NONRESIDENT TRAINING COURSE

April 1995

Fire Controlman Supervisor

NAVEDTRA 14097

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 will demonstrate a knowledge of the subject matter by correctly answering questions on the following subjects: Fire Controlman supervisor responsibilities; organization, administration, inspections, and maintenance; supervision and training; combat systems, subsystems, and their maintenance; and weapons exercises.

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.

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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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: n311.products@cnet.navy.mil
Phone: Comm: (850) 452-1503
            DSN: 922-1503
            FAX: (850) 452-1370
            (Do not fax answer sheets.)
Address: COMMANDING OFFICER
            NETPDTC N311
            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 3 points. (Refer to *Administrative Procedures for Naval Reservists on Inactive Duty,* BUPERSINST 1001.39, for more information about retirement points.)

Student Comments

Course Title: *Fire Controlman Supervisor*

NAVEDTRA: 14097   **Date**:

We need some information about you:

Rate/Rank and Name: _____ SSN: _____ Command/Unit _____

Street Address: _____ City: _____ State/FPO: _____ Zip _____

Your comments, suggestions, etc.:

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

NETPDTC 1550/41 (Rev 4-00

CHAPTER 1

FIRE CONTROLMAN
SUPERVISOR RESPONSIBILITIES

LEARNING   OBJECTIVES

Upon completing this chapter, you should be able to do the following:

1. Discuss the responsibilities of an FC supervisor.

2. Describe the basic requirements for effective communications as a supervisor.

3. Identify the supervisor's role in enforcing performance and equipment standards.

4. Identify the sources of information available for use by supervisory personnel.

INTRODUCTION

This training manual (TRAMAN) is designed to help you understand your work in the division as a Fire Controlman (FC) supervisor. It will also assist you in meeting the requirements for advancement to Fire Controlman first class and chief.

This manual is not the only publication you will need to prepare for advancement, as you will need to study other publications to prepare for the advancement-in-rate examination. Since this manual provides only background information on subjects, you will need to study the indicated references to learn each topic in depth.

Although you will be a supervisor in the FC rating, you may also have to supervise personnel from other ratings. The ratings you deal with daily will depend on your command's organization. Most of the information given in this TRAMAN is based on the assumption that you are familiar with volumes 1 through 4 of *FC2,* NAVEDTRA 10277.

This first chapter includes topics on supervisory responsibilities, effective communications, professional updates, performance and equipment standards, technical materials, and a brief bibliography for information and advancement study.

SUPERVISORY   RESPONSIBILITIES

By becoming an FC supervisor, you will have taken a big step in your career. Previous advancement brought increased responsibilities, which also brought increased rewards. The responsibilities of an FC supervisor are even greater, as your work will be important to the successful management of the division and the department. For general information on the advancement system and on the increased responsibilities of a supervisor, review *Military Requirements for Petty Officer First Class,* NAVEDTRA 12046.

By this time in your career, you are valuable as a technical specialist. You are also valuable as a supervisor, leader, and trainer of others. You can, there-

fore, make far-reaching and long-lasting contributions to the Navy. The extent of your contribution to the Navy depends on your willingness and ability to accept increased responsibility for military matters and for the professional requirements of a Fire Controlman. It also depends on your skill in getting other people to work for you.

You will find that your responsibilities for military leadership are much the same as those of petty officers in other ratings. Every petty officer is a military person as well as a technical specialist.

Your responsibilities for technical leadership are directly related to the nature of your work. Operating and maintaining the ship's combat systems equipment is a vital job. It is a teamwork job requiring a special kind of leadership ability. This leadership ability can be developed only by personnel who have a high degree of technical competence and a deep sense of personal responsibility.

RESPONSIBILITIES WITHIN THE COMBAT SYSTEM/WEAPONS DEPARTMENT CHAIN

You will be expected to translate the general orders given by officers into detailed, practical, on-the-job language that even relatively inexperienced personnel can understand and follow. In dealing with your juniors, you must see that they perform their work properly. You must also be able to explain to officers what your juniors may need or any problems they may experience.

RESPONSIBILITIES FOR TRAINING

Training is essential. Even if you are blessed with a highly skilled and well-trained electronics force, you will still find training necessary. For example, some of your best workers may be transferred and replaced by inexperienced or poorly trained personnel. Often, a job may call for skills that your assigned personnel do not have, especially if your division must maintain new equipment.

These and similar problems require you to be a training specialist who can conduct both formal and informal training programs. You must train individuals and groups to work safely, neatly, and accurately, and in a spirit of cooperation.

RESPONSIBILITIES TO SUBORDINATES

Any discussion of responsibilities must include the responsibility that you, as a supervisor, have toward your subordinates. You are responsible for developing their professional and general military skills.

You must also help them to become mature, competent technicians who are prepared to assume supervisory responsibilities. You must teach them and encourage them to use their skills and knowledge to make decisions. You must then support those decisions when they are correct and fair.

However, you must also advise or counsel your subordinates when their decisions may cause harm to themselves, others, or equipment. Use the "learn-by-mistakes" theory to teach your subordinates. But be constantly aware of what is happening to ensure that the lessons taught are worth the consequences if any problems develop.

As a supervisor, you have an overriding responsibility to take care of your people before caring for yourself. This responsibility requires steadfast devotion to your subordinates. Gaining the loyalty of subordinates requires unselfish actions on the part of seniors.

TAKE CARE OF YOUR PEOPLE
AND THEY WILL TAKE CARE OF YOU!

RESPONSIBILITIES TO OTHER RATINGS

As you advance to FC1 and then to FCC, you will find that your plans and decisions may affect many people. Some of these people may not be in your division or even in the combat systems/weapons.

Therefore, it becomes more and more important for you to understand the duties and responsibilities of personnel in other ratings. Every petty officer in the Navy is a technical specialist in a particular field.

Learn as much as you can about the work of other ratings. Plan your own work to fit in with the overall mission of the organization.

EFFECTIVE COMMUNICATIONS

The basic requirements for effective communications are knowledge of your own language, knowledge of standard naval terminology, and precise use of technical terms.

● Language: Knowledge of your own language includes using correct English when you speak and write. Remember, the basic purpose of all communications is understanding. To lead, supervise, and train others, you must be able to speak and write so that they understand exactly what you mean.

● Naval Terminology: Standard naval terminology consists of words that express ideas that are usually understood or procedures used only by naval personnel. When a situation calls for standard Navy terminology, use it.

● Technical Terms: Use technical terms with precision. A command of the technical language of the Fire Controlman rating will help you receive and pass along information accurately. It will also help you exchange ideas with other technicians. If you don't understand the precise meaning of the terms used in your rating, you may not be able to understand the content of technical publications. Although the correct use of technical terms is always important, it is particularly important when you are dealing with lower-rated personnel. If you are sloppy in your use of technical terms, you will likely confuse them. This may cause them to work in an improper or unsafe manner.

Just as you ensure accuracy and clarity in communicating with your juniors, you must also remember to communicate effectively with your superiors. You must be aware of what technical knowledge, if any, your superiors have. Many times, you will be called on to work for junior officers who have had no prior experience in the electronics or combat systems fields. Therefore, you are responsible for keeping them aware of all matters concerning the systems and the personnel under your control.

PROFESSIONAL UPDATES

Practically everything in the Navy-policies, procedures, equipment, systems, publications—is always in various stages of development and revision. As an FC supervisor, you must stay informed of all changes and developments that might affect your work.

Some changes will be called directly to your attention; others you must look for. Try to develop a special alertness for new information, especially technical information on electronics and associated equipment and systems. New types of equipment and systems are constantly being designed and tested. Existing types of equipment are modified.

If you follow the history of weapons systems since the end of World War II, you will find that several important changes have occurred. Designers of new electronic equipment have incorporated several functions into a single piece of equipment as a self-contained system. This approach replaces combining several pieces of single-function equipment into one system.

The size of weapons systems has decreased as electron tubes have given way to transistors. Smaller and more-reliable electronic components have been developed (such as capacitors, resistors, transformers, and coils). Microcircuits are common. In addition, computers have become more prominent. As an FC supervisor, you must be aware of all changes that are occurring in the electronics field.

PERFORMANCE AND EQUIPMENT STANDARDS

How do performance and equipment standards apply to you as a supervisor? Let's start with a definition. A *standard* is set up by either custom or au-

thority to measure quality, quantity, performance, or service. As a supervisor, you must ensure that the standards are met that are set by the Navy, your ship and division, and you. The standards that you will deal with on a continuing basis are performance standards and equipment standards, as described in the following subsections. Use these standards to develop a training program for your division to encompass all aspects of your subordinates' rating.

PERFORMANCE STANDARDS

Performance standards include naval standards (NAVSTDs), occupational standards (OCCSTDs), and personnel qualification standards (PQSs). The *Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards,* NAVPERS 18068 (commonly called the *Occupational Standards Manual* lists the minimum skills requirements for each rate within each rating. You are probably already familiar with much of this information.

Naval Standards

Naval standmds (NAVSTDs) are task statements that are not rating specific. They are the basis on which the military requirements training manuals are developed.

Section I of NAVPERS 18068 lists the naval standards (NAVSTDs) for each paygrade. These are the skills and knowledges essential to the overall effectiveness of the enlisted personnel in the performance of their duties.

Naval standards encompass

- military requirements,

- essential virtues of professionalism,

- pride of service in support of the oath of enlistment.

- maintenance of good order and discipline, and

- basic skills and knowledges concerning the well-being of Navy personnel.

An example of an E-6 naval standard is:
"NAVSTD 944601— Write enlisted performance evaluations."

NAVSTDs are also used for curriculum development at basic training commands and apprentice training facilities.

Occupational Standards

Occupational standards (OCCSTDs) are rating-specific skills and knowledges. They are listed in NAVPERS 18068 for each rating. (Since OCCSTDs are rating specific, they cannot be performed by all Navy personnel advancing to chief petty officer. They apply only to personnel in a specific rating.)

These OCCSTDs are only the minimum requirements for enlisted occupational skills. The content of the training manual you are now reading is based on the OCCSTDs for FC1 and FCC.

OCCSTDs are used in the development of training manuals and rating advancement exams. They are also used in the development of class A and class C school curricula, formal shipboard training, on-the-job training (OJT), and general rating training for divisions.

NAVPERS 18068 is kept current by numbered changes. However, these changes are issued more frequently than most training manuals can be revised. Therefore, the training manuals may not always reflect the latest OCCSTDs.

Since the advancement examinations are also based on Navy OCCSTDs, you should always check the latest changes to ensure that your personnel know the current requirements for advancement in the rating.

An example of an FCC occupational standard is:
"OCCSTD K464— Modify weapons and target pairing. "

Personnel Qualification Standards

Personnel qualification standards (PQSs) are <u>minimum</u> skills and knowledges necessary to qualify for a specific watch station, maintain specific equipment, or perform as a team member within a unit. They are used to certify that officer and enlisted personnel can perform certain duties. The PQS program is not designed as a training program, but it does provide many training goals. Therefore, you should use PQSs as key elements to ensure that your training program is well-structured and dynamic. A complete listing of available PQS manuals is published in the *Personnel Qualification Standards Catalog,* NAVEDTRA 43100-5.

Depending on your command, you may be responsible for any or all of the following duties within your division's PQS program:

● Supervising divisional PQSs.

● Supervising the qualification of petty officers.

● Recommending to the department head the assignment of division qualification of petty officers.

● Recommending to the department head the entry level of newly assigned personnel.

● Recommending to the department head any required tailoring that the division may need.

● Recommending to the department head final qualification of personnel.

● Ensuring that PQS documentation is entered on page 4 of the individual's service record.

● Assigning requirements and PQS goals to individual trainees according to departmental guidance.

● Checking, weekly, the progress of division personnel toward PQS goals as shown in the progress records.

● Briefing the department head, monthly, on the status of division personnel and adjusting goals accordingly.

● Integrating PQS status with the routine administration of special requests, early liberty approvals, etc.

● Ensuring that enlisted evaluations reflect PQS qualification accomplishments.

EQUIPMENT STANDARDS

Not all standards pertain to the development of your personnel. Equipment standards fall into this category. Equipment standards, or operational parameters, are standards that are set for individual equipments to ensure that they operate at maximum performance. These standards may be determined by the equipment's manufacturer, the Navy's planned maintenance system (PMS), or another authority.

An equipment standard for a radar
may be stated as:
"Transmitter Frequency: 9375 ±30MHz."

This standard gives the operational parameters within which this specific radar transmitter should operate. If the transmitter were to begin operating outside the prescribed standards, you would need to perform corrective maintenance.

TECHNICAL MATERIALS

As a supervisor, you have three major responsibilities concerning technical materials:

1. Ensure that appropriate technical materials are available. Your division cannot operate properly or professionally without the necessary technical materials.

2. Keep your technical materials current. Out-of-date technical materials, in addition to causing in-

conveniences, may result in harm to equipment or personnel.

   3. Require your subordinates to use their technical materials, both on the job and to prepare for advancement.

Observing your responsibilities toward technical materials will not just make you a better professional; it will also demonstrate to your subordinates proper professional and supervisory attitudes.

INFORMATION SOURCES
AND
ADVANCEMENT STUDY BIBLIOGRAPHY

You and your subordinates should know which references to consult for detailed, authoritative, current information on all subjects related to both NAVSTDs and FC OCCSTDs. Most of the publications mentioned here are subject to change or revision from time to time-some at regular intervals, others as the need arises. When using any publication that is kept current by changes, ensure that you have a copy in which all official changes have been entered.

Official publications and directives carry abbreviations and numbers that identify the source and the subject matter of each document. For instance, the identification number for this training manual is NAVEDTRA 12409.

The term *NAVEDTRA* refers to a publication that is published by the Chief of Naval Education and Training (CNET). The term *NAVPERS* refers to a publication that is published by the Chief of Naval Personnel (CHNAVPERS).

Some of the NAVEDTRA and NAVPERS publications described here are essential to personnel learning to perform the duties of their rating or seeking advancement. The others, although not essential, are very helpful. (For a complete list of NAVEDTRA TRAMANs, consult the current *Catalog of Nonresident Training Courses,* NAVEDTRA 12061.)

The following subsections include OCCSTD-based publications, NAVSTD-based publications, and gen-

eral information publications. These publications and their nonresident training courses are usually required for advancement.

OCCSTD-BASED PUBLICATIONS

OCCSTD-based publications are rating specific. There are two types: (1) TRAMANs, and (2) advancement handbooks.

OCCSTD-based TRAMANs

OCCSTD-based TRAMANs are written for a specific rating. Most TRAMANs have two purposes: (1) they are written to help personnel perform the duties of their rating, and (2) they may be used to help personnel study for advancement.

The following TRAMANs are based on OCCSTDs for the FC rating:

- *Fire Controlman Third Class,* NAVEDTRA 10276-1

- *Fire Controlman Second Class,* NAVEDTRA 10277

- *Fire Controlman First Class,* NAVEDTRA 10278

- *Fire Controlman Chief,* NAVEDTRA 10279

Advancement Handbooks

The *Advancement Handbook for Petty Officers* series is published yearly by the Naval Education and Training Program Management Support Activity (NETPMSA), Pensacola, Florida, and should be available from your educational services officer (ESO).

This is a very useful set of booklets with information taken from the *Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards,* NAVPERS 18068; and the *Bibliography for Advancement Study,* NAVEDTRA 10052. Each rating has its own booklet that lists requirements specifically for that rating.

Besides listing the OCCSTDs and the source materials related to those standards, the booklets also contain general information on advancement. Personnel studying for advancement should read and study all sources listed in the bibliography.

Examination questions are based on all sources listed, whether they are required or are only recommended. Ensure that your division personnel receive copies to use as they study for advancement.

NAVSTD-BASED PUBLICATIONS

NAVSTD-based publications are specifically prepared to present information based on NAVSTDs. Study of the following TRAMANs is required for taking advancement-in-rate examinations:

● *Basic Military Requirements,* NAVEDTRA 12043

● *Military Requirements for Petty Officer Third Class,* NAVEDTRA 12044

● *Military Requirements for Petty Officer Second Class,* NAVEDTRA 12045

● *Military Requirements for Petty Officer First Class,* NAVEDTRA 12046

● *Military Requirements for Chief Petty Officer,* NAVEDTRA 12047

● *Military Requirements for Senior and Master Chief Petty Officer,* NAVEDTRA 12048

GENERAL PUBLICATIONS

Some TRAMANs are general in nature and are intended for use by more than one rating. The following publications are recommended for basic information and advancement study:

● *Navy Electricity and Electronics Training Series (NEETS)* consists of many volumes, including officer-enlisted correspondence course assignment booklets and modules (texts) that present electrical and electronic subjects on a basic, introductory level. They may be studied sequentially from the beginning or as individual units on specific subjects, such as radar or microelectronics.

● *Use and Care of Hand Tools and Measuring Tools,* NAVPERS 12085, covers general uses and approved safety procedures for Navy hand tools. It also includes safety precautions, operating practices, and care of common power tools; operating principles of measuring instruments and measuring techniques; and types of fastening devices and procedures for using them. It discusses sharpening cutting tools; metal cutting operations and procedures; and techniques of miscellaneous tasks, such as flaring metal tubing, removing broken bolts, stripping insulated wire, soldering, and lubricating.

● *Blueprint Reading and Sketching,* NAVEDTRA 12014, discusses blueprint uses, types, and language; technical sketching procedures; and electrical and electronic prints. In addition, it discusses piping, machine, sheet metal, structural, and architectural prints.

● *Electronics Information Maintenance Books (EIMB)* series includes installation standards, electronic circuits, test methods and practices, reference data, electromagnetic interference reduction, and general maintenance. From time to time, you should review this series, especially the general information handbooks, paying special attention to appendixes and other portions of the books you may have overlooked.

RECOMMENDED READING LIST

NOTE: Although the following references were current when this TRAMAN was published, their continued currency cannot be assured. Therefore, you need to ensure that you are studying the latest revision.

PQS Management Guide, NAVEDTRA 43100-1D, Naval Education and Training Support Center, Pacific, San Diego, CA, 1991.

Requirements for Petty Officer First Class, NAVEDTRA 12046, Naval Education and Training Program Management Support Activity, Pensacola, FL, 1991.

Requirements for Senior and Master Chief Petty Officer, NAVEDTRA 12048, Naval Education and Training Program Management Support Activity, Pensacola, FL, 1991.

CHAPTER 2

ORGANIZATION, ADMINISTRATION, INSPECTIONS, AND MAINTENANCE

LEARNING OBJECTIVES

Upon completing this chapter, you should be able to do the following:

1. Describe the combat systems/weapons department organization and its basic administrative requirements.

2. Describe the division watch, quarter, and station bill, including watch assignments.

3. Identify personnel manning requirements.

4. Describe the major reports and records originating in the combat systems/weapons division.

5. Explain the supervisor's safety responsibilities.

6. Describe the importance of information security.

7. Describe the types of inspections, maintenance periods, overhauls, and alterations.

INTRODUCTION

As a Fire Controlman (FC) supervisor, you will have duties and responsibilities that involve more than just repairing equipment. You will also assume the additional duties of a work-center supervisor.

This chapter discusses command organization, administration, inspections, and maintenance and material management responsibilities.

For additional information on general organization and administration, refer to *Military Requirements for Petty Officer Second Class,* NAVEDTRA 12045; *Military Requirements for Petty Officer First Class,* NAVEDTRA 12046; and *Military Requirements for Chief Petty Officer,* NAVEDTRA 12047.

ORGANIZATION

To manage your division effectively and efficiently, you must have a sound division organization. A sound division organization has a clear organizational structure and definite policies and procedures. It also has the necessary controls to ensure that the division is capable of completing its mission under all conditions. A functional organization eases the process of escalating from peacetime status to wartime status without major organizational changes.

The standard requirements for organization aboard each ship type and class are defined by the type commander (TYCOM) or higher authority. These requirements are intended to help commanding officers manage their units in the best possible manner.

The organization of the combat systems/weapons division is basically the same aboard all ships and shore commands. Variations in the organization within ships of the same type and class are usually caused by such factors as the number of experienced personnel, the differences in the employment or material condition of ships, and the methods that different division officers or senior petty officers use to organize and run their divisions. The basic administrative and functional organization in ships is prescribed by the *Standard Organization and Regulations of the U.S. Navy* (commonly called the SORM), OPNAVINST 3120.32.

Every level of command should have an organization bill. The organization bill for a particular level describes the duties and responsibilities of personnel assigned to that level. It also prescribes policy and procedures peculiar to that level.

SUPERVISOR RESPONSIBILITIES

As an FC1 or FCC, you may be either the leading FC or an equipment technician, depending on the size of your command. The leading FC assists the combat systems officer (CSO)/weapons officer and is responsible for directly supervising the preventive and corrective maintenance of all electronic equipment.

The leading FC also ensures that all records and publications are current and are available for reference, prepares required reports, and supervises the cleanliness and upkeep of the divisional spaces.

