

### NONRESIDENT TRAINING COURSE



June 1993

# **Electronics Technician**

## **Volume 2—Administration**

**NAVEDTRA 14087** 

Although the words "he," "him," and "his" are used sparingly in this course to enhance communication, they are not intended to be gender driven or to affront or discriminate against anyone.

### **PREFACE**

By enrolling in this self-study course, you have demonstrated a desire to improve yourself and the Navy. Remember, however, this self-study course is only one part of the total Navy training program. Practical experience, schools, selected reading, and your desire to succeed are also necessary to successfully round out a fully meaningful training program.

COURSE OVERVIEW: In completing this nonresident training course, you should be able to: Identify the primary reports and periodicals of importance to the Electronics Technician Second Class; Identify and briefly describe the primary components of and forms associated with the Maintenance Data System (MDS); Identify the primary publications that an Electronics Technician should expect to find in the ET technical library; Identify and briefly describe the major components of the Naval Supply Systems Command; Identify the major parts of the Coordinated Shipboard Allowance List (COSAL); Explain the basic procedures involved in the requisition and turn in of supplies and equipment in the naval supply systems.

**THE COURSE**: This self-study course is organized into subject matter areas, each containing learning objectives to help you determine what you should learn along with text and illustrations to help you understand the information. The subject matter reflects day-to-day requirements and experiences of personnel in the rating or skill area. It also reflects guidance provided by Enlisted Community Managers (ECMs) and other senior personnel, technical references, instructions, etc., and either the occupational or naval standards, which are listed in the *Manual of Navy Enlisted Manpower Personnel Classifications and Occupational Standards*, NAVPERS 18068.

**THE QUESTIONS**: The questions that appear in this course are designed to help you understand the material in the text.

**VALUE**: In completing this course, you will improve your military and professional knowledge. Importantly, it can also help you study for the Navy-wide advancement in rate examination. If you are studying and discover a reference in the text to another publication for further information, look it up.

1993 Edition Prepared by ETC Allen F. Carney

Published by
NAVAL EDUCATION AND TRAINING
PROFESSIONAL DEVELOPMENT
AND TECHNOLOGY CENTER

NAVSUP Logistics Tracking Number 0504-LP-026-7530

### Sailor's Creed

"I am a United States Sailor.

I will support and defend the Constitution of the United States of America and I will obey the orders of those appointed over me.

I represent the fighting spirit of the Navy and those who have gone before me to defend freedom and democracy around the world.

I proudly serve my country's Navy combat team with honor, courage and commitment.

I am committed to excellence and the fair treatment of all."

### **CONTENTS**

CHAPTER	Page
1. General Administration	1-1
2. Technical Administration	
3. Logistics	3-1
APPENDIX	
I. References	AI-1
INDEX	INDEX-1

### SUMMARY OF THE ELECTRONICS TECHNICIAN TRAINING SERIES

This series of training manuals was developed to replace the *Electronics Technician 3 & 2* TRAMAN. The content is directed toward personnel working toward advancement to Electronics Technician Second Class.

The nine volumes in the series are based on major topic areas with which the ET2 should be familiar. Volume 1, Safety, provides an introduction to general safety as it relates to the ET rating. It also provides both general and specific information on electronic tag-out procedures, man-aloft procedures, hazardous materials (i.e., solvents, batteries, and vacuum tubes), and radiation hazards. Volume 2, Administration, discusses COSAL updates, 3-M documentation, supply paperwork, and other associated administrative topics. Volume 3, Communication Systems, provides a basic introduction to shipboard and shore-based communication systems. Systems covered include man-pat radios (i.e., PRC-104, PSC-3) in the hf, vhf, uhf, SATCOM, and shf ranges. Also provided is an introduction to the Communications Link Interoperability System (CLIPS). Volume 4, Radar Systems, is a basic introduction to air search, surface search, ground controlled approach, and carrier controlled approach radar systems. Volume 5, Navigation Systems, is a basic introduction to navigation systems, such as OMEGA, SATNAV, TACAN, and man-pat systems. Volume 6, Digital Data Systems, is a basic introduction to digital data systems and includes discussions about SNAP II, laptop computers, and desktop computers. Volume 7, Antennas and Wave Propagation, is an introduction to wave propagation, as it pertains to Electronics Technicians, and shipboard and shore-based antennas. Volume 8, System Concepts, discusses system interfaces, troubleshooting, sub-systems, dry air, cooling, and power systems. Volume 9, Electrooptics, is an introduction to night vision equipment, lasers, thermal imaging, and fiber optics.

### INSTRUCTIONS FOR TAKING THE COURSE

### **ASSIGNMENTS**

The text pages that you are to study are listed at the beginning of each assignment. Study these pages carefully before attempting to answer the questions. Pay close attention to tables and illustrations and read the learning objectives. The learning objectives state what you should be able to do after studying the material. Answering the questions correctly helps you accomplish the objectives.

### SELECTING YOUR ANSWERS

Read each question carefully, then select the BEST answer. You may refer freely to the text. The answers must be the result of your own work and decisions. You are prohibited from referring to or copying the answers of others and from giving answers to anyone else taking the course.

### SUBMITTING YOUR ASSIGNMENTS

To have your assignments graded, you must be enrolled in the course with the Nonresident Training Course Administration Branch at the Naval Education and Training Professional Development and Technology Center (NETPDTC). Following enrollment, there are two ways of having your assignments graded: (1) use the Internet to submit your assignments as you complete them, or (2) send all the assignments at one time by mail to NETPDTC.

**Grading on the Internet:** Advantages to Internet grading are:

- you may submit your answers as soon as you complete an assignment, and
- you get your results faster; usually by the next working day (approximately 24 hours).

In addition to receiving grade results for each assignment, you will receive course completion confirmation once you have completed all the assignments. To submit your assignment answers via the Internet, go to:

### http://courses.cnet.navy.mil

Grading by Mail: When you submit answer sheets by mail, send all of your assignments at one time. Do NOT submit individual answer sheets for grading. Mail all of your assignments in an envelope, which you either provide yourself or obtain from your nearest Educational Services Officer (ESO). Submit answer sheets to:

COMMANDING OFFICER NETPDTC N331 6490 SAUFLEY FIELD ROAD PENSACOLA FL 32559-5000

**Answer Sheets:** All courses include one "scannable" answer sheet for each assignment. These answer sheets are preprinted with your SSN, name, assignment number, and course number. Explanations for completing the answer sheets are on the answer sheet.

**Do not use answer sheet reproductions:** Use only the original answer sheets that we provide—reproductions will not work with our scanning equipment and cannot be processed.

Follow the instructions for marking your answers on the answer sheet. Be sure that blocks 1, 2, and 3 are filled in correctly. This information is necessary for your course to be properly processed and for you to receive credit for your work.

### **COMPLETION TIME**

Courses must be completed within 12 months from the date of enrollment. This includes time required to resubmit failed assignments.

### PASS/FAIL ASSIGNMENT PROCEDURES

If your overall course score is 3.2 or higher, you will pass the course and will not be required to resubmit assignments. Once your assignments have been graded you will receive course completion confirmation.

If you receive less than a 3.2 on any assignment and your overall course score is below 3.2, you will be given the opportunity to resubmit failed assignments. You may resubmit failed assignments only once. Internet students will receive notification when they have failed an assignment—they may then resubmit failed assignments on the web site. Internet students may view and print results for failed assignments from the web site. Students who submit by mail will receive a failing result letter and a new answer sheet for resubmission of each failed assignment.

### **COMPLETION CONFIRMATION**

After successfully completing this course, you will receive a letter of completion.

### **ERRATA**

Errata are used to correct minor errors or delete obsolete information in a course. Errata may also be used to provide instructions to the student. If a course has an errata, it will be included as the first page(s) after the front cover. Errata for all courses can be accessed and viewed/downloaded at:

### http://www.advancement.cnet.navy.mil

### STUDENT FEEDBACK QUESTIONS

We value your suggestions, questions, and criticisms on our courses. If you would like to communicate with us regarding this course, we encourage you, if possible, to use e-mail. If you write or fax, please use a copy of the Student Comment form that follows this page.

### For subject matter questions:

E-mail: n315.products@cnet.navy.mil Phone: Comm: (850) 452-1001, Ext. 1713

DSN: 922-1001, Ext. 1713 FAX: (850) 452-1370 (Do not fax answer sheets.) Address: COMMANDING OFFICER

NETPDTC N315

6490 SAUFLEY FIELD ROAD PENSACOLA FL 32509-5237

## For enrollment, shipping, grading, or completion letter questions

E-mail: fleetservices@cnet.navy.mil Phone: Toll Free: 877-264-8583

Comm: (850) 452-1511/1181/1859

DSN: 922-1511/1181/1859 FAX: (850) 452-1370 (Do not fax answer sheets.)

Address: COMMANDING OFFICER

**NETPDTC N331** 

6490 SAUFLEY FIELD ROAD PENSACOLA FL 32559-5000

### NAVAL RESERVE RETIREMENT CREDIT

If you are a member of the Naval Reserve, you may earn retirement points for successfully completing this course, if authorized under current directives governing retirement of Naval Reserve personnel. For Naval Reserve retirement, this course is evaluated at 2 points. (Refer to Administrative Procedures for Naval Reservists on Inactive Duty, BUPERSINST 1001.39, for more information about retirement points.)

### **Student Comments**

<b>Course Title:</b>	Electronics Technician,	Volume 2—Adminis	stration	
NAVEDTRA:	14087		Date:	
We need some inf	formation about you:			
Rate/Rank and Name	e:	SSN:	Command/Unit	
Street Address:		City:	State/FPO:	Zip
Your comments,	suggestions, etc.:			

**Privacy Act Statement:** Under authority of Title 5, USC 301, information regarding your military status is requested in processing your comments and in preparing a reply. This information will not be divulged without written authorization to anyone other than those within DOD for official use in determining performance.

NETPDTC 1550/41 (Rev 4-00

### CHAPTER 1

### **GENERAL ADMINISTRATION**

Records and reports are the bywords in administration. They are vital in each of the following department and division functions:

- The supervision and assignment of ETs
- The upkeep and cleanliness of the spaces
- Electronics supply
- Allocation of funding
- Procurement of tools; consumables (such as fuses, bulbs, solder), and equipage items to replace those lost, expended, or surveyed

Without records and reports, performing these functions would be impossible.

As an ET2, you will be involved with either creating or maintaining various administrative records and reports in addition to maintaining and repairing electronic equipment.

In this chapter we will discuss some of the reports that you may be involved in filling out. We will also cover the different periodicals that will assist you in your administrative responsibilities.

#### REPORTS

Reports, like inspections, are a "necessary evil" to the working technician. Without reports and a system of accountability, our job of maintenance and repair would be impossible. There would be no way to maintain supply support for our equipment, no way to know what equipment was on board, in what quantity, or where. In this section, we will introduce surveys, getting under way reports, casualty reports, and trouble reports and logs.

#### **SURVEY**

A survey is made and reported when naval property is (1) condemned as a result of damage, obsolescence, or deterioration, or (2) acknowledged to be nonexistent because of loss, theft, or total destruction. Figure 1-1 is a sample of the Report of Survey, DD Form 200.

You can find more information on DD Form 200 in NAVSUP P-485, *Afloat Supply Procedures,* located in your supply department.

### **GETTING UNDER WAY REPORT**

The electronics material officer (EMO) is normally responsible for turning in an equipment status report before getting under way. You may be asked to furnish information about the equipment in your work center or about such diverse areas as:

- Major systems status
- Estimated time of repair (ETR)
- Power out and MDS readings from the radars
- Power out and receiver sensitivity readings from communications equipment

This report is usually a locally generated form and may vary between commands.

### **CASUALTY REPORT (CASREP)**

The CASREP system contains four types of reports: initial, update, correct, and cancel. CASREPs are not a substitute for, but are in addition to and complement, 3-M data. You can find information on preparation and submission of casualty reports in *Operational Reports*, NWP 10-1-10 (formerly NWP 7 [REV. A]).

### TROUBLE REPORTS AND LOGS

Trouble reports and logs are locally generated and, if used, are a great help in filling out 3-M documents. They are usually filled out each time an equipment trouble is detected. These reports and logs indicate such things as equipment affected, nature of the trouble, and time of failure. When the trouble has been corrected, the technician ensuring that the correction has been completed should then make an entry on the report or in the log stating so with the date of completion and his or her signature.

Other locally generated logs that your shop may maintain are a *test equipment checkout log*, to track test equipment on loan to other divisions; a consumable usage log, to track the use of the shop's consumable supplies; and a *tool accountability log*, to track the tools issued to individuals.

<u></u>			1. DATE		2. SURVEY NUM	ER
REPO	RT OF SU	IRVEY				
3. CLASS OF PROPERTY	4. 5	TOCK RECORD ACCOUNT OR O	THER PROPERTY	RECORD AN	STATION	
5. ACCOUNTABLE OR RESPONSIBL	E OFFICER	(Name, grade, SSN and designation	n)			
6. 7.			6.	9. UNIT	710:	DISPO-
NATIONAL STOCK NUMBER		DESCRIPTION	QUANTIT	PRICE	TOTAL COST	SITION
			1			ļ
			1			1
			1			
					1	
					1	
			12. FOR LO	11	13. FOR DAMAGE	l
	COMMENDE	D PECUNIARY CHARGE	<b>→</b> ]			
14. DATE AND CIRCUMSTANCES						
						i
15.		Ţ16.	<del></del>	ITE. THIS SP.	ACE RESERVED FOR	
AFFIDAVIT		I certify that the loss, destr		ACTION	BY AUTHORITY OF	
I do solemnly swear (or allirm) that (to my knowledge and belief) the articles	o the best of	unserviceability of the articles of shown above, and/or on attached caused in the manner stated and		İ		- 1
property shown above and/or on attach were lost, destroyed, damaged, or wor	ned sheets	caused in the manner stated and neglect on my part, and that each with a view to elimination by de-	APTICIO IISTOS			}
manner stated, while in the public ser		examined by me personally, has viously condemned, and is, in my	never been pre-			
SIGNATURE		less for further public use.  SIGNATURE (Accountable or Res	poneible Officer)			
						Ì
NAME, GRADE, SSN AND ORGANIZA	7101	NAME COADE (CN AND DOCA				İ
NAME, GRADE, SSR AND ORGANIZA	HON	NAME, GRADE, SSN AND ORGA	412 X 1 10 N			j
						1
SUBSCRIBED AND SWORN TO (or affile		17. HEADQUARTERS				- 1
BEFORE ME AT		77. HEADQUARTERS				- 1
		STATION	DATE			- 1
THIS DAY OF	19	·				
SIGNATURE		то				- 1
NAME, GRADE, SSN AND ORGANIZAT	TION OR	YOU ARE APPOINTED SURVEY	ING OFFICER			1
		BY ORDER OF	İ			-
				18 880855	TY VOUCHER NUMBI	
		SIGNATURE OF ADJUTANT/EXECUTIV	E OFFICER & DATE	FRUPER	VOUCHER NUMBI	-^

DD 1 DEC 73 200 EDITION OF 1 APR 73 MAY BE USED UNTIL EXHAUSTED S/N 0102-LF-000-2000

Figure 1-1.—Report of Survey, DD Form 200.

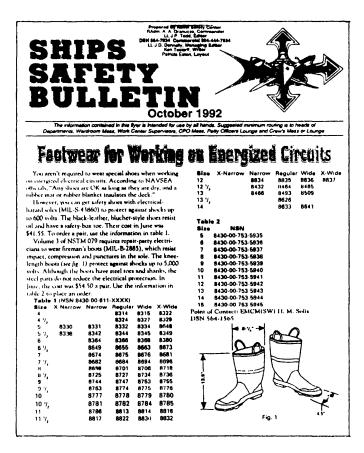


Figure 1-2.—SHIPS SAFETY BULLETIN cover page.

### **PERIODICALS**

Periodicals come in many variations. They maybe bulletins, magazines, messages, or publications. The periodicals that we discuss in the following paragraphs will bring you updates on equipment, safety items, and overall information that could affect you as an ET.

### SHIPS SAFETY BULLETIN

The *SHIPS SAFETY BULLETIN* is published by the Naval Safety Center in Norfolk, Virginia. It is distributed on a monthly basis. Since it is a safety bulletin, the issues should be kept in a binder in the work center for reference.

This bulletin covers all aspects of safety information, from electrical safety shoes to revisions of safety courses. If your work center does not maintain copies of the *SHIPS SAFETY BULLETIN*, find out where they are kept and review them to keep yourself up to date on safety related items. Figure 1-2 is an illustration of the front cover of the *SHIPS SAFETY BULLETIN*.

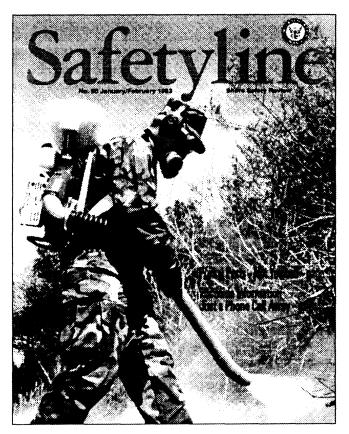


Figure 1-3.—Front cover of Safteyline magazine.

### **AFLOAT SAFETY ADVISORIES**

Safety advisories are sent out in message format and advise you of current and emergent safety-related items. The Afloat Safety Advisories are available from the Naval Safety Center, Naval Air Station, Norfolk, Virginia, on disk in WordPerfect 5.1 or ASCII format. Your command may contact the safety center for this disk at DSN 564-7634.

#### **SAFETYLINE**

Safetyline is a shore safety review periodical in magazine form. It is published bimonthly by the Naval Safety Center in Norfolk, Virginia. Safetyline is approved as an official publication for distributing safety-related information. This information informs Department of the Navy personnel about current safety concerns and emerging developments within their area of expertise to enhance their professional development. Although the contents of this periodical are informative, they are not considered directive.

The *Safeline* presents good articles on safety and is a beneficial addition to any shore-based ET shop library. Figure 1-3 is a sample front cover of Safetyline.

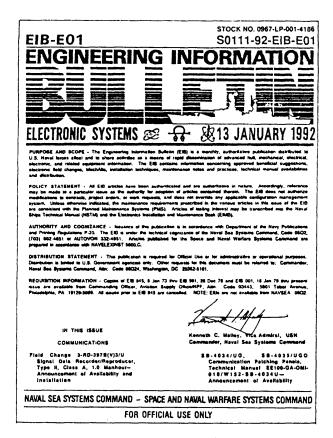


Figure 1-4.—Front cover of an EIB.

## ENGINEERING INFORMATION BULLETIN (EIB)

The EIB is a monthly, authoritative publication distributed to afloat and shore activities. It is a means of rapid dissemination of advanced hull, mechanical, electrical, electronic, and related equipment information. The EIB contains information concerning

- Approved beneficial suggestions
- Electronic field changes
- Installation techniques
- Maintenance notes and practices
- Technical manual corrections, availabilities and distribution.

Your ET shop should maintain a library of the EIBs for electronic systems for ready reference. It should also route all new EIBs to all personnel concerned with the topics for information and action.

You should familiarize yourself with the information contained in these periodicals. By doing so, you will help keep yourself current with changes to

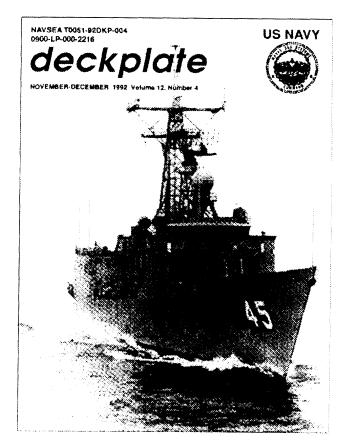


Figure 1-5.—Cover of deckplate magazine

equipment and procedures. Figure 1-4 is an illustration of a front cover of an EIB.

### **DECKPLATE**

Deckplate is published bimonthly and is a technical periodical in magazine form. It is published by the Naval Sea Systems Command (NAVSEA) and contains articles on design, construction, and repair of naval vessels and their equipment and other technical equipment and programs under NAVSEA command

The content of *deckplate is* considered as information intended for information purposes only. Do <u>not</u> regard it as information that alters or supersedes official regulations, orders, or directives. Figure 1-5 illustrates the front cover of *deckplate*.

### AIMS NEWSLETTER

The *AIMS NEWSLETTER* provides information to shipboard technicians and operators of AIMS systems. At present, it is printed only as needed. That is, when information is obtained and compiled by the Naval

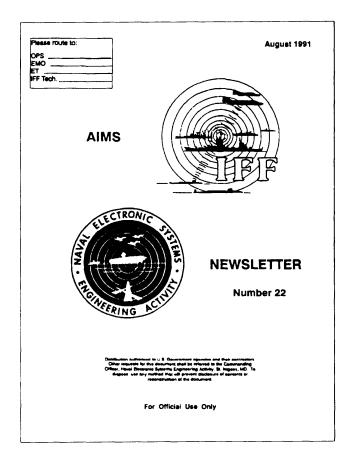


Figure 1-6.—Cover of an AIMS NEWSLETTER.

Electronic Systems Engineering Activity (NESEA), a newsletter is written and sent out.

To obtain back copies of the AIMS newsletters, contact the Naval Electronic Systems Engineering Activity (Code 2114), St. Inigoes, Maryland. You may also access an AIMS hotline if you have questions or problems concerning maintenance. The number for the AIMS hotline is DSN 326-3512, extension 8229. Figure 1-6 is an illustration of the front cover of an *AIMS NEWSLETTER*.

### **FATHOM**

*FATHOM* is an afloat safety review periodical in magazine form. It is published bimonthly by the Naval Safety Center in Norfolk Virginia. *FATHOM* contains articles pertaining to safety issues of concern to surface and submarine forces and is distributed primarily to these forces. Figure 1-7 shows a front cover of *FATHOM*.

In the previous paragraphs we have discussed only a few of the periodicals that are available in the fleet.

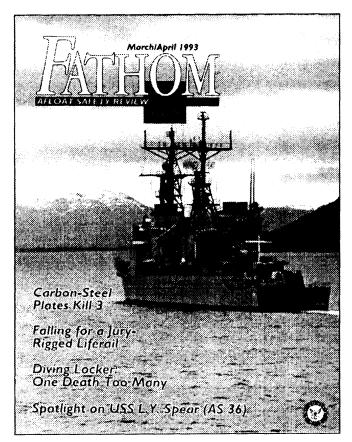


Figure 1-7.—Front cover of FATHOM.

