



**NONRESIDENT  
TRAINING  
COURSE**

June 1993



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# **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.

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ETC Allen F. Carney*

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AND TECHNOLOGY CENTER

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## **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."

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# 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:

**<https://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:

<https://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**

**Course Title:** Electronics Technician, Volume 2—Administration

**NAVEDTRA:** 14087 **Date:** \_\_\_\_\_

**We need some information about you:**

Rate/Rank and Name: \_\_\_\_\_ SSN: \_\_\_\_\_ Command/Unit \_\_\_\_\_

Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State/FPO: \_\_\_\_\_ Zip \_\_\_\_\_

**Your comments, suggestions, etc.:**

<p><b>Privacy Act Statement:</b> 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.</p>
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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.

REPORT OF SURVEY				1. DATE		2. SURVEY NUMBER	
3. CLASS OF PROPERTY			4. STOCK RECORD ACCOUNT OR OTHER PROPERTY RECORD AND STATION				
5. ACCOUNTABLE OR RESPONSIBLE OFFICER (Name, grade, SSN and designation)							
6. NATIONAL STOCK NUMBER	7. DESCRIPTION	8. QUANTITY	9. UNIT PRICE	10. TOTAL COST	11. DISPOSITION		
RECOMMENDED PECUNIARY CHARGE →			12. FOR LOSS		13. FOR DAMAGE		
14. DATE AND CIRCUMSTANCES							
<b>15. AFFIDAVIT</b> I do solemnly swear (or affirm) that (to the best of my knowledge and belief) the articles of public property shown above and/or on attached sheets were lost, destroyed, damaged, or worn out in the manner stated, while in the public service.		<b>16. CERTIFICATE</b> I certify that the loss, destruction, damage, or unserviceability of the articles of public property shown above, and/or on attached sheets, was caused in the manner stated and without fault or neglect on my part, and that each article listed with a view to elimination by destruction has been examined by me personally, has never been previously condemned, and is, in my opinion, worthless for further public use.		<b>18. THIS SPACE RESERVED FOR ACTION BY AUTHORITY OF:</b>			
SIGNATURE		SIGNATURE (Accountable or Responsible Officer)					
NAME, GRADE, SSN AND ORGANIZATION		NAME, GRADE, SSN AND ORGANIZATION					
SUBSCRIBED AND SWORN TO (or affirmed)  BEFORE ME AT  THIS _____ DAY OF _____ 19____		<b>17. HEADQUARTERS</b> STATION _____ DATE _____					
SIGNATURE		TO _____					
NAME, GRADE, SSN AND ORGANIZATION OR TITLE; IF NOTARY PUBLIC, AFFIX SEAL		YOU ARE APPOINTED SURVEYING OFFICER  BY ORDER OF _____  SIGNATURE OF ADJUTANT/EXECUTIVE OFFICER & DATE _____					
						19. PROPERTY VOUCHER NUMBER	

DD FORM 200  
1 DEC 73

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.

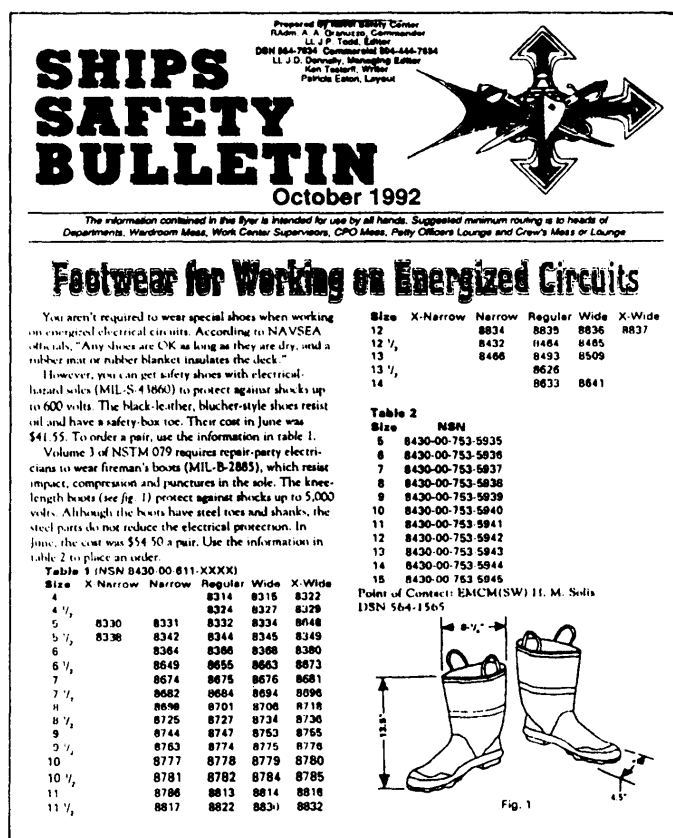


Figure 1-2.—SHIPS SAFETY BULLETIN cover page.

## 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*.

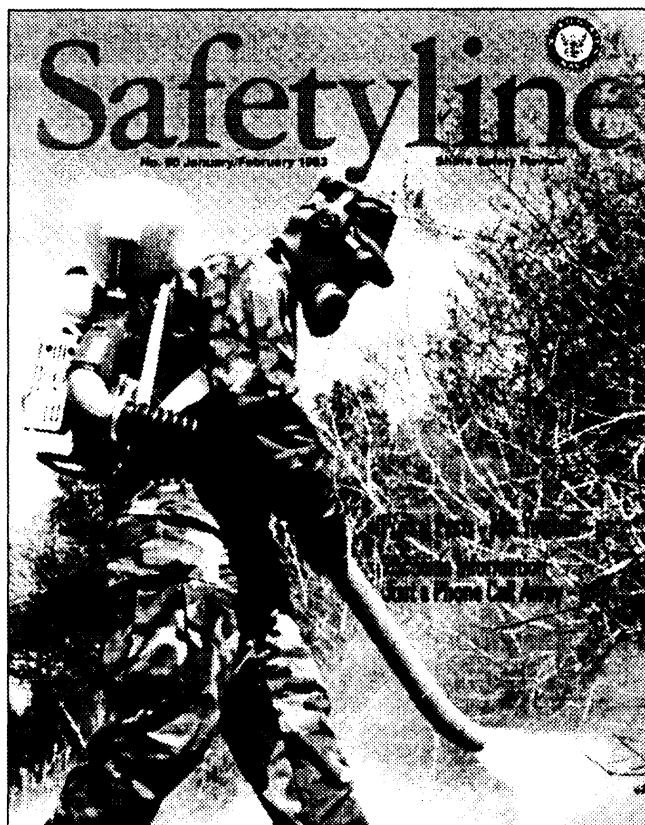


Figure 1-3.—Front cover of *Safetyline* magazine.

## 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 *Safetyline* 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*.

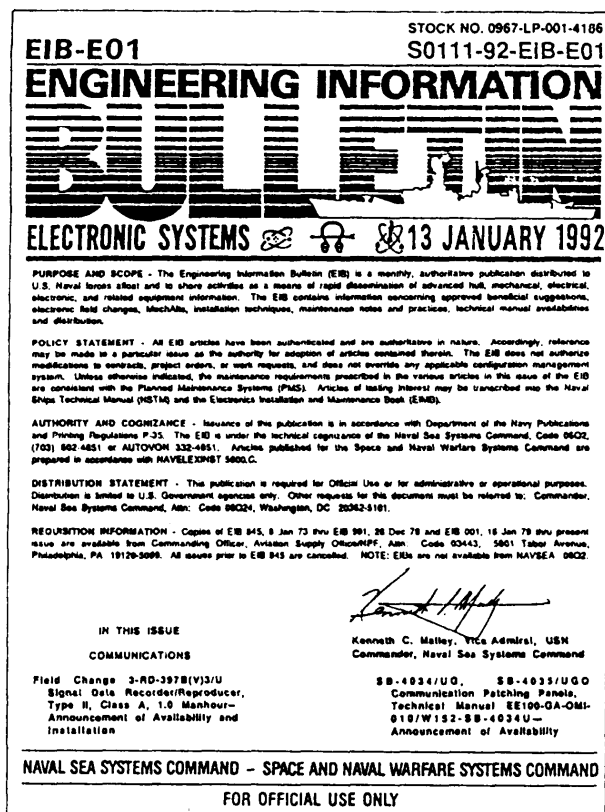


Figure 1-4.—Front cover of an EIB.

