Electronics Technician

Volume 2–Administration

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Although the words “he,” “him,” and “his” are used sparingly in this manual to enhance communication, they are not intended to be gender driven nor to affront or discriminate against anyone reading this text.
ELECTRONICS TECHNICIAN

VOLUME 2
ADMINISTRATION

NAVEDTRA 12412

1993 Edition Prepared by
ETC Allen F. Carney
This training manual (TRAMAN), Electronics Technician, Volume 2—Administration, NAVEDTRA 12412, and its companion nonresident training course (NRTC), NAVEDTRA 82412, are part of a planned 9-part series of TRAMANs intended to provide Navy enlisted personnel with information pertinent to their assignments and necessary for advancement to the Electronics Technician Second Class rate. The nine volumes planned for the series are as follows: Volume 1, Safety; Volume 2, Administration; Volume 3, Communication Systems; Volume 4, Radar Systems; Volume 5, Navigation Systems; Volume 6, Digital Data Systems; Volume 7, Antennas and Wave Propagation; Volume 8, System Concepts; Volume 9, Electro Optics.

Designed for individual study instead of formal classroom instruction the TRAMANs provide subject matter that relates directly to the Occupational Standards for the Electronics Technician Second Class. The Navy Electricity and Electronics Training Series (NEETS) modules provide information that is basic to your understanding of the material presented in these volumes. To avoid repeating such basic information, these volumes refer you to the appropriate NEETS modules and EIMB handbook. You may also be directed to review or study additional references commonly found in ET workspaces or used by Electronics Technicians. You should study the referenced publications as thoroughly as you would if they were repeated as part of the ET2 TRAMAN. The NRTCs, printed under separate cover, consist of supporting questions designed to help you study the associated TRAMAN and referenced publications and to satisfy part of the requirements for advancement.

This training manual and the nonresident training course were prepared by the Naval Education and Training Program Management Support Activity for the Chief of Naval Education and Training.

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THE UNITED STATES NAVY

GUARDIAN OF OUR COUNTRY

The United States Navy is responsible for maintaining control of the sea and is a ready force on watch at home and overseas, capable of strong action to preserve the peace or of instant offensive action to win in war.

It is upon the maintenance of this control that our country's glorious future depends; the United States Navy exists to make it so.

WE SERVE WITH HONOR

Tradition, valor, and victory are the Navy's heritage from the past. To these may be added dedication, discipline, and vigilance as the watchwords of the present and the future.

At home or on distant stations as we serve with pride, confident in the respect of our country, our shipmates, and our families.

Our responsibilities sober us; our adversities strengthen us.

Service to God and Country is our special privilege. We serve with honor.

THE FUTURE OF THE NAVY

The Navy will always employ new weapons, new techniques, and greater power to protect and defend the United States on the sea, under the sea, and in the air.

Now and in the future, control of the sea gives the United States her greatest advantage for the maintenance of peace and for victory in war.

Mobility, surprise, dispersal, and offensive power are the keynotes of the new Navy. The roots of the Navy lie in a strong belief in the future, in continued dedication to our tasks, and in reflection on our heritage from the past.

Never have our opportunities and our responsibilities been greater.
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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.
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

<table>
<thead>
<tr>
<th>1. DATE</th>
<th>2. SURVEY NUMBER</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>3. CLASS OF PROPERTY</th>
<th>4. STOCK RECORD ACCOUNT OR OTHER PROPERTY RECORD AND STATION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5. ACCOUNTABLE OR RESPONSIBLE OFFICER (Name, grade, SSN and designation)</th>
</tr>
</thead>
</table>

|--------------------------|---------------|------------|--------------|---------------|----------------|

**RECOMMENDED PECUNIARY CHARGE**

<table>
<thead>
<tr>
<th>12. FOR LOSS</th>
<th>13. FOR DAMAGE</th>
</tr>
</thead>
</table>

### 14. DATE AND CIRCUMSTANCES

### 15. AFFIDAVIT

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.