You may want to use the technical periodicals to keep up to date with any changes that may occur to policy or equipment configuration. However, remember, that most periodicals are for information purposes only and do not change or supersede policies, directives, or instructions.

### USING SOURCES OF INFORMATION

Use bulletins, instructions, and periodicals to increase your knowledge of electronics. They are excellent sources for discovering new techniques in troubleshooting and testing of equipment, and for obtaining updates on safety procedures.

You can use individual command logs, such as those that we mentioned earlier, to keep an accurate history of equipment performance, and the location of test equipment.

You can also use the sources of information that we discussed above as training aids for new] y reporting personnel. New personnel can use the sources to bring themselves up to date on new procedures and troubleshooting techniques. In addition they can use the

log books to learn about the operating history of the equipment they are assigned to maintain.

### MAINTAINING SOURCES OF INFORMATION

Since sources of information are of great importance to every technician, there is a need to maintain, update, and care for all of them. In the remainder of this chapter, we will discuss how to care for the Electronics Technicians' primary sources of information.

#### **SCHEMATICS**

Let's begin with the schematics that took you so much time to color code when you were in school, particularly in "C" school. The instructor for schematics gave you certain information that you thought would be valuable in the future. You probably put that information on your schematics. After "C" school, you may have referred to those schematics during certain repair procedures. The schematics became good reference material. If you still have the schematics, laminate them and make them part of your personal, professional reference library.

Now let's look at the schematics contained in your technical manuals. The first thing to remember is that the technical manuals in your shop are for every technician to use. Do not write on these schematics. If you do, you will probably confuse you shipmates when they need to use them. Often, these schematics tend to tear along the folds. Reinforce these areas with clear tape. Finally, be sure to fold the schematics neatly back into the technical manual when you have finished using them.

#### **SHOP LOGS**

Far too often, shop logs become scratch pads or doodle pads. To ensure that this does not happen with your shop logs, place them on book shelves when you have completed your entries into them. Remember, these logs will contain information on equipment history that shipmates who arrive on board long after you have transferred may need to use.

#### **PERIODICALS**

Periodicals such as the EIB and the *SHIPS SAFETY BULETIN* should be kept in hard binders in chronological order. Keep these binders in a bookcase or shelf in your shop for everyone in the shop to use. As we mentioned before, these periodicals are filled with technical and safety information.

### **INSTRUCTIONS**

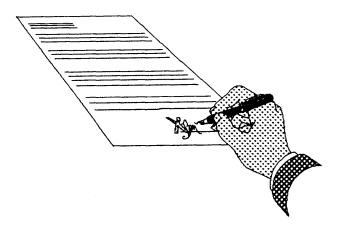
There are many instructions in the Navy, and to keep them all in your shop would be an impossibility. However, in many of these instructions, you will find pertinent information that pertains directly to the ET world, such as electronic safety, hazardous material control, and so on. When you come across this information, copy it and keep it in a binder for reference in your shop. Remember to keep this binder up to date as you receive changes to the instructions.

In this chapter we have discussed some of the reports, logs, and publications that will be helpful to you in your everyday job as a technician. You now have the responsibility to apply this information and to enhance your administrative skills. In the next chapter you will learn about the technical administration aspects of your job as an Electronics Technician.

### **CHAPTER 2**

### TECHNICAL ADMINISTRATION

Technical administration is basically the filling out of paperwork required to complete a task. Whether the task is maintenance or repair in nature, it is not fully completed until all documenting paperwork has been finalized. You, as the technician, are responsible for ensuring that all paperwork is completed for each task you are assigned.



### THE MAINTENANCE DATA SYSTEM (MDS)

The Maintenance Data System (MDS) provides a means of recording maintenance actions in substantial detail. This allows a variety of information concerning these actions and the performance of equipment involved to be retrieved. (In older documents, you may see the system refereed to as MDCS.) One of the major objectives of the MDS is to provide the capability of reporting configuration changes. In the following paragraphs, we will describe MDS subsystems that you will use frequently.

## MAINTENANCE DATA SYSTEM (MDS) FORMS

In the following paragraphs we will briefly discuss the MDS forms that you as an ET are most likely to come across in your daily routine. For more in-depth information on the MDS forms, we recommend that you read chapter 9 of OPNAVINST 4790.4, *Ships' Maintenance and Material Management (3-M) Manual.* Because the supply forms associated with the

MDS have been discussed in other training manuals, we will not cover them here.

### Ship's Maintenance Action Form-OPNAV 4790/2K

This form, shown in figure 2-1, is the primary maintenance form. It is used by maintenance personnel to report (1) deferred maintenance actions and (2) all completed maintenance actions (including previously deferred actions).

The OPNAV 47902K contains six sections that require entries, depending on the type of maintenance action being reported. The form is printed on paper that does not require carbon to make multiple copies. Whenever you make an entry on this form, print the information, using all CAPITAL letters. Be sure the information is legible and inserted within the "tic" marks. If you make an error, line it out using a single line and enter the correct information.

### Supplemental Form-OPNAV 4790/2L

This form, illustrated in figure 2-2, is used to provide amplifying information for a maintenance action reported on a 2K form. For example, you may include on the 2L information from drawings, listings, associated parts placement, part labels, and the like, for use by a repair activity.

When you need to use an OPNAV 4790/2L with an OPNAV 4790/2K, enter in block 35 of the 2K the notation "2L USED."

### Maintenance Planning and Estimating Form-OPNAV 4790/2P

This form is used with an OPNAV 4790/2K that defers maintenance to be done by an IMA under the Intermediate Maintenance Management System (IMMS). It provides information necessary to allow screening and planning to be done in detail.

Figure 2-3 illustrates this form as it may appear when planning and scheduling have been completed by a repair activity. Chapter 12 of OPNAVINST 4790.4B contains detailed information on the use of the form.

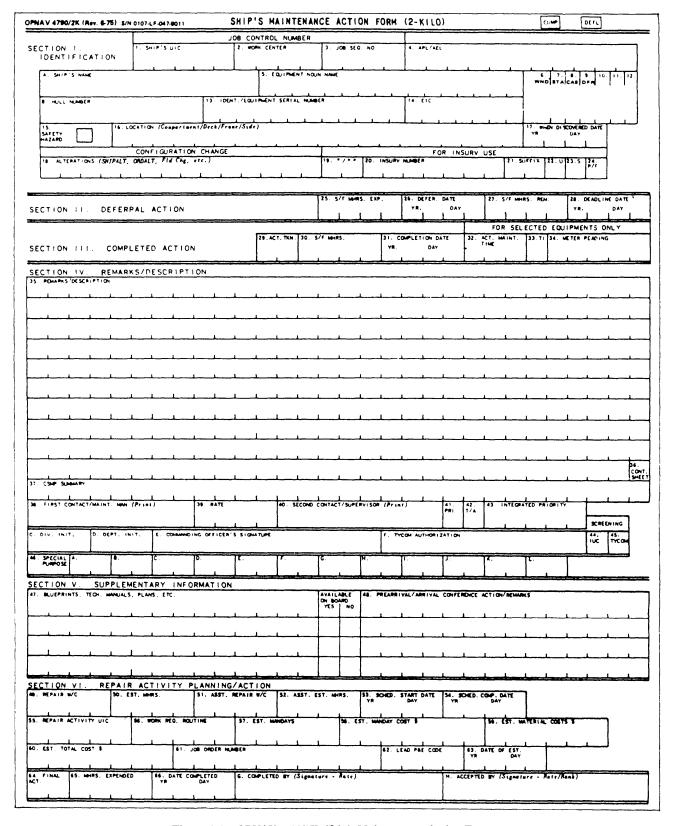


Figure 2-1.—OPNAV 4790/2K, Ship's Maintenance Action Form.

CTION I. IDENTIFICATION		100 BOL	YTROL NUMBER
SHIP'S NAME	B HULL NUMBER	C SHIP'S UIC D	MORK CENTER E JOBSEG NO
			<u> </u>
		CONTINUATION FOR	2K 2L
CTION II. REMARKS/SKETCHES			
CTION II. HEMARKS/SKETCHES			
CTION III. AUTHENTICATION			
FIRST CONTACT/MAINTENANCE MAN (Prui)	1 1	ECOND CONTACT/SUPERVISOR /AIM.	K DATE
	YR DAY		YR DAY

Figure 2-2.—OPNAV 4790/2L Supplemental Form.

OPNAV 4790/2P (6-84) MAI	NTENANCE PLANNING & ESTIMATION	NG FORM (P & E)	
SECTION I. PLANNING		JOB CON	TROL NUMBER
USS WHITE PLAINS	A FS 4	I SHIP'S UIC 2 WOI	AK CENTER 3 JOB SEG NO
A PERIODIC MAINTENANCE REQUIREMENT	S PERIODICITY & YYMM IS		E, Ø, 1 1, 6, Ø, 8
8 SCREENING ACTION	8 QUALITY ASSURANCE REQUIREMENTS	+ + + + + + + + + + + + + + + + + + + +	10 SPECIAL REQUIREMENTS
a. h. DEPOT ACCOMPLISH	8 SUB SAFE	SPECIAL CLEANING	, Ø 3 KEY EVENT
b. X : X IMA ACCOMPLISH	b. LEVELI	h. SPECIAL TESTING	D. SPECIAL INTEREST
c i TSU/NAVSEC/NOSSO/ETC	c. NUCLEAR LEVEL 1	SPECIAL IDENTIFICATION	c DRY DOCK REQUIRED
d k SHIPS FORCE (IMA) (DEPOT) ASSIST	d NON DESTRUCT TEST	i NOISE CRITICAL	PRE OVERHAUL TEST REQUIRED
e. I. SHIP TO SHOP	. NUCLEAR WORK PROCEDURES	RADIOLOGICAL CONTROL	POST OVERHAUL TEST REQUIRED
t ACCOMPLISH WITH MODIFICATIONS	SUBMARINE ANTENNA ENGINEERING DIVISION	OTHER CONTROLS	f. DEPARTURE TEST
9 DISAPPROVE			
C TUC SIGNATURE	D TYCOM SIGNATURE		11 NORMALLY DONE BY
SECTION II. SCHEDULING			0 S/F b IMA c □ 0€P01
12 LEAD WORK CENTER 13 SCHED START DATE 14 SCHED C	المنياب المحاد	EY OP 17 TASK	
IR ASST WORK CENTER IS SCHED START DATE TO SCHED	COMP DATE 21 EST MHRS 22 K	EV OP 23 TASK	
24 ASST WORK CENTER 125 SCHED START DATE 126 SCHED	5 8 0 0 4 0 COMP DATE 21 EST MINAS 28 F	KEY OP 29 TASK	
1 - A   YH   DA   YH	5,90,100	<u> </u>	1 1 1 1
JO ASSI WORK CENTER JI SCHED START DATE JZ SCHED O	DA 33 EST MHRS 34 K	SEY OF JB TASK	
38 ASST WORK CENTER 37 SCHED START DATE 38 SCHED C	COMP DATE 30 EST MHRS 40 H	CEY OF 41 TASK	
42 ASST WORK CENTER 43 SCHED START DATE 44 SCHED (	COMP DATE 46 EST MHRS 46 H	EV OP 47 YASK	
SECTION III. TECHNICAL DOCUMENTATION		<del>.</del>	ON BOARD
48			YES NO
	<del>                                     </del>	<del></del>	
	<del></del>	<del></del>	
	<del>}                                    </del>	<del></del>	
SECTION IV. IUC/REPAIR ACTIVITY/TYCOM REMA	<del></del>	<del></del>	
	REPAIRS	TO 6.4	\$ ROV
M,A,T,E,R,I,A,L	<del> </del>	<del>                                     </del>	
		1 1 1 1 1 1	
	<del></del>	+ + + + + + + + + + + + + + + + + + + +	
	<del>                                     </del>	<del> </del>	
SECTION V. SUPPLEMENTAL PLANNING	<del></del>	<del></del>	
SO EST MANDAYS SOST 8	52 EST. MATERIAL COST \$	SJ. EST TOTAL COST B	, S
S/N 0107-LF 770-3079	**************************************	<u> </u>	

Figure 2-3.—OPNAV 4790/2P, Maintenance Planning and Estimating Form.

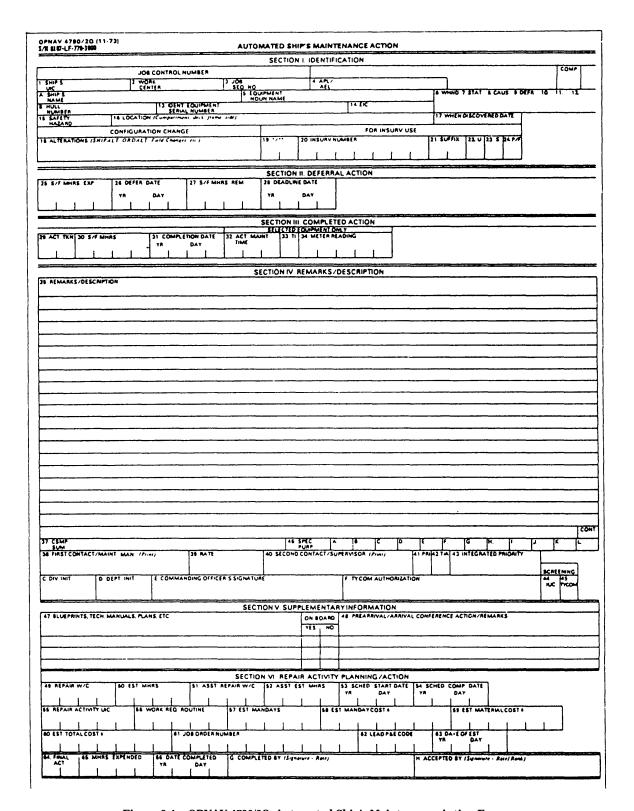


Figure 2-4.—OPNAV 4790/2Q, Automated Ship's Maintenance Action Form

## **Automated Ship's Maintenance Action Form-OPNAV 4790/2Q**

This form, shown in figure 2-4, is basically the same as the 4790/2K, except that it is filled in by computer. It contains the same information as the 2K. You may enter

additional information by hand as necessary. You may also use this form as an automated work request and in preparation for INSURV.

 ${\bf NOTE:}$  Data entered into the computer is checked for accuracy and completeness. Elements that contain

errors are brought to the attention of the operator for correction as required by OPNAVINST 4790.4.

### Automated Work Request (AWR)-OPNAV 4790/2R

This form is produced by the computer and combines the basic information submitted on the OPNAV 4790/2K and the planning information submitted on the OPNAV 4790/2P, if the 2P has been entered into the IMMS. A simulated AWR, produced under the Shipboard Non-Tactical ADP System (SNAP), is a valid work request and will be accepted by all involved activities (see figure 2-5). An AWR may be used for any of the following purposes:

- To describe all work and planning information relating to a specific job
- To enter planning information relating to a specific job with the OPNAV 4790/2K replacing the OPNAV 4790/2P
- By an IMA to conduct advance planning of a tended unit's availability

Chapter 12 of OPNAVINST 4790.4 contains detailed information on this form.

# Ship's Configuration Change Form-OPNAV 4790/CK and Ship's Configuration Change Form Continuation Page-OPNAV 4790/CK(C)

These forms shown in figures 2-6A and 2-6B are used to report configuration changes at the individual equipment level.

When you use the OPNAV 4790/CK form, you do not need to document the associated maintenance action on an OPNAV 4790/2K form. The OPNAV 4790/CK form is used both as a closing deferral for reporting the accomplishment of a previously deferred maintenance action that results in a configuration change, and as a completed maintenance action (no prior deferral) reporting a configuration change.

A configuration change occurs whenever a maintenance action results in the following situations:

- 1. Addition or installation of any new equipment.
- 2. Deletion or removal of any installed equipment.
- 3. Replacement or exchange of any equipment. A replacement or exchange is reported as the removal of an installed equipment and installation of a new equipment.

- 4. Modification of any installed equipment. A modification results from a maintenance action that alters the design or operating characteristics of the equipment, or a maintenance action in which nonstandard replacement parts (not identified on the APL or in the technical manual) are used.
- 5. Relocation of any equipment.
- 6. Accomplishment of any alteration directive.

Two excellent documents that provide block-by-block instructions for completing the OPNAV 4790/CK are OPNAVINST 4790.4 (3-M Manual) and SPCCINST 4441.170, the *COSAL Use and Maintenance Manual*.

### CURRENT SHIP'S MAINTENANCE PROJECT (CSMP)

The CSMP is an administrative system that provides the command and work center with the management data needed for the systematic accomplishment of repair and alteration of ship's hull, installed equipment, and material. It identifies at any one time the backlog of deferred maintenance for each work center. The MDS provides the means for gathering this information. If the information provided is not accurate or up-to-date or is improperly used by supervisors or maintenance technicians, the CSMP system is worthless.

The usefulness of the MDS depends upon your accuracy, thoroughness, and timeliness in reporting information. The MDS is a system in which potential benefits are directly proportional to the efforts applied. Programs for improving reliability, maintainability, and logistic support of fleet equipment depend on how conscientiously you adhere to reporting procedures.

### PLANNED MAINTENANCE SYSTEM (PMS)

The Planned Maintenance System provides each command with a simple standard means for planning, scheduling, controlling, and performing planned maintenance of all equipment. PMS maintenance actions are the minimum required to maintain the equipment in a fully operable condition. Maintenance procedures are contained on cards called "maintenance requirement cards" (MRCs).

### **Maintenance Requirement Cards (MRCs)**

The MRCs provide detailed information for performing preventive maintenance. They state exactly

******	WORK REQUEST
	IDENTIFICATION COMP
JOB CONTROL NUMBER  1. SHIP'S 95835   NUMBER   1. JOB SEG. 1 698	* AEC 67382Ø1 34
LEDI NUMBER 1008  A SHIPS USS WHITE PLAINS SEQUENTIAL COMPTION NAME COMPTION IN LOCATION COMPANY  B. HULL NUMBER 14 EIC 16 LOCATION COMPANY	RESSOR MTR 12 BERNAL MO NO 2 25HP
AFS-4 T505 REEFER RM (	5 96 2 E   FOR INSURY BOARD USE
	19. 1/11   20. INSURY NUMBER   21. SUFFIX   22. U   23. S   24. P/F
	<u> </u>
	DEFERRAL ACTION
28. DEFEA. DATE 27. BY MINS. REMAINING 2 2 2 9 9 6 6	
	OMPLETED ACTION LECTED EQUIPMENT ONLY
YA DAY TIME	LÉCTED EQUIPMENT ONLY TRUL 34. METER READING ISO
	MARKS/DESCRIPTION
MEMORIS NOTED TEMP INCREASE DRIVE EN INCREASE DB LEVELS. UNIT SEC	D. SOUND ANALYSIS REVEALED SHARP URED. S/F OPENED/INSPECTED. ROTOR
SHAFT SCORED/UNDERSIZED. REM	
	SBL, REINSTALL, ALIGN, AND TEST.
37. CHAPT SCORED/UNDERSIZED	HAL SPECIAL A. B. C. D. E. F. C. H. I. J. K. L.
M FIRST CONTACT! PAYNE MM1 SECOND CONTACT!	HARRIS ENC 41. Mil 42. 1/1/2 43. INTEGRATED PRIORITY
E. COMMANDING OFFICER'S SIGNATURE F. TYCOM AUTHORIZATION	44. IUC SCREENING 45. TYCOM SCREENING
SECTION V. SUPPLE	MENTARY INFORMATION
27 SP BLUEPRINTS Y N	ON SAD
de Répair active. Tr' BLUFRINTE. PLANE TECH. MANUALE FEC	
A MANAGE TAMA TAMAM DEDATED MO / AA A F	OV MATERIAL
ACTION ACTION IMA LIMIT REPAIRS TO 699 \$ F	O V MATERIAL
pe usimums	
SECTION	
51. PERIODIC MAINT REQUINT. SSUED	VI. PLANNING  S. SPECIAL D. ATA
STY AS- SUBSAFE C   NUCLEAR LEVEL 1   MUCLEAR WORK	9- 1 SPECIAL CLEANING I. SPECIAL II. RADIOLOGICAL
MEDMITS PEC L. DAY DOCK	A N SPECIAL TESTING   NOISE CRITICAL   OTHER CONTROLS  6. PRE-OVERHAUL   POST-OVERHAUL   DEPARTURE   1 TEST REQUIRED   REQUIRED   REQUIRED
MEOUNED	T TEST REQUIRED TEST REQUIRED TAREQUIRED PLANNING/SCHEDULING ACTION
ST. LEAD M. SCHED. M. SCHED. M. EST. 61, NO 62 TASK WC START COMP. WHRS	83. ASST 64. SCHED. 86. SCHED. 86. EST. 87. K/O 68. TASK
38A 6245 6269 9149	75. ASST 78. BCHED. 177. BCHED. 78. EST 78. R/O 80. TASK
51 A   6247   6258   gg/4g	75 ASST 76 BCHED 77. SCHED 76 EST 76. R/O 80. TASK
81. ASST 82. SCHED. 83. SCHED. 84. EST. 85. K/O 86. TASK WC START COMP. SHRS	87. ASST 88. SCHED. 89. SCHED. 80. EST. 91. N/O 92. TASK
52A 6245 6259 9199   St. REPAIR ACT. URG   St. WORK RED. ROUTINE NO.   St. EST. MANDAYS	TO EST. MANDAY COST 8 87. EST. MATERIAL COST 8
ML EST. TOTAL COST 8 99. JOB ORDER NUMBER	100. LEAD PAE CODE 101. DATE OF ESTIMATE
102 FINAL 103 MHAS EXPENDED 104 DATE COMPLETED IS COMPLETED BY (Supplied	<u> </u>
102 FINAL 103 MHAS EXPENDED 104 DATE COMPLETED G. COMPLETED BY (Supplim	W. ACCEPTED BY (Signature & Rate/Rank)
<u> </u>	

Figure 2-5.—OPNAV 4790/2R, Automated Work Request (AWR).