## 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

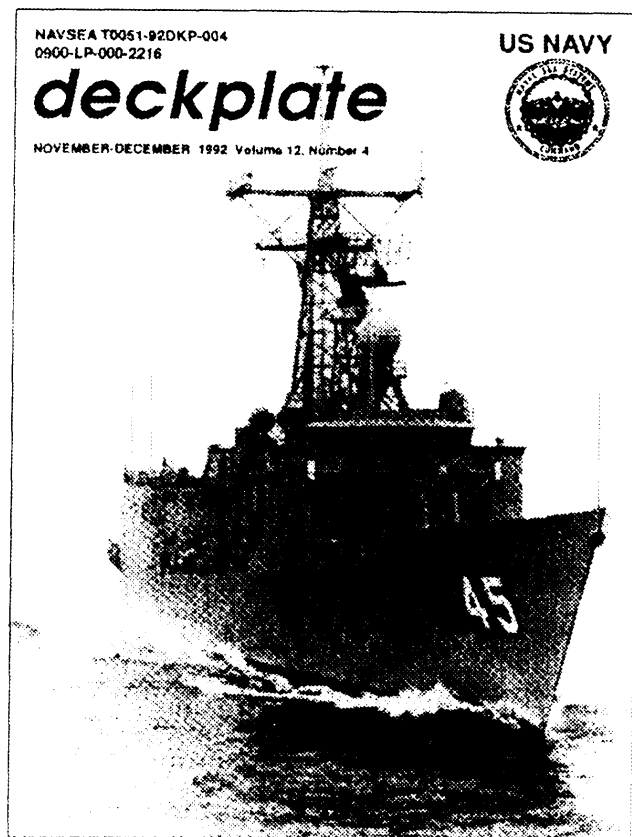


Figure 1-5.—Cover of *deckplate* magazine

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 not 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

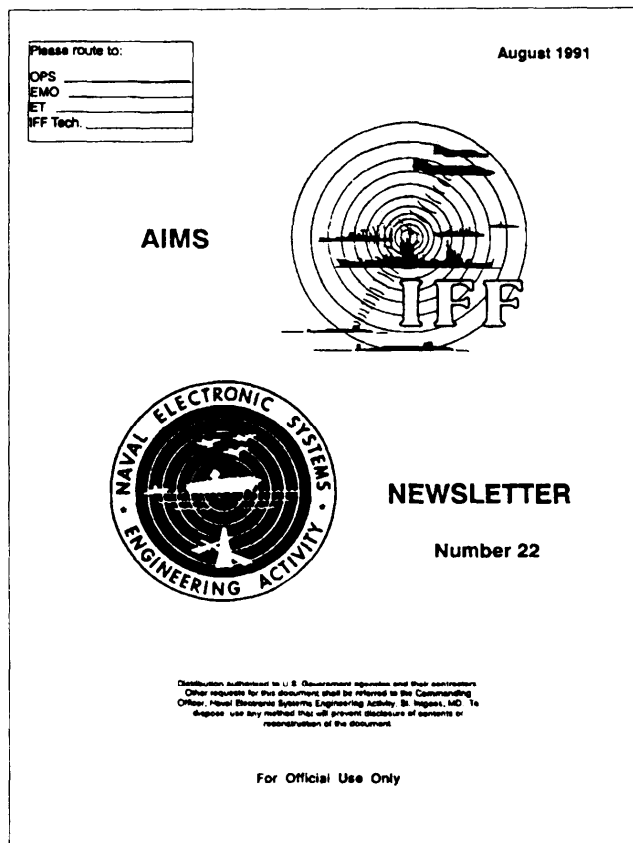


Figure 1-6.—Cover of an *AIMS NEWSLETTER*.

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.

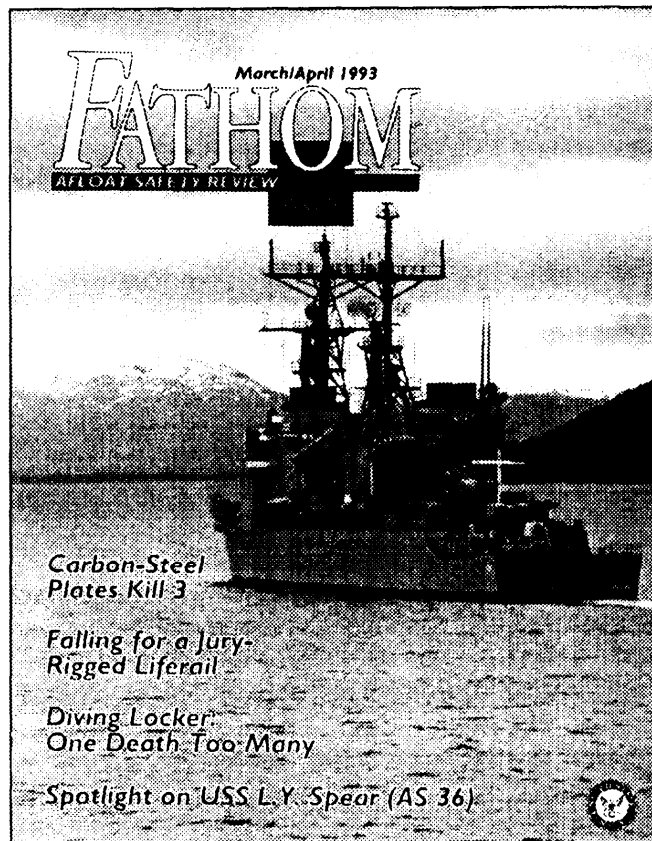


Figure 1-7.—Front cover of *FATHOM*.

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 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 BULLETIN* 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.

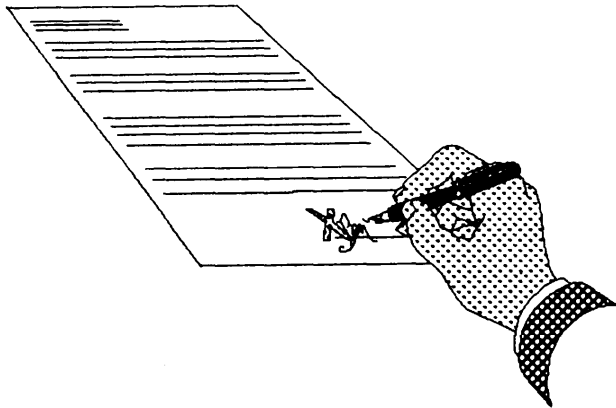
In this chapter we have discussed some of the reports, logs, and publications that will be helpful to you in your everyday job as a technician. You now have the responsibility to apply this information and to enhance your administrative skills. In the next chapter you will learn about the technical administration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

## SHIP'S MAINTENANCE ACTION FORM (2-KILO)

CLMP

DEFL

## SECTION I. IDENTIFICATION

1. SHIP'S UIC		2. WORK CENTER		3. JOB SEQ. NO.		4. APL/AEL	
A. SHIP'S NAME				5. EQUIPMENT NOUN NAME			
B. HULL NUMBER				13. IDENT./EQUIPMENT SERIAL NUMBER			
15. SAFETY HAZARD <input type="checkbox"/>				16. LOCATION (Compartment/Deck/Fraze/Side)			
18. ALTERATIONS (SHIPALT, ORDALT, Fid Chg, etc.)				19. ***			
20. INSURV NUMBER				21. SUFFIX			
22. U				23. S			
24. P/F				25. S/F MHRS. EXP.			
26. DEFER. DATE YR. DAY				27. S/F MHRS. REM.			
28. DEADLINE DATE YR. DAY				29. ACT. TKN			
30. S/F MHRS.				31. COMPLETION DATE YR. DAY			
32. ACT. MAINT. TIME				33. T1			
34. METER PENDING				35. REMARKS/DESCRIPTION			

## SECTION II. DEFERPAL ACTION

## SECTION III. COMPLETED ACTION

## SECTION IV. REMARKS/DESCRIPTION

35. REMARKS/DESCRIPTION											
36. CONT. SHEET											
37. COMP SUMMARY											
38. FIRST CONTACT/MAINT. MAN (Print)											
39. RATE											
40. SECOND CONTACT/SUPERVISOR (Print)											
41. PRI											
42. T/A											
43. INTEGRATED PRIORITY											
44. IUC											
45. TYCOM											
46. SPECIAL PURPOSE											
47. BLUEPRINTS, TECH. MANUALS, PLANS, ETC.											
48. PREARRIVAL/ARRIVAL CONFERENCE ACTION/REMARKS											

## SECTION V. SUPPLEMENTARY INFORMATION

49. REPAIR W/C											
50. EST. MHRS.											
51. ASST. REPAIR W/C											
52. ASST. EST. MHRS.											
53. SCHED. START DATE YR. DAY											
54. SCHED. COMP. DATE YR. DAY											
55. REPAIR ACTIVITY UIC											
56. WORK REQ. ROUTINE											
57. EST. MANDAYS											
58. EST. MANDAY COST \$											
59. EST. MATERIAL COSTS \$											
60. EST. TOTAL COST \$											
61. JOB ORDER NUMBER											
62. LEAD P&E CODE											
63. DATE OF EST. YR. DAY											
64. FINAL ACT.											
65. MHRS. EXPENDED											
66. DATE COMPLETED YR. DAY											
67. COMPLETED BY (Signature - Rate)											
68. ACCEPTED BY (Signature - Rate/Rank)											

## SECTION VI. REPAIR ACTIVITY PLANNING/ACTION

69. REPAIR ACTIVITY UIC											
70. WORK REQ. ROUTINE											
71. EST. MANDAYS											
72. EST. MANDAY COST \$											
73. EST. MATERIAL COSTS \$											
74. EST. TOTAL COST \$											
75. JOB ORDER NUMBER											
76. LEAD P&E CODE											
77. DATE OF EST. YR. DAY											
78. FINAL ACT.											
79. MHRS. EXPENDED											
80. DATE COMPLETED YR. DAY											
81. COMPLETED BY (Signature - Rate)											
82. ACCEPTED BY (Signature - Rate/Rank)											