PERSONNEL RESPONSIBILITIES

The proper assignment of available personnel for the upkeep of equipment and for other necessary duties is essential. It is particularly critical if the division is short of personnel or if the available personnel are inexperienced. The leading petty officer must always be aware of the qualifications of the onboard technicians.

If the division is well-staffed, inexperienced people may be assigned to work with more-experienced crewmembers. In such cases, the leading petty officer

should ensure that the inexperienced personnel actually receive technical instruction, rather than merely act as toolbox carriers.

If the combat systems/weapons (fire-control) organization chart is organized into blocks according to the various types of equipment the division maintains, then the names of the technicians assigned to the different groups of equipment may be written under the appropriate blocks, with the top name being that of the supervisor in charge of that particular group.

In the final breakdown of duties, a certain number of equipment units may be assigned to one individual. An advantage of this arrangement is that the responsibility for the maintenance of certain equipment *is* placed on individual technicians. In smaller vessels, of course, the equipment to be maintained and the Fire Controlmen available are reduced proportionately.

ADMINISTRATION

Your involvement in administrative actions will become more of a requirement, directly or indirectly, as you advance to first class and chief. This section describes some of the duties and responsibilities associated with these requirements, including a knowledge of general quarters, watches, personnel manning, reports, safety, information security, and space upkeep and cleanliness.

GENERAL QUARTERS

Combat systems/weapons department personnel are each assigned a general quarters station by the division watch, quarter, and station bill. Assignments of personnel should be practical and functional, as determined by the CSO/weapons officer.

As an FC1 or FCC, you will be in a position to make recommendations to the CSO/weapons officer, and your experience and attitude will contribute much to the success of the department.

Specific instructions for general quarters should be outlined in the division's organization manual. Pro-

cedures and applications should be a major part of combat/weapons systems training.

WATCHES

As an FC supervisor, you maybe in charge of the inport and underway watches. These watches are briefly discussed in the following paragraphs:

● <u>Inport Watches:</u> The leading FC of each watch section is designated as the duty Fire Controlman and is directly responsible for the handling of all equipment casualties that may occur outside normal working hours. All technicians who are aboard, even though they may rate liberty, are considered to be on duty and may be called on by the duty Fire Controlman at any time to assist in handling any equipment repair.

● <u>Underway Watches:</u> The leading FC makes up the underway watch list, which is then approved by the CSO/weapons officer and posted in the division spaces or combat systems spaces. All watches are stood according to this watch list and watch-standing instructions. A Fire Controlman on watch should not leave his assigned space except to handle a casualty, to supervise preventive maintenance, or to make inspections or tests. Note that the only reading materials authorized for use during underway watches are technical publications, manuals, and instruction books pertaining to some phase of combat systems.

PERSONNEL MANNING

Personnel manning is a prime concern of the CSO/weapons officer. However, you will more than likely be involved with personnel manning within your division. A division must have the correct manning levels to fiction properly and to fill the needs of equipment maintenance and other shipboard functions, such as general quarters watch stations.

Manpower requirements are normally accounted for by the Navy Manpower Requirements System (NMRS). The following subsections give a general background in Navy manning and the personnel tools with which to work, including the ship manning document, the manpower authorization, and the enlisted distribution and verification report.

Ship Manning Document

The main function of the ship manning document (SMD) and the preliminary ship manning document (PSMD) is to document manpower requirements. To effectively manage personnel, the Navy needs an accurate identification of ship manning requirements. This is documented on the SMD and the PSMD in terms of the quantity and quality of personnel (skills, experience, specialized training) that are required to perform mission requirements as specified in the required operational capability (ROC), submarine required operational capability (SUBROC), and projected operational environment (POE) statements.

An ROC statement lists all required operational capabilities for a class of ships, a type of aircraft squadron, or other unit as assigned by the Chief of Naval Operations (CNO). Examples of ROC and SUBROC statements are shown in the following box:

```
ROC:       1. Engage submarines with antisub-
              marine armament.
           2. Engage airborne threats using sur-
              face-to-air armament,

SUBROC: 1. Attack with torpedoes.
           2. Engage airborne threats using in-
              stalled antiair (AA) weapons.
```

A POE statement lists the most-demanding conditions (wartime or peacetime) of operation for which a unit must be manned, as shown in the following example:

```
At sea in wartime, capable of performing all offen-
sive and defensive fictions simultaneously while
in Readiness Condition I; capable of performing
other functions that are not required to be accom-
plished simultaneously.
```

The SMD is developed in six phases: (1) data collection, (2) workload standards development or validation, (3) preliminary statement of required billets, (4) fleet review, (5) publication of final billets, and (6) implementation. The NMRS provides automated data-processing support for each of these phases.

If a ship is modernized during its service life (such as updating or adding equipment or systems), the SMD provides a means for determining manpower requirements for the modified systems or mission. The NMRS can generate an SMD to identify billets needed to operate and maintain new weapons, equipments, and systems far enough in advance of fleet introduction to provide trained personnel both when and where they are needed.

In addition, the shipboard managers–from the commanding officer to the leading petty officers-may use the SMD as an effective source document. Since it has detailed watch station requirements, the SMD can serve as the basis for establishing a battle organization and a watch bill for specific conditions of readiness. The SMD presents the basic manning requirements summary in seven sections. See table 2-1.

Manpower Authorization

Even though you will probably not be directly involved with manpower authorization (MPA) changes, you should have some knowledge of manpower authorization. The SMD is the basis for the Manpower Authorization (MPA) (OPNAV 1000/2).

The proper classification of authorized billets is extremely important in defining the Navy's overall manpower requirements. The numbers of billets throughout the Navy are summarized by the various classification categories. These figures provide the basis for recruiting, training, and promoting Navy personnel.

The Navy must produce the maximum combat readiness with the dollar resources available. For this reason, and because of the high cost of manpower, each billet requirement must be stated at the minimum skill and experience levels necessary for satisfactory performance of billet functions.

Billet reviews are conducted periodically at the CNO level. In those reviews, decisions are made based on the existing classification of each billet as indicated on the MPA. Improperly classified billets become the lowest priority billets in the category in which they are classified. Consequently, if the objective is to delete or redistribute billets, improperly classified billets are prime candidates for deletion or reprogramming,

The manpower requirements and manpower classifications within each Navy activity are specifically reviewed at the activity level annually to ensure the deletion of unnecessary billets or positions and the proper classification of each authorized billet or position.

If changes are required, a Manpower Authorization Change Request (MACR) (OPNAV 1000/4A) is submitted. If changes to the designator rating, grade, or number of billets and/or positions are requested, the requests must be justified in terms of changes in mission, function, and/or task, as contained in the ROC or shore required operational capability (SHO-ROC) statements. If a billet is currently classified improperly, the misclassification must be explained.

MACRs are normally submitted annually. More-frequent requests must be justified on the basis of changes in mission or functions beyond the control of the activity. Valid requirements for billet changes that will require the movement of personnel must be identified and requested as early as feasible to permit orderly personnel management. Normally, it requires 5 to 9 months after final billet approval before new or changed billets can be filled with personnel. MACRs that involve an activity reorganization are planned and submitted on the basis of the existing number of billets.

The Billets Authorized (BA) column on the MPA (block 32) indicates the billets authorized by the CNO. The quantity assigned to each billet authorized on the MPA is normally the same as the corresponding billet in the SMD. SMD billet requirements, which are not included in the BA column on the MPA, are entered on the MPA as Mobilization Billets (MBs), the majority of which will be reflected in the Selected Reserve (SR) column (block 39).

Table 2-1.-Ship Manning Document Description

Section	Title		Description
I	Officer Billet Summary		Consolidates the officer requirements into a single section.
II	Manpower Summary		Shows the number of officer, enlisted, and civilian manpower requirements at the department level.
III	Manpower Requirements		Displays the ship's manpower requirements by organizational component.
IV	Battle Bill		Shows the watch-station requirements for each condition of readiness prescribed in the ROC and POE statements.
V	Functional Workload		Provides a summary of all workloads, by category, that contributed to the billet requirements in each organizational component.
VI	Part 01	Summary of Officer Manpower Requirements	Provides a summary of officer billets by designator and paygrade along with totals for both. (This summary is shipwide and is not related to organizational components.)
	Part 02	Summary of Enlisted Manpower Requirements	Is similar to Part 01, but more detailed. Includes a summary for each rating group (i.e., DS, ET, FC, OS, RM) in alphabetical order, showing primary and secondary NECs and paygrades. The end of the section gives a summary for the entire activity, summarized by paygrade only. (This summary is shipwide and is not related to the organizational structure.)
	Part 02A	Summary of Enlisted Manpower Requirements by Division/Department	Summarizes the paygrades by each organizational component and shows the totals for each division/department. There is a single-line entry for each skill level (rating, paygrade, primary NEC, and secondary NEC) at the division level. Each department starts at the top of a new page.
VII	Summary of Organizational Manpower Requirements		Summarizes and displays the billet information contained in the previous sections.
	Part I		Shows the officer, chief petty officer (E-7, E-8, E-9), and other enlisted billets in the document.
	Part II		Shows the apportionment of enlisted skills by paygrade, including petty officers (E-4 and above), designated strikers (i.e., DSSN, ETSN, FCSN), and nonrated personnel (i.e., SN, FN).
	Part III		Shows the paygrade summary of all enlisted billet requirements on a shipwide basis. (This summary is identical to that shown at the end of Section VI [Part 02].)

What does all this mean to you? You, as a supervisor, play a very important part in the process. You must continually work with your personnel specialist to ensure that billet and personnel requirements for your division are accurately reflected in the SMDs. By keeping your division's manning requirements current, you help to keep your ship's manning requirements current.

Check the MPA to ensure that all the Navy enlisted classifications (NECs) listed in the MPA that pertain to your division are current and correct. It is especially important to ensure that the NECs required to support new installations are requested and that old NECs no longer required are deleted.

When you work with the MPA, refer to the *Manual of Navy Total Force Manpower Policies and Procedures,* OPNAVINST 1000.16. It contains the information and procedures necessary to initiate a ship's force change request (SFCR).

Enlisted Distribution and Verification Report

An enlisted distribution and verification report (EDVR) is a statement of an activity's personnel account—the number of personnel assigned, their rates, their NECs, etc. The Enlisted Personnel Management Center (EPMAC) publishes an up-to-date EDVR monthly for every command.

As a supervisor, you should learn to use the EDVR. It contains valuable information that will assist you in providing proper manning for your ship. You will use the EDVR often, more so than the MPA or the SMD. As an FC1 or FCC, you will work closely with the division officer to determine NEC manning and personnel losses and gains, as well as to initiate any necessary changes to the EDVR.

The purpose of the EDVR is to provide

● a rate or NEC summary of the current and future manning status of the activity,

● a common reference point in any discussion of manning status between the manning or detailing control authorities and the activity,

● a statement of account for verification by the activity, and

● a permanent historical record at the Navy Military Personnel Command (NMPC) of an activity's personnel account for statistical uses and overall Navy manning.

The EDVR printout is divided into the following nine sections and as described in table 2-2:

● Sections 1 through 3 contain personnel information that has been extracted from the activity account and that requires special attention or action by the activity.

● Section 4 contains the total personnel account of the activity, including those members reflected in sections 1 through 3.

● Sections 5 through 8 contain only statistical and authorized billet information.

● Section 9 contains information on NEC management and lists names and up to five NECs that the service member may hold.

Table 2-2.-Enlisted Distribution and Verification Report Description

Section	Title	Description
1	Prospective Gains	Lists all members who are ordered to report to your activity within the next 7 months.
2	Prospective Losses	Lists all members who should have been detached or who are expected to be detached from the activity within the next 7 months. Career and noncareer EAOS (end of active obligated service) losses are also listed.
3	Personnel on Board for Temporary Duty or Assigned in a Deserter Status	Lists the personnel on board for temporary duty or assigned in a deserter status.
4	Total Personnel on Board and Rating NEC Summary	Lists all members in the activity's personnel account, regardless of their loss, gain, or duty status. When a member also appears in one of the three preceding sections, the section in which the member is listed is displayed in item AA of the EDVR.
5	Personnel Status Summary	Gives the numerical summary of the activity's personnel account, showing authorized billets, the Navy manning plan (NMP), and members on board the activity.
6	NEC Summary	Gives the summary of an activity's authorized NEC billets and the members on board or expected on board who possess those NECs.
7	CNO Billets Authorized Revision Number xxxx Dated Yr/Mo/Da	Is identical to the summary of organization billets in the activity's MPA.
8	NEC Billet/Personnel Inventory	Lists the NECs for which the activity has authorized billets and the members who hold those billets.
9	NEC Management Section	Lists the names of the activity's personnel who hold NECs and lists up to five NECs per individual.

REPORTS

Periodic reports and maintaining personnel and equipment records will become a daily responsibility as you advance in rate. Train yourself to be both proficient and efficient. Preparing these reports and records in a proper and timely manner will allow you more time to complete your other duties. In other words, if you let the paperwork pile up, you will be pressured for time and will probably do the reports hurriedly. Keeping up with the paperwork daily will decrease your stress level and will yield a better management product for the Navy.

Even though the CSO/weapons officer is ultimately responsible for all division reports and records, he will depend on your knowledge and performance for inputs to that information. Some of the reports and records with which you should be familiar, described in the following subsections, should be listed in your command's instruction on recurring reports.

Eight O'Clock Reports

Eight o'clock reports are daily equipment status reports given to the commanding officer by the executive officer each evening at 8:00 p.m. (2000). At sea, the CSO/weapons officer usually gives the combat/weapons systems eight o'clock reports to the executive officer. In port, these reports are given to the command duty officer (CDO) by the duty department officers. As the senior FC, you must ensure that the information is current and accurate for your area of responsibility.

Traditionally, the eight o'clock reports are verbal reports of equipment status. However, because of the

number of equipments on our ships today, there is usually a master sheet of equipments in multiple-copy form. Applicable comments are made adjacent to the listed equipments on a daily basis. One copy of the equipments list is kept for the divisional file. The original is turned in for the eight o'clock reports.

The following information is provided for each piece of equipment on the eight o'clock report:

● Status of the equipment, whether in an up status or a down status and with a statement of the nature of the problem if the equipment is in a down status.

● Parts information (parts on board, parts not on board, and supply requisition number).

● Estimated time of repair for a down item.

● Necessity of a casualty report (CASREP). (If an equipment or system CASREP has already been made, the report includes the CASREP serial number for the applicable equipment or system.)

Casualty Reports

As a combat systems supervisor, you will often be in a situation that requires you to draft casualty reports (CASREPs). These are message reports that support the CNO and the fleet commanders in the management of assigned forces, The effective use and support of Navy forces require an up-to-date, accurate operational status report for each unit. An important part of each operational status report is casualty information.

The CASREP system contains four types of reports: INITIAL, UPDATE, CORRECT, and CANCEL. CASREPs are not a substitute for maintenance and material management (3-M) data, but they are in addition to and complement that information. The reference publication for CASREP information and procedures is *Operational Reports,* NWP 10-1-10.

Equipment Status Reports

Equipment status reports vary from command to command. On most ships, the combat systems/weapons department is responsible for turning in an equipment status report before the ship gets under way. This report may be due any time from 72 hours to 24 hours before the ship gets under way, depending on the requirements set by the TYCOM and the command.

The equipment status report usually includes major equipment status, estimated time of repair (ETR), power out/minimum discernible signal (MDS) readings from radars, and power out/receiver sensitivity readings from communications equipment. This report is usually given on a locally generated report form (checklist type); however, it maybe made on the same form as the eight o'clock report.

SAFETY

Most accidents are preventable. However, through ignorance or misunderstanding, there is a common belief that accidents are the inevitable result of unchangeable circumstances or fate. This belief fails to consider the basic law of cause and effect. In other words, accidents do not occur without a cause; most accidents are the direct result of some deviation from prescribed safe operating procedures.

A preventable accident may be traced to an ingrained belief or work habit of an individual. This belief or work habit may cause the individual to perform an unsafe act or permit a hazardous condition to exist. Then, when an accident occurs, the cause-and-effect sequence is completed.

One purpose of safety rules is to remind personnel of the dangers inherent in their work. Training in the observance of safety precautions can help prevent accidents and encourage the maintenance of an accident-free work environment. Operating procedures and work methods should stress hazard prevention

so that personnel do not expose themselves unnecessarily to injury or occupational health hazards. Most accidents can be prevented if personnel are alert to causes and take appropriate remedial action.

Electrical Safety Training

Any failure to follow electrical safety rules or procedures may result in mild to severe shocks. In some cases, death may even result. As a leading FC, you have safety-related responsibilities that may be grouped into the following three general areas:

1. Division Responsibilities: Division responsibilities include ensuring that all personnel in the division are aware of and observe all safety precautions, especially those precautions regarding electrical safety.

2. Nonelectrical Rating Responsibilities: Nonelectrical rating responsibilities are ever increasing, as more and more electronic equipment is used in the various jobs. As an FC1 or FCC, you will automatically be considered an expert on electrical safety precautions. Therefore, you have a responsibility to educate the personnel whose primary duties are nonelectrical about these precautions.

3. Petty Officer Responsibilities: As a petty officer, you have the same responsibilities as all other petty officers in enforcing all safety precautions.

Electrical Shock Causes

Nearly all shipboard electrical shocks are caused in one or more of the following ways (all these failures may be summarized as neglecting applicable safety precautions):

● Unauthorized use of, or unauthorized modifications to, equipment.

● Failure to observe applicable safety precautions in the use of equipment or in working on or near energized equipment.

● Failure to repair equipment that is known to be defective and has previously given users a mild shock.

● Failure to test and inspect equipment for defects, or failure to remedy all defects found by tests and inspections.

Electrical Safety Education

Electrical safety education is a must. You cannot expect personnel to observe a safety precaution unless they are fully aware of the dangers involved. Therefore, one of your first duties is to ensure that all personnel in the combat systems/weapons division are aware of the dangers and the safety precautions necessary to combat those dangers.

Safety precautions depend to some extent on the type of ship involved. Some ships necessarily have particular precautions that must be strictly observed, but which are not applicable to other types of ships. Therefore, you should ensure that all personnel read and understand all safety precautions pertaining to the electrical and electronic equipments on your own ship.

Safety precautions for personnel in nonelectrical ratings should include information concerning electrical shock and precautions they must observe when using electrical equipment, either aboard ship or ashore.

Facts to be stressed to all personnel, both electrical and nonelectrical rating personnel, concerning electric shock should include the following cautions:

● Voltages as low as 30 volts can be fatal.

● The dangers from electric shock are much greater aboard ship than ashore.

● There is little middle ground between a slight tingle and a fatal shock.

Fundamentally, current, rather than voltage, is the criterion of shock intensity. The passage of even a very small current through a vital part of the human body may cause death. The voltage necessary to produce the fatal current depends on such factors as the body resistance, the contact condition, and the path the current takes through the body.

The probable effects of shock are shown in table 2-3.

Table 2-3.-Probable Effects of Electric Shock

AC 60 Hz (mA)	DC (mA)	Probable Effect
0-1	0-4	Perception
1-4	4-15	Surprise
4-21	15-80	Reflex action
21-40	80-160	Muscular inhibition
40-100	160-300	Respiratory block
Over 100	Over 300	Death

It is imperative to recognize that the resistance of the human body cannot be relied on to prevent a fatal shock from 115 volts or even lower voltages. Fatalities from as low as 30 volts have been recorded. Tests have shown that body resistance under unfavorable conditions may be as low as 300 ohms and possibly as low as 100 ohms from temple to temple if the skin is broken.

Volt for volt, dc potentials are normally not as dangerous as ac potentials. This is shown by the fact that reasonably safe "let-go currents" for 60-Hz ac are 9.0 mA for men and 6.0 mA for women, whereas the corresponding values for dc are 62.0 mA for men and 41.0 mA for women.

The instruction to personnel in nonelectrical ratings regarding the safety precautions they must observe when using electrical equipment should emphasize the following points:

● NEVER use any personal portable electrical equipment aboard ship unless it has been inspected and approved.

● NEVER use portable electrical equipment if there is reason to believe it might be defective. Have it tested by authorized personnel.

● NEVER make repairs yourself. All repairs must be made by authorized personnel only.

● ALWAYS visually inspect portable electrical equipment before you use it. Look for damaged plugs, frayed cords, broken or missing ground connections, etc.

● ALWAYS report any shock you receive from electrical equipment, regardless of how slight.

General Safety Promotion

Promoting safety within the electronics division or on the ship in general requires that you, as the FC1 or FCC, become safety conscious to the point that you automatically consider safety in every job or operation. Through the use of safety reminders and by your personal example, you pass safety consciousness on to other personnel.

You must be thoroughly familiar with section D5 of *Navy Safety Precautions for Forces Afloat,* OP-NAVINST 5100.19. This is the primary source of general safety rules and regulations. Safety information is also given in the *Electronics Installation and Maintenance Book, General,* NAVSEA SE000-00-EIM-100.