SECTIO	H I JOS IDENTIFICAT	ION							
			ROL NUMBER				ALTERATION	IDENTIFICATI	20N
	1 SHIP'S UIC	2 WO	AK CENTER	3 100 860	- A	ALTERATIONS (SHI	PALT. PLO CHO	. ETC)	
A SHIP'S	E HAMP			10 14	ILL NUMBER		15 610		10 42
				"			' '~		"~"
7 EQUIP	MENT NOUN HAME				10	SF WHAS EXP	P ACT MAINT	10 COMP	DAYE LIN
	<del> </del>		سنسب						لتلب
SECTIO	N N JOS DESCRIPTIO	NAEMARKS							
12 308 0	DESCRIPTION/REMARKS								
	<del></del>					<del></del>			
								_ 1 _ 1 . 1	
			_						
SECTIO	N III COMPONENT CO	NEIGURATION C	HANGE IDENT	IFICATION	<del></del>		<del></del>	<del></del>	
	ONENT NOUN NAME								14 QUANTITY
						.1. 1 1	11		
	ONENT IDENTIFICATION				17 COM	POHENT BERIAL NI	MARK		
18. COMP	OHENT APLIAEL		10 10	CATION (DE	CKFRAME/BIO	¥€)		20 EIC	
1 NEXT	HOHER ASSEMBLY						* 124 BAC	سببط	23 WORK CENTE
	FLATE DATA								
	PLATE DATA								
	<del></del>								
							<del></del>		
						<del></del>		<del></del>	
-	<del> </del>				1.1		L 1 . 1		
					1 20 4 6 4				
					30 EOE	1 1			
7 TM			<u> </u>		30 E084				
77 TM	N IV SPECIAL PURPOS	i i i			» foe:		<u> </u>		
7 TH					30 E064	<del></del>			
77 TM	IV SPECIAL PURPOS				38 6084	30 SECAS OFFIC	SE USE		
7 TH				-INST		30 SECAS OFFI	SE USE		
BECTION	38 ALI	Seri		SECTION 1	RUCTIONS	30 SECAS OFFI		LEGENO	
BECTION	SECTION DESCRIP	SIN L L L L L L L L L L L L L L L L L L L	PAGE	SECTION 1	RUCTIONS	30 SECAS OFFI		LEGENO	
BECTION B. AIN ITEM	38 ALI	EN ET EN ET	PAGE	SECTION 1	RUCTIONS	30 SECAS OFFR	PLE	0 0	TIONAL
BECTION B. AIN TEM NUMBER	SECTION DESCRIP	EI A II PTION	PAGE	SECTION 1	RUCTIONS	30 SECAS OFFR	DLE NBLE	0 0	TTONAL UT REQUIRED
F TM SECTION B. AIN ITEM HUMBER 1-3	SECTION DESCRIPTION  EI A II PTION	PAGE M IP	SECTION 1	RUCTIONS	30 SECAS OFFR	DLE NBLE	0 0		
FT TM  BECTION  FTEM  NUMBER  1-3  4  5	SECTION DESCRIPTION NUMBER ALTERATION IDENTIFIC EQUIPMENT IDENTIFIC	BIN  FI A II  PTION  (A)  CATION  ATION CODE	PAGE M IP M	SECTION 1	RUCTIONS	SO SECAS OFFR	PLE ABLE RY	O OI	OT REQUIRED
FT TM  BECTION  ITEM  IVANIBLE  1-3  4  5  0  7	SECTION SECTION JOS CONTROL NAMES ALTERATORI DERTERIC ACTION TAREN EQUIPMENT IDUM NAME BIRP'S FORCE MANKO	BIN PTON P ATION ATION CODE ME UMS EXPENDED	PAGE M IF M M M M M	SECTION 1	RUCTIONS LECONT PAGE M JP NR NR NR	SO SECAS OFFR  IA FAVARA  P PAPPLIC  M MANDATO  BECTION	DLE NBLE	O OI	
FT TM  BECTION  ITEM  ILLIA  ITEM  ILLIA  IL	SECTION ORSENS AND ACTIVE MARKET MARK	BIN PTON P ATION ATION CODE ME UMS EXPENDED	PAGE M IP M M M M M M M	SECTION 1	RUCTIONS LE CONT PAGE M P M M M M M M M M M M M M M M M M M	SO SECAS OFFR  IA FAVARA  P PAPPLIC  M MANDATO  BECTION	DLE ABLE RY	O OI	OT REQUIRED
FT TM SECTION SECTION FAIN  TEM NUMBER 1-3 4 5 6 7 8 9	SECTION SECTION SECTION SECONTROL NUMBER JOS CONTROL NUMBER ALTERATION DENTERC ECUPPMENT IDENTERC ACTION TAKEN ECUPPMENT HOUN NAM SHIP'S FONCE MANHO ACTIVE MANTENANCE COMPLETION DATE	BIN PTON P ATION ATION CODE ME UMS EXPENDED	PAGE M IP M M M M M M M M M M M M M M M M M	SECTION 1	RUCTIONS LE I ONT PAGE M M M M M M M M M M M M M M M M M M M	SO SECAS OFFR  IA FAVARA  P PAPPLIC  M MANDATO  BECTION	DLE ABLE RY	O OI	OT REQUIRED
FT TM  BECTION  ITEM  ILLIA  ITEM  ILLIA  IL	SECTION DESCRIPTION OF SCHOOL NAMES ALTERATION IDENTERIC EQUIPMENT IDENTERIC FOUNTAIN TOWN TOWN TOWN TOWN TOWN TOWN TOWN TOW	BIN  TTON  R  CATION  ATION CODE  ME  UPS EXPENDED  TIME	PAGE M IP M M M M M M M M M M M M M M M M M	SECTION 1	RUCTIONS LE CONT PAGE M P M M M M M M M M M M M M M M M M M	SO SECAS OFFR  IA FAVARA  P PAPPLIC  M MANDATO  BECTION	DLE ABLE RY	O OI	OT REQUIRED
FT TAM  BECTRON  ITEM  ITEM  ITEM  1-3  4  5  6  7  8  9  10  11  12  ITEM	SE AKI  SECTION DESCRIPTION AND CONTROL NUMBER ALTERATION EDETFIC EQUIPMENT IDENTIFIC EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC COMPLETION DAY EVER READING ACTIVE MAINTEMANCE COMPLETION DATE METER READING ACE DESCRIPTION (RE)	SIN  KI LA K  PTION  P  CATION  ATION CODE  ME  UNS EXPENDED  TIME	PAGE M IP M M M M M M M M M M M M M M M M M	SECTION 1	RUCTIONS B CONT PAGE M M M NR NR NR NR NR	IA F AVAILAL  F F APPLICA  M MANDATO  SECTION  ACTION	BLE ABLE RY  I. BLOCK 6 TAKEN	O OF MA NO	OT REQUIRED  TION III, BLOCK 15  MEONENT ACTION  MAINTENANCE ACTIONS  EMOVED
FT TM  BECTION  ITEM  IT	SECTION SECTION SECTION SECTION ASSESSMENT ASSESSMENT SECTION ASSESSMENT SECTION ACTION TAKEN EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC COMPLETION OF TAKEN METER RELIGION ACTIVE MAINTENANCE COMPLETION OF TAKEN SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION (REL SECTION DESCRIPTION DE	SIN  ELLA N  E	PAGE M PP M M M M M F P O REMOYE (RVO)	METALL (VA)	RUCTIONS LE ONIT PAGE MP MP MP MR MR NR NR NR NR NR MR MR MR MR MR MR MR MR MR MR MR MR MR	SO SECAS OFFR  IA F AVARA  P F APPLIC  M MANDATO  BECTION  ACTION  ATTERNAT  SO - FULLY OF	DLE ABLE RY  I. BLOCK 6 TAKEN  V COMPLETED ON MPLETED	0 OI NA NO	OT REQUIRED  CTION III, BLOCK 15  MAINTENANCE  ACTIONS  EMOVED  DUPINENT  BTALLED
FT TM  BECTION  FINAL  FTEM  FUNDER  1-3  4  5  6  7  8  9  10  11  12  ITEM  FUNDER  13	SECTION SECTION SECTION SECTION SECTION SECTION ACTION TOWNER AUTENATION SERTER EQUIPMENT SOUNTER EQUIPMENT SOUNT NAME EQUIPMENT SOUN NAME SHIP'S FORCE MARKO ACTIVE MARKENANCE COMPLETION OATE METER READWO JOE DESCRIPTION (RE DESCRIPTION (RE DESCRIPTION) SECTION COMPONENT NOUN NAME COMPONENT NAME COMPONENT	SIN  ELLA N  E	PAGE M IP IP M M M M M IM M M M M M M M M M	MECTION 1   C	RUCTIONS Is II OUT PAGE MP MP MP MP MP NR NR NR NR NR NR MP MP MP MP MP MP MP MP MP MP MP MP MP	SO SECUL OFFE  IA FAVARA  P FAPPLIC  M MANDATO  BECTION  ACTION  SE - PARTIALLY  M - PALLY OF  ALTERNA  E - PALLY  ALTERNA  SC - PALLY  DE	N.E. AND AND AND AND AND AND AND AND AND AND	O OI NA NO SEL CO	OT REQUIRED  CTION III. BLOCK 15  MAINTENANCE ACTIONS  ENOVED  SUPPRIENT  OUPPRIENT  OUPPRIENT
77 TM SECTION IS ANN INTERNATION INTERNATION IN INTERNATION IN INTERNATION	SE ALL  SECTION DESCRIP JOS CONTROL MUNICE LOUNDENT DENTIFIC ECUPMENT DENTIFIC ACTION TAKEN ECUPMENT MOUN HAN ACTIVE MARTEMANCE COMPLETION DATE METER READING METER READING DESCRIPTION DATE COMPLETION DATE COMPLETION DATE DESCRIPTION DATE DESCRIPTION DESCRIPTION OUTPER COMPORTED THOSE NO.	SIN  ELLA N  E	PAGE  M  P  M  M  M  M  M  M  M  M  M  M  M	PETALL (VA)	RUCTIONS Is II ONLY PAGE  IF IN IN IN IN IN IN IN IN IN IN IN IN IN	SO SECAS OFFR  A F AVABLA  B A PAPPLIC  M MANDATO  BECTON  ACTION  ACTION  ACTION  C PULLY OC  ACTION	N.E. SLOCK 6 TAKEN  Y COMPLETED ON MAPLETED ON MAPLETED INT TO DIT TO ON	O OI NA NO SEL CO	OT REQUIRED  CTION W. BLOCK 19  MAINTENANCE ACTIONS  MOVED  OUPMENT  OUPMENT  OUPMENT  OUPMENT
F7 TM SECTION IS AN I I I I I I I I I I I I I I I I I I	SECTION SECTION SECTION SECTION SECTION SECTION ACTION TOWNER AUTENATION SERTER EQUIPMENT SOUNTER EQUIPMENT SOUNT NAME EQUIPMENT SOUN NAME SHIP'S FORCE MARKO ACTIVE MARKENANCE COMPLETION OATE METER READWO JOE DESCRIPTION (RE DESCRIPTION (RE DESCRIPTION) SECTION COMPONENT NOUN NAME COMPONENT NAME COMPONENT	SIN STATE OF THE S	PAGE M IP M M M M M M M M M M M M M M M M M	PESTALL (VA) M M	RUCTIONS A BOOMY PAGE M M M M M M M M M M M M M M M M M M M	SO SECAS OFFR  IA FAVARA  ### ### ###########################	N.E. SLOCK 6 TAKEN  Y COMPLETED ON MAPLETED ON MAPLETED ON ON ON ON ON ON ON ON ON ON ON ON ON O	O OI MR MC	OT REQUIRED  CTION III. BLOCK 15 MAPONEHT ACTION  MAINTENANCE ACTIONS  EMOVED OUTPMENT  STALLED OUTPMENT COMPRIS  COMPRIS COMP
77 TM SECTION IS ANN INTERNATION INTERNATION IN INTERNATION IN INTERNATION	BECTION BECTION BECTION DESCRIP AND CONTROL NUMBER ALTERATION IDENTERS EQUIPMENT IDENTERS ACTION TAKEN EQUIPMENT IDENTERS ACTION TAKEN BURDET FORCE MANHO ACTIVE MARTERIANCE COMPLETION DATE METER PRACHING BECTION COMPONENT MOUNTAIN COMPONENT FOR INC.	SIN  KI A K  K	PAGE  M  P  M  M  M  M  M  M  M  M  M  M  M	PETALL (VA)	RUCTIONS Is II ONLY PAGE  IF IN IN IN IN IN IN IN IN IN IN IN IN IN	SO SECAS OFFR  IA F AVARA  P F APPLIC  M MANDATO  BECTION  ACTION  ACTION  SC - PALLY O  SCHWALL  SC - PALLY  NOT APPLIC  NOT	BLE BLOCK 6 TAKEN  Y COMPLETED ON MOPELETED ON INT TO ON DEPRETED INT TO ON DEPRETED INT TO ON DEPRETED INT TO ON DEPRETED INT TO ON DEPRETED	O OI MR MC	OT REQUIRED  OTTON IN. BLOCK 15 MINONENT ACTION  MAINTENANCE ACTIONS  EMOVED DUPMENT OUPPENT OUPPENT COMPIG OUPPENT OU
77 TM SECTION S AIN	SECTION SECTION SECTION SECTION ACCONTROL NUMBER ALTERATION IDENTIFIC EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE ACTI	SIN  KI A K  K	PAGE M P M M M M M M F O R P R M M M M M M M M M M M M M M M M M	PRETALL (VA)	RUCTIONS IS IN THE STATE OF THE	SO SECUE OFFE  IA F AVARA  P F APPLIC  M MANDATO  BECTION  ACTION  SC - PALLY OF  EQUIVALIA  A TERMIN  A TERMIN  TO APPLIC  OCHEMIN  DEAMNET  DEAMN	V COMPLETED ON MAPLETED ON MAPLETED ON ON DIPERCENTED DISTORMENT TO ON DIPERCENTED COMPLETED FOR THE C	O OI MA MC	OT REQUIRED  OTTON III. BLOCK 15 MINONENT ACTION  MAINTENANCE ACTIONE  EMOVED DUPMENT BTALLED DUPMENT OUPMENT
77 TM SECTION 18 ANN 1 1-3 1-5 1-5 1-5 1-5 1-5 1-5 1-5 1-5 1-5 1-5	SECTION SECTION SECRET ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ACTION TAKEN EQUIPMENT IQUIN NAI SHIP'S FORCE MAINO ACTIVE MARTENANCE COMPLETION DATE SECTION OF DESCRIPTION (RE COMPONENT MOUN NAI OUNTITY COMPONENT ACTION COMPONENT SECTION COMPONENT COMP	SIN  KI A K  K	PAGE M IP M M M M M IP O REMOVE (M) M M IP O REMOVE (M) M M M M M M M M M M M M M M M M M M	PRETALL (VA)  M  M  M  M  M  M	RUCTIONS IS IS ONLY PAGE MP MP MP MP MP MP MP MP MP MP MP MP MP	SO SECAS OFFE  IA FAVARA  P APPLIC  M MANDATO  BECTON  ACTION  ACTION  ACTION  TO APPLIC  GOWNLET  A ATRAIT  NOT APP  1 MANTEN  COMPLET  C	V COMPLETED ON THE COMPLETED ON ON THE COMPLETED ON ON ON ON ON ON ON ON ON ON ON ON ON O	O OI MA MC	OT REQUIRED  OTTON IS, BLOCK 19 MARONEHT ACTION  MAINTENANCE ACTIONS  EMOVED OUTPHENT OUTPHENT OUTPHENT COMPRE OOMER OOM
77 TM   177 TM   18 ECTION   18 APR   18 APR   19 APR   1	SE ALL  SECTION DESCRIP JOS CONTROL MUNICIPA LOS CONTROL MUNICIPA EQUIPMENT DENTIFIC ACTION TAKEN EQUIPMENT DENTIFIC ACTION TAKEN EQUIPMENT DENTIFIC ACTION TAKEN ACTION TAKEN ACTION TAKEN ACTION TAKEN ACTION TAKEN ACTION ACTION TAKEN ACTION DESCRIP COMPONENT NOUN NU COMPONENT ACTION COMPONENT SERMAL N COMPONENT SERMAL COMPONENT COMPON	SIN  KI A K  K	PAGE  M  P  M  M  M  M  M  M  M  M  M  M  M	PESTALL PESTALL MA M M M M M M M M M M M M M M M M M	RUCTIONS  LI ONT PAGE  M M M M M M M M M M M M M M M M M M	M F AVAILAL  M F A	PAGE  AND  Y COMPLETED  ON  MAPLETED  ON  MAPLETED  ON  ON  ON  ON  ON  ON  ON  ON  ON  O	O OI MA NO OI OI OI OI OI OI OI OI OI OI OI OI OI	OT REQUIRED  OT REQUIRED  OT REQUIRED  MAINTENANCE ACTIONS  EMOVED  OUR STALLED  OU
77 YM 17 YM 18 RECTION 18 Ren 17 Telemen 1-3 4 6 7 8 9 10 11 11 12 11 14 16 16 17 19 10 11 10 10 10 10 10 10 10 10 10 10 10	SECTION SECTION SECRET ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ACTIVE MARKEN EQUIPMENT DOWN NAM SHIP'S FORCE MARKO ACTIVE MARKENANCE COMPLETION DATE SECTION COMPONENT NOWN NAM OUNTITY COMPONENT ACTION COMPONENT	BIN  IT À II  PTON  II  ATON CODE  ME  MURS EXPENDED  TIME  MARKE)  IN II  TION  ATON  PAGE  M  P  M  M  M  M  M  M  M  M  M  M  M	PESTALL PESTALL MA M M M M M M M M M M M M M M M M M	RUCTIONS A BOOMY PAGE M M M M M M M M M M M M M M M M M M M	MAPPING MANAGATO  ACTION  ACTI	N.E. SLOCK 6 TAKEN  Y COMPLETED ON MAPLETED ON MAPLETED HIT TO ON DIRECTIVE LICABLE MODE ACTION ED PARTS ED PAR	O OH MA MC	OT REQUIRED  OTTON IS, BLOCK 19 MARONEHT ACTION  MAINTENANCE ACTIONS  EMOVED OUTPHENT OUTPHENT OUTPHENT COMPRE OOMER OOM	
77 TM SECTION 19 ANN 19	SECTION OR SCANING AND AND AND AND AND AND AND AND AND AND	BIN  IT À II  PTON  II  ATON CODE  ME  MURS EXPENDED  TIME  MARKE)  IN II  TION  ATON  PAGE M IP M M M M M M M M M M M M M M M M M	BECTON I I  C  PRISTALL (VA)  M  M  M  IA  IA  IA  IA  IA  IA	RUCTIONS  A II  OPPLY PAGE  II  III  III  III  III  III  III  I	IN F AVAILAL  F APPLICA  M F AVAILAL  F APPLICA  M MANDATO  BECTION  ACTION  A	V COMPLETED ON DIFFERENCE OF THE PROPERTY OF T	O OH MA MC	OT REQUIRED  OT REQUIRED  OTTON M. BLOCK 15 MINONENT ACTION  MAINTENANCE ACTIONS  EMOVED OUTMENT STALLED OUTMENT OUTME	
77 TM SECTION 18 ANN 18 ANN 11-3 4 5 6 7 7 8 9 11-11-12 17EM MC 11-3 14 15 16 16 17 17 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	SECTION DESCRIPTION AND SECTION OF SCHOOL AND SECTION OF SCHOOL AND SECTION OF SCHOOL AND SECTION OF SECTION O	BIN  IT À II  PTON  II  ATON CODE  ME  MURS EXPENDED  TIME  MARKE)  IN II  TION  ATON  PAGE M IP M M M M M M IP M M M M M M M M M M	BECTON I I  C  PRETAL  (VA)  M  M  II  IA  IA  IA  IA  IA  IA  IA	RUCTIONS IS IN THE PROPERTY OF	SO SECAS OFFR  IA F AVARA  P F APPLICA  M MAMOATO  BECTION  ACTION  SC - PALLY O  EQUIVALY  ALTERAT  SO - PALLY  EQUIVALY  ALTERAT  ODMELT  DAMME F  PATE M  P	V COMPLETED ON DIFFERENCE OF THE PROPERTY OF T	O OH MA MC	OT REQUIRED  OT REQUIRED  OTTON M. BLOCK 15 MINONENT ACTION  MAINTENANCE ACTIONS  EMOVED OUTMENT STALLED OUTMENT OUTME	
77 TM SECTION S AN (TEM HUMBER 1-3 4 5 6 7 7 8 9 111 12 17EM 17EM 17EM 17EM 17EM 17EM 17EM 17EM	SECTION DISCOME ALTERATOR IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE DESCRIPTION (R	SIN  IT IS IN  IT IS IN  ATON CODE  ME  UNB EXPENDED  TIME  MARKS  IN IN  TITON  LATON  ATON CODE  ATON  ATON CODE  ATON  ATON  ATON  ATON  ATON  ATON  CATON  ATON  CODE	PAGE M IP M M M M M M IP O REMOYE (RMO) M M M M M M M M M M M M M M M M M M	PRESTALL  PRESTALL  (VA)  M  M  M  IA  IA  IA  IA  IA  IA  IA  I	RUCTIONS Is II OUT PAGE MP MP MP MP MP MP MP MP MP MP MP MP MP	IN F AVAILAL  F APPLICA  M F AVAILAL  F APPLICA  M MANDATO  BECTION  ACTION  A	V COMPLETED ON DIFFERENCE OF THE PROPERTY OF T	O OH MA MC	OT REQUIRED  OT REQUIRED  OTTON M. BLOCK 15 MINONENT ACTION  MAINTENANCE ACTIONS  EMOVED OUTMENT STALLED OUTMENT OUTME
77 TM SECTION IS ANN IN INC. I	SECTION GEORGE ALTERATION MARIES ALTERATION MARIES ALTERATION MARIES ALTERATION MARIES EQUIPMENT DENTIFIC ACTIVE TAKEN EQUIPMENT DOWN MARIES ACTIVE MARITEMANCE COMPETION DATE MORE DESCRIPTION (REC DESCRIPTION (	SIN  IT IS IN  IT IS IN  ATON CODE  ME  UNB EXPENDED  TIME  MARKS  IN IN  TITON  LATON  ATON CODE  ATON  ATON CODE  ATON  ATON  ATON  ATON  ATON  ATON  CATON  ATON  CODE	PAGE  M  P  M  M  M  M  M  M  M  M  M  M  M	BECTON I I  C  PRISTALL (VA)  M  M  M  M  M  M  M  M  M  M  M  M  M	RUCTIONS Is II  POST PAGE  M  P  NR  NR  NR  NR  NR  M  M  M  M  M  M  M  M  M  M  M  M  M	IN F AVAILAL  F APPLICA  M F AVAILAL  F APPLICA  M MANDATO  BECTION  ACTION  A	V COMPLETED ON DIFFERENCE OF THE PROPERTY OF T	O OH MA MC	OT REQUIRED  OT REQUIRED  OTTON M. BLOCK 15 MINONENT ACTION  MAINTENANCE ACTIONS  EMOVED OUTMENT STALLED OUTMENT OUTME
7 YM PRECTION R FAN (TEM PRIME TO THE T	SECTION DISCOME ALTERATOR IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTION TAKEN EQUIPMENT IDENTIFIC ACTIVE MAINTENANCE ACTIVE MAINTENANCE ACTIVE MAINTENANCE DESCRIPTION (R	SIN  SIN  SIN  SIN  SIN  SIN  SIN  SIN	PAGE M IP M M M M M M IP O REMOYE (RMO) M M M M M M M M M M M M M M M M M M	PRESTALL  PRESTALL  (VA)  M  M  M  IA  IA  IA  IA  IA  IA  IA  I	RUCTIONS Is II OUT PAGE MP MP MP MP MP MP MP MP MP MP MP MP MP	IN F AVAILAL  F APPLICA  M F AVAILAL  F APPLICA  M MANDATO  BECTION  ACTION  A	V COMPLETED ON DIFFERENCE OF THE PROPERTY OF T	O OH MA MC	OT REQUIRED  OT REQUIRED  OTTON M. BLOCK 15 MINONENT ACTION  MAINTENANCE ACTIONS  EMOVED OUTMENT STALLED OUTMENT OUTME

Figure 2-6A.—OPNAV 4790/CK, Ship's Configuration Change Form.