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

OPNAV 4790/2L (Rev 4-73) S/N 0107-LF-770-3080		SUPPLEMENTAL FORM (2-LIMA)		
<b>SECTION I. IDENTIFICATION</b>				
A SHIP'S NAME	B HULL NUMBER	C SHIP'S UIC	<div style="text-align: center; font-weight: bold; font-size: small;">JOB CONTROL NUMBER</div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <span>D WORK CENTER</span> <span>E JOB SEQ NO</span> </div>	
		F CONTINUATION FOR <input type="checkbox"/> 2K <input type="checkbox"/> 2L <input type="checkbox"/> 2P		
<b>SECTION II. REMARKS/SKETCHES</b>				
<div style="font-size: x-small; margin-bottom: 5px;">G</div>				
<b>SECTION III. AUTHENTICATION</b>				
H FIRST CONTACT/MAINTENANCE MAN (Print)	I DATE <div style="display: flex; justify-content: space-between; font-size: x-small;"> <span>YR</span> <span>DAY</span> </div>	J SECOND CONTACT/SUPERVISOR (Print)	K DATE <div style="display: flex; justify-content: space-between; font-size: x-small;"> <span>YR</span> <span>DAY</span> </div>	

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

## SECTION I. PLANNING

A SHIP'S NAME <b>USS WHITE PLAINS</b>		B HULL NUMBER <b>AFS 4</b>	JOB CONTROL NUMBER		
1 SHIP'S UIC <b>05835</b>		2 WORK CENTER <b>EE01</b>	3 JOB SEQ NO <b>1608</b>		
4 PERIODIC MAINTENANCE REQUIREMENT	5 PERIODICITY	6 YMM ISSUED	7 SPECIAL DATA		
8 SCREENING ACTION		9 QUALITY ASSURANCE REQUIREMENTS		10 SPECIAL REQUIREMENTS	
a <input type="checkbox"/> IUC <input type="checkbox"/> TYCOM b <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> DEPOT ACCOMPLISH c <input type="checkbox"/> <input type="checkbox"/> IMA ACCOMPLISH d <input type="checkbox"/> <input type="checkbox"/> TSU/NAVSEC/NOSSO/ETC e <input type="checkbox"/> <input type="checkbox"/> SHIPS FORCE (HMAI) (DEPOT) ASSIST f <input type="checkbox"/> <input type="checkbox"/> SHIP TO SHOP g <input type="checkbox"/> <input type="checkbox"/> ACCOMPLISH WITH MODIFICATIONS h <input type="checkbox"/> <input type="checkbox"/> DISAPPROVE		a <input type="checkbox"/> SUBSAFE b <input type="checkbox"/> LEVEL I c <input type="checkbox"/> NUCLEAR LEVEL I d <input type="checkbox"/> NON-DESTRUCT TEST e <input type="checkbox"/> NUCLEAR WORK PROCEDURES f <input type="checkbox"/> SUBMARINE ANTENNA ENGINEERING DIVISION g <input type="checkbox"/> SPECIAL CLEANING h <input checked="" type="checkbox"/> SPECIAL TESTING i <input type="checkbox"/> SPECIAL IDENTIFICATION j <input type="checkbox"/> NOISE CRITICAL k <input type="checkbox"/> RADIOLOGICAL CONTROL l <input type="checkbox"/> OTHER CONTROLS		a <input type="checkbox"/> <b>03</b> KEY EVENT b <input type="checkbox"/> SPECIAL INTEREST c <input type="checkbox"/> DRY DOCK REQUIRED d <input checked="" type="checkbox"/> PRE-OVERHAUL TEST REQUIRED e <input checked="" type="checkbox"/> POST-OVERHAUL TEST REQUIRED f <input type="checkbox"/> DEPARTURE TEST REQUIRED	
C IUC SIGNATURE		D TYCOM SIGNATURE		11 NORMALLY DONE BY	
				a <input type="checkbox"/> S/F    b <input type="checkbox"/> IMA    c <input type="checkbox"/> DEPOT	

## SECTION II. SCHEDULING

12 LEAD WORK CENTER <b>38A</b>	13 SCHED START DATE YR <b>62</b> DA <b>45</b>	14 SCHED COMP DATE YR <b>62</b> DA <b>01</b>	15 EST MHRS <b>140</b>	16 KEY OP	17 TASK
18 ASST WORK CENTER <b>51A</b>	19 SCHED START DATE YR <b>62</b> DA <b>47</b>	20 SCHED COMP DATE YR <b>62</b> DA <b>58</b>	21 EST MHRS <b>040</b>	22 KEY OP	23 TASK
24 ASST WORK CENTER <b>52A</b>	25 SCHED START DATE YR <b>62</b> DA <b>45</b>	26 SCHED COMP DATE YR <b>62</b> DA <b>59</b>	27 EST MHRS <b>0100</b>	28 KEY OP	29 TASK
30 ASST WORK CENTER	31 SCHED START DATE YR DA	32 SCHED COMP DATE YR DA	33 EST MHRS	34 KEY OP	35 TASK
36 ASST WORK CENTER	37 SCHED START DATE YR DA	38 SCHED COMP DATE YR DA	39 EST MHRS	40 KEY OP	41 TASK
42 ASST WORK CENTER	43 SCHED START DATE YR DA	44 SCHED COMP DATE YR DA	45 EST MHRS	46 KEY OP	47 TASK

## SECTION III. TECHNICAL DOCUMENTATION

48	ON BOARD YES NO

## SECTION IV. IUC/REPAIR ACTIVITY/TYCOM REMARKS

49
<b>IMA LIMIT REPAIRS TO 600 \$ ROV MATERIAL</b>

## SECTION V. SUPPLEMENTAL PLANNING

50 EST MANDAYS	51 EST MANDAYS COST \$	52 EST MATERIAL COSTS	53 EST TOTAL COST \$	54

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

OPNAV 4790/2Q (11-73) S/N 8187-LF-779-3888															AUTOMATED SHIP'S MAINTENANCE ACTION																			
SECTION I. IDENTIFICATION																																		
JOB CONTROL NUMBER															COMP																			
1 SHIP SUC					2 WORK CENTER					3 JOB SEQ NO					4 APL/ AEL																			
5 SHIP NAME					6 IDENT EQUIPMENT SERIAL NUMBER					7 EQUIPMENT MOUNT NAME					8 WHEN 7 STAT & CAUS 8 DEFA 10 11 12																			
9 HULL NUMBER					13 IDENT EQUIPMENT SERIAL NUMBER					14 I/C																								
15 SAFETY HAZARD					16 LOCATION (Compartment, deck, frame side)										17 WHEN DISCOVERED DATE																			
CONFIGURATION CHANGE															FOR INSURV USE																			
18 ALTERATIONS (SHIPALT OR DALY Field Changes etc.)															19 "1"					20 INSURV NUMBER					21 SUFFIX 22 U 23 S 24 P/P									
SECTION II. DEFERRAL ACTION																																		
25 S/F MHRS EXP					26 DEFER DATE YR DAY					27 S/F MHRS REM					28 DEADLINE DATE YR DAY																			
SECTION III. COMPLETED ACTION																																		
29 ACT TKN 30 S/F MHRS										31 COMPLETION DATE YR DAY					32 ACT MAINT TIME					33 T1 34 METER READING														
SECTION IV. REMARKS/DESCRIPTION																																		
35 REMARKS/DESCRIPTION																																		
37 CSMP SUM																									46 SPEC PURP A B C D E F G H I J K L					CONT				
38 FIRST CONTACT/MAINT MAN (Print)										39 RATE					40 SECOND CONTACT/SUPERVISOR (Print)										41 PRJ42 TA 43 INTEGRATED PRIORITY									
C DIV INIT					D DEPT INIT					E COMMANDING OFFICER'S SIGNATURE										F TYCOM AUTHORIZATION					SCREENING 44 HLC 45 TYCOM									
SECTION V. SUPPLEMENTARY INFORMATION																																		
47 BLUEPRINTS, TECH MANUALS, PLANS, ETC															ON BOARD YES NO					48 PREARRIVAL/ARRIVAL CONFERENCE ACTION/REMARKS														
SECTION VI. REPAIR ACTIVITY PLANNING/ACTION																																		
49 REPAIR W/C					50 EST MHRS					51 ASST REPAIR W/C					52 ASST EST MHRS					53 SCHED START DATE YR DAY					54 SCHED COMP DATE YR DAY									
55 REPAIR ACTIVITY LOC					56 WORK REQ ROUTINE					57 EST MANDAYS					58 EST MANDAYCOST \$					59 EST MATERIALCOST \$														
60 EST TOTAL COST \$										61 JOB ORDER NUMBER										62 LEAD P&E CODE					63 DATE OF EST YR DAY									
64 FINAL ACT					65 MHRS EXPENDED					66 DATE COMPLETED YR DAY					G COMPLETED BY (Signature - Rate)										H ACCEPTED BY (Signature - Rate/Rank)									

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.

