deck are opened and closed. Air ports below the weather deck shall have a special locking key in accordance with U. S. Coast Guard regulations.

12.3 Locks.

Padlocks shall be used on lockers, store rooms and similar type security enclosures. Staterooms, offices and cabinet doors shall be equipped with built-in tumbler-type locks. These locks may be repaired by requisitioning and installing new lock barrels. Duplicate keys shall be obtained by requisitioning "as per sample."

CHAPTER 15

GASOLINE STOWAGE AND EQUIPMENT

15.1 Applicability of Code of Federal Regulations

The requirements for handling, stowage and transportation of explosive or other dangerous articles or substances shall be as directed in the Code of Federal Regulations, Title 46 - Shipping, Parts 146 to 149.

CHAPTER 16

ACCESS OPENINGS

16.1 Applicability of the NAVSHIPS Manual.

Chapter 9160, NAVSHIPS Manual, is applicable to civil service-manned (USNS) ships.

16.2 Closing of access openings.

Access openings to voids, cofferdams, double bottoms or deep tanks shall normally be kept closed.

CHAPTER 17

BOOMS AND CRANES

17.1 Testing of cargo gear.

Cargo booms and assemblies shall be tested annually in accordance with requirements of National Cargo Bureau Inc.

17.2 Hatch tent pendants.

All cargo booms will be rigged with a 5/8" wire rope pendant and a 10" wide mortise block to carry a $3\frac{1}{2}$" manila rope gantline, so arranged that any type hatch tent may be rigged therefrom.

17.3 Preventers.

All cargo booms will be rigged with a suitable full length wire preventer, the eye of the preventer to be secured by passing over the end of the boom, the end of the preventer to be belayed on deck. The standard procedure accepted as the best marine practice shall be followed: Set up the boom guy as taut as possible. Stretch the preventer, following the lead of the boom guy, haul taut and belay. Next ease off boom guy until preventer takes a partial strain; this will prevent jerking and keep the boom under control should the boom guy part.

CHAPTER 18

RIGGING

18.1 Applicability of the NAVSHIPS Manual.

Chapter 9180, NAVSHIPS Manual, is applicable to civil service-manned (USNS) ships, except as modified below.

18.2 Inspection.

There are two types of cargo gear currently in use in MSTS ships; the single part, nominally rated five-ton gear and the multi-part, heavy lift gear. Gear inspections are scheduled according to the extent of use. Because of more frequent use, the lighter gear is inspected oftener.

18.3 Tests and records.

a. The annual testing of rigging shall be accomplished in accordance with the requirements of the National Cargo Bureau Inc.

b. A record of work accomplished shall be maintained on the appropriate hull and machinery history cards, which will be available for examination by staff inspectors.

18.4 Progressive maintenance.

a. To maintain cargo gear properly and keep costs within the stringent budgetary limitations imposed upon MSTS operations, masters shall implement a program of progressive maintenance on all cargo gear. By careful planning and by scheduling one set of gear at a time, a thorough and complete overhaul of the equipment can be accomplished by the ship's force over a year's period.

b. The progressive maintenance schedule shall cover the following equipment:

1. Topping lifts and cargo falls. Inspect wire rope each time prior to use, but not less than every 60 days.

(a) Care: Slush down as determined by inspection and by the requirements of severe weather.

(b) Renewal: Wire rope which is properly selected and maintained usually lasts several years. If flats, kinks, cuts or

fraying are noted, the wire shall be removed.

2. Vang pendants, slings and standing rigging. Inspect every 30 days (including grounding wires.)

(a) Care: coat with proper preservative as necessary and insure that coating remains intact.

(b) Renewal: not required unless wire is damaged.

3. Vang falls. Inspect rope each time prior to use, but not less than every 30 days.

Renewal: When inspection reveals cuts and frays, rope shall be renewed.

4. Shackles and sockets. Each time the ship's cargo gear is to be used, a visual inspection shall be made for cracks, bent pins, pins not secured, distortion, etc. Pull pins semi-annually for further inspection.