INFORMATION SECURITY

The security of the United States, in general, and of naval operations, in particular, depends in part on successfully safeguarding classified information. All FCs must be security conscious to the point that they automatically exercise proper discretion in performing their duties and do not think of security of information as something separate from other matters. By doing so, security of classified information becomes a natural element of every task and not an additional burden.

You should be thoroughly familiar with the *Department of the Navy Information and Personnel Security Program Regulation,* OPNAVINST 5510.1. Following its guidance should be second nature to you.

SPACE UPKEEP AND CLEANLINESS

The upkeep and cleanliness of spaces in the electronics division is very important. The safety and operation of equipment depend on correct and routine upkeep. The upkeep of spaces should be a daily routine, regardless of priorities.

As a senior petty officer, you should ensure that all workspaces are always in excellent shape, with tools properly stowed and equipment properly mounted and covered when not in use. While equipment repairs or other unforeseen events sometimes dictate maintenance, space upkeep and cleanliness should not be forgotten. Dangers of fire, damage control, personnel safety, and clogged equipment filters, as well as many other reasons, dictate that your spaces be kept up and clean at all times.

INSPECTIONS

Inspections of electronic equipment and digital data equipment systems are made at least once during each ship's training cycle and at other times when necessary. These inspections determine the state of equipment readiness and compare its condition with a previously established condition to detect any deterioration. They also help to determine the readiness of equipment after it has been installed, overhauled, repaired, or altered.

INSPECTION AND SURVEY INSPECTIONS

Inspection and survey (INSURV) inspections are conducted by the Board of Inspection and Survey to determine the material readiness of the ship's equipment and systems. Any discrepancies or deficiencies discovered by the INSURV inspection team are documented on Ship's Maintenance Action Form (OPNAV 4790/2K). These work requests are then used in planning an availability or an overhaul.

Material Inspection of Ships by the Board of Inspections and Surveys, OPNAVINST 4730.5, requires an INSURV inspection for active ships at least once every 3 years.

TYPE COMMANDER ADMINISTRATIVE INSPECTIONS

Type commander (TYCOM) administrative inspections are held at least once during each training cycle and are divided into a whole-ship category and a department category. Administrative methods are examined to determine if they are intelligent and efficient. They are also checked to determine if they are directed toward keeping the ship prepared for wartime mission performance.

MATERIAL READINESS INSPECTIONS

Material readiness inspections (MRIs) determine the material readiness of shipboard equipment and systems installations. They are conducted once during each ship's training cycle and are supervised by an officer who is qualified in the particular equipment or system. When practical, this officer is assisted by an engineer furnished by the systems command responsible for that equipment. In the interest of reducing costs and conserving manpower, these inspections are normally conducted concurrently with, or as part of, the INSURV inspection.

MRIs consist of three specific types of inspections: (1) performance inspections, (2) physical inspections, and (3) maintenance administration inspections.

Performance Inspections

Performance inspections include, but are not limited to, the following actions:

● Making the basic measurements listed on the maintenance requirement card (MRC) for the equipment and systems designated by the inspecting officer as essential to the primary mission and task of the ship being inspected.

● Conducting system tests on designated systems at a test and calibration facility. If any of these tests are not performed at the time or just before the inspection, they should be completed soon afterwards. In any event, additional measurements, as noted on system MRCs, should be taken at the time of the system test.

● Conducting interference tests to determine if operating the equipment causes problems with other installed electronic equipment or if it is hampered by interference from other electronic or nonelectronic equipment. The interference tests also identify the source and amplitude of interference emanating from nonelectronic equipment.

● Listing all approved modifications required but not made, as well as all unauthorized modifications.

Physical Inspections

Physical inspections include visually inspecting and determining the condition and adequacy of all equipment, cabling, repair parts, and tools.

Maintenance Administration Inspections

Maintenance administration inspections determine if there is an established procedure for submitting a Ship's Maintenance Action Form (OPNAV 4790/2K) and a Ship's Configuration Change Form (OPNAV 4790/2CK).

Checks are also made to ensure that there is a procedure for listing field changes on field change plates and updating electronics publications.

These inspections include, but are not limited to, checking to determine if the quantity and rates of electronics personnel on board meet the ship's allowance and if the electronics personnel assigned to the ship are capable of supporting the allowed equipment. They are also used to determine if there is an established program for on-the-job training (OJT), as well as a program for sending personnel to fleet and NMPC-controlled electronics schools.

PREOVERHAUL TESTS AND INSPECTIONS

Preoverhaul tests and inspections (POT&Is) are held approximately 10 to 12 months before an overhaul. These inspections cover work on combat system items to be done during the upcoming overhaul. They provide information that is used to develop the plans for the ship's overhaul.

Personnel performing these inspections are normally from the ship's home yard. Personnel from the Naval Space and Warfare Command (NAVSPA-WARCOM) or the Naval Sea Systems Command (NAVSEASYSCOM) may also perform part of these inspections.

POSTOVERHAUL INSPECTIONS

Postoverhaul inspections furnish the commanding officer of the ship a report on the condition, capabilities, and limitations of the shipboard equipment and systems. These inspections include new installations of equipment and systems, as well as the equipment or systems that were included in the overhaul job orders.

MAINTENANCE AND MATERIAL MANAGEMENT RESPONSIBILITIES

By this point in your career, you probably have an extensive knowledge of the maintenance and material management (3-M) systems. You should follow those requirements automatically. However, as an FC1 or FCC, you should know the full use of the 3-M systems and must ensure that your personnel comply with the requirements.

Maintenance periods and overhauls are scheduled at various times according to the needs of the ship, the fleet, the type of ship, and the available funds. Regular overhauls are normally scheduled approximately every 60 months. Alterations are any changes made to improve the military or technical aspects of a ship.

The required heavy maintenance and overhauls that cannot be accomplished while the ship is under way usually takes from 2 to 6 months. During this time, many new electronics installations and equipment or system overhauls may be completed with the assistance of yard, tender, or civilian contract personnel.

To review the mechanics of the 3-M system, refer to "The Ships' 3-M Systems" chapter of the *Military Requirements for Petty Officer Third Class,* NAVEDTRA 12044. Although that chapter provides an excellent description of the 3-M systems, the official reference for the 3-M systems is the *Ships' Maintenance and Material Management (3-M) Manual,* OPNAV - INST 4790.4. You may also wish to read *Introduction to* 3-M *Systems,* NAVEDTRA 13092, which gives a short but very informative explanation of 3-M systems and procedures.

AVAILABILITY TYPES

An availability is an assignment of a ship to a repair facility for repairs beyond the capability of the ship's force. Besides regular overhaul, several types of availabilities are assigned, according to the needs of the individual ship or the fleet. These are restricted, technical, and intermediate-level maintenance activity availabilities.

Restricted Availability

A restricted availability (RAV) is normally assigned for emergency repairs of prime systems that prevent the ship from fulfilling its mission. When emergency repairs to primary systems cannot be made by the ship's force, the commanding officer may request the TYCOM to assign a restricted availability for the repair of a specific system. During an RAV, the ship is incapable of performing its mission.

Technical Availability

A technical availability (TAV) is assigned when repairs on noncritical systems or equipment must be made by a repair facility or yard. These repairs do not affect the ability of the ship to complete its mission. If necessary, the ship can get under way without the system or equipment being repaired.

Intermediate-Level Maintenance Activity Availability

An intermediate-level maintenance activity availability (IMAV) involves repairs made by either afloat repair activities (tenders and repair ships) or shore intermediate maintenance activities (SIMAs). Its purpose is to accomplish as much intermediate-level maintenance and repair work as possible within the workload limitations, the available funds, and the relative priority of the required work.

Although the primary emphasis of a SIMA effort is on repair work, authorized ship alterations and alterations equivalent to repair are undertaken as SIMA workloads permit.

UPKEEP PERIOD

The upkeep period is time in a port where the facilities of a yard or a tender are available for routine maintenance that cannot be completed while the ship is under way. Upkeep scheduled with the assistance of a tender or a repair ship is sometimes referred to as *tender availability.*

SHIPYARD OVERHAUL

Ships are assigned availabilities at shore-based repair activities as directed by the CNO. The first scheduled overhaul is normally granted to a ship after an initial operating period of approximately 2 years. Thereafter, scheduled overhauls depend on the ship type.

The amount of time in the shipyard for these overhauls varies. For example, if the shipyard works on a one-shift basis, the overhaul often requires 6 months or longer. The employment schedule, an operating directive furnished by the TYCOM, indicates when a ship is scheduled for overhaul.

Availability Work Package Development and Alteration

For an availability to be a success, the work to be done must be clearly defined in sufficient time to order material and to issue the necessary job orders or contract specifications. The definition of work required is obtained from the ship's database, as reflected in the current ship's maintenance project (CSMP), and from the results of the POT&Is.

The work package is developed through a sequence of events that starts with the ship's CSMP and results in an authorized work package control document and the ship alteration and repair package (SARP). The development process of the SARP is shown in table 2-4.

Preoverhaul

For the best use of the time and funds available for an overhaul, planning for the repairs to be made during the overhaul must be done in advance of the ship's arrival at the repair activity. Advanced planning is required of both the ship and the repair activity.

In preparing the combat systems work list for submission to the CSO/weapons officer, the leading FC must give all the information necessary to assist the shipyard in locating and rectifying the troubles. Most of this information is obtained from the CSMP.

The work list indicates all work that should be completed during the overhaul, the priority for each item, and the name of the ship's quality assurance (QA) inspectors. The work list is combined with the work lists submitted by the other divisions. Before the ship enters the repair yard, a complete ship's work list should be submitted.

Overhaul

During an overhaul, the combat systems/weapons department personnel continue to have responsibility for their equipments, including repairs. This includes inspecting the work both during and on completion of the repairs.

Your responsibilities also include signing off jobs that are completed. To do this properly as a member of the ship's QA team, you must understand and apply the requirements of the *Quality Assurance Manual,* COMNAVSURFLANTINST 9090.1.

Remember, once you have signed off the work as being completed, you have "bought" the equipment, whether it works or not.

Postoverhaul

Completing an overhaul requires submitting a report on the completion status of all authorized repairs, canceling or rescheduling of uncompleted work, and preparing the ship for its initial voyage after the overhaul.

Except in unusual circumstances, job orders for uncompleted repair work are closed or canceled when the ship leaves the repair activity. Job orders for authorized alterations, however, are held open until the work is either completed later or canceled by the appropriate systems command.

If the ship leaves the repair facility with unfinished work to be completed by another activity, all outstanding job orders are transferred to the other activity, together with all pertinent information and whatever material was assembled for the work. If work is later desired on job orders that have been closed or canceled, new requests must be made.

When readying a ship for sea including its initial voyage after an overhaul, the electronics personnel must see that allowances of equipment, tools, and repair parts are on board and are properly stowed.

The reason is obvious, as negligence can make the ship a liability during action.

Table 2-4.-Ship Alteration and Repair Package Process

Step	Section	Purpose
1	CSMP Validation	The CSMP undergoes formal review to ensure its accuracy and completeness. This is the responsibility of the ship; however, external assistance is generally provided to enhance the effort. The CSMP provides the largest input into the development of the SARP.
2	Preoverhaul Tests and Inspections	These POT&Is identify work not previously covered in the CSMP. They also define more clearly the CSMP work requirements.
3	TYCOM Screening of the CSMP and Work Identified by POT&Is	The work may be assigned to off-ship activities or the ship's force, or it may be deferred until a later availability. Some categories of work will be authorized immediately to allow advanced planning (ordering of material and estimating of the work package).
4	Other POT&Is Designated by the TYCOM and the Concurrent Development of Estimates by the Naval Shipyard or the Supervisor of Shipbuilding	The ship must prioritize all work requirements that have been screened but are not yet authorized. This is completed in preparation for the work definition conference.
5	Maintenance Work Definition Review (Complex Overhaul/Selected Restricted Availability)	This meeting is scheduled by the TYCOM and is held aboard ship with the planning and estimating group. The POT&I information is used to make the work package fully defined within funding constraints and to prepare it for presentation to the work definition conference.

Alteration

In general, an alteration is any change. It can be major or minor and can affect almost anything about the ship. It may be any of several types: ship alteration (SHIPALT), boat alteration (BOATALT), machinery alteration (MACHALT), ordnance alteration (ORDALT), or alteration equivalent to repair (AER). An alteration, such as equipment calibration, can be performed during an availability.

Alterations are managed through the fleet modernization program and may be either military or technical improvements.

● Military Alteration: A military alteration results in a change of a ship's operational or military characteristics, qualities, or features. It also increases the ability of the ship to meet its ROC. The decision to incorporate a military alteration rests solely with the CNO.

● Technical Alteration: A technical alteration is a change that improves the safety of personnel and equipment and provides increased reliability, maintainability, and efficiency of installed equipment.

Table 2-5 lists the alteration categories and their authorization sponsors.

Table 2-5.-Ship Alteration Categories

Title	Authorization Sponsor
K	Funded and authorized by the CNO
K/P	Funded and authorized by the CNO
D	Funded and authorized by the TYCOM
F	Funded and authorized by the TYCOM
TIA	No funding required; authorized by the TYCOM

Field Change

A field change (FC) is a modification to combat/weapons systems equipment. It should improve per-

formance, reliability, maintenance, operational characteristics, and/or safety.

The type designator indicates the completeness of the change package. Some packages contain all necessary instructions, parts, and tools, whereas other packages contain only instructions.

The four types of field changes are shown in table 2-6.

The three classes of field changes are described in table 2-7. The class designator indicates the activity responsible for the funding and installation of the field change.

Table 2-6.-Field Change Descriptions

Type	Description
I	Requires parts, all of which are included in the field change kit. Also included in the kit are publication package changes, materials, and special tools required to change one equipment and to revise existing equipment nameplates, publications, and charts.
II	May require parts, none of which are included with the field change. Usually affects only the publications package. If parts and tools are required, they are considered standard stock items and are available as bench spares (i.e., wire, lugs, soldering irons, etc.).
III	Requires parts, some, but not all, of which are included in the field change kit. The parts not included are considered standard stock items.
IV	Does not require parts or the use of any special tools. This type of field change is usually published in an *Electronics Information Bulletin* (EIB) and consists of only a publication change.

Table 2-7.-Field Change Classes

Class	Description
A	Modification may be made by forces afloat or station personnel. No installation funding is required. Approval of class A field changes to be made by forces afloat indicates only that the work content is within their technical capability. The class A designation does not require the modification, nor does it require forces afloat to make the modification. The decision of when and how to make the modification is considered to be a forces-afloat prerogative.
B	Modification requires fleet funding for and work by naval shipyards, tenders, etc., when authorized by the TYCOM. Except for class B field changes presently under way or in the fleet planning stage, this class of field change will no longer be issued.
C	Modification normally requires industrial assistance and the appropriate systems command installation funding.

RECOMMENDED READING LIST

NOTE: Although the following references were current when this TRAMAN was published, their continued currency cannot be assured. Therefore, you need to ensure that you are studying the latest revision.

Department of the Navy Directives Issuance Systerm Consolidated Subject Index, DPSINST 5215.1, Washington, DC. 1994.

Format and Procedures for Validation of Enlisted Distribution and Verification Report (EDVR), NAVMILPERS-COMINST 1080.1, Naval Military Personnel Command, Washington, DC, 1989.

Guide for User Maintenance of NAVSEA Technical Manuals, NAVSEA S005-AA-GYD-030/TMMP, Naval Sea Systems Command, Washington, DC, 1988.

Navy Stock List of Publications and Forms, NAVSUP 2002, Navy Publications and Forms Center, Philadelphia, PA, 1994.

CHAPTER 3

SUPERVISION AND TRAINING

LEARNING OBJECTIVES

Upon completing this chapter, you should be able to do the following:

1. Describe the management responsibilities of the combat systems/weapons division supervisor.

2. Describe the types of training and procedures for training as used by the shipboard combat systems/weapons division.

INTRODUCTION

As you advance to FC1 or FCC, you will function as a first-line supervisor. In other words, you will be in immediate control of personnel, You will also act as the liaison between your superiors and your subordinates. You will be responsible for planning work, issuing jobs, instructing personnel, checking work, and reporting to your superiors on the progress of assigned tasks.

So, as you can see, you will have far greater duties and responsibilities than you had at your previous paygrade. Since you have acquired much valuable job-related knowledge, it is now your turn to pass that knowledge onto others.

As a combat systems/weapons supervisor, you will be responsible for maintaining all division combat systems equipment. Maintaining this equipment is a job of vital importance. It requires a leadership ability that can be developed only by personnel who have a high degree of technical competence combined with a deep sense of personal responsibility.

A combat systems/weapons supervisor spends less time working on equipment and more time ensuring that the work center is running smoothly. Instead of working on a specific equipment, you will spend time on other jobs, such as updating a personnel qualifica-tion standards (PQS) progress chart or scheduling maintenance for the next week. As a senior petty officer, you will find more people asking your opinion on technical matters. Your responsibilities for technical leadership are special to your rating and are directly related to the nature of your work.

The combat systems/weapons field is growing rapidly, caused in part by the swift pace of development in modem technology. This requires that you keep up with the latest developments. As technology advances, you will find yourself involved with equipment and systems much more complex than any you have previously encountered.

Sometimes you may need to develop a procedure to check out the operation of a new piece of equipment because the available technical information or technical manual has only limited data for isolating a malfunction. You must then be able to instruct your subordinates in using these newly developed, interim procedures. Therefore, you must acquire the technical and leadership skills required to translate these ideas into actions.

This chapter discusses the management (which includes supervision and training) of a combat systems/weapons division and some of the problems that supervisors face in leadership roles, In no way can we cover all areas of supervision and training, but we can provide

you with a solid foundation of knowledge on which to build. Refer to military requirements training manuals for additional information on supervision and training.

SUPERVISION

As a division supervisor, you must be aware of the greater scope of your duties and responsibilities. You must also learn and practice the characteristics of a good supervisor, continuing this process as you attempt to master all phases of supervision and management in the combat systems/weapons division.

This section discusses many of the elements that you will encounter as a combat systems/weapons supervisor, including general management, and supervisory duties and responsibilities.

GENERAL MANAGEMENT

As an FC1 or FCC, you will normally be a work-center supervisor or a division supervisor. In either position, you will be confronted with the many responsibilities of management. Your primary job will be to ensure that the work center functions smoothly.

The prime objective of a combat systems/weapons supervisor is to maintain control of complex, costly electronic systems and equipment through a sound maintenance management program. The supervisor must be aware of the alternatives that are available to make a maintenance management program perform most effectively and efficiently.

You and your maintenance personnel must meet both technical and military requirements. The skills required to manage a maintenance shop are not acquired overnight. You will need to spend time and effort to develop the management ability necessary to accomplish all your division's goals.

The problems and responsibilities that a work center or division supervisor must face are similar to those encountered in other fictional areas of any command. For example, increasing productivity while reducing cost is a goal of all supervisors.

While technological growth has eased the burden and increased the effectiveness of supervisors and managers in many aspects of command operations, it has sometimes turned the combat systems/weapons supervisor's job into an overwhelming problem. You may be responsible for maintaining a multimillion-dollar resource ashore or at sea,

Your division will have to keep high-cost, highly sophisticated electronic systems and equipment in the highest possible state of readiness under a variety of working conditions. No matter how well designed the equipment is, its value to the command lies in the ability of the maintenance supervisor to provide the maximum amount of uptime.

A supervisor may face some of the following problems every workday:

● Procedural changes: What improvements could be realized by minor modifications to existing procedures?

● Future requirements: Will future system demands affect present resources?

● System downtime: Is the amount of downtime the system suffers reasonable, given the personnel and material assets available?

● Training requirements: Have all technicians acquired the highest level of technical competence? If not, can the on-site training program bring them up to speed?

● New personnel: Is the in-house training program adequate for new personnel?

● Material assets: Will the material assets be adequate for any upcoming deployment?

If the supervisor has reasonable and well-documented answers to these questions, it is likely that he is effectively managing the work center instead of merely supervising it. Good management and good supervision are inseparable for the control, operation, and financial budgeting of division assets. The right

answers to questions such as those mentioned will significantly enhance a command's ability to carry out its mission.

SUPERVISORY DUTIES AND RESPONSIBILITIES

An exact list of duties and responsibilities can be made only when the list concerns a specific position. However, the following duties and responsibilities are typical of a combat systems/weapons supervisor:

● Keeping maintenance operations running smoothly and efficiently.

● Promoting teamwork.

● Maintaining discipline.

● Maintaining high morale

● Getting the right person on the job at the right time.

● Maintaining the quality and quantity of work.

● Checking and inspecting jobs and personnel.

● Preventing accidents and controlling hazards and hazardous material.

● Using and storing materials economically.

● Maintaining good housekeeping on the job.

● Keeping records and preparing reports.

● Planning and scheduling work.

● Training personnel.

● Procuring supplies and equipment to perform the work.

● Inspecting, caring for, and preserving equipment.

● Giving orders and directions.

● Maintaining liaison with other units, departments, and divisions.