**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

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

SHIP'S CONFIGURATION CHANGE FORM				OPNAV 4790/CK (5-84)		CONFIG FILE CORR		COMP MIA NO DEFL		COMP DEFL		
S/N 0107-LF-047-9001												
<b>SECTION I JOB IDENTIFICATION</b>												
JOB CONTROL NUMBER						ALTERATION IDENTIFICATION						
1 SHIP'S UIC		2 WORK CENTER		3 JOB REQ NR		4 ALTERATIONS (SHIPALTY, PLO CHG, ETC)						
A SHIP'S NAME				B HULL NUMBER		C EIC		D ACT TAK				
7 EQUIPMENT HOUR NAME						8 SP HOURS EXP		9 ACT MAINT TIME		10 COMP DATE		
										11 MNR		
<b>SECTION II JOB DESCRIPTION/REMARKS</b>												
12 JOB DESCRIPTION/REMARKS												
<b>SECTION III COMPONENT CONFIGURATION CHANGE IDENTIFICATION</b>												
13 COMPONENT HOUR NAME										14 QUANTITY		15 CA
16 COMPONENT IDENTIFICATION						17 COMPONENT SERIAL NUMBER						
18 COMPONENT APU/UEL						19 LOCATION (DECK/FRAME/SIDE)				20 EIC		
21 NEXT HIGHER ASSEMBLY						22 E A C				23 WORK CENTER		
24 NAMEPLATE DATA												
25 MIP						26 EOB						
27 TM												
<b>SECTION IV SPECIAL PURPOSE</b>												
28 RSH				29 ALB/N				30 SPECIAL OFFICE USE				
<b>—INSTRUCTIONS—</b>												
ITEM NUMBER		SECTION I & II DESCRIPTION		SECTION I & II PAGE 1		CONT PAGE		LEGEND				
1-3		JOB CONTROL NUMBER		M		M		IA IF AVAILABLE O OPTIONAL				
4		ALTERATION IDENTIFICATION		IP		IP		IP IF APPLICABLE NR NOT REQUIRED				
5		EQUIPMENT IDENTIFICATION CODE		M		NR		M MANDATORY				
6		ACTION TAKEN		M		NR						
7		EQUIPMENT HOUR NAME		M		NR						
8		SHIP'S FORCE MANHOURS EXPENDED		M		NR		SECTION I, BLOCK 8 ACTION TAKEN				
9		ACTIVE MAINTENANCE TIME		M		NR		SECTION II, BLOCK 15 COMPONENT ACTION				
10		COMPLETION DATE		M		NR						
11		METER READING		IP		NR						
12		JOB DESCRIPTION (REMARKS)		O		NR						
ITEM NUMBER		SECTION III DESCRIPTION		REMOVE (RD)		INSTALL (IA)		MODIFY (MC)				
13		COMPONENT HOUR NAME		M		M		M				
14		QUANTITY		M		M		M				
15		COMPONENT ACTION		M		M		M				
16		COMPONENT IDENTIFICATION		IP		IP		IP				
17		COMPONENT SERIAL NUMBER		IA		IA		IA				
18		COMPONENT APU/UEL		M		IA		IA				
19		LOCATION		M		M		M				
20		EQUIPMENT IDENTIFICATION CODE		NR		IA		NR				
21		NEXT HIGHER ASSEMBLY		IP		IP		IP				
22		SERVICE APPLICATION CODE		IA		IA		IA				
23		WORK CENTER		NR		M		NR				
24		NAMEPLATE DATA		NR		M		NR				
25		MAINTENANCE INDEX PAGE		IA		IA		IA				
26		EOBS		IP		IP		IP				
27		TECH MANUAL NUMBER		IA		IA		IA				
WORK CENTER SUPERVISOR		DIVISION OFF		SUPPLY DEPT		3 M COORDINATOR		SHIP SEQUENCE NUMBER		PAGE _____ OF _____		

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



**OPNAV 4790/CK(C)**

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

SHIP SYSTEM		SUBSYSTEM		MRC CODE R-286 M-5	
SYSTEM		EQUIPMENT AN/SPS-52A Radar Set		RATES FTM3 2.0 FTMSN 2.0	M/M 2.0 2.0
MAINTENANCE REQUIREMENT DESCRIPTION 1. Test receiver alignment.				TOTAL M/M 4.0 ELAPSED TIME 2.0	
SAFETY PRECAUTIONS 1. Forces afloat comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series. 2. When BATTLE SHORT or DOOR INTLK BYPASS switches are ON, protective interlocks are bypassed and voltages dangerous to life are accessible when equipment is open. Do not work alone.					
TOOLS, PARTS, MATERIALS, TEST EQUIPMENT 1. Adapter, UG-28A/U 2. 4" Adjustable wrench 3. 4" Normal duty screwdriver 4. Multimeter, AN/USM-311 (SCAT 4245) 5. Pulse Generator, SG-816/U (SCAT 4409) 6. Oscilloscope, AN/USM-281A (SCAT 4308) 7. Signal Generator, HENLETT-PACKARD-8616A (SCAT 4374)					
PROCEDURE Maintenance procedure with this requirement is CONFIDENTIAL. Maintenance Requirement Card is stowed in _____				PAGE 1 OF 4 C 19 CSCI	
LOCATION		DATE January 1986		M	
MAINTENANCE REQUIREMENT CARD (MRC) OPNAV FORM 4700-1					

SHIP SYSTEM		SUBSYSTEM		MRC CODE R-286 M-5	
SYSTEM		EQUIPMENT AN/USM-281A		RATES FTM3 2.0 FTMSN 2.0	M/M 2.0 2.0
MAINTENANCE REQUIREMENT DESCRIPTION 1. Test receiver alignment.				TOTAL M/M 4.0 ELAPSED TIME 2.0	
SAFETY PRECAUTIONS 1. Forces afloat comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series. 2. When BATTLE SHORT or DOOR INTLK BYPASS switches are ON, protective interlocks are bypassed and voltages dangerous to life are accessible when equipment is open. Do not work alone.					
TOOLS, PARTS, MATERIALS, TEST EQUIPMENT 1. Adapter, UG-28A/U 2. 4" Adjustable wrench 3. 4" Normal duty screwdriver 4. Multimeter, AN/USM-311 (SCAT 4245) 5. Pulse Generator, SG-816/U (SCAT 4409) 6. Oscilloscope, AN/USM-281A (SCAT 4308) 7. Signal Generator, HENLETT-PACKARD-8616A (SCAT 4374)					
PROCEDURE Maintenance procedure with this requirement is CONFIDENTIAL. Maintenance Requirement Card is stowed in _____				PAGE 1 OF 4 C 19 CSCI	
LOCATION		DATE January 1986		M	
MAINTENANCE REQUIREMENT CARD (MRC) OPNAV FORM 4700-1					

SHIP SYSTEM		SUBSYSTEM		MRC CODE R-286 M-5	
SYSTEM		EQUIPMENT AN/USM-281A		RATES FTM3 2.0 FTMSN 2.0	M/M 2.0 2.0
MAINTENANCE REQUIREMENT DESCRIPTION 1. Test receiver alignment.				TOTAL M/M 4.0 ELAPSED TIME 2.0	
SAFETY PRECAUTIONS 1. Forces afloat comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series. 2. When BATTLE SHORT or DOOR INTLK BYPASS switches are ON, protective interlocks are bypassed and voltages dangerous to life are accessible when equipment is open. Do not work alone.					
TOOLS, PARTS, MATERIALS, TEST EQUIPMENT 1. Adapter, UG-28A/U 2. 4" Adjustable wrench 3. 4" Normal duty screwdriver 4. Multimeter, AN/USM-311 (SCAT 4245) 5. Pulse Generator, SG-816/U (SCAT 4409) 6. Oscilloscope, AN/USM-281A (SCAT 4308) 7. Signal Generator, HENLETT-PACKARD-8616A (SCAT 4374)					
PROCEDURE Maintenance procedure with this requirement is CONFIDENTIAL. Maintenance Requirement Card is stowed in _____				PAGE 1 OF 4 C 19 CSCI	
LOCATION		DATE January 1986		M	
MAINTENANCE REQUIREMENT CARD (MRC) OPNAV FORM 4700-1					

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

[illegible]

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 NAVSEASYSKOM.