5. Blocks. Prior to any use of the gear, the blocks shall be visually inspected. Pins and self-lubricating bushings shall be pulled for examination once a year.

Care: lubricate all blocks without self-lubricating bearings once each trip prior to use. Lubricate every three days during loading period. Keep all blocks which are exposed to the weather covered with preservative. Overhaul ship's spare blocks on a rotation program. Blocks beyond economical repair shall be replaced on ship's requisition.

6. Goosenecks. Inspect visually immediately prior to each loading period. Lift for inspection and cleaning of bearing annually.

Care: lubricate prior to use of boom at each loading period.

7. Heel blocks and topping lift swivels. Inspect visually prior to each loading period.

8. Boom heel pins. Inspect visually prior to each loading period. Withdraw annually and inspect for bends and flat spots. Inspect eye at boom heel for flat spots.

Care: where fittings are provided, lubricate prior to each loading period. Preserve by soaking with penetrating oil prior to putting out to sea.

9. Fairlead sheaves. Inspect visually prior to each loading period. Inspection shall be made for cracks, distortion, pin wear, etc.

Care: lubricate prior to each loading period.

10. Cargo hooks. Inspect visually prior to each loading period. Inspection shall be made for cracks, distortion, pin wear, etc.

Care: Prior to sailing, remove from rig, preserve and store as required.

11. Swivels and pins for cargo hooks. Inspect visually prior to each loading period.

Care: prior to sailing, remove from rig, preserve and store until required.

12. Chain stoppers. Inspect prior to each loading period for distortion of links, wear, etc.

13. Hatch rollers. Inspect hatches for need of rollers, request change in allowance for additional rollers, as required. When rollers are in use, check daily for lubrication, proper alignment and wear.

14. Shrouds and stays. Every 30 days inspect for rust bleeding through, deterioration from stack gases and destruction of preservative materials and serving. Check grounding wires.

(a) Care: coat with preservative as required and insure that coating remains intact.

(b) Renewal: not required unless wire is damaged.

15. Turnbuckles. Inspect every 30 days. Pull pins for inspection semi-annually. Inspect bonding wires every 30 days.

Care: Keep bonding contact wires clean. Once a year clean and preserve threads by applying a thick coating of white lead and tallow mixed in equal proportions, serving the

twofold purpose of lubricant and preservative. Protect coating by serving with several layers of burlap strips. Liberally apply mixture on all layers of burlap. Replace canvas cuff with seam on the underside to prevent entry of rain or saltwater.

CHAPTER 19

PAINTING

Section A

Painting Instructions

19.1 When to paint

A ship's force cannot rely on painting alone to give the ship a clean, shipshape appearance. Soiled surfaces shall be cleaned rather than painted over. When surfaces remain unsightly because their colors have changed by fading, yellowing or appear excessively soiled, they shall be repainted. One coat shall suffice in such instances.

19.2 Excessive painting

Frequent painting over of surfaces topside shall be avoided because of the weight added on by excessive layers of paint. Thick coats of paint constitute a fire hazard and tend to peel and lift from the surface. Surfaces with excessively thick paint shall be cleaned to bare metal and primed before repainting.

19.3 Painting by ship's force/shore activities

The following areas may at times be painted by shore activities when workload, passenger lift or other extenuating circumstances preclude the accomplishment of painting by the ship's force. Ship's force shall exert every effort to accomplish all work possible.

1. Cabin passenger staterooms and areas
2. Ship's officers' quarters and areas
3. Troop compartments and heads
4. Cargo holds and hatch trunks
5. Auditorium
6. Barber shop
7. Children's playroom
8. Dining saloon
9. Doors, passenger quarters
10. Cabin passenger lobbies and passageways
11. Ship's hull outside (generally painted by the shore activity at the home port).

19.4 Supervision

Shipboard painting operations shall be supervised by responsible