**SIGNATURE**

### 16. CERTIFICATE

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 negligence on the part of any person.

**SIGNATURE** (Accountable or Responsible Officer)

**NAME, GRADE, SSN AND ORGANIZATION**

**SUBSCRIBED AND SWORN TO (or affirmed) BEFORE ME AT**

**HEADQUARTERS**

**THIS DAY OF**

**STATION**

**DATE**

**SIGNATURE**

**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**

### DD FORM 200

**EDITION OF 1 APR 73 MAY BE USED UNTIL EXHAUSTED**

5/N 0102-LF-000-20000

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

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**1-2**
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.

AFLOAT SAFETY ADVISORIES

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

SAFETYLINE

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

The Safeline presents good articles on safety and is a beneficial addition to any shore-based ET shop library. Figure 1-3 is a sample front cover of Safetyline.
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 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
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. 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 newly 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 your 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.
Figure 2-1.—OPNAV 4790/2K, Ship's Maintenance Action Form.
Figure 2-2.—OPNAV 4790/2L Supplemental Form.
## Figure 2-3—OPNAV 4790/2P, Maintenance Planning and Estimating 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
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).
Figure 2-6A.—OPNAV 4790/CK, Ship's Configuration Change Form.
<table>
<thead>
<tr>
<th>COMPONENT NAME</th>
<th>PART NUMBER</th>
<th>SERIAL NUMBER</th>
<th>LOCATION</th>
<th>WORK CENTER</th>
<th>OPERATOR</th>
<th>INSTALL DATA</th>
<th>NEXT HOOK</th>
<th>COMPLETION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2-6B.—OPNAV 4790(CK(C), Ship's Configuration Change Form Continuation Page
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
Figure 2-8.—Standard Equipment Guide List (EGL).

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

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

THE TECHNICAL LIBRARY

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

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

PUBLICATION APPLICABILITY LISTING (PAL)

The PAL lists technical manuals, operating instruction charts, performance standards sheets, maintenance standards books, and technical manual changes for operating and maintaining onboard systems and equipments that are under the technical cognizance of NAVSEASYSCOM.

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

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

- Volume 1—General Publications
  Part 1—Electronics, HM&E, and Miscellaneous
  Part 2—Weapons

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

- Volume 2—Electronics
  Part 1—Equipment sequence
  Part 2—Publication sequence

- Volume 3—HM & E
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
Fig. 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 one'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.


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.


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

INVENTORY MANAGERS

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

INVENTORY CONTROL POINTS (ICPs)

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

STOCK POINTS

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

Supply Centers and Depots

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

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

Industrial Naval Air Stations (INASs)

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

MOBILE LOGISTICS SUPPORT FORCE (MLSF)

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

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

DEFENSE LOGISTICS AGENCY (DLA)

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

INTEGRATED NAVY SUPPLY SYSTEM

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

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

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).
Description of COSAL Parts and Sections

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

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

**Part I**

Summary of Effective Allowance Parts/Equipage Lists (SOEAPL)

Index—Section A (Equipment Nomenclature Sequence)

Index-Sections B, C, D, and E

**Part II**

Section A—Allowance Parts Lists (APLs)

Section B—Circuit Symbol Data (microfiche only)

Section C—Allowance Equipage Lists (AEL)

**Part III**

Section A—Storeroom Items (SRI)

Stock Number Sequence List (SNSL)

Section B—Operating Space Items (OSI)

Stock Number Sequence List (SNSL)

Section CF—Maintenance Assistance Module (MAM)

Section CR—Ready Service Spares (RSS)

Section D—Alternate Number Cross-Reference to Stock Number

Section E—General Use Consumables List (GUCL)

Section F—Forms and Publications

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

**PART I—SUMMARY.**—The Summary of Effective Allowance Parts/Equipage Lists (SOEAPL) is a numerical listing of all APLs and AELs used to determine how many of each part is listed on the stock number sequence list (SNSL). [Figure 3-1] is an example of a summary page, with a description of the information it contains.
Figure 3-2.—COSAL indexes.
Table 3-1—Description of Contents of Columns of COSAL Index