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

REPORT SYMBOL OPNAV 4790-4						
SEE INSTRUCTIONS ON BACK OF GREEN PAGE						
<b>FROM (SHIP NAME AND HULL NUMBER)</b>  U.S.S. MIDWAY (CV-41)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: x-small;">SERIAL #</td> <td>2596-89</td> </tr> <tr> <td style="font-size: x-small;">DATE</td> <td></td> </tr> </table>	SERIAL #	2596-89	DATE		
SERIAL #	2596-89					
DATE						
<b>TO</b> <input checked="" type="checkbox"/> NAVAL SEA SUPPORT CENTER <u>PACIFIC</u> (Category A) <input type="checkbox"/> TYPE COMMANDER (Category B)						
SUBJECT: PLANNED MAINTENANCE SYSTEM FEEDBACK REPORT						
SYSTEM, SUB-SYSTEM, OR COMPONENT	APL/CID/AN NO./MK. MOD.					
SYSCOM MIP CONTROL NUMBER	SYSCOM MRC CONTROL NUMBER					
DESCRIPTION OF PROBLEM						
CATEGORY A	CATEGORY B					
<input checked="" type="checkbox"/> MIP/MRC REPLACEMENT	<input type="checkbox"/> TECHNICAL <input type="checkbox"/> TYCOM ASSISTANCE <input type="checkbox"/> OTHER (Specify)					
<b>REMARKS</b>  <div style="margin-left: 100px;">             MIPs only, 1 each              A-33/109-87              EL-11/128-67               MIPs and MRCs              E-11/62-18 2 each              F-6/7-87 1 each               MRCs only, 5 each              (MIP E-14/749-22) 69 T965 S           </div>						
ORIGINATOR & WORK CENTER CODE	DIV. OFFICER					
DEPT. HEAD	3-M COORDINATOR					
Originator do not write below. For TYCOM use only.						
<table style="width: 100%;"> <tr> <td style="width: 25%;">TYCOM</td> <td style="width: 25%;"><input type="checkbox"/> CONCUR</td> <td style="width: 25%;"><input type="checkbox"/> DO NOT CONCUR</td> <td style="width: 25%;"><input type="checkbox"/> TAKES ACTION</td> <td style="width: 25%;"><input type="checkbox"/> PASSES FOR ACTION</td> </tr> </table>		TYCOM	<input type="checkbox"/> CONCUR	<input type="checkbox"/> DO NOT CONCUR	<input type="checkbox"/> TAKES ACTION	<input type="checkbox"/> PASSES FOR ACTION
TYCOM	<input type="checkbox"/> CONCUR	<input type="checkbox"/> DO NOT CONCUR	<input type="checkbox"/> TAKES ACTION	<input type="checkbox"/> PASSES FOR ACTION		
TYCOM REP SIGNATURE	DATE					
OPNAV 4790/7B (Rev. 9-89)      ACTION COPY      PAGE ____ OF ____ S/N 0107-LF-007-8000 EDITION OF 3-84 MAY 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:

- a. 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 SYSCOM 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 J-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.
- e. ORIGINATOR IDENTIFICATION: Sign and insert work center code in appropriate space.

2. 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. J-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.

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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 *Engineering 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 be an 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 (INAs)

The INAs 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 INAs 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:

1. 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.
3. 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.

7. 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).



COSAL INDEX — PART I (SECTION A)									
EQUIP/COMP/REC	EQUIPMENT/COMPONENT/EQUIPAGE NOMENCLATURE/CHARACTERISTICS	IDENTIFICATION NO.	QUAN-TITY	COL NO	NOTES	* ALLOW SUPT CODE	SERVICE APPLICATION/INFORMATION		
NV	AN-CRT-3	54390900	3			EEPAA	RADIO		
NV	AN-PIP-1A	56403101	1			AEPCA	1C PUBLIC ADDRESS SET		
V	AN-SRC-21	57112100	2			EEPAA	RADIO		
V	AN-URC-32	58442100	1			EEPAA	RADIO		
V	TRANSMITTER, COURSE ORDER MK42M0	49401615	2			MEPAA	FCS TRANSMITTER		

12345678

9101112

DD 0001	0015	1st digit 2nd & 3rd digits 4th & 5th digits	Technical Bureau/Commissaire Program Support Authority Logistics Support Bureau	I	A	29
SUPP TYPE & MAIL NO.	DATE	* ALLOWANCE SUPPORT CODES		PART	SECTION	PAGE

0100 303 7900

COSAL INDEX — PART I (SECTION B)									
SERVICE APPLICATION/INFORMATION	EQUIP/COMP/REC	EQUIPMENT/COMPONENT/EQUIPAGE NOMENCLATURE CHARACTERISTICS	IDENTIFICATION NO.	QUAN-TITY	COL NO	NOTES	* ALLOW SUPT CODE		
AN/SLQ-32 ELECTRONICS COUNTERMEASURES SYSTEM 4ANSLQ32	V	AN-70002/SLQ-32(V), AMPL, RF	52505502	2			EEPAA		
	V	AN/SLQ-32(V)2, COUNTERMEASURES SET	56940368CL	1			EEPAU		
	V	AS-3316/SLQ-32(V), ANTENNA ASSY	59226865	2			EEPAA		
	V	AS-3317/SLQ-32(V), ANTENNA	59226866	2			EEPAA		
	V	AS-3318/SLQ-32(V), ANTENNA	59226567	2			EEPAA		
	V	CP-1370/SLQ-32(V), PROCESSOR, SIGNAL DATA	62405309	2			EEPAA		
AN/SPS-49 RADAR SYSTEM 2ANSP549	V	AN/SPM-23, TEST SET, RADAR	92019105	1			XEPAA		
	V	AN/SPS-49(V)2 FC1 P/O R-2/SPS-49(V)	57041230FA	1			XESAC		
	V	AN/SPS-49(V)2, RADAR SET	57040502CL	1			XEPAU		
	V	AS-3263/SPS-49(V), ANTENNA	59226806	1			XEPAA		
	V	BZ221/U, BUZZER	57040416	2			XEPAA		
	V	CN-1446/SPS-49(V), REGULATOR ASSEMBLY, VOLT	62364417	1			XEPAA		

01234567

9101112

FFG 10	07-15-85	1st digit 2nd & 3rd digits 4th & 5th digits	Technical Bureau/Commissaire Program Support Authority Logistics Support Bureau	1	B	E 1
SUPP TYPE & MAIL NO.	DATE	* ALLOWANCE SUPPORT CODES		PART	SECTION	PAGE

0100 303 8000

Figure 3-2.—COSAL indexes.

**Table 3-1.—Description of Contents of Columns of COSAL Index**

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).

\*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.

NAVSTAND FORM 1310 (2-PT) (1-40)		ALLOWANCE PARTS LIST (APL)		IDENTIFICATION NO		DATE	
PORTAGE HOMELAND/CHARACTERISTICS		TECHNICAL DOCUMENT NUMBER		430190918		07-15-7-	
C-3868-SRC		334-2163					
CHARACTERISTICS		SAMPLE ONLY		ON BOARD ALLOWANCE TABLE		COL	
MFR ACE ELECTRONICS CO.				COL		COL	
NAVCOM PLAN-				COL		COL	
MFR DMG-2300-157				COL		COL	
MFR ID-GR				COL		COL	
PATTERN NO-130				COL		COL	
EQUIP SPEC-MIL-M-280				COL		COL	
FSN-				COL		COL	
LAPL-43-016				COL		COL	
TYPE-11				COL		COL	
CLASS-2				COL		COL	
SIZE-				COL		COL	
DRIVE-MOTOR				COL		COL	
MFR MOTOR IDENT-				COL		COL	
VOLTS-115				COL		COL	
FREQUENCY-AC				COL		COL	
PHASE-SINGLE				COL		COL	
AMPS-5.3				COL		COL	
HP-.333				COL		COL	
0742				COL		COL	
STARTER-MTR				COL		COL	
MOTOR-AC				COL		COL	
A4742-3				COL		COL	
4902-3				COL		COL	
4908-3				COL		COL	
5002-3				COL		COL	
ADDITIONAL MANUAL NO/S				COL		COL	
334-0000				COL		COL	
61482 BEARING ASSY-KN				COL		COL	
61482 BELT-V OTS CRCH				COL		COL	
61482 WHEEL-ABRSV				COL		COL	
61482 BELT-V OTS CRCH				COL		COL	
92 3110-00-225-6093				COL		COL	
9C 3030-00-528-4256				COL		COL	
9C 7320-00-297-0852				COL		COL	
9C 3030-00-528-4254				COL		COL	
151403699				COL		COL	
173330037				COL		COL	
SEE SNLS FOR ALLOW				COL		COL	
ITEM NAME				COL		COL	
STOCK NO.				COL		COL	
ALLOWANCE EQUIPAGE LIST (AEL)				COL		COL	
REFERENCE NO/DESCRIPTIVE DATA				COL		COL	
DD 0001 1255				COL		COL	
SHIP TYPE & HULL NO.				COL		COL	
PAGE				COL		COL	
430190918				COL		COL	
07-15-7-				COL		COL	
1				COL		COL	

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



Table 3-2.—Data Elements of the APL

1. Equipment/Component Nomenclature/Characteristics	Name of equipment or component and brief description. This corresponds to the Index entries.
2. Technical Document Number	The predominant technical manual or plan number. 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 top and bottom of page.
4. Date	COSAL publication date.
5. Page	Consecutive numbering of all pages required to describe one equipment/component which is identified 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 immediately following the last line of data for that APL. This enables you to ensure that you have a complete APL.
6. Characteristics	Complete nameplate data on the equipment/component named in item 1.
7. Reference/Symbol Number	A number, other than an NSN, by which a part may 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 Equipment" are listed on the "Parent APL." Any additional accessory components not listed on the APL should be reported to SPCC.
12. 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 on the dependence/operation of the component.
14. Source Code	Indicates the availability of repair parts and method of procurement. These codes are defined in the Introduction.
15. Maintenance Code	A three digit code signifying the maintenance activity authorized to replace, repair, and condemn 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 C - Consumable
17. Notes Code	Provides necessary and important information about individual items listed on the APL. The Introduction lists and defines these codes.
18. Quantity in One Equipment/Component	The total population of the part within the equipment/component described by the APL.
19. Unit of Issue	The term connotes the physical measurement or count of quantities of an item for procurement, storage, and issue.
20. Allowance Item Code	Refer to Part III to determine applicable allowances.
21. On-Board Allowance Table	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 published.
23. Page	Consecutive page numbering from first page to last of all APL pages published as Part II.
24. Identification Number	Same as item 3 above.
25. Date	Same as item 4 above.
26. Page	Same as item 5 above.