In addition to the aforementioned typical duties and responsibilities, the following seven major areas are common to all supervisory positions:

1. Production: The supervisor is responsible for ensuring that all work is done properly and on time. This is true both in the office and in the work center. To meet these goals, the supervisor must function in three main ways:

   a. Organize and plan the workload to ensure maximum production with minimum effort and confusion.

   b. Delegate the authority for completing work assignments, keeping in mind that the final product is the responsibility of the supervisor.

   c. Control the workload and see that all work is completed correctly.

2. Safety, health, and physical welfare of subordinates: Safety and production go hand in hand. The safe way is the efficient way. When work center personnel are absent because of injury, they are nonproducers. A good supervisor stresses safety to the crew; sets an example by working safely; teaches safety as an integral part of each job; and, most of all, plans each job with safety in mind. A good supervisor does not wait until after an accident happens to start a safety program. Showing concern over the health and physical welfare of your crew will pay off in increased production. It will add to their feelings of trust and confidence in you as a division supervisor and will increase the amount of respect they have for you.

3. Development of cooperation: Developing cooperation among the members of your division is paramount to effective production. Some supervisors, however, tend to overlook the need for cooperation in two other directions:

a. Cooperation with management.

b. Cooperation with supervisors on other ships or in other departments, divisions, or work groups of your ship.

In the course of a routine equipment overhaul, you will often have to deal with numerous people in work centers or units of the repair activity. It is particularly essential, therefore, that you develop a rapport with the management and supervisory personnel of the repair activity.

4. <u>Development of morale:</u> The esprit de corps of a group and their willingness to work toward common goals depend, to a great extent, on your leadership. A group with high morale is a producing group.

5, <u>Training and development of subordinates</u>: A good division supervisor is invariably a good teacher and leader and is a developer of personnel. One of the greatest contributions you can make as a supervisor is the development of your people. You should ensure that <u>at least</u> one trained person is ready to assume responsibility as supervisor if the need were to arise. It is a sign of good leadership when you can take leave and have the division continue to run smoothly. Do not be afraid to teach every phase of your own work to at least one or two subordinates. And since much of your time will involve teaching, you should try to improve your teaching ability.

6. <u>Records and reports:</u> Chapter 2 discussed some of the records and reports with which you will be associated. Keeping records and preparing reports are not tasks that you will always enjoy doing, yet they are a vital part of your work. Make it a point to keep neat, accurate records and get reports out on time. Paperwork may seem to be a waste of time, but in the long run, you will realize how much your success as a division supervisor depends upon your ability to handle paperwork properly.

7. <u>Balanced supervision:</u> Major duties and responsibilities must be balanced. You must pay the proper amount of attention to each phase of your job. Do not emphasize production at the expense of safety or training. Also, do not become so concerned with the human element that production is neglected. Keep up

with paperwork as it occurs; then, you can maintain control of your workday and will never need to neglect your more-active duties to attack a stack of papers. In always attempting to place the proper emphasis on each of your responsibilities, you will be practicing balanced supervision.

RESPONSIBILITY TO USERS

Your responsibility to users is twofold. First, you must ensure that all equipment is ready for maximum use at all times. Second, you and your division personnel should be a source of technical knowledge and training for all users.

Having the most up-to-date combat systems/weapons equipment is of no value to the Navy unless the equipment is operating at peak efficiency at all times. Many initial equipment casualties turn out to be operator errors. An unusually high incidence of operator errors may indicate inadequate training.

The problems associated with inadequate training usually occur because of one or more of the following circumstances:

● A large number of new personnel

● A new system being operated

● The installation of new equipment

● Any operations following an extended in-port period

The effects of the first three of these circumstances may be eliminated with an adequate shipboard training program to supplement formal off-ship team training. Since you have the technical expertise, you should assist in (or provide) the technical training necessary to operate the combat systems/weapons equipment correctly. By doing so, you will simplify both your job and the job of your division personnel.

Problems that result from an extended in-port period are usually caused by forgetfulness. Since this is part of human nature, you cannot correct it; however, if the problem continues, you should make the appropriate

work centers aware of it so they can ensure that it does not happen again.

RESPONSIBILITIES TO UPPER MANAGEMENT

As a combat systems/weapons supervisor, you will find yourself in a middle-management position. You will have more responsibilities and direct input to the upper echelon than you did as a petty officer second class.

One of the supervisor's responsibilities is to support the goals and requirements of upper management (the division officer and the department head). This support may take many forms, such as providing unscheduled corrective maintenance, technical reports, additional manpower for important command functions, operational training in specialized areas, or any one of a dozen other tasks that may be required of your personnel.

On occasion, you may be called upon to solve a difficult problem. If after much brainstorming, you are unable to solve the problem, you should seek assistance from the next senior person in the chain of command. Keeping a problem to yourself when you have run out of ideas will not solve it. Inform your division leading chief petty officer (LCPO) or your division officer of your problem; one of them should be able to assist you.

TRAITS OF A GOOD SUPERVISOR

Good supervisors usually have certain desirable traits. These traits are loyalty, positive thinking, genuine interest in people, initiative, decisiveness, tact and courtesy, fairness, sincerity and integrity, teaching ability, and self-confidence.

Loyalty

One trait that should stand out in every supervisor is loyalty. You must show loyalty to your country, the Navy, your unit, your superiors, and the personnel who work for you. To receive and keep the respect and loyalty of your personnel, you must be loyal yourself.

Positive Thinking

Good leaders will always be positive thinkers. They think in terms of *how* things *can* be done, not *why* they can *not* be done. They maintain an open mind to changes, new ideas, and training opportunities, Positive thinkers look to the future with confidence, and their confidence is contagious. They are enthusiastic about their jobs and the part they play in the Navy. If you want to lead others, start practicing the art of positive thinking today.

Genuine Interest in People

Did you ever meet a really great leader? If so, you probably found that instead of being cold and aloof, the person was a warm, friendly human being who seemed to make you feel important by paying close attention to what you had to say.

One of the first steps you, as a supervisor, should take is to get to know your technicians personally. This not only creates a feeling that you are genuinely interested in them, but it also helps you place the right person in the right job at the right time.

You will appreciate the importance of knowing your technicians personally when the need arises for them to convert from technicians to professional defensive tacticians and fighters. Here, the wrong person in the wrong place could prove disastrous.

However, you must avoid falling into the familiarity trap. Many experienced supervisors will tell you of cases where they were overly friendly with certain personnel. Then, when the time came for discipline or other adverse action, it was very difficult to deal with those personnel.

Initiative

Personnel with initiative are always needed in the naval service. Initiative is evidence of an open and alert mind. Personnel with initiative continually look for better ways to do things; they don't wait for someone else to take action.

To be a good supervisor, you must show initiative. Don't put off until tomorrow what you should do today. If you see an unsafe condition, take action to correct it before an accident occurs. If you see that a new form or procedure would simplify a job, devise the new form or procedure. If you see an inadequacy in yourself, try to overcome it. Weak people lack initiative. Good leaders are characterized by strong initiative.

Decisiveness

Good leaders are able to make decisions. A common complaint heard from subordinates is "You can't get a decision from them."

Most of the decisions that must be made by supervisors in the naval service concern relatively minor actions. Subordinates usually want the supervisor's approval to perform some action that they already know should be done. A prompt go-ahead from the supervisor is all that is needed. In many trivial matters, it makes little difference whether an answer is yes or no; the important thing is to give an answer.

The supervisor who stalls, puts off, evades, or refuses to give a decision is a bottleneck.

Of course, there are times when a decision requires careful consideration of many factors and, therefore, much deliberation. In such cases, you should tell the person when to return for the decision and see to it that you have made the decision.

Tact and Courtesy

Good leaders are habitually tactful and courteous. Whether in the work center or in the office, supervisors can be thoughtful of others without being considered weak.

Tact is saying and doing the right thing at the right time. It is the lubricating oil in human relationships. It is the regard for the feelings of others based on an understanding of human nature—the little considerations that make the job pleasant and smooth.

Courtesy is treating others with respect, as important human beings, not as tools to be used for your convenience. It means following the accepted rules of conduct and being polite. Courtesy is important to the supervisor. One discourteous act, even though unintentional, can make an enemy—and the supervisor cannot afford to have enemies. If you have even one enemy, you have one too many. Remember, courtesy is contagious.

Fairness

Personnel are extremely sensitive to partiality by a supervisor; they may even single out little incidents where there was absolutely no intent to show favoritism. To avoid causing any problems of unfairness, you must think ahead on changes or decisions to be made, work to be assigned, recommendations for promotion, etc. In each instance, you must try to ensure that your actions are both fair and impartial.

Sincerity and Integrity

Sincerity and integrity are extremely important to a supervisor. You should deal with your personnel squarely and honestly at all times to win and hold their respect. Talk to your crew on a one-to-one basis.

Don't be afraid to face the facts and say what you think. You of-ten hear, "Give me the person who looks you straight in the eye and tells the truth every time!" A reputation for being a square shooter is worth every effort on your part.

Consistency and dependability are valuable assets of integrity.

Consistency of thought and action is important if your personnel are going to know where they stand. Being too strict one day and too lax the next day is worse than being consistently strict or consistently lax, Avoid exhibiting inconsistent moods—good one day, bad the next—to your crew. Your crew tends to reflect your attitudes. Exhibit a firm and positive attitude—and be consistent.

Dependability involves consistently meeting obligations promptly. A reputation for being "on time, every time" is worth every effort on your part. Build this reputation early, even before you become a first-line supervisor, and maintain it.

Any violation of dependability or integrity will cast serious doubts upon your ability to act as a responsible supervisor. One violation of integrity may take months (or forever) to rectify.

Teaching Ability

Teaching ability is a vital trait of a good supervisor. A large part of your job will involve instructing personnel in one way or another. Even giving orders is a form of instruction.

You should learn and practice the art of public speaking, the principles of on-the-job instruction, and the techniques of conference leadership. People who cannot stand on their feet before a group and express their ideas should not be supervisors. To be a successful supervisor, you must be able to train and develop others.

Self-Confidence

Good supervisors have a quiet self-confidence (not an arrogant or cocky manner) based on thorough knowledge of the job and belief in their own ability. Confidence begets confidence. It is amazing to see how people will follow those who have confidence in themselves. Mousy, hesitant supervisors who lack self-confidence cannot inspire confidence in others.

On the other hand, beware of arrogance. Some supervisors put on such a front of aggressive confidence to hide their own inferiority feelings that they ridicule the opinions of others, dominate conversations, and are arrogant toward others. Such people are much less effective than they think they are.

Supervisors who have a quiet inner confidence, which is expressed in their confident manner, actions, and words, are respected and followed.

RELATIONSHIPS WITH SUPERIORS

Your bosses are very important to you. In their hands rests much of your success in your job. Whether or not you like them personally, you must cooperate with them if you hope to advance.

Many supervisors rate loyalty at the top of the list of desirable qualities. A loyal supervisor does not criticize the boss to others, even if there is cause for occasional disagreement.

Dependability is another desirable quality your superior looks for in you. He likes to know that when you are given an assignment, you will complete it to the best of your ability and on time. There are few things more annoying to a boss than a subordinate who always has an alibi or who cannot be depended on to do a job.

Do not be a "yes" person; but, on the other hand, do not go to the extreme of being a "no" person. Good bosses want subordinate supervisors who are not afraid to tell them tactfully what they think, even if it means telling them that they are wrong. But they do not like having a subordinate who is against everything and who stubbornly resists every idea.

Tactful Suggestions

Most bosses resent employees who make it a common practice to tell them bluntly what should be done or what should not be done. It is easy to get your ideas across to the boss without incurring resentment; just put them in the form of a question: "What do you think about this idea?" or "Do you think this would work?"

If the boss gives you an assignment that is obviously a mistake, tactfully ask about handling it from another angle. However, if the boss insists on carrying out the order as specified, do not argue.

Work-Center Status

Bosses like to know what is going on in their areas of responsibility, but they do not want to be

bothered with all the petty details. Keep them advised of job status, personnel problems, proposed changes, and other important matters.

If you make a serious mistake, tell your boss about it immediately. Don't wait until the boss discovers the mistake and then you try to defend your actions. And remember, lengthy explanations of your actions are not required.

RELATIONSHIPS WITH FELLOW SUPERVISORS

Friction and jealousy are your prime enemies in establishing cooperation with your fellow supervisors. A good supervisor avoids backstabbing, gossiping, and criticizing fellow supervisors when the competition becomes keen. The main thing to remember is that you cannot rise by putting others down. If you try to do so, your unkind actions will ultimately cause you to fail in your job.

In addition to being cooperative personally, a good supervisor may sometimes have to encourage cooperation on the part of other supervisors. In the long run, the person who is able to foster and maintain harmony in all relationships is the one who will be assigned to the Navy's key jobs.

TEAMWORK WITHIN THE DIVISION

Even in primitive times, people banded together. To have a working team, you should know and appreciate the psychological rewards that a group must provide to hold its members are feelings of security, belonging, being somebody, accomplishment, satisfaction, and pride in the group, as well as receiving recognition from outside the group. All these elements are very important in attaining the goals of the group.

A good leader encourages these feelings, since the stronger are these psychological rewards, the stronger is the group. Some supervisors achieve such an intense feeling of group pride that their personnel actually feel privileged to work in those groups.

The people we supervise are human beings with individual differences. They usually produce only to the extent that they feel like producing, and their will to produce is based primarily on the ability of their supervisors to win their cooperation. Good leadership is reflected in this ability to get cooperation; and cooperation, in turn, is a reflection of the respect the personnel have for their supervisors. Teamwork or cooperation, then, is based on good human relations.

When you walk into any division or office, you can almost feel if the spirit of cooperation is present. If it is there, you can see it in the faces of the people, in the appearance of the workspace, in the reception you receive, and in the way the work is performed.

Poor cooperation and poor management are indicated whenever bickering, jealousy, and friction are present. Low production is the inevitable result. Frequent accidents, indifference, sloppy work, griping, complaints, grievances, criticism of the unit, buckpassing, loafing, many requests for transfer, poor planning, and poor training or indifference to training are danger signals that indicate a lack of cooperation and poor management.

Developing cooperation within your group is largely a matter of adapting your behavior to meet the varying situations you encounter daily—and in going out of your way to show a willingness to cooperate. You cannot simply order cooperation.

Elements in the development of cooperation include adapting to change, correcting mistakes, delegating authority, training personnel, setting an example, giving credit, handling personal problems, and breaking in new personnel. The following subsections briefly describe these factors.

Adapting to Change

Most people resist change. Even when the change is clearly for the better, people sometimes persist in clinging to the old ways. Unless ordered by higher authority, changes must not be too fast. They should be properly timed and, if possible, explained before they are placed in effect. If the explanations are plausible, personnel will be more willing to adapt to change.

Correcting Mistakes

When you think you need to correct a mistake a worker is making, unless safety is involved, make the correction through those who deal directly with the individual. The worker takes orders from an immediate supervisor, and that supervisor may have valid reasons for having the person perform in a certain way.

Delegating Authority

Good supervisors soon learn to delegate work. They develop their subordinates to the point where they can delegate to them all the routine work. Then the supervisors have time to handle personnel problems, study, and do the necessary planning and creative work.

Training Personnel

Train at least one person to handle your position, and do not be afraid that the person you train will surpass you. Supervisors who train and develop subordinates make possible their own advancement, because higher-level managers want good people in every billet.

Good supervisors provide for each person in their unit. They encourage their people to take advantage of educational opportunities. When the group personnel feel that a supervisor is interested in their welfare and that the job offers more than just pay, they develop a strong sense of cooperation and loyalty.

Setting an Example

An important part of your job is to set an example. Supervisors who are enthusiastic about their jobs, who are friendly and good-humored, and who foster harmony among their associates, do much to create a cooperative attitude in their group by their own example.

Giving Credit

Always give credit where credit is due, and never forget to pass on any credit given to you. Good supervisors give full credit to the team. Frequent and sincere praise is a wonderful incentive to individuals and to the group as a whole.

Handling Personal Problems

Personal problems arise almost daily in any group of people. You must tactfully handle each problem. Rumors about any of your personnel, disputes between personnel, family troubles, and similar situations can disrupt the efficiency of the group. Usually, positive action from you is required.

Try to solve problems that arise in your work center or between crewmembers, if solving those problems is within your capability. This does not mean that you should act as a chaplain, a marriage counselor, or a psychiatrist. It does, however, emphasize the need for you to be able to recognize the problematic symptoms that require special help so that you may arrange to have those problems placed in the proper hands as soon as possible.

In each case, first listen and get all the facts. Then tactfully bring about a solution so that all personnel concerned may work in harmony. The best course of action is usually to face problems squarely and honestly, bringing them out into the open on a one-to-one basis and solving them before they become major situations.

Breaking in New Personnel

Breaking in new personnel is a vital facet of your job as a supervisor. Suppose you are in the middle of a rush job. You are behind in your paperwork. You have been called to the phone unceasingly. Nothing has gone right. Then, right in the middle of it all, a new crewmember arrives. The most important thing at the moment is to get this person off to the right start.

Remember, the impressions made during the first days on the new assignment will carry over for a long time to come. The member's future attitude concerning the outfit is being molded, good or bad, during this period.

The following suggestions should assist you in properly handling new members of your crew:

● Put new arrivals at ease. Give them a cordial greeting. Make them feel that you are glad to have them. Be tactful. Get their names correct and remember them.

● Show personal interest. Seek out topics of mutual interest. Ask about their previous work and their families, and ask if they have been properly berthed.

● Give them the right point of view. Let them know you have confidence in them and that you expect and demand good work. Now is the time to build proper attitudes and loyalty.

● Tell them about the work. They are eager to know what they will be doing. Show them how their jobs will fit in with the whole picture and help them feel that their jobs are important.

● Give them essential information. Do not confuse them with endless details. Write down for them some of the essential information, since, at this time, they have so much other new information to remember.

● Introduce the new personnel. Always introduce newcomers to each member of the crew and to any others whom they need to know.

● See them again at the end of the day. Ask them how they are doing and give them a few words of encouragement.

If you cannot personally carry out these suggestions, put new personnel in the hands of a trusted subordinate who is well-qualified to handle the situation. Explain the reason for your unavailability and tell the new arrivals that you will want to talk with them later in the day—and be sure to do it.

PERSONNEL PROBLEMS

Misunderstandings can arise in almost any working situation, such as a complaint in good faith, a disagreement between crewmembers, or disobedience. These are problems that you must face and attempt to solve as expeditiously as possible.

Whenever you have a problem to solve, you should use a logical, proven method to guide you to a solution. Problem solving is primarily a method of thinking based on scientific procedures. This section shows you how to use a scientific approach to solve a problem.

One of the most important steps in learning to use a scientific approach is accepting the need for a logical, orderly procedure for evaluating a problem. An excellent procedure is the *six-column approach.* Over the years, this method has given excellent results.

In the six-column approach, the column titles represent the phases and sequence of the problem-solving process: (1) facts, (2) problem, (3) possible actions, (4) consequences of possible actions, (5) accepted courses of action, and (6) cause of the problem.

A shallow look at the system may lead you to think that the process is fine, as long as time is not an important element. You may think you won't often have enough time to use it. A deeper look, however, will show you that this process, properly learned and properly used, applies to any problem, regardless of the time element. You must then realize that time is relative. Extra time spent at the beginning saves time later on.

By using a scientific approach, you will make better use of whatever time you have available to solve the problem. Some problems require lengthy consideration. Others, however, may require only a few seconds to determine the facts, identify the problem, consider a course of action, and act. After you have used the process several times, it should become automatic whenever you encounter a problem.

Now place yourself in the hypothetical situation of being the leader of a group of problem solvers as

you study the six basic steps in problem solving, using the six-column approach.

Step 1—Facts

Determine the facts. All good objective reasoning is based on facts, things, or events that have actually occurred. People often interject assumptions that are subjective and have not occurred. Insist that your group deal only with the facts as outlined in each problem; or, if an assumption is accepted, ensure that it is identified as an assumption, not as a fact.

Delay discussion of any facet of the problem until you are sure you have obtained all pertinent facts. After the group has discussed the problem and agreed on the facts, list the facts under column 1.

Step 2—Problem

Define the problem. In any human relations incident or any other problem, there are usually two elements or problems—the apparent and the underlying. You will notice this when your group tries to define the problem. Most people can easily see the immediate problem: the equipment does not work, someone is in trouble, relationships are poor between people, etc.

The person must face all these problems. A person can often define the immediate (apparent) problem, but usually he must be trained to define the underlying difficulty. A statement defining the problem should be written out; an oral statement is not enough. The group should analyze the written definition critically and come to an agreement concerning it. Only then is the group equipped to explore the best possible course of action. Enter the result in column 2.

Step 3—Possible Actions

Determine possible solutions. Most problems have many possible courses of action to achieve solutions. Before you decide on any single course of action, try to determine all the courses of action. In handling technical or human-relations problems, you may find

that there are many alternative solutions. In this phase, you are not evaluating the course of action; you are merely listing the alternatives. Enter the possible courses of action under column 3.