J WORK CENTER 3		T	ALTERATION II		LION	SAME A	. T	
2 WORK CENTER 3							, I	
	108 SEQ NA	ALTERATIO	NS ISHIPALT, FLO CH	6 (1)(1		PI SIII	PAG	
11 COMPONENT NOUN	NAME						. ,	14 QUANTITY IS CA
16 COMPONENT IDENT	FICATION			17 COMP	ONENT SERIAL NUM	BEA		
18 COMPONENT APLIA	<del>(                                    </del>	* * * * * * * * * * * * * * * * * * * *	19 LOCATION IDEC	KIF RAMEIS	iot:	70	EIC	<del></del>
21 NEXTHIGHER ASSE	WELV .	<del></del>	<del></del>	• • •	<del></del>	22 SAC		23 WORK CENTER
24 NAMEPLATE DATA		<del></del>		<del>            _   _  </del>	<del></del>	<del>1</del>		<del></del>
<del>                                     </del>	<del></del>		<del></del>		<del></del>			
<del></del>	<del></del>	<del></del>	<del></del>			<del> </del>		
	<del> </del>		<del> </del>	· · · · · · ·				<del></del>
25 MIP		<del></del>		26 6055				
27 750	<del></del>		<del></del>	<u> </u>	<del></del>	<del></del>		<del></del>
30 014	1 20 20 20			٠.	20. 55.55.055.05	1 1 1		
<u> </u>	75 AICSIN				1			
	108 SEQ NA	4 ALTERATIO			TION	SAME A		3
						EXCEPT	PAC	
								14 QUANTITY IS CA
16 COMPONENT IDENT	FICATION			17 COMP	ONENT SERIAL NUM	ere.		
18 COMPONENT APL/A	EL		19 LOCATION IDEC	K/FRAME/S	(DE)	20	LIC	
21 NEXT HIGHER ASSE	MBLY					22 S A C		23 WORK CENTER
24 NAMEPLATE DATA			<del></del>			· · · · · · · · · · · · · · · · · · ·		<del>  </del>
<del></del>		<del></del>	· · · · · · · · · · · · · · · · · · ·		<del> </del>	<del></del>	·	
	<del></del>		<del></del>	<del></del>	<del></del>		<u> </u>	
			<del> </del>			1 1 1		<del></del>
25 MIP	<del></del>			76 6055	<del></del>	44		
27 79	<del> </del>		<del></del>		<del> </del>		ш.	
	+		<del></del>		<del> </del>			
								<u> </u>
	JOB SEQ NA	4 ALTERATIO			TION	P1, \$111		
	4 4 4					EXCEPT	PAG	
								14 QUANTITY IS CA
				L.,			ـــــــــــــــــــــــــــــــــــــــ	
		4 4 .4	18 LOCATION (DEC	K/FRAME/S	.OE)	44 . L	€iC	
21 NEXT HIGHER ASSE	MBLY					22 SAC		23 WORK CENTER
24 NAMEPLATE DATA	<del></del>	<del></del>	h					
1 1 1	<del></del>	<del></del>			· · · · · ·		—	
		<del></del>	h		<del></del>			<del></del>
			<del></del>	·	·		ш_	
25 MIP	<del></del>	****		26 EOSS	<del> </del>			
			<del></del>		<del></del>	<del></del>	щ.	<del></del>
	120 411 515				1 dec de cadace :			
	12 2.0.7					<del> </del>		<u> </u>
	108 880 NR	A ALTERATIO			TION			
			<u> </u>		· · · · · · · · · · · · · · · · · · ·	EXCEPT	PAG	
	4 4 4	1 1	<del></del>					14 QUANTITY 18 CA
18 COMPONENT IDENT	FICATION					SER.		I
18 COMPONENT APLIA			19 LOCATION IDEC	K/FRAME/S	106)	20	EIC	
21 NEXT HIGHER ASSE	MBLY	<del></del>				22 S.A.C.		23 WORK CENTER
24 NAMEPLATE DATA		**	I		· · · · · · · · · · · · · · · · · · ·			
	<del></del>	<del></del>						<del></del>
	<del></del>	<del></del>	<del></del>	<del></del>		<del></del>	L	
					<del></del>			
					<u> </u>			
			<del></del>	26 EOSS				
27 TM								
	25 MIP 27 TM 38 RIN CONTROL NUMBER 29 WORK CENTER 21 NEXT HIGHER ASSE 24 NAMEPLATE DATA 25 MIP 27 TM 38 RIN 18 COMPONENT APLIA 21 NEXT HIGHER ASSE 24 NAMEPLATE DATA 25 MIP 27 TM 28 RIN 29 RIN 29 RIN 20 NIROL NUMBER 21 NEXT HIGHER ASSE 24 NAMEPLATE DATA 21 NEXT HIGHER ASSE 24 NAMEPLATE DATA 25 MIP 27 TM 28 RIN 29 RIN 20 NIROL NUMBER 21 WORK CENTER 22 WORK CENTER 23 WORK CENTER 23 WORK CENTER 24 NAMEPLATE DATA 25 MIP 26 RIN 27 TM 28 RIN 28 RIN 29 RIN 20 WORK CENTER 21 COMPONENT ADLA 21 NEXT HIGHER ASSE	25 MIP  27 TU  28 RIN 29 AILSIN CONTROL NUMBER  2 WORK CENTER 3 JOSSEO NR  13 COMPONENT ROUN NAME  16 COMPONENT APLAEL  21 NEAT HIGHER ASSEMBLY  24 NAMEPLATE DATA  25 MIP  27 TU  28 RIN 29 AILSIN CONTROL NUMBER  2 WORK CENTER 3 JOSSEO NR  13 COMPONENT NOUN NAME  14 CAMPONENT NOUN NAME  15 COMPONENT NOUN NAME  21 NEAT HIGHER ASSEMBLY  24 NAMEPLATE DATA  25 MIP  27 TW  28 RIN 29 AILSIN CONTROL NUMBER  27 TW  28 RIN 29 AILSIN CONTROL NUMBER  31 WORK CENTER 3 JOSSEO NR  13 COMPONENT NOUN NAME  14 CAMPONENT NOUN NAME  15 COMPONENT NOUN NAME  16 COMPONENT NOUN NAME  17 TW  28 RIN 29 AILSIN CONTROL NUMBER  29 AILSIN CONTROL NUMBER  31 WORK CENTER 3 JOSSEO NR  13 COMPONENT NOUN NAME  16 COMPONENT NOUN NAME	25 MIP 27 TM 28 RIN	25 MIP 27 TM 28 RIN	25 MIP 25 MIP 26 RIN 27 TM 28 RIN 29 AILSIN 20 COMPONENT NOUN NAME 16 COMPONENT ROUN NAME 17 COMPONENT ROUN NAME 18 COMPONENT ROUN NAME 29 AILSIN 20 RIN 29 AILSIN 20 RIN 29 AILSIN 20 RIN 20 RIN 20 RIN 20 RIN 20 RIN 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 22 COMPONENT ROUN NAME 23 COMPONENT ROUN NAME 24 COMPONENT ROUN NAME 25 AILSIN 26 RIN 27 TM 28 RIN 28 RIN 29 AILSIN 20 COMPONENT ROUN NAME 29 COMPONENT ROUN NAME 29 COMPONENT ROUN NAME 20 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 22 COMPONENT ROUN NAME 23 RIN 24 RIN 25 MIP 26 RIN 27 TM 28 RIN 28 RIN 29 AILSIN 20 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 RIN 22 RIN 23 RIN 24 RIN 25 MIP 26 RIN 27 TM 28 RIN 28 RIN 29 AILSIN 20 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 COMPONENT ROUN NAME 21 RIN 21 REXT RIGGER ASSEMBLY 22 NAMEPLATE DATA 23 TM 24 RAMEPLATE DATA 25 MIP 26 COMPONENT ROUN NAME 27 TM 28 RIN 29 RIN 20 RIN 20 RIN 20 RIN 20 RIN 21 COMPONENT ROUN NAME 21 RIN 21 REXT RINGER ASSEMBLY 22 NAMEPLATE DATA 23 TM 24 RAMEPLATE DATA 25 MIP 26 COMPONENT ROUN RAME 27 TM 28 RIN 29 RIN 20 RIN 20 RIN 20 RIN 20 RIN 20 RIN 21 ROUN ROUN ROUN ROUN ROUN ROUN ROUN ROUN	23 MARY 23 MARY 23 MARY 24 MARY 25 MARY 26 MARY 27 MARY 28 MARY 29 MARY 29 MARY 20 MARY 20 MARY 21 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 27 MARY 28 MARY 28 MARY 29 MARY 20 MARY 20 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 26 MARY 27 MARY 28 MARY 29 MARY 20 MARY 20 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 27 MARY 28 MARY 29 MARY 29 MARY 20 MARY 20 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 27 MARY 28 MARY 29 MARY 29 MARY 20 MARY 20 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 27 MARY 28 MARY 29 MARY 29 MARY 29 MARY 20 MARY 20 MARY 20 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 27 MARY 28 MARY 29 MARY 29 MARY 29 MARY 20 MARY 20 MARY 21 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 27 MARY 27 MARY 28 MARY 29 MARY 29 MARY 29 MARY 20 MARY 20 MARY 21 MARY 21 MARY 21 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 26 MARY 27 MARY 27 MARY 28 MARY 28 MARY 29 MARY 29 MARY 20 MARY 21 MARY 21 MARY 21 MARY 21 MARY 21 MARY 21 MARY 21 MARY 22 MARY 23 MARY 24 MARY 25 MARY 26 MARY 26 MARY 27 MAR	23	32

Figure 2-6B.—OPNAV 4790/CK(C), Ship's Configuration Change Form Continuation Page

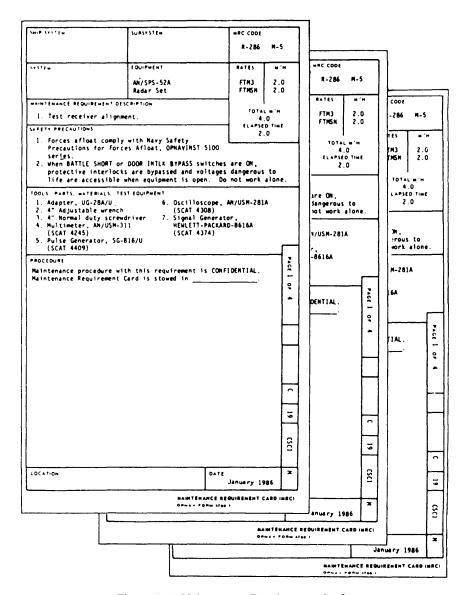


Figure 2-7.—Maintenance Requirement Cards

the "who, what, when, how, and with what resources" associated with a specific maintenance requirement. (See figure 2-7.)

Some MRCs have equipment guide lists (EGLs) accompanying them to serve as location guides for a number of identical equipments. A blank EGL is shown in figure 2-8.

### List of Effective Pages (LOEP)

The work center LOEP contains a list of the Maintenance Index Pages (MIPs) and a brief description of the systems and equipments in the work center.

### **Maintenance Index Page (MIP)**

A MIP contains a brief description of the maintenance requirements on all the MRCs for each item of equipment.

#### **Schedules**

Maintenance is scheduled on cycle, quarterly, and weekly schedules.

Cycle Schedule-Displays the PMS requirements to be performed during the period between major overhauls.

Quarterly Schedule-Displays each work center's PMS requirements to be performed during a specific 3-month period.

Weekly Schedule-Displays the planned maintenance scheduled for accomplishment in a work center during a specific week.

### PMS Feedback Report (FBR)-OPNAV 4790/7B

The PMS feedback report, shown in figure 2-9, provides the command with an easy method of

PAGE	OF	
	MRC PERIO	ODICITY
SERIAL NO. QUANTITY	LOCATION	APPLICABLE DATA AS REQUIRED BY MR
	_	
		•
		MRC PERI

Figure 2-8.—Standard Equipment Guide List (EGL).

recommending changes to maintenance requirement cards, ordering MRCs that have been lost or mutilated, and notifying the systems commands of any discrepancies in coverage.

The FBR is a five-part form composed of an original and four copies. Instructions for preparing and submitting the form are printed on the back of the last copy as illustrated in figure 2-10. You can obtain these forms through the Navy Supply System. For detailed instructions on 3-M procedures, refer to OPNAVINST 4790.4B.

### THE TECHNICAL LIBRARY

Now that we have discussed the paperwork needed to complete maintenance actions, we will look at the technical library that should be setup and maintained to provide technicians the technical documents they need to perform maintenance.

In the following paragraphs we will discuss various manuals and publication that will give you a good starting point for a technical library.

## PUBLICATION APPLICABILITY LISTING (PAL)

The PAL lists technical manuals, operating instruction charts, performance standards sheets, maintenance standards books, and technical manual

changes for operating and maintaining onboard systems and equipments that are under the technical cognizance of NAVSEASYSCOM.

The PAL is produced from the Ships' Technical Publications System, NAVSEA's technical manual information system, and is maintained by the Naval Ship's Data Support System (NSDSS), Port Hueneme, California. Although the PAL provides assistance in determining the publications needs of the ship or shore station to which it applies, it is not a list of required publications.

The PAL contains four separately bound volumes, each having two parts:

• Volume 1-General Publications

Part 1-Electronics, HM&E, and Miscellaneous

Part 2-Weapons

Volume 1 lists only general and ship-applicable publications that do not relate to equipments or systems. It does not include any of the publications that appear in Volumes 2, 3, and 4.

• Volume 2-Electronics

Part 1-Equipment sequence

Part 2-Publication sequence

• Volume 3-HM & E

SEE INSTRUCTIONS	REPORT SYMBOL OPNAV 4790-4 ON BACK OF GREEN PAGE
FROM (SHIP NAME AND HULL NUME	
U.S.S. MIDWAY (CV-41)	DATE
NAVAL SEA SUPPORT CENTER	PACIFIC (Category A)
TYPE COMMANDER (Category B)	
	ANCE SYSTEM FEEDBACK REPORT
SYSTEM, SUB-SYSTEM, OR COMPONENT	APL/CID/AN NO./MK. MOD.
SYSCOM MIP CONTROL NUMBER	SYSCOM MRC CONTROL NUMBER
DESCRIPTION	DN OF PROBLEM
CATEGORY A	CATEGORY B
XX MIP/MRC REPLACEMENT	TECHNICAL
	TYCOM ASSISTANCE
	OTHER (Specify)
REMARKS	OTHER (Specify)
MIPs only A-33/10 EL-11/1	9-87
MIPs and E-11/62 F-6/7-8	MRCs -18 2 each 7 l each
MRCs cnly (MIP E-	7, 5 each 14/749-22) 69 T965 S
ORISTNATOR & WORK CENTER CODE EX00 DEST HEAD	DIV. DEFICER  3. IN COORDINATORY
[ Without	1 / Lechart
Originator do not write i	below, For TYCOM ase only.
TYCOM CONCUR DO NO	
TYCOM REP SIGNATURE	DATE
S/N 0107-LF-007-8000	ON COPY PAGE OF  BE USED UNTIL EXHAUSTED

Figure 2-9.—OPNAV 4790/7B, PMS Feedback Report (FBR).

Part 1-Equipment sequence

Part 2-Publication sequence

### • Volume 4-Weapons

Part 1-Equipment sequence

Part 2-Publication sequence

## MAINTENANCE STANDARDS HANDBOOKS

Maintenance standards handbooks describe a series of specially developed preventive maintenance procedures that, when performed as directed, will reveal areas of subnormal performance and provide for

#### 1. ORIGINATOR:

- Typewritten copies are preferred, however handprinted copies are acceptable. Use ballpoint pen and ensure all copies are legible.
- b. EQUIPMENT IDENTIFICATION: Fill in titled blocks that apply. Give as much information that can be determined. Ensure that current APL number is used for hull, mechanical or electrical equipment or electronic/weapons equipment which does not have an Army-Navy number or mark/mod designation.
- c. DESCRIPTION OF PROBLEM: Check the appropriate box.

#### Category A

(1) MIP/MRC REPLACEMENT: Ensure that PMS documentation request is current in accordance with latest SFR. For missing MIP's/MRC's, give SYS-COM control numbers when they can be determined. If SYSCOM control numbers cannot be determined, provide as much nameplate data as can be obtained. When ordering a variety of missing/worn MIP's/MRC's, the subject section shall be left blank.

#### Category B

- (2) TECHNICAL: (a) Identify specific discrepancy discovered in PMS by MRC control number, step number, etc.
  - (b) For publication discrepancies identify publication by number, volume, revision date/number, change number, page, paragraph and or figure as appropriate.

### THIS FORM WILL NOT BE USED TO ORDER PUBLICATIONS.

- (3) TYCOM ASSISTANCE: Includes clarification of 3-M instructions and other matters related to PMS administration.
- (4) OTHER: Identify in detail any problem not covered by (1) through (3) above. Shifts of maintenance responsibility will be reported under this item. Ensure that all work centers involved in the change are identified by work center code. Approval by the Executive Officer will be shown in the "Remarks".
- d. REMARKS: Provide brief, but complete, description of problem or requirement. Executive Officer indicate approval of maintenance responsibility shift by endorsement. Use additional forms if more space is required. Mark additional forms, "page 2 of 2", "page 2 of 3", etc. Staple additional forms behind basic form.
- ORIGINATOR IDENTIFICATION: Sign and insert work center code in appropriate space.
- DIVISION OFFICER: Review for accuracy and completeness and sign in the space provided.
- 3. DEPARTMENT HEAD: Review for accuracy and completeness and sign in the space provided.
- 4. 3-M COORDINATOR:
  - a. Serialize, date and sign in the appropriate spaces.
  - b. Routing Instructions: For category "A" FBR's forward the white and yellow copies to the appropriate NAVSEACEN and the pink copy to the TYCOM. For category "B" FBR's forward the white, yellow and pink copies to the TYCOM. Retain blue copy in suspense file. Return green copy to the originator.

OPNAV 4790/78 (Back

Figure 2-10.—Instructions for Preparing the PMS Feedback Report (reverse side of FBR form).

effective mechanical and electrical maintenance of the equipment. The installing activity performs those procedures on the equipment when it is operating properly and publishes the results as "designated reference standards." The designated reference standards collectively represent normal performance. This allows you to compare the results of a scheduled

test with the reference standards to identify, properly analyze, and correct abnormalities.

## NAVAL SHIPS' TECHNICAL MANUAL (NSTM)

The NSTM is a set of books (chapters) that contain general information on a variety of topics. You can find

a complete listing of the NSTM chapters in chapter 001, *General - NSTM Publications Index and User Guide.* The chapters we have listed below are related to your job, both as a technician and as a member of a ship's or station's organization.

## NSTM Chapter 79-Practical Damage Control (DC)

This chapter provides broad guidance for establishing a DC organization. This guidance is designed to help organizations plan before damage occurs, spend a minimal amount of time localizing damage that does occur, and make emergency repairs or restoration as quickly as possible after damage occurs.

### **NSTM Chapter 300-Electrical Plant**

This chapter provides information and instructions on electrical equipment, electrical safety precautions, electrical insulation and insulation resistance, and maintenance reconditioning of electrical equipment. It provides the requirements we, as ETs, must meet in a shipboard safety program, including use and maintenance of organizational electrical and electronic equipment and personal electrical and electronic equipment.

### **NSTM Chapter 400-Electronics**

This chapter provides major policies and instructions pertaining to maintenance of electronic equipment and safety information aboard active and reserve ships.

## **NSTM Chapter 631-Preservation** of Ships in Service

This chapter provides instructions, requirements, and information for prevention of corrosion of ships, boats, and small craft. Topics include surface preparation, painting, and application of other preventive measures.

### **NSTM Chapter 634-Deck Coverings**

This chapter provides information concerning materials, installation procedures, maintenance and

repair of deck coverings, gratings, sealing methods, and caulking compounds used for sealing deck seams.