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Equipment/Component Military Essentiality Code</td>
</tr>
<tr>
<td>2.</td>
<td>Equipment/Component/Equipage Nomenclature/Characteristics</td>
</tr>
<tr>
<td>3.</td>
<td>Identification Number</td>
</tr>
<tr>
<td>4.</td>
<td>Quantity</td>
</tr>
<tr>
<td>5.</td>
<td>Column Number</td>
</tr>
<tr>
<td>6.</td>
<td>Notes</td>
</tr>
<tr>
<td>7.</td>
<td>Allowance Support Code</td>
</tr>
<tr>
<td>8.</td>
<td>Service Application/Information</td>
</tr>
<tr>
<td>9.</td>
<td>Ship Type and Hull Number</td>
</tr>
<tr>
<td>10.</td>
<td>Date</td>
</tr>
<tr>
<td>11.</td>
<td>Allowance Support Codes</td>
</tr>
<tr>
<td>12.</td>
<td>Page</td>
</tr>
</tbody>
</table>

*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 in Section B.

Table 3-1 describes the uses of the Index columns and is keyed to the numbers shown in Figure 3-2.
Figure 3-3.—Allowance parts list (APL).
### Table 3-2.—Data Elements of the APL

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Equipment/Component Nomenclature/Characteristics</td>
<td>Name of equipment or component and brief description. This corresponds to the index entries.</td>
</tr>
<tr>
<td>2. Technical Document Number</td>
<td>The predominant technical manual or plan number. Additional numbers shown in Item 8.</td>
</tr>
<tr>
<td>3. Identification Number</td>
<td>Identifying number assigned to a particular item or component of equipment. This number is shown at the top and bottom of page.</td>
</tr>
<tr>
<td>4. Date</td>
<td>COSAL publication date.</td>
</tr>
<tr>
<td>5. Page</td>
<td>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 &quot;END&quot; 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.</td>
</tr>
<tr>
<td>6. Characteristics Complete nameplate data on the equipment/component named in Item 1.</td>
<td></td>
</tr>
<tr>
<td>7. Reference/Symbol Number</td>
<td>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.</td>
</tr>
<tr>
<td>8. Additional Data Area</td>
<td>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.</td>
</tr>
<tr>
<td>9. Item Name</td>
<td>The name listing of repair parts and/or related accessory components for the equipment/component covered by the APL.</td>
</tr>
<tr>
<td>10. Stock Number</td>
<td>The NSN assigned to a specific repair part. When an NSN has not been assigned, the reference number from Item 7 is repeated.</td>
</tr>
<tr>
<td>11. Accessory Components</td>
<td>Accessory components applicable to a &quot;Parent Equipment&quot; are listed on the &quot;Parent APL.&quot; Any additional accessory components not listed on the APL should be reported to SPCC.</td>
</tr>
<tr>
<td>12. Federal Supply Code for Manufacturers (FSCM)</td>
<td>Indicates a coded number of a manufacturer.</td>
</tr>
<tr>
<td>13. Part Military Essentiality Code (Part MEK)</td>
<td>There are two codes. They are shown on the APL and the NSN.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Source Code</td>
<td>Indicates the availability of repair parts and method of procurement. These codes are defined in the Introduction.</td>
</tr>
<tr>
<td>15. Maintenance Code</td>
<td>A three digit code signifying the maintenance activity authorized to replace, repair, and condemn an item. Only first digit is used. These codes are defined in the Introduction.</td>
</tr>
<tr>
<td>16. Recoverability Condemnation Code</td>
<td>Indicates the recoverability characteristics of items removed during maintenance.</td>
</tr>
<tr>
<td>R</td>
<td>Repairsable</td>
</tr>
<tr>
<td>S</td>
<td>Salvageable</td>
</tr>
<tr>
<td>C</td>
<td>Consumable</td>
</tr>
<tr>
<td>17. Notes Code</td>
<td>Provides necessary and important information about individual items listed on the APL. The introduction lists and defines these codes.</td>
</tr>
<tr>
<td>18. Quantity in One Equipment/Component</td>
<td>The total population of the part within the equipment/component described by the APL.</td>
</tr>
<tr>
<td>19. Unit of Issue</td>
<td>The term connotes the physical measurement or count of quantities of an item for procurement, storage, and issue.</td>
</tr>
<tr>
<td>20. Allowance Item Code</td>
<td>Refer to Part III to determine applicable allowances.</td>
</tr>
<tr>
<td>21. On-Board Allowance Table</td>
<td>APLs published as part of an allowance list for shipboard use and contained in Part II of the COSAL will not have quantities printed in the onboard allowance table columns. Instead, &quot;SEE NSN FOR ALLOW&quot; will be printed. APLs which are received after the regular COSAL will have quantities shown so you can update your NSN and stock record cards.</td>
</tr>
<tr>
<td>22. Ship Type and Hull Number</td>
<td>The specific ship/activity for which the APL is published.</td>
</tr>
<tr>
<td>23. Page</td>
<td>Consecutive page numbering from first page to last of all APL pages published as Part II.</td>
</tr>
<tr>
<td>24. Identification Number</td>
<td>Same as Item 3 above.</td>
</tr>
<tr>
<td>25. Date</td>
<td>Same as Item 4 above.</td>
</tr>
<tr>
<td>26. Page</td>
<td>Same as Item 5 above.</td>
</tr>
</tbody>
</table>