(Step 4 determines, to a large degree, which of the courses of action from column 3 you may effectively use in solving the problem.)

Step 4—Consequences of Possible Actions

Determine the consequences, if any, of possible actions. No leader worthy of the name leaps to the solution of a problem without considering the consequences of all proposed courses of action. "What will occur if I do this instead of that?" You, as a military leader, are responsible for the action you take. Therefore, you must be completely aware of the consequences of each decision you make. Consider the relative importance of each course of action. Enter the result in column 4.

(Since step 5 involves the use of manpower and/or materials, you must consider this step carefully to obtain the most economical result. This phase of the problem requires much discussion and thought.)

Step 5—Accepted Courses of Action

Determine the accepted courses of action. One (or a combination) of the possible actions will be chosen as the solution to the problem. Do not think that you need unanimous agreement to achieve a solution.

Usually, you should give serious consideration to the opinion of the majority; however, the final decision is your responsibility as leader, based on your personal evaluation of the facts and recommendations submitted. Enter the result in column 5.

Step 6—Cause of the Problem

Identify the cause of the problem. Hypothetically, you have now solved the immediate problem; it no longer exists. What is left for you to do? You should ask, "What caused this problem to occur?" By asking

this question, you have begun to think in terms of preventing the problem from reoccurring, if possible.

You should give considerable time and discussion to this phase. To be a good leader, you must develop insight to determine the basic causes of problems. Good thinking in this area can help the organization to function smoothly. The goal is to prevent problems from occurring, rather that solving them after they occur. Remember, if you don't make a concerted effort to prevent problems, you will have to make a concerted effort to solve them.

DISCIPLINE

Good human relations between supervisors and their work force are easy to spot. The upbeat, enthusiastic atmosphere in the work center indicates that supervisors appreciate and understand the workers; they have their workers' interests and welfare at heart, and they respect their workers' opinions, knowledge, and skills.

Human relations factors that lead to positive discipline include

● understanding and practicing the principles, standards, rules, and regulations necessary to good conduct;

● knowing their personnel as individuals and treating them fairly and impartially;

● developing the feeling of belonging and security within the group;

● getting information to the group through proper channels and promptly eliminating rumors;

● using authority sparingly and always without displaying it;

● delegating authority to the lowest echelon possible;

never making issues of minor infractions or personal issues of disciplinary matters;

● displaying confidence in the group, rather than suspicion of it (workers are reluctant to betray expressed confidence);

● training the group technically;

● looking after the mental and physical welfare of the group;

● trying to avoid errors, but showing willingness to admit errors when they are made;

● developing loyalty in the group and of the group; and

● knowing that because of individual differences, discipline cannot be a completely routine matter.

Some of the principal causes of misconduct are discontent, idleness, lack of interest in the job, misunderstanding of regulations, resentment, and emotional strain. The wise supervisor avoids the necessity for formal discipline by removing as many of these causes as possible.

One of the major problems you may encounter as a supervisor is maintaining discipline in your crew. Discipline can be both positive and negative, and includes giving orders and reprimanding subordinates for misconduct.

Determining Positive and Negative Discipline

Discipline can be both positive and negative. It is much more than reprisal for wrongdoing. Actually, it may also exist where no disciplinary actions ever have to be taken. Most people realize they cannot get along without self-discipline and that no organization can function and no progress can be made unless individuals conform to what is best for the whole group. The supervisor who can build the spirit of coopera-

tion, which is the basis for true discipline, has few discipline problems.

The following paragraphs differentiate between positive discipline and negative discipline:

● *Positive discipline is* the force that originates within individuals that prompts them to obey rules and regulations. People in a Navy organization do what is right because they do not want to hurt the group as a whole and because they believe that by following the accepted rules, they will help the group achieve its objectives. This is called *esprit de corps.* The supervisor who builds esprit de corps has little need to resort to negative discipline. Discipline and high morale go hand in hand. Positive discipline is closely tied to the admiration and respect personnel have for their supervisor. This, in turn, is based on good human relations.

● *Negative discipline* is fear based on the threat of punishment. It originates from without. If you subject people to negative discipline, they will do only enough to get by when you are watching. Then, when you leave for a few minutes, discipline also leaves. Their only motivation for working is fear of reprisal.

Giving Orders

A good supervisor gives much thought to the *art* of giving orders. Properly giving orders really is an art that you must practice. Proficiency in giving orders will reap many benefits. Since most disciplinary problems are the result of personnel not carrying out orders, this subject cannot be overemphasized. There are three basic types of orders: (1) direct command, (2) request, and (3) suggestion.

You should always consider (1) the situation under which you will give the order, and (2) the personnel who will carry out the order. The following subsections discuss the three types of orders, based on each of these two considerations.

SITUATION.— The situation may involve a direct command, a request, or a suggestion.

● Direct command: In a military formation, the direct command, or formal type of order, is always used. It is also used when there is immediate danger, fire, accident, disobedience of safety rules, etc.

● Request: The request is the best type of order to give for daily routine work. It is used for most orders given by good supervisors.

● Suggestion: The suggestion is excellent when you wish personnel to proceed on their own when you do not know exactly how the job should be done. It is also excellent for building initiative. Suggestions build morale and show your personnel that you have confidence in them. However, it is not clear-cut, and you certainly will have no recourse if the job is not done properly.

PERSONNEL.— The personnel involved in receiving orders may respond to a direct command, a request, or a suggestion.

● Direct command: The direct command is normally used to direct careless, lazy, insubordinate, or insensitive personnel. Except in unusual situations, the direct command is normally reserved for those who must be spoken to in a firm and positive manner.

● Request: The request is, by far, the best type of order to use with most personnel. To them, a simple request in the form of a question has the full effect of a direct order. Moreover, the request fosters a feeling of cooperative effort and teamwork.

● Suggestion: The suggestion is excellent for those to whom a suggestion is sufficient. It stimulates people to show what can be done. People with real initiative like to work on their own. In dealing with sensitive, highly intelligent personnel, a mere hint that something is desired should be enough to get a project started. Toss this person an idea by saying something like, "Petty Officer Jones, I wonder if it would be a good idea to do this?" or "Seaman Smith, do you have any ideas on how this can be done?" This makes the individual a key person in the project and provides a feeling of importance. It also shows that you have

confidence in that person and provides excellent training.

Although the situation and the individual are the prime considerations in giving orders, the attitude and the tone of voice in which they are given are also very important. Whenever you give orders, apply the five Cs: clearly, completely, concisely, confidently, and correctly. Also, avoid orders that are unnecessary.

Reprimanding

When one of your subordinates disobeys or fails to carry out an order, you must take action. You would be remiss in your duties as a supervisor if you did not. The most common type of discipline is the simple reprimand.

The reprimand must be fitted to both the person and the situation. A sensitive person might be crushed by the slightest hint of something wrong, while an insensitive person could easily deal with a severe rebuke. The reprimand should be a calm, constructive action, not destructive. You are interested in the underlying causes, not in getting even with the person.

Failure to act when a reprimand is due is a sign of poor supervision. No one likes a supervisor who is too lenient or who is ingratiating. If one person gets by with doing something wrong, the supervisor may lose control. On the other hand, issuing too many reprimands is just as bad.

A good supervisor knows how to draw a fine line between harshness and leniency. A person with a keen understanding of human nature should be able to discern this line. Be sure to practice the three Fs of discipline: fairness, firmness, and friendliness.

The following list gives recommended suggestions for administering reprimands:

● Get all the facts.

● Never reprimand a person in front of others

● Put the person at ease, Find a word of praise first, if appropriate, to take out the sting.

● Never use sarcasm, anger, profanity, or abuse.

● Fit the reprimand to the individual.

● Present the facts, (Have all the facts at hand; the person may attempt to deny the charge.)

● Ask the person why there was an error.

● Try to get the person to admit the mistake.

● Never threaten; this person knows how far you can go.

● Once the wrong is admitted, the reprimand is over.

● Leave on a friendly note, and let the person know the incident is closed. Never nag.

● Follow up later with a casual and friendly contact at the work center.

To test the effectiveness of your reprimand, ask yourself "Did it build morale?" Remember, you must get along with this person in the future; you must keep this person as a working, producing individual; and you must be able to get along with your own conscience. You do not have to be soft, but remember that there is a great deal of difference between dignity and arrogance.

COMMUNICATIONS

The art of good communications is vital to your success as a supervisor. Communications may be broken down into two broad categories: internal and external.

Internal Communications

To achieve good internal communications, keep your personnel informed. They should know the reasons

behind any changes that affect them. If security prevents you from giving reasons, let them know that security is the reason. They will understand.

Communications is a two-way street. You, as the supervisor, need feedback from your crew on everything that is happening so you can make decisions and formulate plans. Be open and free in communicating with your people and encourage them to discuss their feelings and opinions.

Good internal communications also means each person is talking to every other person. Work centers and work groups should communicate freely with each other to develop harmonious relations. Investigate any breakdown in communications and try to correct the problem immediately.

External Communications

Without proper external communications, you will not be able to coordinate complex jobs involving a number of work centers and/or divisions. You must develop good lines and methods of communications external to your work center. Running systems tests may involve several work centers aboard ship and, in some cases, other ships or activities. Unless you can effectively communicate your requirements to each work center, you will be unable to successfully complete the systems tests.

Much of your external communications will be in correspondence. The correspondence will be of little value unless you have an effective method of keeping track of the information and ensuring that it gets to the ultimate users. You should develop controls to ensure that information gets to the people who will benefit the most from it. If you do this, you, the supervisor, will be the winner.

ASSETS

Effective supervisors make the best use of their assets, both personnel and material. To do this, you must thoroughly understand the limitations and capabilities of your personnel and know if there are any major deficiencies in your material assets.

Personnel Assets

Personnel assets are the most complex to manage, as well as the most flexible to use. Combat systems/weapons personnel are responsible for maintaining a variety of electronic and digital equipments and systems. Because the equipments and systems maintained by electronics personnel are very complex, long periods of training are required to qualify personnel for the maintenance role.

Personnel graduating from formal schools are assigned Navy enlisted classification codes (NECs). There are many different NECs assigned to the FC rating; your division will normally have several of these NEC requirements. At the present time, almost all FCs are assigned by the Bureau of Naval Personnel (BUPERS) according to the requirements of the NECs.

Division personnel are the keys to your success as the division supervisor. Without their continuing loyalty to you and their willingness to follow in the direction that you lead, you will be unable to effectively achieve the required results. You may be a good technician, but you cannot do everything yourself.

Material Assets

Material assets are all parts, tools, test equipment, and workspaces that you need to perform the division's maintenance role. A deficiency in any one area makes it difficult to perform your job in the most efficient manner. By carefully surveying your division and identifying its shortcomings, you can take corrective action and improve the conditions under which your personnel will be working.

MATERIAL AVAILABILITY.— Material availability determines how long it takes to complete a maintenance action. A spare part for a particular piece of equipment could require from 6 months to over a year to acquire from a vendor who has to produce it on a special order. There is little the supervisor can do about this situation. There are many other situations, however, in which the supervisor can play a controlling role.

As a supervisor, you will control (1) tools, (2) test equipment, (3) consumables, (4) safety equipment, and (5) other materials specific to your work center. Therefore, you must respect your personnel by having the correct material available for them to perform their preventive and corrective maintenance without delays caused by lack of material.

MATERIAL CONTROL.— The most effective way to control material assets is to maintain accountability. Mass issuing of tools to all work-center personnel represents a major expense, and it usually means the tools will not be available when needed.

Loaning test equipment items to every work center that wants to borrow them may mean that the equipment will not be in the correct spaces when you need it. As the supervisor, you should always be willing to help others, but you must have a system to keep track of material assets.

You may make a simple equipment checkout log containing item description, serial number, work center, name of the person to whom the item is checked out, date loaned out, date returned, and space for the lender's initials. Logging this information will allow you to track tools borrowed and returned. However, this accountability system works only if everyone uses it.

Tools are government property and, as such, are accountable items. Thousands of dollars are needlessly spent on tools each year because tools are misplaced or are carelessly left lying around to be lost or stolen.

Space Assets

Sometimes it seems as if combat systems/weapons spaces are designed by people who will never have to use them for maintenance. Ashore, the facilities are normally adequate to provide proper maintenance. Aboard ship, however, there is little space that is not dedicated to some vital function.

As a supervisor, you may feel there is little you can do about the inadequacies of your division spaces. Sometimes this may be true; but, in most cases, if you analyze the situation carefully, you can usually devise

better methods of arranging the workspace. This, in turn, should result in more-efficient working conditions.

Consider each area on a case-by-case basis. Brackets, stowage bins, book shelves, and collapsible workbenches may be installed in an amazing number of places that previously may have been overlooked. Involve all your people in the planning.

If you are fortunate enough to be involved in the planning stages of a division maintenance area, you should consider the following items:

● Is adequate lighting available?

● Are adequate 60-Hz and 400-Hz (if applicable) power receptacles available?

● Is the layout of the work center the most effective use of the space?

● Are special safety devices or safety precautions needed in the work center?

● Is the parts storage area centrally located to all workstations?

These are just a few of the questions that you should ask. The only limits to how well a space can meet your needs are the space available and your ingenuity and imagination. If space is available, you should be able to develop the plans for an efficient work area.

TRAINING

Training for personnel may be either formal or informal, either off site or on site. As a supervisor, you will spend a good part of your time training your work force or arranging for training. Much of this training is informal, such as showing a new technician how to align or adjust a radar repeater or how to use a technical manual.

A good training program is balanced. The better trained your work force is, the more readily your division can perform the required maintenance with which it is tasked.

OFF-SITE TRAINING

Formal off-site training is composed of factory schools, class A and C schools, and fleet classes.

● <u>Factory</u> <u>schools</u> are held by various vendors or contractors. They are the costliest form of training available. In addition to travel finds, fill or partial per diem usually must be funded by the type commander (TY-COM). These schools are often the only source of training available for new types of equipment being installed on new or modernized vessels.

● <u>Navy</u> <u>class</u> <u>A</u> <u>and</u> <u>C</u> <u>schools</u> are designated class A or class C to identify the level and type of training offered. Class A schools offer the basic technical knowledges and skills required to prepare personnel for job-entry-level performance and further specialized training. Class C schools offer the advanced knowledge, skills, and techniques required to perform a particular job in a billet. To send your personnel to these schools, you must obtain training quotas. Your educational services office (ESO) can assist you in obtaining training quotas.

● <u>Other</u> <u>formal</u> <u>classes</u> are available from fleet technical support centers (FTSCs). The classes offered cover a wide range of equipment in use in the fleet and some of the basic skills required to maintain this equipment. FTSCs announce scheduled classes via messages to all local units on a monthly or quarterly basis, depending on the location of the FTSC.

In addition, the *Catalog of Navy Training Courses (CANTMC),* NAVEDTRA 10500, lists all formal courses of instruction offered to naval personnel. It contains the following information on each of the courses listed: location, length, class of school (A or C), convening frequency, purpose, scope, prerequisites, quota control, and reporting designation. This publication is an invaluable aid for supervisors as they plan off-site training. It is normally located in the ESO.

ON-SITE TRAINING

On-site training (shipboard) is necessary throughout the naval establishment. Technicians reporting to their first duty station from a C school have much to learn about their particular work-center or work-group operation and system configurations. The courses of instruction that FCs attend usually provide only the fundamental theory and skills required to perform the minimum maintenance on electronic and digital equipments. Most C schools do not have the manpower or equipment available for the students to pefrom all the maintenance tasks they will ultimately be required to do.

Most of the hands-on training that FCs receive is at their first duty stations. As a supervisor, you will be responsible for providing the extra training the new FC will require to become a competent, technically skilled technician.

You can do this by combining the following training methods:

● <u>On-the-job</u> <u>training:</u> On-the-job training is one of the most widely used and easiest ways of providing training.

● <u>Personnel</u> <u>qualification</u> <u>standards:</u> The personnel qualification standards program is designed to develop a person's ability to stand a watch or maintain a piece of equipment.

● <u>Formal</u> <u>shipboard</u> <u>training:</u> Formal shipboard training is the best way to train large groups of people, but it requires more effort and preparation than most other methods.

On-the-Job Training

On-the-job training (OJT) is, by far, the simplest and easiest way to train. It can be used almost anytime that you, the supervisor, desires. In fact, you perform OJT many times a day without ever thinking about it. Showing a new FC how to perform radio frequency (RF) transmitter alignment, how to perform RF power measurements, and how to perform a receiver sensitivity check are all examples of OJT.

When used wisely, OJT allows new FCs to gain hands-on experience under operational conditions that normally cannot be acquired at a formal school. By emphasizing OJT, you will be able to increase the technical competence of your new personnel in a shorter

period of time. Although you can use OJT informally, you should also schedule it as part of your work center's in-rate training program.

Personnel Qualification Standards

The Navy's Personnel Qualification standards (PQS) program is part of training and qualifying new personnel. It is also used to cross-train and requalify experienced personnel. The concept of standards for personnel qualification is not new in the Navy. For many years, various forms of qualification standards have been in use.

Observing the performance of new technicians in a division routine helps the supervisor decide when the technicians are ready to stand a watch or work on equipment alone. PQSs are very beneficial and are required in a well-managed training program.

The success of the PQS program in your division or work center depends on you, by your taking the following five steps:

1. Maintain an adequate PQS reference library of technical, procedural, and rate training manuals.

2. Manage effectively the overall division work-center training program.

3. Have a program to prepare work-group supervisors as PQS qualifiers. Supervise and assist designated PQS qualifiers.

4. Have realistic individual qualification goals and time limits.

5. Monitor individual qualification progress.

Formal Shipboard Training

The most difficult training to perform is that aboard ship or in a busy maintenance shop. There are many variables to consider when you attempt formal training aboard ship. First, consider the preparation required for presenting a formal class.

You should consider the following four factors when you are preparing for a formal training session:

1. <u>Class lesson plans</u>: Are adequate up-to-date lesson plans or instructor's guides available? If lesson plans (LPs) or instructor guides (IGs) are available, you should carefully screen them to ensure that they contain the topics you want to present and all of the points you want to emphasize-the need-to-know material. If LPs or IGs are not available or are inadequate for your needs, prepare new ones. Whenever you start to prepare an LP or an IG, you should remember one important point: Instructors are the experts; they should be fully knowledgeable in the subject area. If you are hazy on some areas, get out the books and refresh your memory. Instructors who have not adequately prepared lose their credibility when they falter or hesitate while covering a subject. Figure 3-1 shows an example of a lesson plan outline.

2. <u>Class schedule</u>: Can the presentation be scheduled at a time that will give maximum attendance? Schedule formal class presentations as early in the day as possible when people are rested and are ready to start the day. They are most likely at that time to be in a more-receptive mood than after they have already worked a full day and are waiting for liberty call. There are always interruptions to class schedules. By planning in advance and ensuring that all persons attending are aware of the schedule, you can minimize the effects of outside events. Keep your training sessions short and schedule them over a number of days. Trying to cover too much material in 1 day may produce poor results due to interruptions because of ship evolutions, loss of interest because of the length of the class, or the technical nature of material covered.

3. <u>Class location:</u> Is there a suitable location for the training session? This is often a problem on small ships since space is at a premium. At a shore station, training rooms are usually available. An adequate space for a classroom should be as comfortable as possible, well-lighted, arranged so the entire class can see the instructor and vice versa, free from outside noise, capable of seating the class personnel, and adequately equipped with the necessary training devices.

4. <u>Class achievement</u>: How can you measure class achievement? Written tests and performance tests are the two primary methods of measurement. These tests give you, the instructor, an idea of how well you presented the material. Prepare your written tests before class, using the IG as a source topic to test. Include only questions that are based on the need- to-know information that you presented during the lecture or demonstration. Prepare your performance tests in the same way as you do written tests. Require each student to perform the procedure while another student assists. If necessary, you can prepare job sheets to help the students in a particularly complex procedure. Also, two students may take turns performing the same procedure as you observe and grade their performances. Wherever a hazardous condition may exist, always emphasize safety precautions on the job sheet.

PART OF LESSON PLAN	INSTRUCTOR'S ACTION FOR LESSON PLAN
TITLE	Write the title and the lesson number.
OBJECTIVES	List the learning objectives, making them realistic.
MATERIALS (1) Training Aids (2) References	(1) List the training aids. (2) List the sources from which this material was obtained.
INTRODUCTION	Introduce the lesson and create interest in it by possibly relating a short story to catch the trainees' interest. (The related story should key up the importance of knowing the lesson.)
PRESENTATION	Place the vital information to be taught in this portion of the lesson plan in outline form. Outline it to provide a coordinated flow of information.
APPLICATION	Prepare a list of questions in advance to see if the trainees have absorbed the presented material. (Include the answers to the questions for reference.)
SUMMARY	Review the vital elements of the presentation,
TEST	Administer a small quiz, if desired.
ASSIGNMENT	Give an assignment to reinforce the lesson, if desired.

Figure 3-1.-Example of a lesson plan outline.