### ELECTRONICS INSTALLATION AND MAINTENANCE BOOK (EIMB)

The EIMB is the medium for collecting, publishing, and distributing, in one convenient source, safety information, maintenance policies and philosophies, installation standards and practices, and overall electronic equipment and material-handling procedures required by Chapter 400 of the *Naval Ships' Technical Manual*. The EIMB is organized into a 13-volume series of individual books.

### **EIMB General Handbook**

This handbook provides data pertaining to administration, supply, publications, and safety matters, and contains the subject index for information contained in the other handbooks.

#### **EIMB Installation Standards Handbook**

This handbook issues approved standards, techniques, and practices for the installation of electronic equipment aboard ships.

#### **EIMB Electronic Circuits Handbook**

This handbook provides the theory of operation and circuit description of basic vacuum tube and semiconductor circuits.

### **EIMB Test Methods and Practices Handbook**

This handbook provides technicians with reference information on the fundamentals of test methods and basic measurements, step-by-step procedures for testing typical electronic circuits and equipment, and fictional descriptions of the theory of operation of the test equipment used and circuits tested.

### **EIMB Reference Data Handbook**

This handbook contains an encyclopedic presentation of useful and informative definitions,

abbreviations, formulas, and other general data related to electronics installations and maintenance.

### **EIMB EMI Reduction Handbook**

This handbook contains techniques and procedures for the elimination or reduction of electromagnetic interference created by own force's electromagnetic radiating devices.

#### **EIMB General Maintenance Handbook**

This handbook contains routine maintenance concepts, techniques, and procedures common to all electronic and electrical equipment.

### **EIMB Equipment-Oriented Handbooks**

For the basic equipment category, each of the six handbooks contains general servicing information; servicing information for specific equipments; a field change identification guide that provides field change information for all equipments of the basic equipment category; and functional descriptions common to the equipment of the basic equipment category. The six equipment-oriented handbooks are as follows:

- 1. Communications
- 2. Radar
- 3. Sonar
- 4. Test Equipment
- 5. Radiac
- 6. Countermeasures

Periodically, the equipment-oriented handbooks are updated by incorporating the *Engineening Information Bulletin* (EIB) articles. The EIMBs are an excellent source of basic information that can be used as a training tool for your workcenter. If space is available, you will benefit from having a complete set for your technical library.

### **OTHER PUBLICATIONS**

There are many other useful publications throughout the fleet. However, because of the vast number, we will only describe a few in the following paragraphs.

### **Shipboard Antenna Systems Manuals**

These five manuals serve as a source of information for personnel concerned with the installation and maintenance of shipboard antennas. The information they contain supplements, but does not supersede, existing specifications. The following is a list of what each volume contains:

- Volume 1-Communications Antenna Fundamentals
- Volume 2-Installation Details, Communications Antenna Systems
- Volume 3–Antenna Couplers, Communications Antenna Systems
- Volume 4–Testing and Maintenance, Communications Antenna Systems
- Volume 5-Antenna Data Sheets

### Miniature/Microminiature (2M) Electronic Repair Program

While this publication (three volumes under one cover) gives procedures and techniques, personnel must be formally trained and certified to make high-quality, reliable repairs to state-of-the-art electronic printed circuits and modules.

### Shipboard Bonding, Grounding, and Other Techniques for Electromagnetic Compatibility and Safety, Military Standard 1310 (NAVY)

The requirements of this standard apply to all new shipboard installations and to any part of an existing installation that is being modified. The procedures and methods specified in this standard apply to any situation that requires the technician to (1) bond, ground, insulate, or use nonmetallic materials to provide electromagnetic compatibility; (2) provide personnel safety from electrical shock hazards; (3) safeguard electrical transmissions of classified information; and (4) provide a dc reference ground. We recommend this publication as a MUST reading assignment for all Electronics Technicians.

# Electromagnetic Radiation Hazards (Hazards to Personnel, Fuel, and Other Flammable Material)

This manual prescribes operating procedures and precautions to prevent injury to personnel, ignition of

volatile vapors, and premature initiation of electroexplosive devices in ordnance caused by exposure to environmental electromagnetic radiation.

Data in this manual are provided in two volumes as follows:

#### • Volume I

Hazards to Personnel, Fuel, and Other Flammable Material (U)

#### Volume II

Part I-Hazards to Unclassified Ordnance Systems (U)

Part II-Hazards to Classified Ordnance Systems (U)

Volume I and Volume II, Part One, are unclassified All classified data are contained in Volume II. Part Two.

### Installation Criteria for Shipboard Secure Electrical Information Processing Systems, Military Standard 1680 (SHIPS)

This standard sets forth the design and installation criteria that apply to shipboard secure electrical information processing systems, including detailed hardware and equipment requirements and the applicable inspection and reporting procedures and documentation. Installation and maintenance technicians of these processing systems MUST be well versed in the contents of this standard.

### General-Purpose Electronic Test Equipment, Military Standard 1364 (Series) (NAVY)

This standard identifies standard General-purpose Electronic Test Equipment (GPETE), GPETE support items, and General Use Portable Electrical Equipment (GUPEE) that are suitable for Navy use and for which the Naval Sea Systems Command exercises material support responsibility by management of item entry. This standard also establishes uniform procedures for submission of applications to procure nonstandard GPETE.

### Military Specification Manuals, Technical: Functionally Oriented Maintenance Manuals (FOMM) for Electronic, Electromechanical, and Ordnance Equipment Systems, and Platforms, Military Specification Mil-M-24100C

This specification sets forth the content and format requirements for FOMMS, and their revisions and changes, necessary for the installation operation, repair (organizational-level, intermediate-level, and depot-level), and parts support of equipment, systems, and subsystems without the services of manufacturer's representatives.

### Procedures for Conducting a Shipboard Electromagnetic Interference (EMI) Survey (Surface Ships), Military Standard 1605 (SHIPS)

This standard provides detailed procedures for conducting an electromagnetic interference survey aboard surface ships.

### Navy Electricity and Electronics Training Series (NEETS)

At present there are 24 NEETS modules. These modules contain a vast amount of information from an introduction to matter, energy, and direct current to an introduction to fiber optics.

The NEETS modules are high quality training aids as well as excellent review publications for basic electronics for all ETs.

### CATALOGS, LISTS, INDEXES, AND DIRECTORIES

The following paragraphs will discuss catalogs, lists, indexes and directories of electronic equipment.

### **Equipment Identification Code (EIC) Master Index**

This index provides a listing of equipment identification codes (EICs) in two sections. Section I lists EIC numbers in numerical sequence and identifies the equipment nomenclature assigned to each EIC number. Section II is the complement of Section I. It lists nomenclature in alphanumerical sequence and identifies the EIC numbers assigned to equipment.

### Guide for User Maintenance of NAVSEA Technical Manuals

The maintenance of up-to-date technical manuals aboard your command is essential to the operational readiness of the command systems and equipment. This guide will bean important part of the technical library.

Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding electrically initiated explosive devices) (METRIC), Military Handbook 263A

This handbook provides guidance, not requirements, for the establishment and implementation

of an Electrostatic Discharge (ESD) Control Program according to the requirements of MIL-STD-1686. This document applies to the protection of electrical and electronic parts, assemblies and equipment from damage due to ESD. It does not provide information for the protection of electrically initiated explosive devices.

### Metrology Automated System for Uniform Recall and Reporting (MEASURE) User's Manual

This manual outlines the procedures that apply to Navy calibration facilities using the system, ship and shore activities obtaining services from them, and other military activities whose use of MEASURE is in effect.

### **CHAPTER 3**

### **LOGISTICS**

As an Electronics Technician, you will definitely be involved with the supply department in getting the exact items you need to complete your tasks. To work effectively and smoothly with the supply department, you must understand how to use the supply system. This chapter should help you understand the overall operation of the system.

### NAVAL SUPPLY SYSTEMS COMMAND

The Naval Supply Systems Command (NAVSUP-SYSCOM) controls the procurement of materials and services throughout the Department of the Navy. It combines into one overall system inventory managers, distribution activities, and other activities that are responsible for providing responsive and efficient material support to the operating forces of the Navy.

#### INVENTORY MANAGERS

Navy inventory managers have the primary responsibility for managing assigned groups or categories of items of supply. The primary function of an inventory manager is to balance parts required and parts available so that Navy fleet and shore activities receive effective and efficient support. Navy inventory managers include systems commands, project managers, bureaus, offices (including Military Sealift Command), and inventory control points (ICPs) under the command of NAVSUPSYSCOM.

## INVENTORY CONTROL POINTS (ICPs)

Each ICP manages one or more types of material held at stock points in a distribution system. The ICPs position materials at stock points, maintain inventory control through an extensive stock reporting system, and provide technical assistance and cataloging services to the supply system and its customers.

### STOCK POINTS

Stock points are large facilities, such as supply centers and depots, that stock parts and assemblies for shipment to requesting commands.

### **Supply Centers and Depots**

Naval supply centers (NSCs) and depots are command organizations that furnish supply support to fleet units and shore activities. These stock points are primarily concerned with procuring, receiving, storing, issuing, and shipping material. Fleet and shore activities send requisitions to the stock points; which, in turn, ship the material and bill the unit for payment. The stock points inform the ICPs of material shipped so the ICPs can track the inventory level and determine when to buy additional material. Stock points stock Navy, Defense Logistics Agency, and General Service Administration cognizance material for issue to supported units.

Supply centers and depots perform similar functions, but at different levels. Supply centers are managed by the Naval Supply Systems Command and support supply depots and other activities that perform depot functions. Supply depots are commanded by a fleet command and normally support only local commands.

## **Industrial Naval Air Stations** (INASs)

The INASs are primary Navy stock points for aviation material. These stock points are collocated with Naval Aviation Depots (NADEPs) and function as storage and shipment points of aviation cognizance material. The INASs report transactions of aviation material to the cognizant ICP.

## MOBILE LOGISTICS SUPPORT FORCE (MLSF)

The purpose of the MLSF is to release deployed fleet units from direct dependence on shore bases for supply support. To do this, the MLSF stocks militarily essential items in high demand by deployed fleet units. The materials carried by MLSF ships are listed in the *Consolidated Afloat Requisitioning Guide Overseas* (CARGO), NAVSUPP-4998-A(Atlantic) and P-4990-P (Pacific).

### GENERAL SERVICES ADMINISTRATION (GSA)

The General Services Administration controls items of material that are common to both military and civilian worlds. Examples of GSA items are paint, paper, handtools, chalkboards, movie projectors, and the like. GSA items are stocked at the naval supply centers located in Norfolk Virginia; and San Diego, California.

### **DEFENSE LOGISTICS AGENCY (DLA)**

The Defense Logistics Agency controls items of material that are common to all the military services but not to the civilian world. Examples of DLA items are fuels and bullets. DLA items are also stocked at the Norfolk and San Diego naval supply centers.

### INTEGRATED NAVY SUPPLY SYSTEM

The Navy supply system is an *integrated* system, allowing materials to be obtained usually from more than one point in the system. In the remainder of this chapter, we will discuss the Navy supply system in general, introduce the primary instructions and forms, and provide a brief description of how to use the system to get parts and supplies.

The following is a description of how the integrated Navy Supply System might react to a typical supply requisition:

- USS Ship requisitions cognizance symbol 9N material from the NSC.
- 2. The NSC, a Navy retail stock point, usually ships the requested material. However, after screening its stocks, the NSC determines that the requested material is not carried. It then refers the requisition to the Defense Electronics Supply Center (DESC), Dayton, the cognizant inventory manager.
- The DESC, Dayton, after researching its master records and determining that the material is available at NSC Oakland (a specialized support point), refers the requisition to NSC, Oakland.
- 4. The NSC, Oakland, issues the material to USS ship.
- 5. The NSC, Oakland, then makes an issue transaction report to DESC, Dayton.
- 6. The DESC, Dayton, after applying the issue report to its master record, learns that stock of the item at NSC, Oakland, is below the required

- level and issues a contract to the ABC Corporation for additional stocks of the item.
- The ABC Corporation ships the material to NSC, Oakland.
- 8. The NSC, Oakland, makes a receipt transaction report to DESC, Dayton.

As you can see, if an item is not available at the local NSC, the requisition does some traveling. So it may take a little time to get the item you requested.

### COORDINATED SHIPBOARD/ SHOREBASED ALLOWANCE LIST (COSAL/COSBAL)

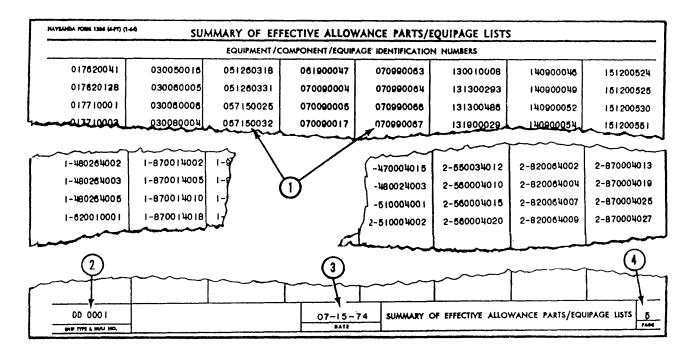
The COSAL/COSBAL is the document that drives the operational and supply support for a ship. It is a dynamic document that changes constantly, as the ship's configuration changes. Each ship in the U.S. Navy has its own COSAL or COSBAL tailored specifically to its mission. The COSAL or COSBAL lists include the following:

- The equipment or components required for the unit to perform its operational assignments
- The repair parts and special tool required for the operation, overhaul, and repair of those equipments
- The miscellaneous portable items necessary for the care and upkeep of the unit

The COSAL/COSBAL is both a technical document and a supply document. It provides nomenclature, operating characteristics, specifications, parts list, and other technical data pertaining to all installed equipment and machinery. It also provides nomenclature and characteristics of the equipage and tools required to operate and maintain the unit and its equipment.

No one can predict exactly when a circuit card in an AN/URT-23 will fail or when a bearing will wear out in a freshwater pump. However, the COSAL/COSBAL can help maintenance and supply personnel in a unit to make an educated guess. The COSAL/COSBAL computers analyze the frequency of failures of parts used aboard units and, based on these analyses, develop an allowance of repair parts that the supply officer should stock.

The COSAL/COSBAL is used primarily for two purposes-to identify repair parts (storeroom items) and to determine operating space allowances (equipage).



- 1. EQUIPMENT/COMPONENT/EQUIPAGE IDENTICATION NUMBERS -THE APL AND AELIDENTIFICATION NUMBERS ARE IN NUMERICAL SEQUENCE STARTING AT THE TOP OF THE PAGE AND CONTINUING TO THE BOTTOM AND FROM LEFT TO RIGHT.
- 2. SHIP TYPE AND HULL NO THE SPECIFIC SHIP FOR WHICH THE SUMMARY IS PUBLISHED
- 3 DATE-MAY BE SHOWN AS A JULIAN DATE (4196-JULY 1974) OR AS MONTH-DAY-YEAR.
- 4. PAGE-CONSECUTIVE PAGE NUMBER OF THE SUMMARY.

Figure 3-1.—Summary of effective allowance parts/equipage lists (SOEAPL).

### **Description of COSAL Parts and Sections**

Since the COSAL and COSBAL are similar, we will describe just the COSAL parts and sections. Certain aviation components (aviation supply offices [ASOs]) will also be included in the COSAL when specifically designated. For more information and complete instructions in the use of the COSAL, we recommend that you read the *COSAL Use and Maintenance Manual*, SPCCINST 4441.170.

Each COSAL publication is produced in three parts. Part I contains indexes. Part II contains associated APLs and AELs. Part III contains allowances and cross-reference data. The three parts are subdivided as follows:

### Part I

Summary of Effective Allowance Parts/Equipage Lists (SOEAPL)

Index-Section A (Equipment Nomenclature Sequence)

Index-Sections B, C, D, and E

### Part II

Section A-Allowance Parts Lists (APLs)

Section B-Circuit Symbol Data (microfiche only)

Section C-Allowance Equipage Lists (AEL)

### **Part III**

Section A-Storeroom Items (SRI)

Stock Number Sequence List (SNSL)

Section B-Operating Space Items (OSI)

Stock Number Sequence List (SNSL)

Section CF-Maintenance Assistance Module (MAM)

Section CR-Ready Service Spares (RSS)

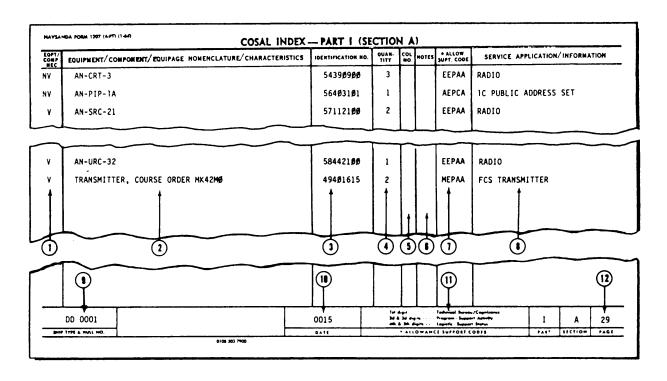
Section D-Alternate Number Cross-Reference to Stock Number

Section E-General Use Consumables List (GUCL)

Section F-Forms and Publications

The following paragraphs provide a brief description of the parts of the COSAL listed above:

**PART I-SUMMARY.**—The Summary of Effective Allowance Parts/Equipage Lists (SOEAPL) is a numerical listing of all APLs and AELs used to determine how many of each part is listed on the stock number sequence list (SNSL). Figure 3-1 is an example of a summary page, with a description of the information it contains.



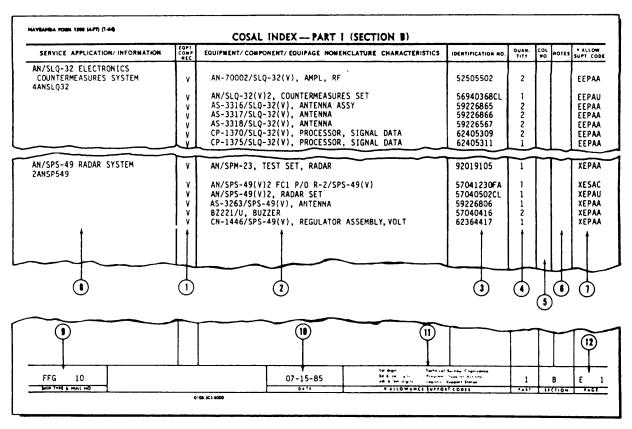


Figure 3-2.—COSAL indexes.

1.	Equipment/Component Military Essentiality Code	Indicates those items of equipment that are essential to the ship's mission.  V - Vital. Failure of the equipment could reduce the ship's capability to perform its mission.  NV - Nonvital. Failure of the equipment would not adversely affect the ship's mission.
2.	Equipment/Component/Equipage Nomenclature/Characteristics	The noun name and partial characteristic description of each APL and AEL.
3.	Identification Number	The APL or AEL identification number.
4.	Quantity	The quantity of each equipment/component per service aboard ship, covered by the applicable APL. Column 4 will be blank for all AELs.
5.	Column Number	The applicable AEL column number from which the allowance is determined. This column is blank for all APLs.
6.	Notes	A code that indicates specific information about an APL/AEL entry. These codes are listed and defined in the Introduction.
7.	Allowance Support Code	Reserved for future use. (See item 11.)
8.	Service Application/Information	The service or major shipboard function in which the equipment/component/equipage operates or performs a service.
9.	Ship Type and Hull Number	The specific ship for which the COSAL is prepared.
10.	Date	Date of preparation (may be expressed as Julian or month-day-year date).
11.	Allowance Support Codes	Pertains to item 7.
12.	Page	Consecutive page numbering from first page to last. Page numbers preceded by "H" apply to Hull, Mechanical and Electrical (Example H-1). Page numbers preceded by "Z" apply to Ordnance(Example Z-1).

<sup>\*</sup>Refer to Figure 3-2.

PART I-COSAL INDEX.- The Index identifies the APLs and AELs associated with the ship's equipment. It also provides other information, such as the code of the work center responsible for the maintenance and various maintenance-related codes. The index is published in five parts, sections A through E. Sections A and B provide a cross-index of all APL/AELs listed in Part II. They contain the same information, but in two slightly different formats. Figure 3-2 shows both the A and B indexes. All areas of information are in the same relative positions, except

that column 8 in Section A listings shifts over to become column 1 in section B listings.

The bulk of the information you will need to repair an item covered by COSAL is contained on the appropriate APL or AEL. To identify the appropriate APL or AEL, you will need to look up either the name of the equipment in Section A or the use of that equipment infection B.

Table 3-1 describes the uses of the Index columns and is keyed to the numbers shown in figure 3-2.

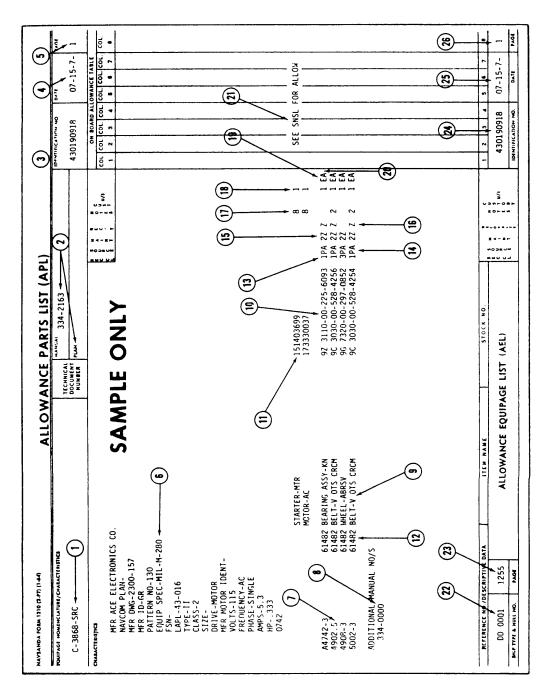


Figure 3-3.-Allowance parts list (APL).