\*Refer to Figure 3-3.

**PART II, SECTION A-ALLOWANCE PARTS 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

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



Table 3-3.—Data Elements of the APL, Section B

- (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 PUBLICATIONS.**— 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 non-automated, use NAVSUP Form 1250-1 as a consumption document. Nonautomated ships of the submarine force use it as a Military Standard

1 REQ DATE 2196	2 DEPT NO 0691	3 URGY C	4 RDD	5 LOCATION	6 SIM NON-SIM <input type="checkbox"/> <input type="checkbox"/>	7 ISSUE DATE	A REQD QTY	B REQD NO
8 NOUN NAME OR REF SYM FUSE		9 FPR <input type="checkbox"/>	10 APL/AEL/CID 57039600		11 INV QTY	12 NIS N/C <input type="checkbox"/> <input type="checkbox"/>	C OBL AMT	D POSTED
JOB CONTROL NUMBER					17 EQUIP COSAL SUPPLY'D YES <input type="checkbox"/> NO <input type="checkbox"/>		E URG MART <input type="checkbox"/> <input type="checkbox"/>	S/R (REQD O/S)
13 UIC	14 WC	15 JSN	16 EIC		17 EQUIP COSAL SUPPLY'D		PROJ	OPTAR LOG
18 SC 19 COG 20 MCC 21 FSC 22 STOCK NUMBER 5920002962440					23 SMC	24 U/I	25 QUANTITY EA0003	26 UNIT PRICE
27 EXTENDED PRICE					28 FUND			
29 REMARKS						30 APPROVED BY		
						31 RECEIVED BY		

1 REQ DATE 2196	2 DEPT NO 0692	3 URGY B	4 RDD	5 LOCATION	6 SIM NON-SIM <input type="checkbox"/> <input type="checkbox"/>	7 ISSUE DATE	A REQD QTY	B REQD NO
8 NOUN NAME OR REF SYM FUSE		9 FPR <input type="checkbox"/>	10 APL/AEL/CID 01689426		11 INV QTY	12 NIS N/C <input type="checkbox"/> <input type="checkbox"/>	C OBL AMT	D POSTED
JOB CONTROL NUMBER					17 EQUIP COSAL SUPPLY'D YES <input type="checkbox"/> NO <input type="checkbox"/>		E URG MART <input type="checkbox"/> <input type="checkbox"/>	S/R (REQD O/S)
13 UIC	14 WC	15 JSN	16 EIC		17 EQUIP COSAL SUPPLY'D		PROJ	OPTAR LOG
18 SC 19 COG 20 MCC 21 FSC 22 STOCK NUMBER V051520E01Z000P31R000					23 SMC	24 U/I	25 QUANTITY EA0002	26 UNIT PRICE
27 EXTENDED PRICE					28 FUND			
29 REMARKS						30 APPROVED BY		
						31 RECEIVED BY		
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8	9	0	1	2	3	4	5	6
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6	7	8	9	0	1	2	3	4
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3	4	5	6	7	8	9	0	1
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4	5	6	7	8	9	0	1	2
3	4	5	6	7	8	9	0	1
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4	5	6	7	8	9	0	1	2
3	4	5	6	7	8	9	0	1
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SHIPPING CONTAINER TALLY		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50																																															
<b>REQUISITION AND INVOICE/SHIPPING DOCUMENT</b>																								SHEET NO. OF SHEETS 15 OCT 1985												S. REQUISITION NUMBER R52192-5288-													
1. FROM R52192 USS JOHN PAUL JONES (DDG-32)																								1. DATE MATERIAL REQUIRED 30 OCT 1985												2. FISCAL YEAR 13													
2. TO M00244 NSC SAN DIEGO, CA																								3. AUTHORITY OR PURPOSE																									
3. SHIP TO - NAME FOR																								4. SIGNATURE L. GARNER, LT. SC, USN												5. VOUCHER NUMBER AND DATE													
SUPPLY OFFICER USS JOHN PAUL JONES (DDG-32) PIER 2, NAVSTA, SAN DIEGO, CA																								6. DATE SHIPPED												7. BILL OF LADING NUMBER													
																								8. MODE OF SHIPMENT												9. BILL OF LADING NUMBER													
																								10. AIR FREIGHT DESIGNATION OR FUEL REFERENCE NO.																									
4. APPROPRIATION AND BUDGET																								5. FUND CODE NU																									
6. NATIONAL STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIAL AND/OR SERVICES																								7. QUANTITY REQUESTED												8. UNIT PRICE													
7. SERVICES AND MATERIALS FOR REPAIR OF:																								8. QUANTITY REQUESTED												9. UNIT PRICE													
3001 MARCHANT CALCULATORS, Ser. Nos. 441067, 441255																								JOB 1																									
3002 FRIDEN ADDING MACHINE, Ser. No. 56432																								JOB 1																									
3003 IBM ELECTRIC TYPEWRITERS, Ser. Nos. 14-667421, 15-667441																								JOB 1																									
3004 REMINGTON ELECTRIC TYPEWRITER, Ser. No. 14-336601																								JOB 1																									
10. SPECIAL INSTRUCTIONS																								11. SPECIAL INSTRUCTIONS																									
12. CHECKED BY																								13. CHECKED BY												14. CHECKED BY													
15. CHECKED BY																								16. CHECKED BY												17. CHECKED BY													
18. CHECKED BY																								19. CHECKED BY												20. CHECKED BY													
TOTAL																								TOTAL												TOTAL													
DD FORM 1149 (8-77)																								REPLACES EDITION OF 1 MAY 56 WHICH MAY BE USED												STOCK NO. 0-01-001-001-0													

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

SERVMART SHOPPING LIST (4400) NAVSUP FORM 1314 (REV. 10-80)				MATERIAL CATEGORY CONSUMABLES		PAGE 1	OF 1	JULIAN DATE 2181
SHIP/ACTIVITY USS JOHN PAUL JONES (DDG-32)				REQUISITION NO. R52192-4271-3369		FUND CODE NC		
ITEM NO.	COG SYM AND NSN OR NIIN ***	DESCRIPTION	U/I	QTY	UNIT PRICE	EXTENSION	REQUIRING DEPT.	
1	00-222-3525	BOOK, RECORD	EA	6	1.50	9.00	OE01	
2	00-281-3685	PAPER, CARBON, 8 x 11	BX	2	2.00	4.00	OE01	
3	00-290-0598	PAPER, BOND, 8 x 13	RM	1	1.97	1.97	OE01	
4	00-370-0606	ERASER	EA	5	.05	.25	OE01	
5								
6								
7								
8								

N00244 NSC SAN DIEGO SERVMART		R52192 USS JOHN PAUL JONES (DDG-32)	
AOA		REMARKS	
R 52192 2181 3369		TOTAL COST LIMITATION \$16.75	
NC		LT I. L. GARNER, SC, USN	
NAME (Signature and Rate or Rank of Authorized Shopper)		TOTAL 15.22	
		PLUS 10% FOR PRICE VARIATIONS	
		GRAND TOTAL (May not exceed dollar limit on DD Form 1348)	

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 mandatory turn-in repairable 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:



LONG SUPPLY IND.	SCHED REMOVAL COMP CARD CODE	COG SYMBOL/ MAT'L CONTROL CODE	NATIONAL ITEM IDENTIFICATION NUMBER/NAVY ITEM CONTROL NUMBER/ AIRCRAFT ENGINE MODEL NUMBER	SPEC MAT'L IDENT CODE	REPAIR MAINT. CODE/ RECOVER- ABILITY CODE	SECUR- ITY CLASS	SHIP- PING CODE	MOVEMENT PRIORITY DESIG- NATOR	NOTES		
L S I	S R C	C O G	M C C	NIIN/NICN/MODEL	SMIC	R M C	R C	S E C	SHPG CODE	M P D	NOTES
		7H	H	6675-00-714-3642		D	D	U	N00189 N00228	13	USE CONTAINER 00-789-2993
		1H	D	6625-00-714-3876		O	G	U	N00189		
		7Z	H	6625-00-714-3992	TE	O	D	U	N00189 N68276	06	BLUESTRIPE
		7G	H	6625-00-714-4223		F	D	U	N00189 N68276	06	BLUESTRIPE
		1R	D	1650-00-714-4365	EU	G	G	U	N00146		
		2R	M	1650-00-714-4475	LC	G	D	U	N00146	13	RMN IN PLACE

PART 1—LISTING OF ITEMS

SHIPPING CODE	SHIPPING INSTRUCTIONS	UIC/ FSCM
N00189	IRAM NAVAL SUPPLY CENTER NORFOLK, VA 23511 ATTENTION OF BLDG SP-237	

PART 2—SHIPPING ADDRESS

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

- 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

### 61-Electric Wire, Power, and Distribution Equipment

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	H
Federal Supply Group	<u>59</u>
Federal Supply Classification	<u>20</u>
National Codification Bureau (NCB) Code	<u>00</u>
National Item Identification Number (NIIN)	<u>00-248-5708</u>
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

00-248-5708 = 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.