Training Presentation

The training presentation is the culmination of your effort and preparation. For the training to be effective, you must present the prepared material in an effective manner. All the effort you put into preparing for the training session may be negated if you do not give an effective presentation.

The following list gives some of the pitfalls you should avoid when giving a formal presentation:

● NEVER talk in a monotone voice. It will put your class to sleep.

● NEVER jingle coins or keys in your pocket. It will divert the attention of the class from the topic you are discussing because they are distracted by what you are doing. If you have the habit of jingling coins or keys, remove them from your pockets before you begin the training session.

● NEVER talk during a loud burst of background noise. Your class will not be able to hear you.

● NEVER use distracting mannerisms, such as tugging your ear or playing with a ruler or a pen. The class will pay more attention to what you are doing than to what you are saying.

● NEVER "talk down" to the class. It will cause animosity toward you, and you will lose the attention and interest of the class.

● NEVER lose control of the class. They will be distracted and will not learn.

Keep your presentation interesting, accurate, and to the point. Toss in a comment on personal experience when you want to emphasize a certain point, or ask questions if you are losing the interest of the class or of an individual. The object is to keep your class working and receptive to the information you are presenting.

Training Topics

A wide variety of topics are appropriate to a combat systems/weapons division. In addition to combat systems/weapons, you should have lesson plans and training for other topics, such as safety, use of test equipment, electronics casualty control, general military subjects, and basic electronics.

Chapter 1 discussed four standards that you can use as a basis for your training program: (1) naval standards, (2) occupational standards, (3) personnel qualification standards, and (4) equipment standards.

● Use the applicable *naval and occupational standards* to tailor your training program to cover the professional and technical requirements of your personnel.

● Use the applicable *equipment standards* when you train personnel on new equipment or equipment with which they may not be familiar. Stress the impor-

tance of equipment standards to personnel before they begin maintenance on equipment to emphasize the importance and quality of the equipment performance.

Training Publications

The training chapter of *Standard Organization and Regulations of the U.S. Navy,* OPNAVINST 3120.32, discusses the quarterly forecast, weekly schedules, and various personal and group training records that must be kept.

The *Catalog of Nonresident Training Courses,* NAVEDTRA 12061, lists training manuals and correspondence courses. The *Personnel Qualification Standards Catalog,* NAVEDTRA 43100-5, contains an alphabetical listing of PQS packages.

Some other sources of information are

● TYCOM directives and work-center directives;

● *Manual of Navy EnlistedManpower and Personnel Classification and Occupational Standards,* NAVPERS 18068; and

● *Catalog of Navy Training Courses (CANTRAC),* NAVEDTRA 10500.

TRAINING SCHEDULES AND RECORDS

The scheduling of shipboard training requires the careful attention of the training officer, the department heads, and the division officers to minimize conflict with the activities of the ship and to ensure that the time allotted to training is used to the best advantage. The only justification for a record of training is that it provides continuity to the training program by indicating what training has been done.

When developing a training schedule, you must consider the ship's operating schedule and yard overhaul periods assigned by the TYCOM. A yard overhaul takes place approximately every 3 years. See figure 3-2.

A TYPICAL TRAINING CYCLE

Shipyard Overhaul Period (Availability)	Months out of Shipyard

Preparation for Refresher Training; Calibration and

   Alignment of Equipment; RFS; ISE; Commence

     Refresher Training . . . . 1 (Jul)

        Refresher Training; ORI . . . . 2 (Aug)

        25-Knot Economy Trial ⎫ . . . . 3 (Sep)

        Commence Competitive Year ⎭

                                       4 (Oct)

                                       5 (Nov)

                                       6 (Dec)

                                       7 (Jan)

                                       8 (Feb)

Administrative Inspection . . . . 9 (Mar)

    Full Power Trial . . . . 10 (Apr)

                                      11 (May)

    Complete Competitive Year . . . . 12 (Jun)

    Economy Trial ⎫ 13

    Commence Competitive Year ⎭

Operational Readiness Inspection 14

                                       15

                                       16

                                       17

     Economy Trial 18

                                       19

     Material Inspection (INSERV) 20

     Administrative Inspection 21

                                       22

    Full Power Trial; Prepare for

    Shipyard Overhaul 23

    Complete Competitive Year 24

    Shipyard Overhaul

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Figure 3-2.-Example of a ship's training cycle adjusted to yard overhaul periods.

Long-Range Training Schedule

The ship's training cycle is tied closely to the periods of time between overhauls. The long-range training plan, prepared by the training board, is the basic instrument for planning and carrying out the ship's training requirements.

The long-range plan contains only information of major importance needed to ensure that the overall coordination and planning of the training effort are effective. It is not concerned with minor details of the ship's training schedule.

In effect, the plan outlines the periods of time that are to be considered as all-hands evolutions, during which little personal training may be scheduled. These events include major inspection, trial, and maintenance periods; competitive exercises; off-ship team training; general quarters, general drills; etc. This plan becomes the framework for preparing the more detailed quarterly forecast of all-hands evolutions and the weekly training schedules.

Quarterly Forecast of All-Hands Evolutions

Based on the long-range training schedule and general policy guidance from the commanding officer, the training officer prepares a quarterly forecast, or estimate, of the number of normal working hours required to carry out evolutions involving all hands. On the basis of that estimate, the training officer also forecasts the number of hours that are available for individual division activities.

When the ship's employment schedule is reasonably firm, the training officer prepares the quarterly forecast simultaneously with the long-range training schedule. At other times, the training officer can forecast only as far ahead as reliable estimates can be made, perhaps monthly or biweekly.

The analysis is based on a normal work week of 35 hours per person, 7 hours per day for 5 days. Obviously, shipboard personnel work many more hours a week than 35. Watch standing, equipment repairs, general quarters, off-duty studies, etc., take up much time beyond the usual work week. The quarterly forecast of all-hands evolutions, however, must be based on the realistic assumption that most training takes place during normal working hours.

In preparing the forecast, the training officer indicates the total number of crew-hours that must be reserved for each all-hands evolution. Thus, during a week in which type training is to be conducted, 31 hours may be reserved for one all-hands evolution and 2 hours for another evolution. After the training officer has completed the calculations, there may be 10 crew-hours reserved for training. On the basis of this computation, the training officer may then inform all division officers of the number of hours available for division activities (35 hrs -10 hrs = 25 hrs).

Division Quarterly Forecast of Activity

As a leading FC, you will generally be called upon to assist the division officer with the division quarterly forecast, at least the portion concerning FC personnel. The division officer may prepare a quarterly forecast to show how the time available for division activities is to be divided among watch standing, lessons, drills, and routine operations.

This forecast is optional because small divisions, such as those on a destroyer, receive little benefit from its use. It is most helpful in the control of large groups of personnel participating in diversified activities.

The forecast is simply a weekly breakdown of total hours available during the quarter. First, the hours needed for watch standing are subtracted from the total. The remaining hours are divided according to the existing situation. Some routine maintenance, for instance, may have been included because of operational commitments, quality monitoring, or inoperative equipment. If so, the training cycle maybe adjusted to absorb the extra time.

A good rule of thumb, however, is a 50-50 approach to training versus maintenance, unless equipment becomes inoperable or an operational emergency arises.

Quarterly Training Schedule

Preparing a quarterly schedule requires careful planning and imagination to ensure completion of individual and team training. The division officer is responsible for maintaining this schedule, and it is generally posted in an area where all FC rates have access.

The leading petty officers generally meet with the division officer to plan the quarterly training schedule, depending on the ship's operating schedule, the quarterly forecast of all-hands evolutions, and the administrative and maintenance needs of the division.

Most of the schedule is devoted to specific subjects that are to be taught during indicated weekly periods. A certain amount of instruction should take place during every watch, but a definite schedule ensures that each of the ship's FCs drill and exercise at least once per quarter, operational conditions permitting.

Weekly Training Schedule

Training petty officers should, at the end of each week, consult the quarterly training schedule and prepare a training program for the following week. The weekly schedule should include pertinent information on the long-range training schedule and on training items allocated for that week from the quarterly training schedule. Any remaining training time may be used as a pickup of any lessons, drills, exercises, etc., that may have been missed the previous week because of unforeseen circumstances.

After completing the weekly training schedule, the training petty officers should forward it to the division officer via the leading FC for approval and incorporation into the division officer's weekly division training schedule.

When space permits, the weekly schedule may include the names of instructors and locations and times of lectures and films. Additionally, any major maintenance activity, test, or inspection may be included in the weekly training schedule, which may then serve as a plan of the week.

The weekly schedule should provide three categories of training: (1) all-hands, (2) military, and (3) professional.

● *All-hands training* is best typified by the onboard know-your-ship requirements. These requirements generally apply to all newly reported personnel, regardless of rate or rating.

● *Military training* applies to the mandatory naval standards for all hands, according to paygrade.

● *Professional training* applies to personnel in a specific rating group, by paygrade.

Training Records

The responsible LCPOs should know at all times how much training has been completed and how much remains to be accomplished. Numerous records of individual training must be maintained to keep this information current.

To standardize record keeping, the Chief of Naval Operations (CNO) has developed four forms, one of which should be suitable for any record or schedule needed in the training program. One of the forms is the Weekly Training Schedule (OPNAV 3120/32).

The remaining forms are General Record, Type I (OPNAV 1500/30); General Record, Type II (OPNAV 1500/31); and General Record, Type III (OPNAV 1500/32). The main difference in these three forms is a flexible columnar arrangement that permits any one of them to be used for several records.

● Type I is useful in preparing the long-range training schedule, the quarterly forecast of all-hands evolutions, and the division quarterly forecast of activity.

● Type II maybe used to maintain both enlisted and officer records of training. Its broad column on the left of the sheet permits relatively lengthy entries, such as names, functions, or training requirements. The other columns are headed by individual blanks.

● Type III is resewed for scheduling instructional periods. The reverse side is a calendar with a space for each day of the year. Planned instructional periods are usually noted in pencil. Because of space limitations, the entries are coded or abbreviated. When a planned training period has taken place, the appropriate entry is made.

RECOMMENDED READING LIST

NOTE: Although the following reference was current when this TRAMAN was published, its continued currency cannot be assured. Therefore, you need to ensure that you are studying the latest revision.

Standard Organization and Regulations of the U.S. Navy, OPNAVINST 3120.32, Chief of Naval Operations, Washington, DC, 1994.

CHAPTER 4

COMBAT SYSTEMS, SUBSYSTEMS, AND MAINTENANCE

LEARNING OBJECTIVES

Upon completing this chapter, you should be able to do the following:

1. Identify the combat systems reference manuals for your class of ship in a combat systems environment.

2. Describe the subsystems that comprise shipboard combat systems.

3. Identify the objectives of the combat systems test and evaluation program.

4. Describe the functions of the ship's electronics readiness team.

5. Discuss integrated maintenance as it pertains to combat systems maintenance.

6. Identify maintenance testing required in a combat systems environment.

7. Describe the goals of fault isolation.

INTRODUCTION

Compared to older combatant ships, today's combatants have more, and increasingly complex, electronics and weapons equipment and systems. Therefore, changes must be made to the traditional organization of division responsibilities. This means combining some of the responsibilities of the combat systems/weapons department.

In the past, technicians were only concerned with maintaining their assigned equipment so it would operate when it was needed. Now, under the combat systems concept, technicians must also ensure the accuracy of their equipment and system outputs into the combat system. Therefore, technicians must cross traditional boundaries and become familiar with the operation and capabilities of the overall system.

The outputs of combat systems equipment into the combat direction system (CDS) and weapons system control equipment must be accurate (within assigned standards): Without accurate signals and data, the ship may not be able to perform its combat mission.

Current practice has one officer, the combat systems/weapons officer, in charge of all weapons systems (all weapons and electronics subsystems) maintenance. This integrates the maintenance of all electronics and makes the ship more capable of fulfilling its mission.

In some configurations, it is possible that the engineering department will supply personnel for supporting systems, such as gyro distribution, cooling systems, primary power, and secondary power.

All subsystems of a combat system—weapons, search radar, communications, antisubmarine warfare, electronic warfare, and sonar—interface through the naval tactical data systerdcombat direction system (NTDS/CDS) subsystems. These collectively compose a single shipboard system.

All combat systems subsystems are very important to the overall readiness of combatants. As a senior technician and supervisor, you must work with your fellow combat systems technicians, supervisors, and operators to ensure a high state of combat systems readiness. Figure 4-1 illustrates the typical external components of a combat system.

COMBAT SYSTEMS REFERENCE MANUALS

Two reference manuals are vital to the training of personnel in the operations of combat systems equipment aboard ships. They are a combat systems training requirements manual and a combat systems technical operations manual. Both of these manuals are generic, ship-class-specific publications that may be obtained aboard your particular ship.

COMBAT SYSTEMS TRAINING REQUIREMENTS MANUAL

A combat systems training requirements manual (CSTRM) is developed for each class of ships in the force. It specifies the standards of technical and operational training expected for all operators and technicians of that ship class.

COMBAT SYSTEMS TECHNICAL OPERATIONS MANUAL

Sophisticated combat systems integration is rapidly replacing the single-system operations found aboard older combatants. To help these ships adopt and maintain these technologically advanced systems, the Chief of Naval Operations (CNO) has directed that each ship within a ship class with tactical data systems and related equipments installed be provided with a combat systems technical operations manual (CSTOM).

Developed specifically for each ship of a class, the CSTOM contains the necessary technical data to provide the technicians with all aspects of systems capabilities, operations, and maintenance.

Specifically, the CSTOM contains and organizes the technical data that shipboard personnel need (1) to operate and maintain the integrated combat systems, (2) to maintain material and personnel readiness, and (3) to define significant capabilities and limitations of the combat system.

The CSTOM is also a reference for the following topics:

● The integration of systems and subsystems.

● The readiness requirements for operational and maintenance personnel.

● The establishment of the ship's electronic readiness team to maintain on-line combat systems readiness.

● The provision of text and graphic materials to be used for both classroom training and self- instruction. Pictorial diagrams, rather than conventional block diagrams, provide more-realistic training. Data are presented in levels ranging from elementary to detailed, allowing presentations to be made at the appropriate educational level.

TACAN ANTENNA AS-3240/URN-26

HOMING BEACON

UHF RADIO ANTENNA
AS-1736/SAC

LAMPS III OMNI ANTENNA
AS-3275/SRO-4

INFRARED TRANSMITTER
T-436A/SAT-2

ANTENNA ASSY AS-3316/SLQ-32(V)

ANTENNA AS-A867/SRA-43
RF TUNER TN/436-43

ANTENNA NT-66096
(MODIFIED)

ANTENNA AS3330/SRN-19
(LOCATION TO BE DETERMINED)

ANTENNA LIGHTNING PROTECTOR

ANTENNA AS-3226/URC
IFF OMNI ANTENNA

AS-177B/UPX

ANTENNA GROUP OE-172/SPS-55

WIND ANEMOMETER

UHF ANTENNA
AS-1736A/SRC

IFF ANTENNA
AS-177B/UPX

2 TO 4 MHZ ANTENNA

MK 32
STIR ANT

MK 75 GUN MOUNT

CLOSE-IN WEAPON SYSTEM

PRAIRIE SYSTEM

MK 32 MOD 3
STARBOARD
TORPEDO TUBES

MASKER SYSTEM
AFTER BELT

MASKER SYSTEM
FORWARD BELT

AMPLIFIER FILTER AM-6491A/WSC-1(V)

ANTENNA AS-3018A/WSC-1(V)

ANTENNA ARRAY ASSY (V)
FOR AN/SLQ-32(V)(V) P & S

MK 126 MISSILE LAUNCHER
FOR MK 13 GMLS

SONAR DOME

MK 24 TDT
P & S

MK 92 CAS ANT

SIEMENS IFF

IFF OMNI ANTENNA
AS-177B/UPX

IFF ANTENNA AS-2196

SPS-49 ANTENNA

SRBOC
LAUNCHER

LAMPS III DIRECTIONAL ANTENNA
AS-3274/SRO-4

LAMPS III OMNI ANTENNA
AS-3275/SRO-4 MOUNTED ON
FAR BOOM BEYOND SPS-55 ANTENNA

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Figure 4-1.—Typical external components of a combat system (FFG-7 class).

COMBAT SYSTEMS SUBSYSTEMS

Because many subsystems comprise an overall combat systems, it would be impractical to cover all the subsystems within this chapter. We will, therefore, discuss only a few of the major subsystems found aboard one ship class, the *Oliver Hazard Perry* (FFG-7).

All subsystems are very important to the readiness of the overall combat systems. Therefore, as a senior technician and supervisor, you must work with your fellow combat systems technicians, supervisors, and operators to ensure a high state of combat systems readiness.

COMBAT DIRECTION SUBSYSTEM

The combat direction system (CDS) subsystem is a digital, computer-based, data-processing system that allows the crew to integrate, control, monitor, and make tactical use of the ship's weapons systems. It also allows the use of task force weapons against air, surface, and subsurface threats.

Sensor data from radar, sonar, countermeasures, and remote communications links are collected, correlated, and evaluated by the CDS operational program. The CDS program then develops and sends recommendations and alerts to the console operators to enable them to use their sensor and weapon resources efficiently.

The CDS is composed of three major equipment groups: (1) data processing, (2) data display, and (3) data communications.

COUNTERMEASURES SUBSYSTEM

The countermeasures subsystem is a stand-alone subsystem that provides combat systems with detection, surveillance, identification, and engagement capabilities against threats the ship encounters during a mission.

This subsystem is divided into three functional groups: (1) electronic warfare support group, (2) acoustical countermeasures group, and (3) electronic attack group.

Electronic Warfare Support Group

The electronic warfare support (ES) group supports actions taken to search for, intercept, locate, record, and analyze radiated electromagnetic energy in support of tactical operations. Thus, ES equipment provides a source of countermeasures information required for threat detection, warning, avoidance, and target acquisition.

The ES group also receives triggers from shipboard emitters and develops the blanking pulses required to prevent the emitters from interfering with operating countermeasures equipment.

The major components of the ES group are (1) the Electronic Countermeasures Set, AN/SLQ-32 (V)2; and (2) the Blanker-Video Mixer, AN/SLA-10B.

Acoustical Countermeasures Group

The acoustical countermeasures (ACM) group provides deception devices designed to provide false or misleading acoustical targets for incoming acoustical homing torpedoes.

The major components of the ACM group are (1) the Torpedo Countermeasures Transmitting Set, AN/SLQ-25 (NIXIE); and (2) the Prairie/Masker System.

Electronic Attack Group

The electronic attack (EA) group provides false or misleading targets for incoming missiles or other weapons. In conducting mission assignments, the ship uses decoy systems primarily as a defensive measure.

The major component of the EA group is the Super Rapid Bloom Offboard Chaff (SRBOC), Mk 36 Mod 1.

CLOSE-IN WEAPONS SUBSYSTEM

The Close-In Weapons Subsystem (CIWS), Mk 15 Mod 1, provides the final defense against antiship cruise missiles (ASCMs) as part of the Navy's defense-in-depth concept. This subsystem engages and destroys ASCMs or aircraft that penetrate a ship's primary defense envelope. It also provides ASCM and antiair defense for ships operating in other than defense-in-depth situations and may be operated in either the antiair warfare (AAW) automatic or manual mode.

The CIWS is essentially a stand-alone weapons system consisting of (1) the Weapon Group, Mk 16 Mod 1; (2) the Remote Control Panel, Mk 340 Mod 1; and (3) the Local Control Panel, Mk 339 Mod 2.

UNDERWATER WEAPONS SUBSYSTEM

The underwater weapons subsystem provides the combat systems with an engagement capability against subsurface threats.

The underwater weapons subsystem is composed of (1) the Sonar Set, AN/SQS-56; (2) the tactical towed array sonar (TACTAS); (3) the Torpedo Tubes, Mk 32 Mod 5; and (4) the Control Panel, Mk 309 Mod 0.

LIGHT AIRBORNE MULTIPURPOSE SUBSYSTEM

The light airborne multipurpose system (LAMPS) is a computer-integrated, ship-helicopter subsystem that is capable of supporting both combat and noncombat missions. The primary combat missions are ASW and antiship surveillance and targeting (ASST). The secondary noncombat missions include search and rescue, medical evacuation, vertical replenishment, and utility operations.

The LAMPS consists primarily of the SH-60B Seahawk helicopter. This helicopter is an all-weather, airborne platform capable of carrying var-ious detection devices, including a sonobuoy receiver-transmitter for transferring sonobuoy data to the ship.

Shipboard LAMPS equipment consists of (1) the Telemetric Data Receiving Set, AN/SKR-4A; and (2) the Sonar Signal Processing Set, AN/SSQ-28.

MISSILE/GUN WEAPONS SUBSYSTEM

The missile/gun weapons subsystem enables the combat systems to deliver to a target an SM-1 missile warhead or a 76-mm gun projectile. This subsystem uses internally and externally generated raw data and processed data to provide the combat systems with weapons assignment, direction, and firing capability. This subsystem supports the combat system AAW, antisurface warfare (ASUW), and ASW missions.