1.	Equipment/Component Nomenclature/	Name of equipment or component and brief description.
2.	Characteristics Technical Document Number	This corresponds to the Index entries. The predominant technical manual or plan number.
٤.	recimited bocomene nomber	Additional numbers shown in item 8.
3.	Identification Number	Identifying number assigned to a particular item or component of equipment. This number is shown at
4.	Date	top and bottom of page. COSAL publication date.
	Page	Consecutive numbering of all pages required to de-
		scribe one equipment/component which is identi- fied by a single APL number. This is shown at
		both top and bottom of page. APLs have the word
		"END" printed in the center of the page immedi- ately following the last line of data for that
		APL. This enables you to ensure that you have a
6.	Characteristics	complete APL. Complete nameplate data on the equipment/component
7.	Reference/Symbol Number	named in item 1. A number, other than an NSN, by which a part may
٠.	Never encey symbol Hamber	be identified, arranged in alpha/numeric
		sequence. It may be a manufacturer's part, drawing, piece, or circuit symbol number.
8.	Additional Data Area	When additional technical manuals or plans are
		applicable, they are listed in this area under an appropriate caption. These are in addition
		to those listed in items 2 and 6.
9.	Item Name	The name listing of repair parts and/or related accessory components for the equipment/component
		covered by the APL.
10.	Stock Number	The NSN assigned to a specific repair part. When an NSN has not been assigned, the reference
		number from item 7 is repeated.
11.	Accessory Components	Accessory components applicable to a "Parent Equip- ment" are listed on the "Parent APL." Any ad-
		ditional accessory components not listed on the
12	Endamal Comply Code for Manufacturans	APL should be reported to SPCC.
	Federal Supply Code for Manufacturers (FSCM)	Indicates a coded number of a manufacturer.
13.	Part Military Essentiality Code (Part MEC)	There are two codes. They are shown on the APL and the SNSL.
	, ===,	1 - Failure of the part would have a major effect
		on the dependence/operation of the component.  3 - Failure of the part would have little effect
14	Source Code	on the dependence/operation of the component. Indicates the availability of repair parts and
•4.	300.00 0000	method of procurement. These codes are defined
15	Maintenance Code	in the Introduction.  A three digit code signifying the maintenance ac-
	The three lands of the	tivity authorized to replace, repair, and con-
		demn an item. Only first digit now used. These codes are defined in the Introduction.
16.	Recoverability Condemnation Code	Indicates the recoverability characteristics of
		items removed during maintenance. R - Repairable
		S - Salvageable
17.	Notes Code	C - Consumable Provides necessary and important information about
		individual items listed on the APL. The Introduc-
18.	Quantity in One Equipment/Component	tion lists and defines these codes. The total population of the part within the equip-
19.	Unit of Issue	ment/component described by the APL. The term connotes the physical measurement or
		count of quantities of an item for procurement,
20.		storage, and issue. Refer to Part III to determine applicable allowances.
21.		APLs published as part of an allowance list for ship- board use and contained in Part II of the COSAL
		will not have quantities printed in the onboard
		allowance table columns. Instead, "SEE SNSL FOR
		ALLOW" will be printed. APLs which are received after the regular COSAL will have quantities
		shown so you can update your SNSL and stock record cards.
22.	Ship Type and Hull Number	The specific ship/activity for which the APL is
23.	Page	published. Consecutive page numbering from first page to last
24.	Identification Number	of all APL pages published as Part II. Same as item 3 above.
25. 26	Date	Same as item 4 above.
26.	Page	Same as item 5 above.

<sup>\*</sup>Refer to Figure 3-3.

**LIST (APL).**– An APL (fig. 3-3) is a technical document that lists the repair parts authorized to be kept on board a ship for a particular piece of equipment. Separate APLs are prepared for each different piece of equipment on board a ship and for each major component of the equipment. APLs are listed in numerical sequence by

PART II, SECTION A-ALLOWANCE PARTS

identification number in Part II of the COSAL. The parts data contained in each APL is arranged in alphanumeric order by part reference or symbol number. This part number is a number, other than a stock number, by which the part may be identified. Examples of such a number are a manufacturer's number, a service part number, and a drawing or circuit symbol number. In table 3-2, the

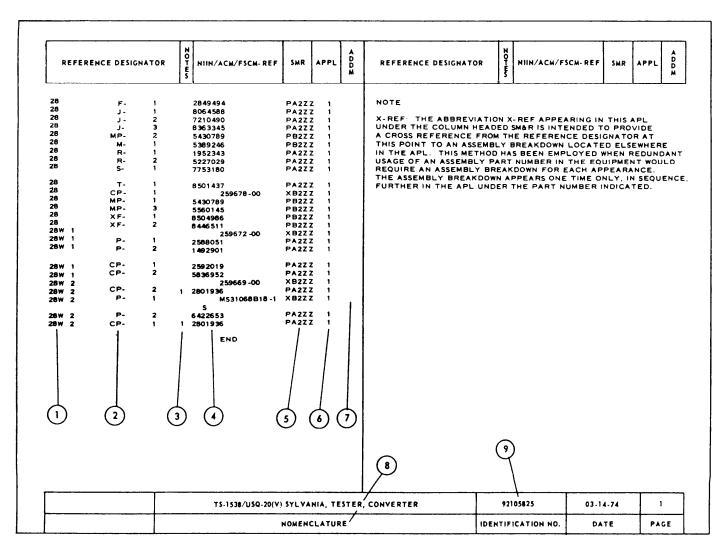


Figure 3-4.—Allowance parts list (APL), Section B.

different data elements are numbered and refer to the numbers in figure 3-3.

**PART II, SECTION B-CIRCUIT SYMBOL DATA.-** Section B (fig. 3-4) is furnished as microfiche with the COSAL. It contains those CSNs that appear in the technical manual for the equipment and is arranged in circuit symbol number (CSN) sequence. The CSNs are cross referenced to the NIIN/PNICN/TNICN part number that appears in Section A. Table 3-3 identifies the data elements of the APL (Part II, Section B) and refers to the numbers in figure 3-4.

**PART II, SECTION C-ALLOWANCE EQUIPAGE LIST (AEL).**The AEL is a technical and supply document prepared for various categories of equipage associated with mechanical, electrical, electronic, and ordnance systems. When an AEL is written for a system, it identifies the items required to operate the system and the repair parts required to

maintain it. The AEL lists specific information for each item, such as name, NSN, unit of issue, quantity needed, and quantity allowed on board. AELs are filed in numerical sequence by AEL identification number. As a technician, you should be aware of where all pertinent AELs can be found.

PART III, SECTIONS A, B, CF, AND CR-STOCK NUMBER SEQUENCE LISTS (SNSL).— The SNSL is a product of today's data processing capability and is a great time-saver in controlling parts and other items. Consider the amount of work that would be necessary to determine how many of what items to order by just using the APL and AELs.

The SNSL has four listings of all NSNs that apply to your unit. They are Section A, Storeroom Items (SRIs); Section B, Operating Space Items (OSIs); and Section CF, Maintenance Assistance Module (MAM); and Section CR, Ready Service Spares (RSS). These

- (1) Unit. The Unit Number assigned by the manufacturer. (Part of the CSN).
- (2) CSN Circuit Symbol Number which is obtained from the equipment technical manual or drawings. (Also known as the Reference Symbol Number.) When APLs are in Part Number sequence, the Part Number will appear in this space.
  - (3) Notes For Codes and Definitions see Appendix (C).
- (4) FSCM-REF#/ ACN/NIIN The FSCM and reference number, ACN or NIIN which applies to this CSN.
- (5) SMR Source and Maintenance Recoverability Code which applies to this application. (see Appendix C for definition).
  - (6) APPL Number of applications with the same CSN.
- (7) ADD An addendum indicator showing how this item was affected by cumulative addenda issued by SPCC. for this APL, (i.e., A = Added, D = Deleted, C = Changed, F = NIIN update, \* = this item is appearing for the first time in this addendum. When the APL is revised, no addendum indicators appear.
  - (8) Nomenclature. The equipment for which the APL is prepared.
  - (9) APL Number. The equipment/component identification number.

### **HOW TO USE SECTION B**

Determine the NIIN (FIIN) ACN or Part Number from Section B, referring to the Reference Symbol Number on Part II, Section A or C (which ever is applicable). The Reference Symbol Number is crossed to the stock number column which will reflect the latest NSN or ACN. Refer to the applicable section of the COSAL Part III to determine if the item is allowed.

\* Refer to Figure 3-4.

sections contain information such as stock number, item name, identification of the equipment in or on which the item is intended for use, and specific supply management information.

PART III, SECTION E-GENERAL USE CONSUMABLES LIST (GUCL).— The GUCL identifies consumables used for general purposes in the routine maintenance and administration of the ship. The items listed in the GUCL are in addition to materials listed in other parts of the ship's COSAL. The GUCL is published by the Fleet Material Support Office (FMSO), but only for new construction, major conversion, or

reactivated units. Normally, it will not be published with or for COSALs resulting from ship overhaul or maintenance actions.

The GUCL contains basic information, such as nomenclature, NSN, unit of issue, weight, and price for both hazardous and nonhazardous materials kept or used in operating spaces and store rooms.

#### PART III, SECTION F-FORMS AND PUBLI-

**CATIONS.**— Section F identifies the various forms and publications the ship needs to conduct normal business and provides information on how to obtain them.

#### How to Use the COSAL

Once you become familiar with the indexes, you will find the COSAL easy to use. The best way to gain this familiarity is by studying the COSAL for your command. Read the entries in both the Part I, Section A and B indexes, then see how they provide across-index by using the same entries but in a different sequence. As you study the entries, refer to the introduction for the meanings of abbreviations that you do not understand.

Chapter 4 of the *COSAL Use and Maintenance Manual* provides instructions for using the COSAL. After you have become familiar with the terminology (chapters 1 through 3), refer to chapter 4 for further instructions and sample problems.

To be of maximum use to you, the COSAL must be kept up-to-date at all times. Anytime you use the COSAL, check to be sure it is up-to-date. In the following paragraphs we will discuss the use of the COSAL according to SPCCINST 4441.170, the *COSAL Use and Maintenance Manual*.

**METHODS OF ENTRY.**- You may enter the COSAL by any of the following methods:

- By the name of the equipment/component or equipage–use Part I, Section A of the Index
- By the shipboard service application, location, or end use of the equipment/component or equipage-use Part I, Section B of the Index
- By the circuit symbol number (CSN) of the part-use Part II, Section B (microfiche only) to cross-reference the CSN to the NINN/PNICN/ TNICN/FSCM/REF. NO. Then use Part II, Section A, to cross-reference the above number to the NSN/PNICN/TNICN
- By the NIIN/part number-use Part III, Section A or B
- By an alternate part number-use Part III, Section D to cross reference alternate numbers to NIIN/PNICN/TNICNs

### ORDERING PARTS, TOOLS, AND SUPPLIES

There are numerous supply publications that you should be familiar with to use the supply system to its full capability when you requisition parts and tools. These publications are discussed in *Military Requirements for Petty Officer Third Class*, NAVEDTRA 12044.

Although the supply department is responsible for supplies, you, the technician, need to know how to identify what is needed, how to write out the request, and how to report on the use of the supplies. The publications containing the stock numbers are kept in the supply department; therefore, to perform your assigned duties, you *must* cooperate with supply personnel.



### SUPPLY REQUISITION FORMS

Documenting material usage and cost data on maintenance transactions requires a joint effort of the ship's supply and maintenance personnel. NAVSUP Form 1250 and DD Form 1348 (discussed in *Military Requirements for Petty Officer Third Class* and OPNAVINST 4790.4) are the primary supply documents used by maintenance personnel. They are used to requisition parts and materials and to record material usage and cost data in support of maintenance actions. Normally, maintenance personnel are responsible for filling out and forwarding the supply forms for materials that they need to do their jobs. However, supply personnel will provide assistance whenever difficult or unusual documentation problems arise.

Some ships have automated supply systems; others have manual supply systems.

On a nonautomated ship, when a repair part is needed before a specific maintenance action can be completed, maintenance personnel use NAVSUP Form 1250 to request the issue of the part from the ship's supply department. Supply personnel issue the part if it is in stock aboard ship. If the part is not in stock supply uses the information on the form to order the part from an off-ship source. Nonautomated ships also use the NAVSUP Form 1250 to request chargeable services.

On an automated ship, when a repair part is required to complete a specific maintenance action, maintenance personnel use DD Form 1348. Chargeable services are also requisitioned on the DD Form 1348.

All submarine forces, automated and nonautomated, use NAVSUP Form 1250-1 as a consumption document. Nonautomated ships of the submarine force use it as a Military Standard

1 REQ DATE 2 DEPT NO 3 URGY 4 RDD 5 LOCATION  2196 Ø691 C 5 LOCATION  8 NOUN NAME OF REF SYM 9 FPR 10 APL/AEL/CID	6 SIM NON-SIM 7 ISSUE DATE A REQN QTY B REQN. NO
	11 INV OTY 12  NIS N/C  S/R (REQN O/S)
JOB CONTROL NUMBER 16	17 EQUIP COSAL SUPPT DE LIBO MARY
R 521920FØ1Ø326P3CTØ9	
SC COG MCC 21 FSC 22 NIIN 23 SMC	J/I QUANTITY UNIT PRICE EXTENDED PRICE FUND
5920002962440 E	A ØØØ3
29 REMARKS	
TA HEWANY?	30 APPROVEO BY
	31 RECEIVED BY
	1
TIPED DATE IS DEPT NO. IS UPCY IA DOD. In COLUMN	In commence that the contribution of the
1. REQ. DATE   2. DEPT NO.   3. URGY   4. RDD   5. LOCATION   6.   2/96   8   -	NON-SIM 7. ISSUE DATE A BERNING PRODUCTION B. REQN. NO.
2/96 Ø692 B	11. INV 017 12. NIS N/C C. OBL AMT D. POSTED
2196   \$692   8	11. INV QTY 12. NIS N/C C. OBL AMT S/R (REQN O/S)
2/96 Ø692 B  8. NOUN NAME OR REF SYM S. FPR 10. APPLAEL/CID  F, U, S, E	11. INV 0TY 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT'D OPTAR LOG
2/96 Ø692 B  B. NOUN NAME OR REF SYM S. FPR 10. APLIABLICID  FUSE	11. INV QTY 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT'D  YES NO E. URG MART  8/R (ISSUE)
2/96 Ø692 B  8. NOUN NAME OR REF SYM 9. FPR 10. APLIABLICID  FUSE	11. INV QTY 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT'D  YES NO S/R (ISSUE)  25. QUANTITY  26. UNIT PRICE  27. EXTENDED PRICE  FUND
2/96 Ø692 B  8. NOUN NAME OR REF SYM S. FPR 10. APLIABLICID  FUSE	11. INV QTY 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT'D  YES NO E. URG MART  8/R (ISSUE)
2/96 Ø692 B  8. NOUN NAME OR REF SYM 9. FPR 10. APLIABLICID  FUSE	11. INV 017 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT D  PE. URG MART S/R (ISSUE)  25. QUANTITY 26. UNIT PRICE 27. EXTENDED PRICE FUND
2/96 Ø692 B  B. NOUN NAME OR REF SYM S. FPR 10. APLIABLICID  FUSE	11. INV QTY 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT'D  YES NO S/R (ISSUE)  25. QUANTITY  26. UNIT PRICE  27. EXTENDED PRICE  FUND
2/96 Ø692 B  8. NOUN NAME OR REF SYM 9. FPR 10. APLIABLICID  FUSE	11. INV 017 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT'D  YES NO E. URG MART S/R (ISSUE)  225 QUANTITY 28. UNIT PRICE 27. EXTENDED PRICE FUND  67   68   69   70   71   72   73   30. APPROVED BY:  31. RECEIVED BY:
2/96 Ø692 B  8. NOUN NAME OR REF SYM 9. FPR 10. APLIABLICID  FUSE	11. INV 017 12. NIS N/C C. OBL AMT S/R (REQN O/S)  17. EQUIP COSAL SUPPT'D  YES NO E. URG MART S/R (ISSUE)  225 QUANTITY 28. UNIT PRICE 27. EXTENDED PRICE FUND  67   68   69   70   71   72   73   30. APPROVED BY:  31. RECEIVED BY:

Figure 3-5.—Information supplied by the division representative on NAVSUP Form 1250 or 1250-1.

Requisitioning and Issue Procedures (MILSTRIP) requisitioning document for procuring material or services from a submarine tender, submarine base, a combat store ship (AFS), a naval supply center, or the Naval Publications and Forms Center (NPFC) Philadelphia. Submarine tenders and bases use the NAVSUP Form 1250 as an invoice for material supplied to supported units of the submarine forces.

NAVSUP Forms 1250 and 1250-1 were developed to meet two needs: (1) to improve inventory control procedures, and (2) to report consumption under the Maintenance Data System (MDS). Be sure to follow the general instructions given below whenever you prepare a NAVSUP Form 1250 or 1250-1:

1. Use a ball-point pen or typewriter.

- 2. Annotate each entry in the proper data block.
- 3. To avoid confusion between the numeral 0 and the letter O, use the communication symbol for zeros, which is 0 with a slash through it from upper right to lower left.

Because of the changing nature of the various forms mentioned in the text that follows, we have not attempted to define the proper procedures for falling them out.

A division supply petty officer determines the material a division requires, then prepares the NAVSUP Form 1250/1250-1. Figure 3-5 shows the NAVSUP 1250/1250-1 with the data that must be provided by the

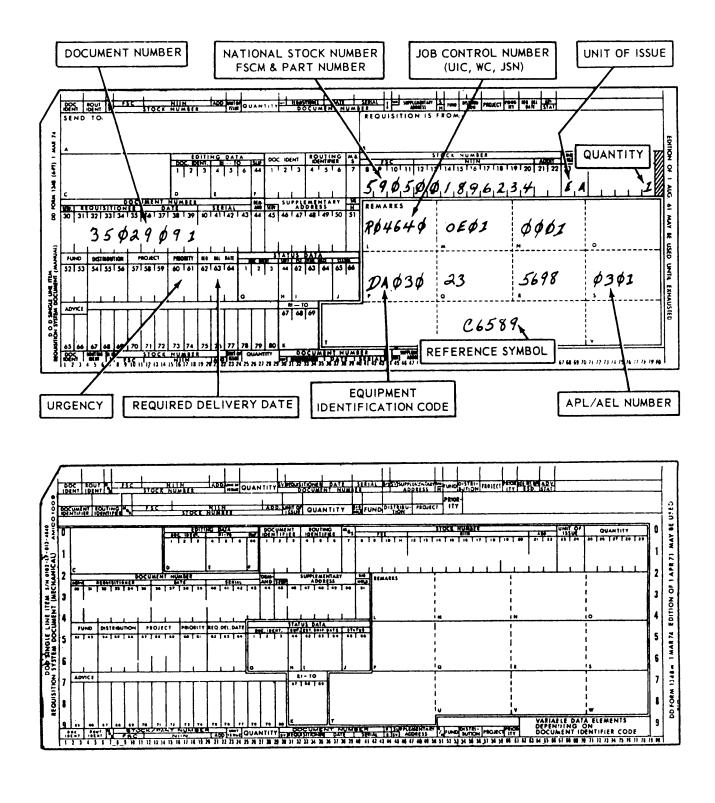


Figure 3-6.-DD Form 1348; Upper-manual. Lower-mechanical.

	REQUISITIO	ON AND	INVO	ICE/SHIPPIN	G DOC	UMENT		1000		15 00			R52192-	
1000	R52192 USS JOHN PAUL JONES (DDG-32)								30 OCT 1985					
in,										1 7017811			L	
	MØØ244 NSC S	AN DIE	GO, C	۸						SMAA NER, L	T. SC	.USN		***** *** ****
3010	10 - 2400 FOR							19. 8478						
	SUPPLY OFF USS JOHN PA	UL JON						11. 4004					14. BILL 07 (40	-1 -11011
	PIER 2, NAVS	STA, SA	N DIE	GO, CA				11. 11.	****		04 04 P6		1461 80.	
APT 6	FUND CODE NU	1	a. a.	BUR, CONT. ING.	WATER TO	AUTHORISATION ACCT & ACTION TO	1997	ACT MIT	er e	(00-	7017 W	04		AMBURT.
•	SER MATTOMAL STOCK HA		-TOIL AM		L MO/00	DEAVICES	· · · · · · · · · · · · · · · · · · ·	######################################	T	1022CT	1774 (0a: 14:0[4	(00: 11:0(0	VAIT 72:C	10741 (017
	Ser. No. 14	141067, DDING 1432 TRIC T 14-66742	MACH YPEWI 1, 15-6	INE, RITERS,	ER,		JOB JOB	1 1 1						
۳	MEPONTATION VA MATE MPTO CHARGEADLE TO	Control 1	TPE COA-		acair1100		32:45	PAMPLING	14.	C001410C65	TOATE		TOT	Tinit' 197as
	<u> </u>	10010	1900	<del>-</del>			V ( 16 H 7	CVBE	1	11C107 45			]	
	CHECASO OF								١	**************************************	10.77		1	69490 1074L
	*******	<del></del>					+		۱۰۱	**169	1		· · · · · · · · · · · · · · · · · · ·	20.40041144 1640888

Figure 3-7.-Requisition and Invoice/Shipping Document, DD Form 1149.

division representative at the time the request is submitted for an equipment-related repair part.

### MILITARY STANDARD REQUISITIONING AND ISSUE PROCEDURES (MILSTRIP)

The DD Form 1348 (fig. 3-6), DOD Single Line Item Requisition System Document, designed to meet MILSTRIP requirements, is discussed in *Military Requirements for Petty Officer Third Class*, NAVEDTRA 12044. You will be using DD Form 1348s and your ready reference list of codes (NAVSUP Publication 409) as you order the items you need.

Here are a few reminders as you use the forms: Prepare the DD Form 1348 by typewriter or ballpoint pen. Do not use pencil because pencil marks can cause errors when the requisition is processed through mark-sensing equipment at shore activities. In preparing requisitions, you do not need to space the entries within the tic marks printed on the forms, but you *must* make the entries within the proper data blocks. Remember to use the communication symbol to indicate zero on MILSTRIP requisitions.

The DD Form 1348 requires the same information as the NAVSUP Form 1250 but in a different order.

Most material requirements are requisitioned on DD Form 1348. However, certain items are excluded from MILSTRIP and are ordered on DD Form 1149 (figure 3-7, included here for your review) unless otherwise indicated.

#### **SERVMART**

A SERVMART is a self-service store operated by a shore supply activity and is stocked with items frequently required by most departments. Most SERVMARTs prepare a shopping guide that lists the items carried in the SERVMART. Also, most SERVMARTs provide a shopping list on which you can write the names of items you want.