SWITCH, TOGGLE		
<p>① Circuitry w/toggle position A, CTR, B-on, none, on. 220VAC at 6 AMP, 250VDC at 0.5 AMP, max. voltage rating. 2 screw terminals. Fully inclosed, driptight. Sealed toggle. Bushing mtd. Military Standard MS35058-23.</p> <p>00-655-1515 <math>\frac{1}{4}</math>"-32NS Thd</p>	 <p>①</p>	 <p>②</p>
<p>② Circuitry w/toggle position A, CTR, B-on, none, on. 250VAC, 30VDC at 5 AMP, max. voltage rating. 3 solder tab terminals. Fully inclosed Bushing mtd. Micro Switch Div. of Honeywell Inc., #6AT6.</p> <p>00-519-6383 <math>\frac{1}{4}</math>"-32NS Thd</p>	<p>1 pole, double throw, one position momentary, contact arrangement.</p> <p>⑤ Circuitry w/toggle position A, CTR, B-on, none, on momentary. 115VAC at 10 AMP, 28VDC at 20 AMP max voltage rating. 2 screw terminals. Fully inclosed, driptight. Sealed toggle. Bushing mtd. Military Standard MS35058-26.</p> <p>00-655-1517 <math>\frac{1}{4}</math>"-32NS Thd</p>	 <p>③</p>
<p>② Circuitry w/toggle position A, CTR, B-on, none, on. 250VAC at 5 AMP, 30VDC at 4 AMP, max. voltage rating. 3 solder tab terminals. Fully inclosed. Bushing mtd. Micro Switch Div. of Honeywell Inc. #6AT102.</p> <p>00-556-9217 <math>\frac{1}{4}</math>"-40NS Thd</p>	<p>⑤ Circuitry w/toggle position A, CTR, B-on momentary, off, on momentary. 115VAC at 10 AMP, 28VDC at 20 AMP, max. voltage rating. 3 screw terminals. Fully inclosed. Sealed toggle. Bushing mtd. Military Standard MS35058-27.</p> <p>00-655-1518 <math>\frac{1}{4}</math>"-32NS Thd</p>	 <p>④</p>
<p>③ Circuitry w/toggle position A, CTR, B-on, none, on. 220VAC, 250VDC at 2 AMP, max. voltage rating. 2 solder tab terminals. Fully inclosed, submersible. Bushing mtd, designed so that the direction of movement of the switch mechanism is the same as that of the lever. Military Standard MS25098-23.</p> <p>00-655-1923 <math>\frac{1}{4}</math>"-32NS Thd</p>	<p>④ Circuitry w/toggle position A, CTR, B-on momentary, off, on momentary. 115VAC, 28VDC at 15 AMP, max. voltage rating. 3 screw terminals. Fully inclosed, vaportight. Sealed toggle. Bushing mtd. Military Standard MS24523-27.</p> <p>00-683-1633 <math>\frac{1}{4}</math>"-32NS Thd</p>	<p>1 pole, double throw, one position momentary, two positions maintained, contact arrangement.</p> <p>④ Circuitry w/toggle position A, CTR, B-on, off, on momentary. 28VDC at 5 AMP, max. voltage rating. 3 solder tab terminals. Fully inclosed. Bushing mtd. The Bendix Corp., #C202-5050-0706.</p> <p>00-944-5124 <math>\frac{1}{4}</math>"-40NS Thd</p>
		<p>⑥ Circuitry w/toggle position A, CTR, B-on, off, on momentary. w/locking in 'A' position. 115VAC, 28VDC at 15 AMP, max. voltage rating. 3 screw terminals. Fully inclosed, submersible. Sealed toggle. Bushing mtd. Military Standard MS24658-31 F.</p> <p>00-914-6446 <math>\frac{1}{4}</math>"-32NS Thd</p>

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 frequently 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.

PUBLICATION ACTION CODE		NATIONAL STOCK NUMBER		SOURCE OF SUPPLY CODE		ACQUISITION ADVISE CODE		QUANTITY UNIT PRICE CODE		UNIT OF ISSUE		SHELF LIFE CODE		SECURITY CODE		REPAIRABILITY CODE		COGNIZANCE CODE		SPECIAL MATERIAL		ISSUE REPAIR/ACQUISITION		SPECIAL RESTRICTION		PRECEDENCE CODE		AUTOMATIC METALS CONTENT CODE		DEMILITARIZATION CODE		PHRASE CODE	
A C T	N S N	S O S	A A C	Q U P	U R	UNIT PRICE		S L C	S E C	M C C	MCD NAVY		P M I	A D P	D M L	ITEM NAME		P C	PHRASE STATEMENT OR UNIT ISSUE/CONV FACTOR														
	5960-00-714-3922	59G	D	O	PG		.81	O	U	9G							A JUMPER TERMINAL STR	K	U/I CONTAINS 25EA														
	6625-00-714-3992	N35	V	I	EA		1440.00*	O	U	H 72*	TE	BL		A* O*			A OSCILLOSCOPE	**	R* REFER TO NET PRICE 979.00														
	5310-00-714-4063	59I	D	M	EA		.03	O	U	9Z							A WASHER, FLAT																
	5310-00-714-4082	59I	D	M	EA		.15	O	U	9Z							A WASHER, FLAT																
	5815-00-714-4123						2.16*										A SPRING, HELICAL, COMP	2	DISCNT USE 5815-00-714-1423														

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

REFERENCE NUMBER		FEDERAL SUPPLY CODE FOR MANUFACTURERS		NATIONAL STOCK NUMBER		ITEM STANDARDIZATION CODE		REFERENCE NUMBER VARIATION CODE		REFERENCE NUMBER CATEGORY CODE		SERVICE/AGENCY DESIGNATOR CODE		DESCRIPTION AVAILABILITY	
J17	REF NO	FSCM	NSN	I S C	R N V C	R N C C	S A D C	D A	ITEM NAME						
CBTV545A	80009	6625-00-714-3992*	6625-00-225-0248	3	2	5			OSCILLOSCOPE						
CBTYPE102	77075	8030-00-734-9314		5	2	3		N	COMPOUND, CALKIN						
CBTZ22000	23040	2530-00-062-0345*	2530-00-278-2287	2	2	5			CUP, HYDRAULIC B						
CBTZ6256A	23040	3020-00-499-9631		C	2	3		N	SPROCKET, DRIVE						
CBT12	85597	3460-00-586-6650		5	2	3			CHIP BREAKER						
CBT13-023	80103	5910-00-500-9119		3	2	3			CAPACITOR, FIXED						

PART 1

NSN	I S C	REF NO	FSCM	R N V C	R N C C	S A D C	D A	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							
		545A	80009	2	3			OSCILLOSCOPE							
		9975856	18876	2	5			OSCILLOSCOPE							
		6625-00-225-0248													
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		Code
Nashua Mfg. Co., Nashua, N.H.	42308	National Bearing Metal Corp., St. Louis, Mo. (82473)	
Nashua Package Sealing Co., Inc., Nashua, N.H. (42318)		Acquired by American Brake Shoe Co.	
Now Nashua Corp.		National Beryllia Corp., Haskell, N.J.	43827
Nashville Bridge Co., Nashville, Tenn.	76611	National Billiard Chalk Co., Chicago, Ill.	42423
Nashville Workshop for the Blind, Nashville, Tenn.	85813	National Billiard Mfg. Co., Cincinnati, Ohio.	42426
Nason Co., Detroit, Mich.	85814	National Bird Control Laboratories, Skokie, Ill.	03827
Nason, R. N., and Co., San Francisco, Calif.	76612	National Biscuit Co., New York, N.Y.	88707
Nassau Boat Basin, Inc., Freeport, N.Y.	42319	National Blank Book Co., Holyoke, Mass.	74103
Nassau Laboratories, Hackensack, N.J.	88483	National Blow Pipe and Mfg. Co., Ltd., New Orleans, La.	42424
Nassau Machine Products Co., East Detroit, Mich.	04705	National Body Mfg. Co., Knightstown, Ind.	42427
Nassau Research and Development Associates, Inc., Mineola, N.Y. (99899)		National Boiler Washing Systems, Chicago, Ill.	82474
Now Narda Corp.		National Box and Lumber Co., Newark, N.J.	85060
Nassau Screw Machine Products Corp., Inwood, N.Y.	98093	National Brake Co., Inc., New York, N.Y.	76622
Nassau Smelting and Refining Co., Inc., Tottenham, N.Y.	85055	National Brake and Electric Co., New York, N.Y.	42429
Nassau Sponge Co., Chicago, Ill.	85056	National Brass Co., Grand Rapids, Mich.	76623
Nassovia G.m.b.H. Machine Tool Factory, Langen, Germany.	98223	National Brass Products, Los Angeles, Calif.	91963
American Distributor—Hirschman, Manhasset, N.Y.		National Brass Works, Inc., Los Angeles, Calif.	00892
Naast-D Machinery Co., Philadelphia, Pa.	15800	National Brief Case Mfg. Co., Inc., Chicago, Ill.	91355
Natco, Inc., Chicago, Ill.	82817	National Broach and Machine Co., Detroit, Mich.	42432
Nathan Aircraft Devices, Inc., New York, N.Y. (76615)		National Broadcasting Co., Inc., New York, N.Y.	42442
Now Nathan Mfg. Co.		National Bronze and Aluminum Casting Co., Cleveland, Ohio.	87980
Nathan Mfg. Co., New York, N.Y.	42323	Detroit, Mich.	87626
Nathaniel Baldwin Co., Denver, Colo.	95567	National Brush Co., Aurora, Ill.	85061
National Academic Cap and Gown Co., Philadel-	85057	National Bundle Tyer Co., Blissfield, Mich.	42447