HARPOON MISSILE WEAPONS SUBSYSTEM

The Harpoon missile weapons subsystem provides a self-contained, surface-to-surface missile system capable of launching the Harpoon missile at over-the-horizon surface targets. The Harpoon missile weapons subsystem is the ship's primary surface-to-surface weapon. This subsystem relies on the weapons control processor (WCP) computer and other elements of the combat systems for target detection, threat evaluation, weapon pairing, and target data functions.

SUPPORT SUBSYSTEM

The support subsystem is absolutely necessary to equipment operation. It consists of the following subsystems and equipments:

1. Dry air and nitrogen.

2. Liquid cooling and heating.

3. Ship power and distribution.

4. Ship parameters and distribution (own-ship heading, roll and pitch, own-ship speed and distance, and wind speed and direction).

5. Air conditioning and heating.

6. Interior communications.

COMBAT SYSTEMS TEST AND EVALUATION PROGRAM

The Combat Systems Test and Evaluation Program (CSTEP) is a combination of special teams, tests, evaluations, publications, and reports used to promote the overall effectiveness and readiness of shipboard combat systems.

This program has three basic purposes:

1. To increase the priority and focus given to combat systems during overhauls and ship restricted availabilities (SRAs);

2. To increase the efficiency and effectiveness of combat systems evolutions that occur during a ship's life cycle schedule; and

3, To provide a procedure for the intermediate unit commander (IUC) to use periodically in monitoring and assessing the combat systems organization and readiness of individual units.

The overall goal of the program is to develop and maintain a high combat systems readiness in each unit in the force. Its specific objectives are as follows:

● Maintenance: To improve the combat systems maintenance condition of the force.

● Overhaul planning: To improve the planning process for the combat systems portion of overhauls and major ship restricted availabilities (SRAs).

● Overhaul. To improve the quality of work conducted on combat systems equipment, to increase . the focus on combat systems integrated testing, and to ensure high levels of technical training during an overhaul or an SRA.

● Post-overhaul: To ensure maximum combat systems effectiveness immediately after overhaul by taking fill advantage of the basic and intermediate training associated with the overhaul or the SRA.

● Combat readiness: To maintain combat systems equipment readiness and training at a high level throughout the entire operational cycle of each unit in the force; to provide for efficient and effective management of combat-systems-related training, administrative, and readiness programs; and to provide a means to evaluate and report promptly a unit's combat systems readiness.

The CSTEP is composed of many elements, all of which are intended to increase combat systems readiness. Several of those programs are briefly discussed in this section. Table 4-1 shows a typical life cycle schedule of CSTEP key events.

Table 4-1.-Typical Life Cycle Schedule of Combat Systems Test and Evaluation Program Key Events

EVENT	SCHEDULE
Pre-Overhaul Test & Inspection (POT&I), Phase I	Start ROH - 12 months
Pre-Work Definition Conference (Pre-WDC) Meeting	Start ROH - 7 months
Work Definition Conference (WDC)	Start ROH - 6 months
Forces Afloat Work Definition Conference (FAWDC)	Start ROH - 3 months
Immediate Unit Commander Pre-Overhaul Assessment (POA)	Start ROH - 4 weeks
Overhaul Activity Delivery ITP to Ship	Start ROH + 6 weeks
Ship Force/Overhaul Activity Complete ITP Review	Start ROH +25%
Combat Systems Coordinated Support Team (CSCST)	Start ROH + 60%
Commence Combat Systems Level Testing	Start ROH + 75% or End - 12 weeks
Combat Systems Post-Overhaul Examination (CSPOE)	As soon as practicable after ROH, usually 2-3 weeks after
Training Readiness Evaluation (TRE)	End ROH + 5 weeks
Combat Systems Ships Qualification Trial (CSSQT)	End ROH + 9 weeks
Weapons System Accuracy Trial/Fleet Operational Readiness Accuracy Check (WSAT/FORAC)	End ROH + 14 weeks
DMSR	Before sailing for refresher training
Refresher Training (RFT)	End ROH + 15 weeks
Naval Gunfire Support (NGFS) Qualification	End ROH + 21 weeks
Combat Systems Operational Readiness Examination (CSORE), Phase I	5 months before deployment *
CSORE, Phase II	4 months before deployment
Combat Systems Readiness Review (CSSR)	Before deployment
CSORE, Phase III	2 months before deployment
Deployment	End ROH + 40 weeks
Command Assessment of Readiness and Training (CART), Phase I	During deployment
CART, Phase II	End deployment + 5 weeks
Interim Refresher Training (IRFT) (as required)	End deployment + 12 weeks
NGFS Qualification	End deployment + 16 weeks
CSORE, Phase I	5 months before deployment
CSORE, Phase II	4 months before deployment
CSSR	Before deployment
CSORE, Phase III	2 months before deployment
* New-construction ships will enter the CSTEP and the CSORE I before initial deployment.	

4-7

GROUP COMMANDER'S COMBAT SYSTEMS COORDINATION SUPPORT TEAM

The group commander's combat systems coordination support team (CSCST) assists in monitoring and assessing an individual unit's combat systems organization and readiness during all combat systems readiness evolutions. During these evolutions, the CSCST conducts ship visits to evaluate and help develop shipboard programs to improve combat systems readiness. Until permanent CSCST detachments are formed in individual home ports, group commanders form CSCSTs from assets within the group and the ship's home port.

Specifically, the CSCST takes the following actions:

● Reviews combat systems administrative support (i.e., technical manuals, CSTOMs, consolidated ship/station allowance list [COSAL], planned maintenance system [PMS], general-purpose electronic test equipment [GPETE]), assesses progress during overhauls and ship restricted availabilities, conducts reviews of the combat systems integrated test plans (CSITPs), and supports CSPOE/CSORE.

● Evaluates and, when required, conducts technical training to improve the ship's force ability to light-off, test, operate, and maintain combat systems equipment.

● Evaluates the effectiveness of the ship's electronic readiness team.

● Assists in conducting the following CSTEP events:

— combat systems pre-overhaul assessment

— combat systems post-overhaul examination

— combat systems operational readiness examination (phases I and II)

NAVSEACEN COMBAT SYSTEMS READINESS ASSISTANCE

Personnel from the NAVSEACEN provide engineering technical support and material services to forces afloat. They assist in conducting combat systems readiness reviews (CSRRs) and provide technical assistance for gun/missile/ASW battery and gunfire control/missile fire control/ASW fire control. These reviews are not the same as the technical assistance for repairs provided by fleet technical support centers (FTSCs). Instead, they provide assistance necessary to further the "self-reliance" of the ship's force in improving the operational readiness of installed ordnance.

COMBAT SYSTEMS READINESS REVIEW

The comprehensive combat systems readiness review (CSRR) helps the ship's force to achieve a high state of combat systems readiness for deployment. Implicit in this goal are the following objectives:

● To assess the readiness of the ship's combat systems materiel and personnel and to report the status to appropriate seniors

● To help the ship's force and the IUCs correct material problems

● To provide on-the-job (OJT) training for the ship's force personnel and to improve the ship's self-sufficiency

ORDNANCE SPECIAL ASSISTANCE TEAM

The ordnance special assistance team (ORDSAT) consists of several technicians, both military and civilian, highly trained in various fire-control systems. The team's primary purpose is to instruct the ship's force in how to maintain its own equipment, thereby

improving its battery system as a whole. Ordnance equipment includes gun battery, gunfire control, guided-missile fire-control, and underwater battery fire-control systems.

COMBAT SYSTEMS OPERATIONAL READINESS EXAMINATION

The combat systems operational readiness examination (CSORE) is an evaluation conducted in three phases by the ship's IUC to determine the material readiness, personnel training level, and logistics support of the installed combat systems.

COMBAT SYSTEMS POST-OVERHAUL EXAMINATION

The combat systems post-overhaul examination (CSPOE) is an evaluation of the combat systems readiness and training of the ship. It provides prerequisite testing and preparation for CSSQTs, WSATs, and RFT; evaluates equipment readiness and the ability of the ship's force to light-off, operate, and maintain equipment; and assesses the combat systems technical training.

COMBAT SYSTEMS SHIP QUALIFICATION TRIALS

The combat systems ship qualification trials (CSSQTs) is a series of comprehensive tests and trials designed to show that the equipment and systems included in the CSSQT program meet combat systems requirements. It also provides training and familiarization to ship personnel in maintaining and operating installed equipment, identifies design problems, and determines deficiencies in support elements (i.e., documentation, logistics, test equipment, or training).

OVERALL COMBAT SYSTEMS OPERABILITY TEST

The overall combat systems operability test (OCSOT) is a level-1 PMS test designed to provide the commanding officer with an operational assessment of the total combat systems.

COMBAT SYSTEMS IMPROVEMENT PROGRAM ADVISORIES

The numbered combat systems improvement program (CSIP) advisories are used by the type commander (TYCOM) to pass on to units lessons learned, recommendations, and specific guidance on combat systems requirements.

COMBAT SYSTEMS INTEGRATED TEST PLAN

The combat systems integrated test plan (CSITP) consists of detailed procedures for conducting all combat system tests through the systems level during overhaul. For further information on the CSITP, refer to *Combat Systems Test and Certifiction Manual,* NAVSEA T9073-AB-TRQ-010.

COMBAT SYSTEMS TEST COORDINATOR

The combat systems test coordinator (CSTC) is the ship's representative to the combat systems test task group. The CSTC is responsible for coordinating all testing with the shipyard and for ensuring that all testing is completed and involves the full ship's force.

SHIP'S ELECTRONICS READINESS TEAM

The CSTOM assigns to the ship's electronics readiness team (SERT) the responsibility for maintaining on-line combat systems readiness. Administratively, the SERT reports to the systems testing officer (STO), who, in turn, reports to the combat systems officer (CSO)/weapons officer.

If your ship has a SERT, the discussion in this subsection should help you understand its purpose. If your ship does not yet have a SERT, you may wish to use some of the SERT's procedures within your area of responsibility. See figure 4-2.

```
┌──────────────────┐      ┌─────────┐      ┌──────────────────────┐
│ COMBAT SYSTEMS   │      │   STO   │      │        SERT          │
│ DEPARTMENT OFFICER│─────│         │─────│                      │
│                  │      │         │      │  OSC, STCC, FTCS     │
└──────────────────┘      └─────────┘      │  GMM1, ETC, DS1, IC1 │
                                            └──────────────────────┘
```
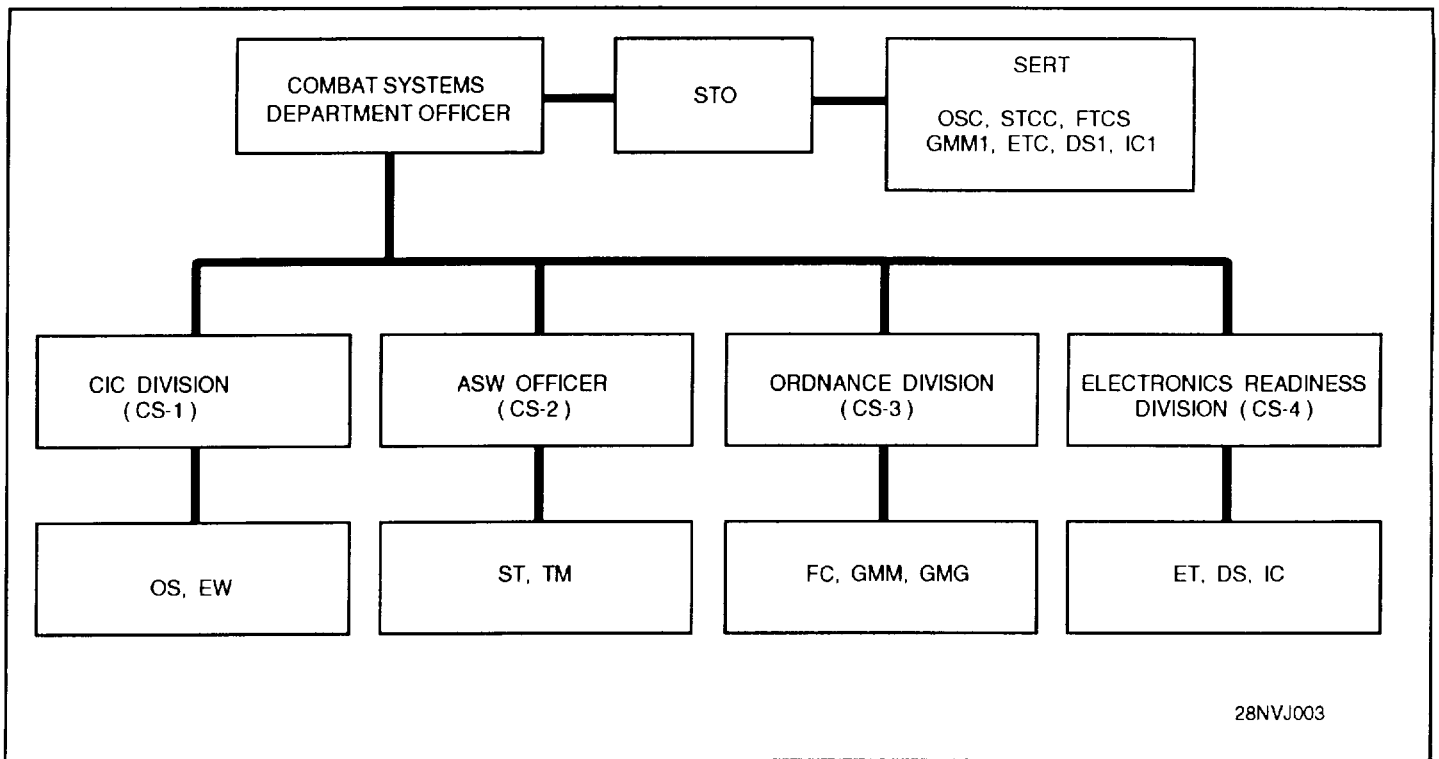
Figure 4-2.-Typical combat systems/weapons department organization.

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SERT Training

Using the CSTOM as the basic reference, the SERT is trained as a unit in combat systems operations, preventive and corrective maintenance, maintenance management, and training.

The SERT members should have knowledge in the following areas, either by previous formal training or by a rigorous shipboard training program:

● PMS philosophy.

● PMS scheduled and corrective maintenance.

● Planned maintenance during overhaul.

● Maintenance data system.

● Combat systems, subsystems, and equipment operation.

● Ship alteration, ordnance alteration, and field change configuration levels.

● Combat systems, subsystems, and equipment maintenance and scheduling.

● Ordnance pamphlets and data, and NAVSEA manuals.

● Combat systems, subsystems, and equipment tests.

● Logistics support.

Members of the SERT are senior petty officers with extensive experience in subsystems and equipment maintenance. Each must be an expert on at least one subsystem. Since the SERT is an official part of the ship's organization, the duties of its members are primary, not collateral. Figure 4-3 shows where the SERT fits into the ship's organization.
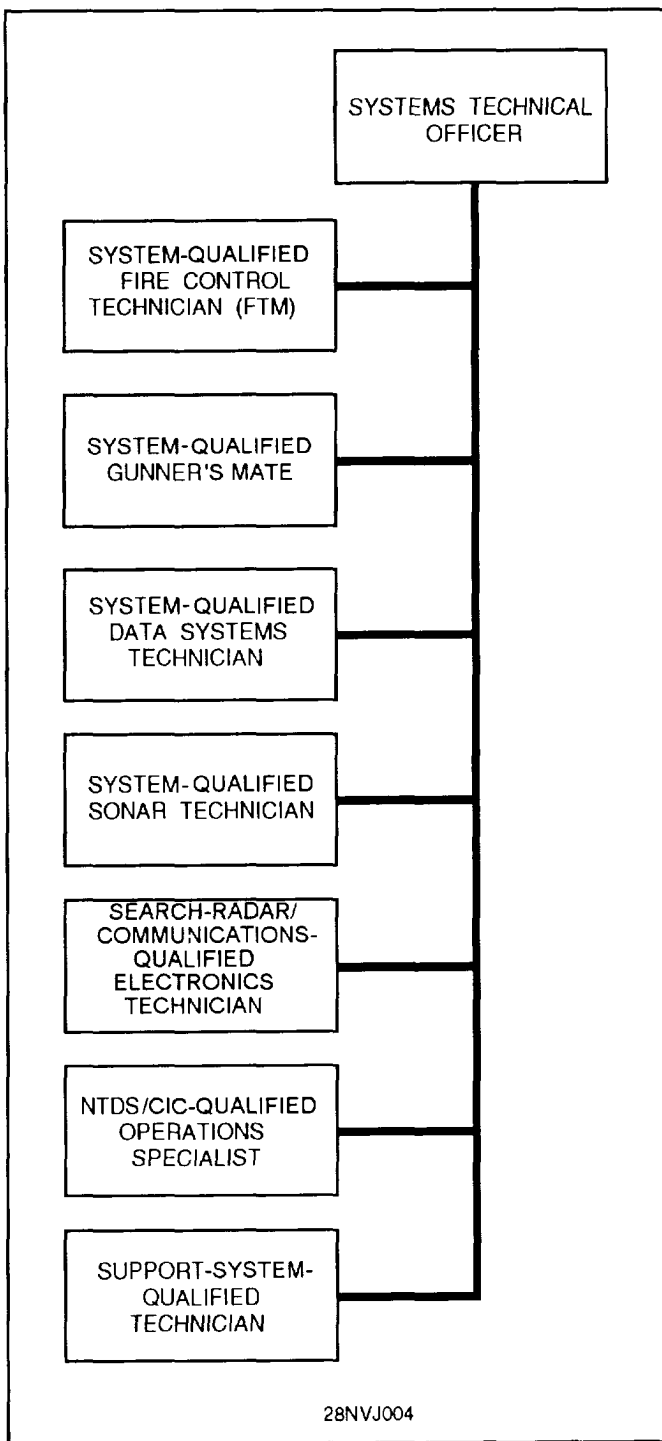
Figure 4-3.-Typical ship's electronics readiness team organization.

SERT Operations

For the SERT to coordinate preventive and corrective maintenance efforts effectively, there must be extensive coordination and cooperation among the major branches of the combat systems/weapons department. The SERT members should have direct access to the leading petty officers of each subsystem group within the combat systems/weapons department.

Additionally, because combat systems do not include all maintenance and operational departments of the ship and because combat systems cannot operate without the support of other departments, all departments should be involved in implementing a system-level maintenance program. Both officers and enlisted personnel should participate in the scheduling process for the plan.

For the SERT to be held responsible for combat systems readiness, it must have clearly defined responsibilities and authority. This is best done by a specific shipboard instruction. The SERT's authority should be in the area of organization, as well as in materiel and personnel readiness.

The knowledge that SERT personnel have must not be confined to a particular subsystem if the organization is to function properly during condition III and in port.

For all personnel to quickly understand combat systems availability during conditions I and III, and in port, the SERT should establish the following three lines of communications:

1. Condition I: The STO should be assigned a general quarters station in the combat information center (CIC). He should be able to inform the tactical control officer (TCO) of the present and changing status of combat systems availability on a threat basis. The rest of the SERT members should be assigned as roving evaluators for subsystems with which they are most familiar. If possible, the duties of the roving evaluators should be rotated to ensure that SERT members become familiar with all areas without affecting the overall operation of the combat systems.

2. Condition III: At least one SERT member should be on watch in the CIC, with the responsibility of reporting combat systems status to the tactical action officer (TAO). The remaining SERT

members should perform their regular duties of testing, instructing, and evaluating maintenance activities.

3. In port: At least one SERT member should be assigned to each duty section so that the command duty officer (CDO) will know the actual systems status at all times.

SERT Responsibilities

Responsibilities of the SERT are broadly defined as maintenance management, readiness assessment, and operational training guidance required to ensure high-level combat systems readiness.

Specific responsibilities of SERT include the following actions:

● Integrating and managing PMS for the combat systems.

● Determining mission-related materiel readiness.

● Managing the corrective maintenance effort for the combat systems, including fault isolation, and data collection and analysis.

● Monitoring operational performance during condition watch exercises and ship or fleet operational exercises.

● Evaluating both materiel and operational readiness of the combat systems, and providing internal or external reports as necessary.

SERT PMS Management

The SERT PMS management includes supervision of actual maintenance actions and all other efforts required to plan and support maintenance events. Therefore, the management task involves controlling all combat system PMS activities, including PMS tasks for the combat systems, subsystems,

and equipments. The SERT provides the foundation for maintenance through proper planning and execution.

Certain PMS procedures at the combat systems level are more oriented toward operator proficiency, with summary observation of combat systems performance. The management guidance in the PMS manual and the cycle and quarterly schedules is primarily equipment- and department-oriented. This guidance provides minimum maintenance requirements for the subsystems and equipments covered under PMS. The SERT must operate within such factors as the interdependence of equipments and subsystems in the overall combat systems, the variations of available manpower, and the dedication of subsystems to operations during conditions I and III.