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

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

PART II, SECTION C—ALLOWANCE EQUIPAGE LIST (AEL).—The AEL is a technical and supply document prepared for various categories of equipage associated with mechanical, electrical, electronic, and ordnance systems. When an AEL is written for a system, it identifies the items required to operate the system and the repair parts required to maintain it. The AEL lists specific information for each item, such as name, NSN, unit of issue, quantity needed, and quantity allowed on board. AELs are filed in numerical sequence by AEL identification number. As a technician, you should be aware of where all pertinent AELs can be found.

PART III, SECTIONS A, B, CF, AND CR—STOCK NUMBER SEQUENCE LISTS (SNSL).—The SNSL is a product of today’s data processing capability and is a great time-saver in controlling parts and other items. Consider the amount of work that would be necessary to determine how many of what items to order by just using the APL and AELs. The SNSL has four listings of all NSNs that apply to your unit. They are Section A, Storeroom Items (SRIs); Section B, Operating Space Items (OSIs); and Section CF, Maintenance Assistance Module (MAM); and Section CR, Ready Service Spares (RSS). These
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, NA Vedtra 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
Requisitioning and Issue Procedures (MILSTRIP) requisitioning document for procuring material or services from a submarine tender, submarine base, a combat store ship (AFS), a naval supply center, or the Naval Publications and Forms Center (NPFC) Philadelphia. Submarine tenders and bases use the NAVSUP Form 1250 as an invoice for material supplied to supported units of the submarine forces.

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

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

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

A division supply petty officer determines the material a division requires, then prepares the NAVSUP Form 1250/1250-1. Figure 3-5 shows the NAVSUP 1250/1250-1 with the data that must be provided by the
Figure 3-6.—DD Form 1348; Upper-manual. Lower-mechanical.
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] is a 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] 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 fluctuations.
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:
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 N9

Material Control Code H

Federal Supply Group 59

Federal Supply Classification 20

National Codification 00

Bureau (NCB) Code

National Item Identification Number (NIIN) 00-248-5708

Special Material Identification Code (SMIC) VN

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

9N = Navy-owned stocks of defense electronic material

H = depot level repairable

59 = electrical and electronic equipment components

20 = fuses and lightning arresters

00 = FSNS assigned before 31 March 1975

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

VN = electrostatic discharge sensitive material

**SEARCHING FOR THE ELUSIVE NSN**

Various publications are available to help you find the stock numbers of the parts you want. Afloat, there are four basic publications.
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.
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 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 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...
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](image-url) 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.

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.
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