The use of standard forms such as a DD 1149 may be required at certain supply activities, while at others no listing of items is required.

If a DD form 1348 is required, make up your shopping list; then prepare the DD Form 1348. The money value limit for the shopping list and the authorized signature are entered in the "Remarks" portion of the requisition. The money limit shown is equal to the total amount of the supporting shopping list, plus an additional 10 percent to allow for price

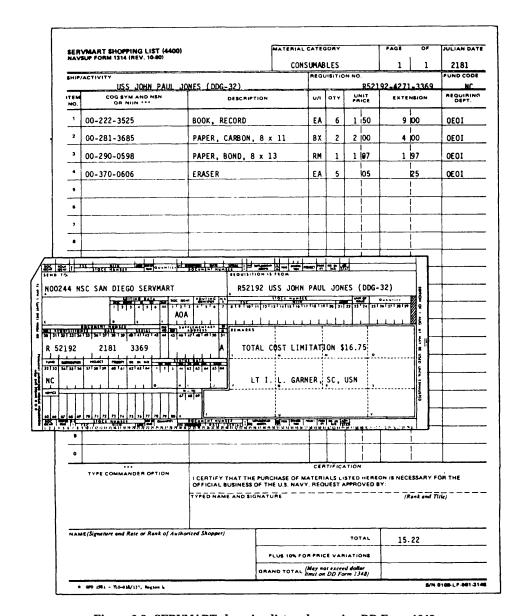


Figure 3-8.-SERVMART shopping list and covering DD Form 1348.

variations. Figure 3-8 shows a sample shopping list and an MVO (money-value-only) requisition.

At some SERVMARTs "credit cards" are used. These cards are issued to activities frequently using the SERVMART and satisfy the same requirement as the DD Form 1348, thereby eliminating the need for this MVO requisition.

### MASTER REPAIRABLE ITEM LIST (MRIL)

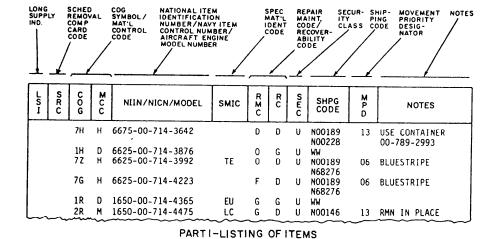
The MRIL is a consolidation of many individual repair lists that have been developed to make it easier to identify and return mandatory turn-in items. The MRIL is published every month. The MRIL shown in figure 3-9 is divided into two basic parts.

- Part 1—Listing of Items
- Part 2—Shipping Addresses

Materials assigned cognizance codes E, R, and V are not included in the MRIL. Repairable items in these cognizance codes are listed in the Master Repair List of Navy Aeronautical Materials.

### MANDATORY TURN-IN ITEMS

You should already be familiar with the basic description of the <u>mandatory turn-in repairable</u> program from completing *Military Requirements for Petty Officer Third Class,* NAVEDTRA 12044. The knowledge you have should enable you to answer the following questions concerning the turn-in system:



SHIPPING SHIPPING UIC/
CODE INSTRUCTIONS FSCM

N00189 IRAM
NAVAL SUPPLY CENTER
NORFOLK, VA 23511
ATTENTION OF
BLOG SP-237

Figure 3-9.-The format of the master repairable item list (MIUL), Parts 1 and 2.

PART 2-SHIPPING ADDRESS

- Why should the item(s) be turned in?
- Is there special material content?
- Is there hazardous material content?
- Is the item a depot level repairable?

Mandatory turn-in repairable can be identified by the material control codes H, E, X, G, or O located in the third position of the item's NSN.

For the program to work as intended, you must return repairable items promptly and in repairable condition. At the time you present your request for a mandatory turn-in item, supply must inform you that the removed part must be returned. Therefore, when you receive the replacement you are required to do the following:

- Remove the defective item without damaging it beyond its already defective condition.
- Provide adequate protection to the item so it will not be further damaged before it is turned in to supply. The most effective way, if at all possible, is to place the defective part in the same container in which you received the replacement part.
- Resist the temptation to cannibalize the item for components that you might possibly use sometime in the future.

 Return the defective item to supply as soon as practical.

Sometimes the needed replacement item is not in the storeroom; supply must obtain it. Normally, you should still turn in the failed item, even though you have not received the replacement item. This way the failed item can enter the repair cycle and be available for reissue soon.

**NOTE:** The exception to this requirement is when equipment can still be used under limited operation with the failed part in place until the replacement is received. If this is the case, you MUST obtain a "Remain in Place" certification.

You can find information about the packaging for protection in the technical manual of the equipment involved. You can also obtain additional information from the supply department at your command. They may suggest that you not package the turn-in item because of any inspections required before shipment or they may say their shipping personnel have the necessary materials to package the item properly. There are two references that you should know about if supply department personnel are not readily available to assist you. They are the *Afloat Supply Procedures*, NAVSUP Publication 485; and *Supply Ashore*, NAVSUP Publication 1.

You will be responsible for learning as much as possible about the supply system by using the training aids available. Most of the ETs in the fleet don't fully understand the supply system and how it works. Most obtain the desired part by any method handy at the time. You MUST become familiar with the system to receive the best results!

### FEDERAL CLASSIFICATION SYSTEM

The Federal Classification System requires that only one identification number be assigned for each item of material. The Federal Classification System includes naming, describing, classifying, and numbering all items carried under centralized inventory control, as well as the publication of catalogs and related identification data. The system is managed by the Defense Logistics Agency (DLA).

#### MATERIAL CLASSIFICATION

The Defense Supply System contains over 4 million different items. The Navy uses and has interest in over 1.5 million of these items. The Federal Supply Classification (FSC) system is a tool to permit the classification of all items of supply used by the federal government. It provides a common language so one service or agency can use available materials held by another.

The FSC is a commodity classification. Groups and classes have been established for the numerous commodities with emphasis on the items in the supply systems of the military departments.

Examples of commodity groups and class are as follows:

58-Communications Equipment (group)

5815–Teletype and Facsimile equipment (class)

5831-Intercoms and Public Address Equipment, Airborne

59-Electrical and Electronic Equipment Components

5905-Resistors

5910-Capacitors

5920-Fuses and Lightning Arresters

 $\ensuremath{\mathsf{61-}Electric}$  Wire, Power, and Distribution Equip ment

6110-Electrical Control Equipment

6135-Batteries, Primary

In the FSC system, most material used by the Navy is assigned a national stock number (NSN). The national stock number is a 13-digit number that includes a four-digit FSC number and a nine-digit National Item Identification Number (NIIN). For example, in the NSN 6135-00-385-7281, the FSC number is 6135 and the NIIN is 00-385-7281.

The following NSN, 5920-00-248-5708, preceded by a cognizance material control code, and followed by a special material identification code (SMIC), shows all the elements with which you should be familiar:

N9 H 5920 00 248-5708-VN

Cognizance Symbol (stores account)	<u>N9</u>	
Material Control Code	Н	
Federal Supply Group	<u>59</u>	
Federal Supply Classification	<u>20</u>	
National Codification Bureau (NCB) Code	<u>00</u>	

National Item Identification 00-248-5708

Number (NIIN)

Special Material Identification Code (SMIC) <u>VN</u>

Separated, this NSN, cognizance material control code, and SMIC will tell you the following information about the item:

9N = Navy-owned stocks of defense electronic material

H = depot level repairable

59 = electrical and electronic equipment components

20 = fuses and lightning arresters

00= FSNS assigned before 31 March 1975

00-284-5708 = the individual item identification number (NIIN)

VN = electrostatic discharge sensitive material

#### SEARCHING FOR THE ELUSIVE NSN

Various publications are available to help you find the stock numbers of the parts you want. Afloat, there are four basic publications.

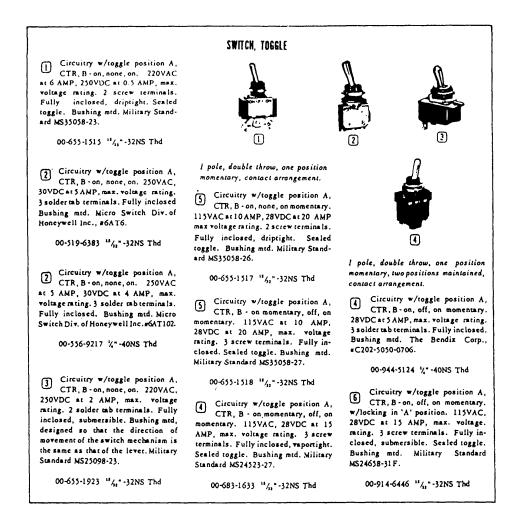


Figure 3-10.-Sample format of an afloat shopping guide (ASG).

- 1. Coordinated Shipboard Allowance List (COSAL)
- 2. Afloat Shopping Guide (ASG)
- 3. Management List-Navy (ML-N)
- 4. Navy Consolidated Master Cross-Reference List (C-MCRL)

Also, many catalogs are published to help you translate your needs to stock numbers. (We will discuss some of these catalogs later in this chapter.) In many cases, the problems of identifying the stock number of an item are much more difficult than those normally encountered by civilian businesses. This complexity has led to the publication of more and more catalogs. As of this writing, a complete set of Navy and federal supply catalogs would occupy some 76 feet of shelf space. Maintaining all these catalogs aboard ship would be difficult, if not impossible. The four basic publications contain enough information to help you identify most of the items you will require.

### **Afloat Shopping Guide (ASG)**

The ASG (NAVSUP P-4400), (explained in *Military Requirements for Petty Officer Third Class)*, is designed to help fleet personnel in identifying the NSN items that are most fiequently requested by ships. The ASG is published every 4 years and updated annually; however, you should still use the ML-N for verification of current stock numbers, unit of issue, unit prices, and the like. The format of the ASG is shown in figure 3-10 for review purposes.

## General Services Administration (GSA) Catalog

The GSA catalogs nonmilitary items in general use by both military and civil agencies of the United States. The GSA Catalog provides a handy reference in identifying consumable-type material and is similar to the ASG. The material in the GSA Catalog is listed in the ML-N as cognizance symbol 9Q and is carried in stock at stock points under Navy ownership for issue.

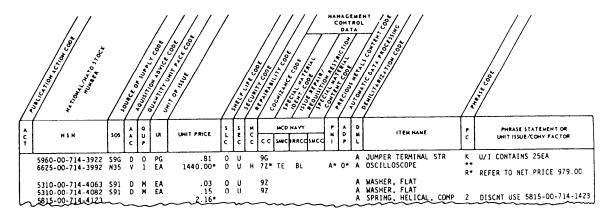
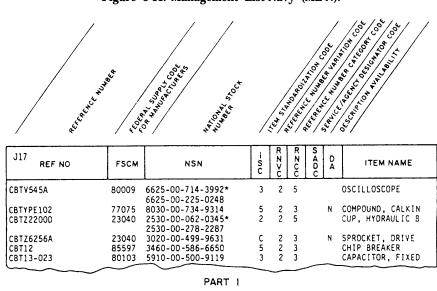


Figure 3-11.-Management List-Navy (ML-N).



NSN	S C	REF NO	FSCM	RZ>U	RZOO	೫೩೦೦	DA	ITEM NAME
5905-00-714-3979	3	5905-00-503-5984*						
6625-00-714-3990	5	10656-307	94756	2	3		N	PULLEY, FLAT WEB
6625-00-714-3992*	3	CBTV545A	80009	2	5			OSCILLOSCOPE
		PC834900041-5	38597	2	3			OSCILLOSCOPE
		1011931	56232	2	5			OSCILLOSCOPE
		1848288	10001	2	3			OSCILLOSCOPE
		1848288	30003	2	5			OSCILLOSCOPE
		54 5A	80009	2	3			OSCILLOSCOPE
		9975856 6625-00-225-0248	18876	2	5			OSCILLOSCOPE
6625-00-714-3993	6	6587	47496	2	3			METER, ELECTRICA

PART 2
Figure 3-12.-Sample page from the consolidated master-cross-reference list (C-MCRL).

**NOTE:** Not all items in the catalog are suitable for shipboard use.

### Management List-Navy (ML-N)

You have read about the ML-N in the *Military Requirements for Petty Officer Third Class.* The ML-N includes the basic management data for preparing requisitions. Figure 3-11, included here for review, shows the different columns of information and what

they contain. The introduction (first fiche-first frames) to the ML-N lists all the codes used and their meanings.

### Navy Consolidated Master Cross-Reference List (C-MCRL)

The C-MCRL (fig. 3-12) is a consolidated list of all NSN items of supply in the Federal Catalog System. It includes many NSNs that are not listed in the ML-N. Therefore, you should exercise caution whenever you

	Code	1	Code
Nashua Mfg. Co., Nashua, N.H.	42308	National Bearing Metal Corp., St. Louis, Mo.	
Nashua Package Sealing Co., Inc., Nashua, N.H.		(82473)	
(42318)		Acquired by American Brake Shoe Co.	
Now Nashua Corp.		National Beryllia Corp., Haskell, N.J.	327ندا
Nashville Bridge Co., Nashville, Tenn.	76611	National Billiard Chalk Co., Chicago, Ill.	42423
Nashville Workshop for the Blind, Nashville,		National Billiard Mfg. Co., Cincinnati, Ohio.	42426
Tenn.	30010	National Bird Control Laboratories, Skokie, Ill.	03827
Nason Co., Detroit, Mich.	85814	National Biscuit Co., New York, N.Y.	88707
Nason, R. N. and Co., San Francisco, Calif.	76612	National Blank Book Co., Holyoke, Mass.	74103
Nassau Boat Basin, Inc., Freeport, N.Y.	42319	National Blow Pipe and Mfg. Co., Ltd., New	42424
Nassau Laboratories, Hackensack, N.J.	88483	Orleans, La.	76461
Nassau Machine Products Co., East Detroit, Mich.	04705		42427
Nassau Research and Development Associates,	04103	National Body Mfg. Co., Knightstown, Ind.	82474
Inc., Mineola, N.Y. (99899)		National Boiler Washing Systems, Chicago, Ill. National Box and Lumber Co., Newark, N.J.	85060
Now Narda Corp.		National Brake Co., Inc., New York, N.Y.	76622
Nassau Screw Machine Products Corp., Inwood,	98093	National Brake and Electric Co., New York, N.Y.	42429
N.Y.	20070	National Brass Co., Grand Rapids, Mich.	76623
Nassau Smelting and Refining Co., Inc., Totten-	85055	National Brass Products, Los Angeles, Calif.	91963
ville. N.Y.	00000	National Brass Works, Inc., Los Angeles, Calif.	00892
Nassau Sponge Co., Chicago, Ill.	85056	National Brief Case Mfg. Co., Inc., Chicago, Ill.	91355
Nassovia G.m.b.H. Machine Tool Factory, Langen.	98223	National Broach and Machine Co., Detroit, Mich.	42432
Germany.	90223		42442
American Distributor—Hirschman, Manhasset,		National Broadcasting Co., Inc., New York, N.Y.	14114
N.Y.		National Bronze and Aluminum Casting Co.	87980
Nast-D Machinery Co., Philadelphia, Pa.	15800	Cleveland, Ohio.	
		Detroit, Mich.	87626
Natco, Inc., Chicago, Ill.	82817	National Brush Co., Aurora, Ill.	85061
Nathan Aircraft Devices, Inc., New York, N.Y.		National Bundle Tyer Co., Blissfield, Mich.	42447
(76615)		National Bureau of Standards.	
Now Nathan Mfg. Co.	40000	See U.S. Government Civil Establishments,	
Nathan Mfg. Co., New York, N.Y.	42323	Commerce Department.	
Nathaniel Baldwin Co., Denver, Colo.	95567	National Business Systems, Inc., Washington, D.C.	03036
National Academic Cap and Gown Co., Philadel-	85057	National Business Systems of Baltimore, Balti-	90395

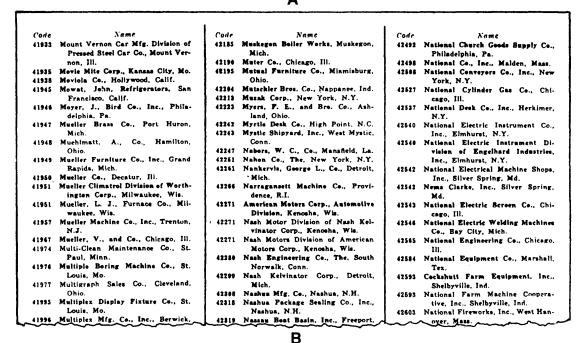


Figure 3-13.-Federal supply code for manufacturers (FSCM): (A) H4-1, name to mfg. code; (B) H42, code to name.

requisition items from the C-MCRL. The C-MCRL is distributed to Navy users semiannually, on microfiche, by the Defense Logistics Services Center (DLSC).

Part 1 of the C-MCRL is a cross-reference between a reference number, an FSCM, and an NSN. Part 2 is a cross-reference between an NSN and a reference number.

### Federal Supply Code For Manufacturers (FSCM)

The FSCM provides a five-digit identification number for commercial firms, primarily manufacturers,

that supply material to the Department of Defense. It is published in three volumes:

- 1. H4-1-Manufacturer's name to manufacturer's code
- 2. H4-2-Manufacturer's code to manufacturer's name
- 3. H4-3-Other countries

Figure 3-13, views A and B, show the format and content of H4-1 and H4-2. When you use the C-MCRL to determine an NIIN, you will frequently find the same

reference number listed more than once, with each listing having a different NIIN. For proper identification, you must then select the NIIN from the line entry showing the FSCM for the company that made the needed part.

The identification lists of the Federal Supply Catalog include the FSCM in the item descriptions. The introduction to each section includes a numerical listing of all FSCMs included in that section.

### **IDENTIFICATION TO A CURRENT NSN**

To obtain required material, you must first find its current NSN. There are three basic methods of entry you may use with the catalogs to obtain this information:

- Entry with an NSN (which may or may not be current)
- 2. Entry with a reference number (manufacturer's part number, Navy drawing number, or other reference number)
- 3. Entry with a noun name and or physical characteristics description

### **Entry With NSN**

In actual practice, if you already have the NSN, you just submit the completed requisition to the supply department.

### **Entry With Parrt, Drawing, or Piece Number**

A reference number is generally any number, other than a current NSN, that can be used to identify an item or to aid in determining the current NSN. Reference numbers, therefore, include old FSNs, electron tube numbers, and electronic equipment circuit symbol numbers. There are, however, two additional important types of reference numbers that you can convert to national stock numbers by using the C-MCRL. They are (1) manufacturer's part numbers and (2) Navy drawing and piece numbers.

Manufacturer's part numbers are numbers assigned to parts by the manufacturer who designs and builds the equipment. The manufacturers assign the numbers for their own use in cataloging and identifying their own material. Some manufacturers use part number systems in which their plan or drawing and piece numbers form all or a portion of their part numbers.

Navy drawing and piece numbers were assigned originally by Navy technical commands to identify

items in equipment built and or designed by those commands. Some items may have both manufacturer's part numbers and Navy drawing and piece numbers listed in various reference publications.

When you first try to determine an item's current NSN, you will probably look for a manufacturer's part number or a Navy drawing and piece number. There are several possible places to look for such numbers:

- 1. On an Allowance Parts List (APL).
- 2. On the part to be replaced. The part number may be stamped on it.
- In equipment technical manuals. hey may refer to a manufacturer's part number or Navy drawing and piece numbers.
- 4. On equipment plans. Plans available on the ship may contain Navy drawing and piece numbers.
- 5. In EIMB reference data.

Technical manuals, furnished by the manufacturer, contain a detailed description of equipment and instructions for its effective use. Normally, the supply officer does not have technical manuals; they are maintained and used by the ship's technicians in maintaining the complex equipment installed in the ship. They can serve as a basic source of identification information for repair parts.

To obtain a current NSN when you know a reference number, enter the C-MCRL to determine the NIIN. When the NIIN is listed, check to ensure that the FSCM coincides with that of the manufacturer of the part.

When the number is listed more than once, you will need to obtain the manufacturer's code. When you obtain the correct NIIN, update your records to reflect the current stock number.

### **Entry with Noun Name and or Physical Description**

The third method of obtaining a current NSN involves beginning the search with a physical characteristic or noun name description of the item.

There are two different methods of describing an item other than by the NSN. The first method uses a physical description of the item and perhaps a description of its electrical, chemical, and other properties. (This type of description is similar to that provided in mail order catalogs.) The second method, which we covered previously, uses only a reference number; that is, manufacturer's part number. Most of the

items in the Navy Supply System are covered only by reference number descriptions because these items are very difficult to describe.

There are, however, many items that you can easily describe by physical characteristics. Included in this category are many common-use items of nontechnical nature, such as paint, handtools, nuts and bolts; and some technical items, such as fuses, resistors, and electron tubes.

You can find the NIIN for a common-use item with a noun name/physical characteristics description in the ASG or GSA catalog. The ASG is sequenced by Federal Supply Groups and Classes. A noun-name-item number index for the ASG is contained in the Introduction and Master Index.

### PLANT PROPERTY

Plant property includes all real property (land or buildings and improvements) owned by the Navy or for which the Navy is accountable. This property may be located at either a Navy shore facility or in the plant of a private contractor. Plant property also includes all personal property of a capital nature (equipment) owned by the Navy. Plant property does not include items of equipment in storage (items that are carried) in the Navy Stock Account (NSA) but that have not been issued for end use. Also it does not include items in the custody of a unit of the operating forces that are moved with the unit. As an Electronics Technician carrying out fiscal and supply duties ashore, you may be called upon to perform tasks associated with plant property accounting.

Identification numbers are used with plant property items to make the following functions easier:

- Selection of specific items for transfer
- Physical inventories of equipment
- Maintenance of property record card files
- Specific identification of equipment items in shipment orders, invoices, and survey reports
- Maintenance of history record cards

Each item of equipment meeting the criteria of plant property is marked with an identification or registration number. This number is also recorded on the plant property record card maintained for that item.

Figure 3-14 is an example of an identification tag that you may find on a piece of electronic equipment.



Figure 3-14.-Sample plant property identification tag.