A

Code	Name	Code	Name	Code	Name
41923	Mount Vernon Car Mfg. Division of Pressed Steel Car Co., Mount Vernon, Ill.	42185	Muskegon Boiler Works, Muskegon, Mich.	42492	National Church Goods Supply Co., Philadelphia, Pa.
41935	Movie Mite Corp., Kansas City, Mo.	42194	Muter Co., Chicago, Ill.	42498	National Co., Inc., Malden, Mass.
41938	Moviola Co., Hollywood, Calif.	42195	Mutual Furniture Co., Miamisburg, Ohio.	42508	National Conveyors Co., Inc., New York, N.Y.
41945	Mowat, John, Refrigerators, San Francisco, Calif.	42204	Mutschler Bros. Co., Nappanee, Ind.	42527	National Cylinder Gas Co., Chicago, Ill.
41946	Moyer, J., Bird Co., Inc., Philadelphia, Pa.	42213	Muzak Corp., New York, N.Y.	42537	National Desk Co., Inc., Herkimer, N.Y.
41947	Mueller Brass Co., Port Huron, Mich.	42223	Myers, F. E., and Bro. Co., Ashland, Ohio.	42540	National Electric Instrument Co., Inc., Elmhurst, N.Y.
41948	Muehlmann, A., Co., Hamilton, Ohio.	42242	Myrtle Desk Co., High Point, N.C.	42546	National Electric Instrument Division of Engelhard Industries, Inc., Elmhurst, N.Y.
41949	Mueller Furniture Co., Inc., Grand Rapids, Mich.	42243	Mystic Shipyard, Inc., West Mystic, Conn.	42542	National Electrical Machine Shops, Inc., Silver Spring, Md.
41950	Mueller Co., Decatur, Ill.	42247	Nabors, W. C., Co., Mansfield, La.	42542	Nema Clarke, Inc., Silver Spring, Md.
41951	Mueller Climatrol Division of Worthington Corp., Milwaukee, Wis.	42261	Nahon Co., The, New York, N.Y.	42543	National Electric Screen Co., Chicago, Ill.
41951	Mueller, L. J., Furnace Co., Milwaukee, Wis.	42261	Nankervis, George L., Co., Detroit, Mich.	42546	National Electric Welding Machines Co., Bay City, Mich.
41957	Mueller Machine Co., Inc., Trenton, N.J.	42266	Narragansett Machine Co., Providence, R.I.	42545	National Engineering Co., Chicago, Ill.
41967	Mueller, V., and Co., Chicago, Ill.	42271	American Motors Corp., Automotive Division, Kenosha, Wis.	42584	National Equipment Co., Marshall, Tex.
41974	Multi-Clean Maintenance Co., St. Paul, Minn.	42271	Nash Motor Division of Nash Kelvinator Corp., Kenosha, Wis.	42593	Cockshutt Farm Equipment, Inc., Shelbyville, Ind.
41976	Multiple Boring Machine Co., St. Louis, Mo.	42271	Nash Motors Division of American Motors Corp., Kenosha, Wis.	42593	National Farm Machine Cooperative, Inc., Shelbyville, Ind.
41977	Multigraph Sales Co., Cleveland, Ohio.	42280	Nash Engineering Co., The, South Norwalk, Conn.	42603	National Fireworks, Inc., West Haver, Mass.
41995	Multiplex Display Fixture Co., St. Louis, Mo.	42299	Nash Kelvinator Corp., Detroit, Mich.		
41996	Multiplex Mfg. Co., Inc., Berwick,	42308	Nashua Mfg. Co., Nashua, N.H.		
		42318	Nashua Package Sealing Co., Inc., Nashua, N.H.		
		42319	Nassau Boat Basin, Inc., Freeport,		

B

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:

1. 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 Part, 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.
3. In equipment technical manuals. They 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.



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# *Assignment Questions*

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**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-Administration*, NAVEDTRA 12412, chapters 1 (all) through 3 (all).

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- 1-1. The EIB contains which of the following types of information?
1. Detailed information on equipment operation
  2. 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?
1. A listing of EIC numbers for electronic test equipment
  2. 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?
1. Single Sideband Communications Handbook
  2. Mil-HDBK-162
  3. 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.

1. Reference Data
2. EMI Reduction
3. General Maintenance
4. Equipment-Oriented

1-11. 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 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

1-14. Routine maintenance concepts, 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 QUESTION.

1-15. Basic vacuum tube and semi-conductor 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

1-18. Safety matters and subject index 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

1-20. Which of the following sources provide(s) the normal performance information found in maintenance standards handbooks?

1. 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 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
  2. Current maintenance actions
  3. Deferred maintenance actions
  4. Completed maintenance actions
- 1-24. Which of the following statements define(s) a configuration change?
1. Addition or deletion of any new or installed equipment
  2. Replacement or exchange of any new or installed equipment
  3. Modification, relocation, or accomplishment of any alteration, by directive. of any equipment
  4. All of the above
- 1-25. 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
- 1-26. What form should be used to 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
- 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?
1. 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?
1. Navy-owned and Navy-controlled real and personal property of a capital nature
  2. 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?
1. 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 basic 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?
1. 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?
1. Identification of NSN items most frequently requested by ships
  2. Cross-reference of COSAL and C-MCRL items
  3. Identification of consumable-type material
  4. All of the above
- 1-48. The ASG is designed to provide which of the following information?
1. Identification of consumable-type material
  2. Identification of NSN items most frequently requested by ships
  3. 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?
1. 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?
1. Packaging is not your responsibility
  2. 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?
1. Nonautomated procedures for MILSTRIP mandatory turn-in
  2. Direct turnover material identification and requisition
  3. Consolidation of repair lists to identify and return mandatory turn-in items
  4. Consolidation of fill-in procedures for issue and turn-in documentation

- 1-59. When preparing NAVSUP Forms 1250 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"
- 1-60. 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
  2. To report consumption under 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
- 1-61. DD Form 1348 is used by maintenance personnel on ships having what type of supply system?
1. Nonautomated
  2. Automated
  3. Nonautomatic
  4. Automatic
- 1-62. When you have the NIIN/part 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
- 1-63. NAVSUP Form 1250 is used by maintenance personnel on ships having what type of supply system?
1. Nonautomated
  2. Automated
  3. Nonautomatic
  4. Automatic
- 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
- 1-66. Which of the following information is contained in the COSAL/COSBAL?
1. Repair parts and special tools for overhaul, and repair of onboard equipment
  2. Miscellaneous portable items for care and upkeep of the ship
  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?
1. To identify storeroom items and determine equipage
  2. To give procedures for storage and issue of repair parts
  3. To list equipment's test equipment stowage requirements
  4. To provide accountability of all equipment necessary for the mission of the command
- 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. Sections A and B of Part I of the COSAL are set up in which of the following ways?
1. They are basically identical, and are arranged as a cross-reference for SOEAPLs in Part II
  2. They are basically identical, and are arranged as a cross-index for APL/AELs in Part II
  3. They are not identical, and are arranged as a cross-index for AEL/APLs in Part I
  4. They are not identical, and are arranged as a cross-reference for SOEAPLS in Part I
- 1-70. DLA has cognizance over items of material that are common 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
- 1-71. GSA has cognizance over items of 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
- 1-73. Stock points devote their primary effort to which of the following actions?
1. Procuring and disposing of material
  2. Receiving and storing of material
  3. Issuing and shipping of material
  4. All of the above
- 1-74. What is the primary function of an inventory manager?
1. To assure that supply support is at maximum levels
  2. To assure that fleet only units are serviced properly
  3. To assure the proper balance between parts requirements and assets
  4. To assure that stock assets meet new construction requirements
- 1-75. Which of the following is the best description of NAVSUPSYSCOM?
1. 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