### INTEGRATED LOGISTICS REVIEW (ILR)

A ship's ability to perform its operational missions depends to a large extent on the crew's ability to keep the equipment installed on board working as it is designed to work. To do your job as a technician, you must have the proper technical manuals, test equipment, planned maintenance material, and repair parts readily available for use. One of the Navy's efforts to deal with these requirements and to improve each command's readiness is called the Integrated Logistics Review (ILR). Working closely with this program is the Integrated Logistics Overhaul (ILO) program.

The ILO is scheduled to coincide with upgrades during overhaul periods. Under the guidance of an experienced ILO site staff member, called a ship project manager (SPM), a small number of selected personnel from the command aide in overhaul work to provide the command with complete logistics support. This system includes not only repair parts but also technical manuals and PMS materials for the equipment installed during an availability or overhaul.

Integrated logistics support (ILS) audits are performed on commands that have completed installation of new or modified systems and equipments during an overhaul or availability period. The logistics support planned for these alterations includes audits on the accuracy of the allowance parts list (APL), the coordinated shipboard allowance list (COSAL), and allowance appendix pages (APPs). The correct technical manual that coincides with the installed equipment configuration is reviewed. Test equipment required to perform maintenance functions is determined by reviewing maintenance requirement cards (MRCs). The Planned Maintenance System (PMS) documentation audits include verification of the command's list of effective pages (LOEP), maintenance index pages (MIPs), and maintenance requirement cards (MRCs). The adequacy of personnel training is checked. Spare parts are sight validated, as are the command's selected

records and drawings of the newly installed equipment. When the audits are completed, the command will be aware of deficiencies in the total support for the equipment on board. As a technician, you will be assured of the availability of everything necessary for you to maintain your equipment.

As an Electronics Technician, your job is to have your equipment in good repair and ready for action. You also must know how to research the supply publications so you can identify the repair parts you need. You must feed information into the supply system so parts will be available when you need them. Finally you must know how to obtain those parts through the supply system.

As you advance in paygrade and responsibilities, you will become aware that as a technician you are one of many people who make up the repair team. Now is the time for you to work closely with the Storekeepers and learn the supply system so that it will work for you and not delay any of your repair tasks.



### **APPENDIX I**

### REFERENCES USED TO DEVELOP THE TRAMAN

- Afloat Supply Procedures, NAVSUP Publication 485, Naval Supply Systems Command, Washington, D.C., 1991.
- COSAL Use and Maintenance Manual, SPCCINST 4441.170, Naval Ship's Parts Control Center, Mechanicsburg, Pa., 1984.
- *Electronics Installation and Maintenance Book, General,* Navsea SE000-00-EIM-100, Naval Sea Systems Command, Washington, D.C., 1983.
- Electronics Installation and Maintenance Book, General Maintenance, Navsea SE000-00-EIM-160, Naval Sea Systems Command, Washington, D.C., 1981.
- Electronics Technician 3 & 2, NAVEDTRA 10197, Naval Education and Training Program Management Support Activity, Pensacola, Fla., 1987.
- Equipment Identification Code (EIC) Master Index, NAMSO 4790.E2579, Navy Ships Parts Control Center, Mechanicsburg, Pa., 1986.
- Guide for User Maintenance of NAVSEA Technical Manuals, 0910-LP-148-7100, Naval Sea Systems Command, Washington, D.C., 1984.
- Ships Maintenance and Material Management (3-M) Manual, OPNAVINST 4790.4B, Office of the Chief of Naval Operations, Washington, D.C., 1990.
- Standard Organization and Regulations Manual of the U.S. Navy, OPNAVINST 3120.32B, Chief of Naval Operations, Washington, D.C., 1986.

### **INDEX**

A	N
Administration, 1-1, 2-1	Naval Supply Systems Command, 3-1
general, 1-1	General Services Administration, 3-2
technical, 2-1	inventory control points, 3-1
	inventory managers, 3-1
I	mobile logistics support force (MLSF), 3-1
Integrated Navy Supply System, 3-2	stock points, 3-1
coordinated shipboard/shorebased allowance lis (COSAL/COSBAL), 3-2	t <b>P</b>
federal classification system, 3-16	Periodicals, 1-3
integrated logistics review (ILR), 3-21	R
mandatory turn-in items, 3-14	K.
master repairable item list (MRIL), 3-14	Reports, 1-1
material classification, 3-16	casualty report (CASREP), 1-1
military standard requisitioning and issue procedures (MILSTRIP), 3-13	getting under way report, 1-1 survey, 1-1
ordering parts, tools, and supplies, 3-10	trouble reports and logs, 1-1
plant property, 3-21	
SERVMART, 3-13	S
supply requisition forms, 3-10	Sources of Information, 1-5
	T
L	Technical Library, 2-11
Logistics, 3-1	catalogs, lists, indexes, and directories, 2-16
M	electronic installation and maintenance book (EIMB), 2-14
Maintenance Data System (MDS), 2-1	maintenance standards handbook 2-12
current ship's maintenance project (CSMP), 2-6	naval ship's technical manual (NSTM), 2-13
forms, 2-1	other publications, 2-15
planned maintenance system (PMS), 2-6	publication applicability listing (PAL), 2-11

# Assignment Questions

**Information:** The text pages that you are to study are provided at the beginning of the assignment questions.

### ASSIGNMENT 1

Textbook Assignment: Electronics Technician Volume 2—Admninistration, NAVEDTRA 12412, chapters 1 (all) through 3 (all).

- 1-1. The EIB contains which of the following types of information?
  - Detailed information on equipment operation
  - Advance information of field changes
  - 3. Procedures concerning OPNAVINST 4790.1
  - 4. All of the above
- 1-2. A DD Form 200 must be submitted when which, if any, of the following actions occurs?
  - 1. Installation
  - 2. Theft
  - 3. Modification
  - 4. None of the above
- 1-3. Which of the following references is used for preparation and submission of CASREPs?
  - 1. NWP-7
  - 2. 3-M manual
  - 3. NWP-3
  - 4. NWP 10-1-10
- 1-4. Shipboard antenna systems manuals supersede existing specifications.
  - 1. True
  - 2. False
- 1-5. Which of the following information is in section II of the EIC Master Index?
  - A listing of EIC numbers for electronic test equipment
  - Identification of EIC numbers assigned to equipment
  - 3. A directory of illustrative data by EIC
  - 4. A listing of EIC nomenclature in numerical sequence

- 1-6. Electromagnetic Radiation Hazards discusses classified data in which of the following publications?
  - 1. Volume I, section one
  - 2. Volume I, section two
  - 3. Volume II, part one
  - 4. Volume II, part two
- 1-7. What publication discusses procedures and techniques to make high-quality, reliable repairs to state-of-the-art electronic printed circuits and modules?
  - Single Sideband Communications Handbook
  - 2. Mil-HDBK-162
  - Directory of Electronic Equipment
  - 4. 2M Electronic Repair Program
- 1-8. What publication discusses design and installation criteria applicable to shipboard secure electrical information processing systems?
  - 1. MIL-STD-1310
  - 2. MIL-HDBK-175
  - 3. MIL-STD-1680
  - 4. MIL-STD-162

IN ANSWERING QUESTIONS 1-9 THROUGH 1-14, SELECT THE EIMB HANDBOOK TYPE THAT CONTAINS THE SUBJECT MATTER IDENTIFIED IN THE QUESTION.

- 1-9. Functional descriptions common to equipment in a basic equipment category.
  - 1. Reference Data
  - 2. EMI Reduction
  - 3. General Maintenance
  - 4. Equipment-Oriented

- 1-10. Definitions, abbreviations, formulas. and general data concerning electronics.
  - Reference Data 1.
  - 2. EMI Reduction
  - 3. General Maintenance
  - 4. Equipment-Oriented
- General servicing information.
  - 1. Reference Data
  - 2. EMI Reduction
  - 3. General Maintenance
  - 4. Equipment-Oriented
- 1-12. Field change identification information for all equipment of a 1-18. Safety matters and subject index basic equipment category.
  - 1. Reference Data
  - 2. EMI Reduction
  - 3. General Maintenance
  - 4. Equipment-Oriented
- 1-13. Techniques and procedures for elimination of electromagnetic interference.
  - 1. Reference Data
  - 2. EMI Reduction
  - 3. General Maintenance
  - 4. Equipment-Oriented
- Routine maintenance concepts, 1-14. techniques, and procedures.
  - 1. Reference Data
  - 2. EMI Reduction
  - 3. General Maintenance
  - 4. Equipment-Oriented

IN ANSWERING QUESTIONS 1-15 THROUGH 1-18, SELECT THE EIMB HANDBOOK THAT CONTAINS THE SUBJECT MATTER DESCRIBED IN THE OUESTION.

- Basic vacuum tube and semiconductor theory of operation and circuit description.
  - 1. General
  - 2. Installation Standards
  - 3. Electronic Circuits
  - 4. Test Methods and Practices

- 1-16. Approved standards, techniques and practices for installation of electronics aboard ships.
  - 1. General
  - 2. Installation Standards
  - 3. Electronic Circuits
  - 4. Test Methods and Practices
- 1-17. Procedures for testing typical electronic circuits and equipment.
  - 1. General
  - 2. Installation Standards
  - 3. Electronic Circuits
  - 4. Test Methods and Practices
  - of other handbooks.
    - 1. General
    - 2. Installation Standards
    - 3. Electronic Circuits
    - 4. Test Methods and Practices
- 1-19. Which chapter in the NSTM covers electronics?
  - 1. 79
  - 2. 300
  - 3. 400
  - 4. 631
  - Which of the following sources 1-20. provide(s) the normal performance information found in maintenance standards handbooks?
    - The log of all test results to date
    - 2. The manufacturer's technical manual
    - 3. The installing activity's reference standards summary
    - 4. All of the above

- 1-21. Which of the following is the best 1-26. What form should be used to description of the PAL?
  - 1. A ready reference source that lists publications by title
  - 2. A publications standards list of mandatory material that every command must have
  - 3. An index of subject matter and where to find it
  - 4. A list of publication needs of the ship/shore station to which it applies
- 1-22. The usefulness of the CSMP, PMS, and the entire 3-M systems depends on which of the following factors of the MDS?
  - 1. Accuracy
  - 2. Timeliness
  - 3. Thoroughness
  - 4. Each of the above
- 1-23. The purpose of the CSMP is to provide the command and workcenter with which of the following management data?
  - 1. Scheduled maintenance actions

  - Current maintenance actions
     Deferred maintenance actions
  - 4. Completed maintenance actions
- Which of the following statements define(s) a configuration change?
  - 1. Addition or deletion of any new or installed equipment
  - new or installed equipment
  - 3. Modification, relocation, or accomplishment of any alteration, by directive. of any equipment
  - 4. All of the above
- What form should be used with a ship's maintenance action form deferring maintenance to be done by an IMA under IMMS?
  - 1. OPNAV 4790/76
  - 2. OPNAV 4790/2P
  - 3. OPNAV 4790/2R
  - 4. OPNAV 4790/2Q

- provide amplifying information relating to a maintenance action reported on a ship's maintenance action form?
  - 1. OPNAV 4790/CK
    - 2. OPNAV 4790/2K
  - 3. OPNAV 4790/2R
    - 4. OPNAV 4790/2L
- 1-27. What form must be used to report completed maintenance actions and deferred maintenance actions?
  - 1. OPNAV 4790/2K
  - 2. OPNAV 4790/2L
  - 3. OPNAV 4790/2P
  - 4. OPNAV 4790/7B
  - 1-28. What form is filled in by computer and contains the same information as the ship's maintenance action form?
    - 1. OPNAV 4790/CK
    - 2. OPNAV 4790/2R
    - 3. OPNAV 4790/2Q
    - 4. OPNAV 4790/2P
  - 1-29. What form must be used to recommend changes to maintenance requirement cards?
    - 1. OPNAV 4790/2K
    - 2. OPNAV 4790/2R
    - 3. OPNAV 4790/CK
    - 4. OPNAV 4790/7B
- 2. Replacement or exchange of any 1-30. Which of the following items contains written maintenance procedures?
  - 1. PMS
  - 2. MRC
  - 3. MDS
  - 4. MIP

- 1-31. Which of the following is one of the major objectives of the MDS?
  - Reporting configuration changes
  - 2. Scheduling corrective maintenance
  - 3. Providing detailed information on MRCs
  - 4. Performing preventive maintenance
- 1-32. Which of the following documents should you review to find out what test equipment you will need to perform maintenance on newly installed equipment?
  - 1. MRC
  - 2. ILR
  - 3. SPM
  - 4. ILO
- 1-33. Which of the following is a program that audits commands having completed installations of new or modified systems and equipment during availability or overhaul?
  - 1. PMS
  - 2. ILS
  - 3. APL
  - 4. ILR
- 1-34. Which of the following is a program that provides logistics support of repair parts, technical manuals, and PMS materials for equipment installed during availability/overhaul?
  - 1. SPM
  - 2. ILO
  - 3. PMS
  - 4. ILR
- 1-35. Which of the following is a program designed to deal with material requirements and to improve a command's readiness?
  - 1. PMS
  - 2. ILS
  - 3. SPM
  - 4. ILR

- 1-36. Which of the following statements describe(s) plant property?
  - Navy-owned and Navy-controlled real and personal property of a capital nature
  - Land, buildings, and improvements of all real property owned by the Navy
  - 3. NSA items not issued and in storage are not included
  - 4. All of the above
- 1-37. Of the following statements, which apply(ies) to SERVMART?
  - Use of MVO requisitions is not permitted
  - 2. Only DD Form 1348 is authorized
  - 3. It is a self-service store stocked with frequently required items
  - 4. All of the above
- 1-38. Which of the following forms should be used to requisition items excluded from MILSTRIP?
  - 1. DD Form 1149
  - 2. DD Form 1348
  - 3. NAVSUP 1250
  - 4. SPCC Form 4790
- 1-39. When you prepare a DD Form 1348, you may use a typewriter, ball-point pen. or pencil.
  - 1. True
  - 2. False
- 1-40. There are two different methods of describing an item other than by NSN. One method uses a physical description. Which of the following is the best description of the other method?
  - 1. Manufacturer's part number
  - 2. Electrical properties
  - 3. Chemical composition

- 1-41. Which of the following publications are a <u>basic</u> source of identification information for repair parts?
  - 1. EIMBs
  - 2. Technical manuals
  - 3. MSGs
  - 4. GSA catalogs
- 1-42. Which of the following EIMB handbooks can be used to find manufacturer's part numbers, Navy drawing numbers, or piece numbers?
  - 1. General
  - 2. Reference Data
  - 3. Installation Standards
  - 4. EMI
- 1-43. Which of the following publications converts manufacturer's part numbers, Navy drawing numbers, and piece numbers to NSNs?
  - 1. FSCM
  - 2. GSA
  - 3. C-MCRL
  - 4. ASG
- 1-44. Which of the following publications is a consolidated list of all NSN items of supply in the Federal Catalog System?
  - 1. C-MCRL
  - 2. ASG
  - 3. ML-N
  - 4. GSA
- 1-45. Which of the following publications provides an identification number for primary manufacturers of DOD material?
  - 1. C-MCRL
  - 2. ASG
  - 3. ML-N
  - 4. FSCM

- 1-46. Which of the following is the best description of the ML-N?
  - It includes basic management data for preparing requisitions
  - 2. It includes all NSN codification information
  - 3. It includes requisition submission information and SMIC usage
  - 4. It includes a complete listing of all FSCs and manufacturer's codes
- 1-47. The GSA catalog is designed to provide which of the following information?
  - Identification of NSN items most frequently requested by ships
  - Cross-reference of COSAL and C-MCRL items
  - Identification of consumabletype material
  - 4. All of the above
- 1-48. The ASG is designed to provide which of the following information?
  - Identification of consumabletype material
  - Identification of NSN items most frequently requested by ships
  - Cross-reference of COSAL and C-MCRL items
  - 4. All of the above

IN ANSWERING QUESTIONS 1-49 AND 1-50, USE THE FOLLOWING NSN:
9N H 5920-00-284-5708-VN

- 1-49. What portion of the NSN is the NIIN?
  - 1. 9N H
  - 2. 00 284-5708
  - 3. 5920
  - 4. 00

- 1-50. What does the "5920" indicate?
  - 1. Material control code
  - 2. Navy-owned stocks
  - 3. Electrical and electronic fuses and lightning arresters
  - 4. Electrostatic discharge sensitive material
- 1-51. NSNs are composed of which of the following parts?
  - 1. NCB numbers
  - 2. NIINs
  - 3. FSC numbers
  - 4. All of the above
- 1-52. The FSC system is a tool to permit classification of all items of supply used by the federal government.
  - 1. True
  - 2. False
- 1-53. Which of the following information is included as part of the federal classification system?
  - Item naming, description, and classification
  - 2. Item numbering, if carried under centralized inventory control
  - 3. Publication of catalogs and related identification data
  - 4. All of the above
- 1-54. For which of the following reasons may you NOT want to package a turn-in item before it is delivered to supply?
  - Packaging is not your responsibility
  - Proper packing instructions are controlled by supply
  - 3. Supply is the only department authorized to package an item
  - 4. Item inspection prior to shipment may be required

- 1-55. What condition must exist for an item to be considered an exception to normal mandatory turn-in procedures?
  - 1. The defective item is further damaged during removal
  - 2. The defective item's original container is not available
  - 3. The defective item is not to be turned in to supply
  - 4. The defective item permits limited operation of equipment
- 1-56. When you are returning a mandatory turn-in item, you should resist the temptation to cannibalize the item for components.
  - 1. True
  - 2. False
- 1-57. The third position of a mandatory turn-in repairable's NSN will contain which of the following material control codes?
  - 1. H only
  - 2. Q only
  - 3. G, X, and E only
  - 4. Any of the above
- 1-58. The MRIL discusses which of the following types of information?
  - Nonautomated procedures for MILSTRIP mandatory turn-in
  - Direct turnover material identification and requisition
  - Consolidation of repair lists to identify and return mandatory turn-in items
  - 4. Consolidation of fill-in procedures for issue and turn-in documentation

- and 1250-1, to avoid confusion between the number zero and the alphabetic O, you should take which of the following actions?
  - 1. Use the slashed numeric symbol for zero only
  - 2. Use the lower case alphabetic "o" only
  - 3. Use either the numeric symbol for zero or the lower case alphabetic "o"
  - 4. Use the word "zero"
- Which of the following is/are the purpose(s) of NAVSUP Forms 1250 and 1250-1?
  - 1. To identify the rate of use on any ship or station
  - MDS and improve inventory control procedures
  - 3. To control the amount issued and to whom it is issued
  - 4. To document the equipment failure-rate down time
- DD Form 1348 is used by 1-61. maintenance personnel on ships having what type of supply system?
  - 1. Nonautomated
  - 2. Automated
  - 3. Nonautomatic
  - 4. Automatic
- When you have the NIIN/part 1-62. number, you may enter the COSAL through which of the following sections?
  - 1. Section A or B, Part III
  - 2. Section A, Part II
  - 3. Section D, Part III
  - 4. Section B or C, Part II
- maintenance personnel on ships having what type of supply system?
  - 1. Nonautomated
  - 2. Automated
  - 3. Nonautomatic
  - 4. Automatic

- 1-59. When preparing NAVSUP Forms 1250 1-64. What document should you look in for information on how to use the COSAL?
  - 1. NAVSEA 0967-LP-008-9000
  - 2. NAVSUP P-4998-A
  - 3. NAVEDTRA 10044
  - 4. SPCCINST 4441.170
  - 1-65. Which of the following is the best description of an APL?
    - 1. A cross-reference from NIIN/PNICN/TNICN to APL
    - 2. A cross-reference from NIIN/PNICN/TNICN to NSN
    - 3. A cross index from NSN to NIIN/PNICN/TNICN
    - 4. A cross-index from APL to NIIN/PNICN/TNICN
  - 2. To report consumption under 1-66. Which of the following information is contained in the COSAL/COSBAL?
    - Repair parts and special tools for overhaul, and repair of onboard equipment
    - 2. Miscellaneous portable items for care and upkeep of the
    - 3. Equipment or components required to perform operational assignments
    - 4. All of the above
    - 1-67. The COSAL is used primarily for which of the following reasons?
      - To identify storeroom items and determine equipage
      - To give procedures for storage and issue of repair parts
      - To list equipment's test equipment stowage requirements
      - To provide accountability of all equipment necessary for the mission of the command
- 1-63. NAVSUP Form 1250 is used by 1-68. Which of the following sections of the COSAL is/are found on microfiche only?
  - 1. Section D, Part III
  - 2. Section B, Part II
  - 3. Index A, Part I
  - 4. All of the above

- 1-69. COSAL are set up in which of the following ways?
  - They are basically identical, and are arranged as a crossreference for SOEAPLs in Part
  - 2. They are basically identical, and are arranged as a crossindex for APL/AELs in Part II
  - 3. They are not identical, and are arranged as a cross-index 1-74. for AEL/APLs in Part I
  - 4. They are not identical, and are arranged as a crossreference for SOEAPLS in Part I
- DLA has cognizance over items of 1-70. material that are corn-non to what users?
  - 1. All government offices worldwide
  - 2. Military services, but not the civilian world
  - 3. Air Force and Marine Corps personnel
  - 4. Government services, but not the military
- GSA has cognizance over items of 1-71. material that are common to what users?
  - 1. Aviation and submarine forces
  - 2. Army and Navy supply systems
  - 3. Military and civilian worlds
  - 4. Navy and Coast Guard
- 1-72. Which of the following organizations are primary stock points for aviation material?
  - 1. MLSFs
  - 2. NADEPs
  - 3. AIMDs
  - 4. INASs

- Sections A and B of Part I of the 1-73. Stock points devote their primary effort to which of the following actions?
  - 1. Procuring and disposing of material
  - Receiving and storing of material
  - 3. Issuing and shipping of material
  - 4. All of the above
  - What is the primary function of an inventory manager?
    - To assure that supply support is at maximum levels
    - To assure that fleet only units are serviced properly
    - To assure the proper balance between parts requirements and assets
    - 4. To assure that stock assets meet new construction requirements
  - Which of the following is the best 1-75. description of NAVSUPSYSCOM?
    - It has cognizance over procurement of materials and services throughout the Department of the Navy
    - 2. It controls contract buying and selling of civilian goods throughout the DOD
    - 3. It inspects the storage and distribution of services on afloat commands and aircraft