The scheduling and performance of PMS (supported by documentation and maintenance training) leads to fault detection, which provides a basis for readiness assessment. Maintenance management ensures that detected faults are isolated and followed by corrective action. Effective corrective maintenance includes logistics control and the determination of how important each corrective maintenance requirement is, based on parts availability and readiness assessment.

Follow-up actions, including verification or retesting, and complete shipboard and maintenance data collection reporting are essential to an effective PMS program.

SERT Materiel Readiness Assessment

The SERT materiel readiness assessment is directed toward four major missions: AAW, ASW, ASUW, and amphibious warfare (AMW). Materiel readiness assessment involves performing tests and operational checks on the subsystems to identify equipment that is either degraded or nonoperational. The results of the tests and operational checks are then used to determine how well the subsystems can perform their mission requirements.

Readiness assessment is probably the most difficult task facing the SERT because it requires the ability to provide an up-to-the-minute status of the capabilities and limitations of the combat systems. It also requires the ability to recommend alternate combinations of equipment to meet mission needs.

The SERT must know the results of all tests and, in addition, the minute-to-minute availability of the combat systems, its subsystems, equipments, and all support functions, such as primary power, chilled water, dry air, and sound-powered telephones.

Although all equipment problems are important, the existing tactical environment can modify their impact on a mission capability. For example, losing the moving target indicator capability can be more important when the ship operates near land masses than when it operates in the open sea.

Materiel readiness assessment should be approached from the functional readiness aspect, rather than the equipment up-or-down-status aspect for the following reasons:

● Complex, multifunction electronic equipment is seldom completely down and less frequently completely up. Normally, one or more functions are in various states of degradation.

● The impact of a fictional fault maybe different for the capability of each mission.

● The complex design of the combat systems includes some fictional redundancy.

● The test results and operational fault directories relate problems to their effect on system functions rather than to the basic operation of the affected equipment.

Readiness assessment uses two basic types of techniques: quantitative and qualitative.

● Quanitative techniques involve the extensive use of mathematics and reports based on graphs and numbers. Past shipboard experience has shown that without computer support, quantitative assessment is not easily managed. Its numerical reporting lacks meaning or requires extensive explanation.

● Qualitative assessment (an application of engineering analysis) is based on system knowledge, experience, and judgment. It is usually a verbal report. These assessments depend on the personal experience level of the users. Therefore, written guidance and report forms are required. The impact of no-go conditions, revealed by PMS results, must be determined for each mission capability.

After an assessment is made, each major function is assigned one of the following four readiness criteria:

1. Fully combat-ready status: All equipments associated with a specific function are in the highest state of readiness with respect to that function.

2. Substantially combat-ready: Although all the equipments may not be fully operational, redundancy permits the mission to be continued, resulting in a high probability of success.

3. Marginally combat-ready: A function may be performed, but with a much-reduced probability of success.

4. Not combat-ready: The equipment has a complete loss of function.

These readiness criteria provide the basis for a summary report of readiness. A combat systems daily fault report should be submitted, listing the sub-function faults of the day, their individual impact, any alternative recommendations, and the expected time of repair. See figure 4-4 for an example of a daily fault report.

COMBAT SYSTEM DAILY FAULT REPORT								
MAINTENANCE STATUS	FAULT	IMPACT				ALTERNATIVE	ETR	NOTE
D	SPS-49 NEEDS RANGE	INACCURATE TARGET INFO	N / A	N / A	N / A	NONE	1630	
M	STIR ANTENNA SERVO ALIGNMENT	REDUCED MISSILE FIRE POWER	N / A	N / A	N / A	NONE	2146	

LEGEND: D - DEFERRED
M - MANDATORY

28NVJ005

Figure 4-4.-Example of a combat systems daily fault report.

Materiel readiness does not end with the successful completion of tests and scheduled maintenance. In addition to testing, other actions (such as visual inspection for cleanliness, corrective maintenance, quality control, and complete integrity) are a necessary part of SERT responsibilities.

Also, requesting the commanding officer to conduct materiel inspections, assigning SERT personnel to inspection teams, and conducting random equipment inspections without prior notice may provide excellent results, Such inspections should be for electronic and mechanical materiel readiness and preservation. The SERT representatives should also provide results of such inspections to appropriate authorities and provide follow-up inspections to ensure that corrective action is taken.

SERT Corrective Maintenance Management

SERT corrective maintenance consists of two basic categories: fault isolation and corrective maintenance.

● The SERT is responsible for directing fault isolation at the combat systems level, managing corrective maintenance at all combat subsystems levels, and coordinating corrective maintenance in related support subsystems.

● The SERT responsibility for corrective maintenance also includes coordinating fault-isolation efforts and evaluating the impact of faults to determine the priority of each corrective maintenance requirement.

Two other SERT responsibilities are (1) follow-up action of verification or retesting, and (2) complete shipboard and maintenance data collection subsystems reporting. Effective corrective maintenance management first requires the consideration of combat systems readiness, then efficient use of manpower. These factors closely relate to the ship's employment and the tactical environment.

There will be times when more corrective maintenance requirements exist than can be simultaneously handled by the available manpower. In addition, sometimes parallel faults exist that require the same personnel or the same system setup for fault isolation. When these conditions occur, the setting of repair priorities is based on management's requirements for readiness and available manpower to make the repairs.

As the SERT collects and evaluates PMS results, it should continually base its recommendations for correcting faults on the tactical situation, complexity of fault isolation, and available manpower. Some faults may be designated for correction; others may be deferred. However, deferred faults, if left to accumulate, tend to degrade overall systems readiness. Therefore, as soon as the situation permits, deferred faults should be repaired.

Faults detected within combat systems must be isolated to a subunit that can be replaced or repaired or to an alignment that can be made before actual corrective action can be taken. Therefore, technicians must have a thorough knowledge of the systems and access to complete systems and equipment documentation.

Most subsystems and equipment maintenance publications provide fault-isolation support in one or two formats. The first format consists of symptoms presented in preselected, logical steps and in reference tables, a logic chart, or logic diagram format. The second format consists of flow diagrams and relay ladders. The CSTOM provides amplifying information on fault isolation.

After a repair priority has been set and the faults isolated, the managers of corrective maintenance must ensure that corrective action is taken, verifica-tion is made by retest, and required reports are completed. Since some faults tend to be repetitive, the SERT should keep records of fault symptoms, identification, and corrective measures.

SERT Monitoring

The SERT responsibility for operational training is vital since overall readiness assurance is a function of operational readiness (personnel proficiency) and materiel readiness. The goal of operational readiness is to achieve maximum combat systems capability for each mission under constantly changing conditions of materiel readiness. The measurement of personnel readiness is based on the three following techniques:

1. PMS tests: In each case, the hardware must be operating properly. Otherwise, the capabilities of the personnel cannot be determined accurately.

2. Simulators or computer programs: The video signal simulators with computer programs provide a means to assess the skill of the console operator. However, the computer programs are limited in assessing the capabilities of combat systems operators.

3. Monitoring of ship or fleet exercises: one way to evaluate the capability of all combat systems personnel is to actually monitor ship or fleet exercises. These exercises include:

● Electronic warfare exercises.

● Gunnery exercises (antiair [AA], surface, and shore).

● Missile exercises (AA and surface.)

● CIC exercises (aircraft, tracking and control).

● Antiship cruise missile exercises.

● ASW exercises.

When the SERT finds personnel deficiencies, it must provide operational training and guidance.

Since the SERT has the knowledge and training capability, it is uniquely qualified to assist the ship's training officer in identifying the topics and content of necessary training for both officers and enlisted personnel.

As an FC supervisor, you will periodically evaluate the operational readiness of your personnel. You should ensure that they are familiar with the following topics:

● Intended purpose of all switches, indicators, controls, and the impact each has on other subsystems or combat systems equipments.

● Communications links available at the station and with the other stations.

● Compliance with specified communications disciplines.

● Knowledge that the lack of communications discipline is an internal hazard to the combat systems or to the ship.

SERT Test Selection and Scheduling

The integrated approach to testing is based on defining all functional test requirements and subjecting them to a critical examination. The examination involves an engineering analysis in which each function, parameter, and characteristic is examined for (1) its importance to mission or mode performance, (2) its reliability based on the circuit elements that affect the function, and (3) its expected mean time between failures.

This approach places a test periodicity (daily, weekly, monthly, quarterly, semiannually, annually, and cyclically) on the functions. Critical functions are assigned a high periodicity, regardless of reliability; while less critical functions may be assigned a lower periodicity based on their reliability.

Related functions are grouped by periodicity and functional interdependency so that they can be tested during appropriate periods. The tactical situation governs how and when maintenance is scheduled.

Scheduling is a critical element of preventive maintenance management and requires a thorough knowledge of the intent and conditions of each maintenance requirement card (MRC).

Important conditions include

● in-port and at-sea requirements,

● outside service requirements,

● navigational support requirements,

● combat systems operational usage,

● ship control requirements,

● emission control conditions,

● computer program requirements,

● subsystems interdependency,

● impact on computer program capability,

● adverse weather conditions,

● time requirements, and

● manpower requirements.

From these conditions, the quarterly schedule can be developed, based on the ship's employment schedule. Heavy maintenance is usually scheduled during in-port periods and independent ship exercises during nonthreat conditions (particularly for those procedures requiring long periods of operational equipment downtime).

If the employment schedule changes, the PMS schedule may require modification. Daily and weekly schedules are based on the ship's readiness condition and operational situation. Subsystem interdependence and manpower usage are also critical in scheduling.

Preventive maintenance management includes the following requirements:

- Ensuring that events take place as scheduled

- Coordinating manning and equipment availability for interdependent testing

- Providing adequate safety measures

- Ensuring the availability of required supporting systems

- Coordinating the actions of command and tactical operation personnel

- Ensuring fault isolation and corrective maintenance follow-up

- Ensuring the completion of required reports

The ship's CSTOM contains readiness assessment and fault-isolation diagrams that (1) indicate the test that requires the fewest ship resources, (2) verifies each combat systems interface function, and (3) aids the SERT in preventive maintenance management.

SERT Readiness Assessment Reporting

After readiness assessment is completed, the readiness status must be reported in a form that is brief and easily understood and that presents a clear picture of the combat systems effectiveness. This is done most effectively by addressing the status of the combat systems equipment as it relates to a mission capability. This summary report also provides a brief description of the effect each division's group has on the overall combat readiness of the ship.

Supporting information on specific subfunction faults related to the summary report sample maybe provided in a combat systems daily fault report form. Figure 4-4 shows a sample method of presenting daily fault information. The SERT should develop report forms similar to that shown in figure 4-4 to fit the ship's requirements. The combat systems daily fault report is the responsibility of the SERT and should provide enough information for the CSO to develop the mission summary reports.

The SERT must evaluate, monitor, and report systems status during competitive and fleet exercises. This includes organizing and instructing observers, preparing recording forms, defining data requirements, collecting and evaluating data, and preparing a composite internal report. These reports should be limited to an evaluation of combat systems materiel and personnel readiness during the exercise.

SERT Alignment Logs

The SERT is responsible, during PMS activities and exercises, for determining the mechanical and electrical alignment of interrelated combat systems functions. The SERT must also assess the impact of a misalignment on the mission.

When SERT members brief subsystems and equipment personnel before an exercise or mission, they must emphasize the need for caution when making adjustments to equipment subsystems that may, in turn, affect the total combat systems alignment.

Alignment tests and efforts to reestablish reference standards are complex and time-consuming. They frequently require shore facilities, ideal environmental conditions, and extensive data collection. Technicians should avoid making realignments that, because of incomplete or inaccurate reference data, result in inefficient use of manpower and resources.

Experience has shown that unnecessary alignment efforts can be avoided if reference data are kept current, are accessible, and can be interpreted by all team members. Therefore, a combat systems alignment smooth log (if not already in effect) must be maintained and kept current and accurate.

A total combat systems alignment manual for the class of ship (with combat system) should be available (separate from the CSTOM). The manual should explain the purpose of total combat systems alignment, provide management data needed for the analysis and troubleshooting of alignment problems, and provide step-by-step procedures needed for combat systems alignment.

INTEGRATED MAINTENANCE

Combat systems integrated maintenance is based on a comprehensive schedule of tests performed at three mutually supporting levels: (1) systems, (2) subsystems, and (3) equipments. These integrated tests are designed to periodically test all combat system functions, parameters, and characteristics against specified tolerances. Successful equipment performance during the tests usually indicates that the systems are combat ready.

Integrated maintenance requirements are developed through engineering analysis, based on a study of all factors that significantly affect maintenance. The analysis defines system and equipment functions and sets tolerances (in terms of system parameters) that allow operators and technicians to determine if the systems are operating properly.

Integrated maintenance procedures provide minimum preventive maintenance coverage of the combat systems and are designed to test specific functions under specific conditions. Sometimes, equipment operators and technicians may not understand the purposes of all the tests. However, they must still follow the procedural sequences explicitly. Improvising or shortcutting procedural sequences of-ten leads to incorrect troubleshooting or masking of actual faults.

The integrated maintenance concept follows PMS principles and is the most effective way to achieve PMS goals. Compliance with this concept enables the SERT to manage the combat systems maintenance effort and to achieve the optimum level of readiness with the most effective use of available manpower.

Integrated maintenance is the planned maintenance system (PMS) as it relates to the maintenance documentation of a typical integrated combat systems, the PMS program, maintenance scheduling, and maintenance data system.

PLANNED MAINTENANCE SYSTEM

Combat systems readiness requires efficient maintenance. The key to this capability is an organized system of planned maintenance to ensure the maximum operational readiness of the combat systems. *The Ships' Maintenance and Material Management (3-M) Manual,* OPNAVINST 4790.4, sets forth an effective PMS and assigns PMS management responsibility.

The PMS provides regularly scheduled tests to detect degraded performance and to prevent failures during tactical operations. When failures occur during combat systems operations, the PMS provides a formal step-by-step fault-isolation and repair procedure. Complete technical documentation (including combat systems, subsystems, and individual equipment manuals) is an integral part of the PMS. These manuals provide the necessary information for understanding, operating, and maintaining the combat systems.

Shipboard maintenance falls into the three following categories:

1. <u>Organization-level maintenance</u>: Maintenance within the capability of ship personnel.

2. <u>Intermediate-level maintenance</u>: Maintenance requiring assistance from outside the ship, such as a tender or an FTSC.

3. <u>Depot-level maintenance</u>: Maintenance requiring port facilities, such as shipyard maintenance.

The goal of PMS is to perform maintenance at the organization or intermediate level. Therefore, depot-level maintenance is not reflected in PMS.

The PMS is a planning and control system that prescribes a logical and efficient approach to complex mechanical, electrical, and electronic main-

tenance. It was developed to provide supervisors at each maintenance level with methods for effectively planning, scheduling, and controlling shipboard maintenance. It includes a maintenance data-collection system that is used to record important scheduled and corrective maintenance information, and an electronic data- processing capability that is used to retrieve this information for maintenance analysis.

The goal of PMS is maximum operational efficiency of all equipments and the reduction of equipment downtime, maintenance man-hours, and maintenance costs. Even though the PMS provides methods and resources to accomplish each goal, it is not self-sufficient and does not replace the initiative of maintenance supervisors or reduce the need for technically competent personnel. The recording and feedback of maintenance and personnel data allow continuing management analysis and improvement of maintenance methods and personnel use.

If the ship's force accepts the PMS program and makes fill use of its planning methods, the maintenance system will promote confidence and reliability. It will be capable of ensuring that the combat systems will be available when they are needed.

Data gathered from the fleet show conclusively that ships that adhere to their PMS schedule maintain a significantly higher state of materiel readiness with no greater maintenance manpower usage than ships that do not. The SERT concept is designed to ensure that the combat systems PMS is properly scheduled, managed, and used.

PMS PROGRAM

The PMS program is essential to equipment readiness. The primary ingredients of the PMS program are as follows:

● Comprehensive procedures for planned maintenance of the combat systems, subsystems, and equipments.

● Systems fault-isolation procedures.

● Scheduling and control of maintenance task performance.

● Description of the methods, materials, tools, and personnel required for maintenance.

Adherence to the PMS program will provide the following results:

● Improved confidence in systems maintenance

● Reduced testing time

● Elimination of redundant testing resulting from lack of coordination

● Detection of most malfunctions during scheduled maintenance events

MAINTENANCE SCHEDULING

The normal flow of events and requirements the SERT should use in developing an integrated maintenance schedule is illustrated in figure 4-5. This figure shows maintenance management responsibilities and the sequence of events that flows from the department master and work-center PMS record books (containing the maintenance index pages), through the scheduling tools (cycle, quarterly, and weekly schedules), to test actions, unscheduled maintenance, and reporting. However, due to the shipboard environment, it does not show the variants and constraints the SERT must consider in the quarterly, weekly, and daily scheduling.

MAINTENANCE MANAGEMENT

PROVIDES CONTINOUS DIRECTION AT EACH LEVEL OF OPERATION.
PLANS MANPOWER AND MATERIEL REQUIREMENTS.
PLANS AND SCHEDULES MAINTENANCE TASK.
EVALUATES SYSTEM MATERIEL READINESS.
PERFORMS MAINTENANCE ANALYSIS.

OPNAV INSTRUCTION
4790.4

CYCLE SCHEDULE

PREVENTIVE MAINTENANCE REQUIREMENTS
BASED ON SHIP OVERHAUL CYCLE.

(OPNAV FORM 4790-13)

DEPARTMENTAL MASTER
AND WORK-CENTER PMS MANUALS

RECORD BOOKS (CONTAIN LOEP AND
MAINTENANCE INDEX PAGES)

QUARTERLY SCHEDULE

SHIP EMPLOYMENT SCHEDULE.
SPECIFIC SCHEDULES IN CONJUNCTION
WITH OPERATIONAL REQUIREMENTS.

(OPNAV FORM 4790-14)

AUTOMATED REPORTS,
CSMP, AND WORK
REQUESTS

MAINTENANCE CONTROL BOARD

CURRENT
QUARTERLY
SCHEDULE

CURRENT
CYCLE
SCHEDULE

MAINTENANCE
DATA SYSTEM

MACHINE
ELECTRONIC
DATA
PROCESSING
EQUIPMENT

WEEKLY SCHEDULE

DIRECT PERSONNEL
ASSIGNMENTS TO
SPECIFIC MAINTENANCE

(OPNAV FORM 4790-16)

SYSTEM
TEST

EQUIPMENT
TEST

EQUIPMENT
SERVICING

UNSCHEDULED
MAINTENANCE

OPERATIONAL
FAILURE

SHIP'S MAINTENANCE
ACTION FORM

(OPNAV FORM 4790/2K)

28NVJ006

Figure 4-5.-Planned maintenance system.

Maintenance Index Page

The maintenance index page (MIP) contains a brief description of the requirements on the MRC for each item of equipment, including the periodicity code, the man-hours involved, the minimum required skill level, and any related maintenance requirements.

The MIPs for all equipments in a department are contained in the departmental master PMS record, which the department head uses to schedule maintenance on the PMS schedule forms. Each work center should maintain a PMS record that contains the MIPs that apply to that work center.

Cycle Schedule

The cycle schedule is used by the CSO to plan periodic maintenance and other requirements. It is a visual display of preventive maintenance requirements based on the ship's overhaul cycle.

Quarterly Schedule

The quarterly schedule, planned from the cycle schedule, is a visual display of the ship's employment schedule. This schedule is prepared by the CSO in cooperation with division officers, maintenance group supervisors, system testing officers, and SERT members. It shows the current status of preventive maintenance for each group. The quarterly schedule assigns specific requirements in conjunction with the ship's operational schedule.

Maintenance Control Board

The maintenance control board contains the cycle schedule and the current and subsequent quarterly schedules. The board summarizes the status of current and planned combat systems preventive maintenance.

Weekly Schedule

The weekly schedule is a visual display that is posted in the working area of each maintenance group. The maintenance group supervisor uses this schedule to assign personnel to perform maintenance on specific equipment. Assignments include system and equipment tests and servicing procedures.

MAINTENANCE DATA SYSTEM

The maintenance data system (MDS) provides a means of recording maintenance actions, processing the recorded data to define important facts about maintenance and equipment, and retrieving information for analysis. Significant data identified by the system include the reason for the malfunction, its discovery, the man-hours used in correcting the problem, the exact equipment affected, any delays in repair and their reasons, and the types of maintenance personnel required.

Maintenance Actions

Maintenance personnel document certain shipboard maintenance actions and corrective maintenance on specific categories of equipment at the time they actually perform or defer the maintenance action. Information is recorded and put into the MDS using the Ship's Maintenance Action Form (OPNAV 4790/2K).

Data-Processing Facilities

The MDS data-processing facilities collect, store, and analyze maintenance information inputs into the system. This information yields data concerning equipment maintainability and reliability, man-hours usage, equipment alteration status, materiel usage and costs, and fleet materiel condition.

Various automated reports are produced periodically for the ship, the repair activities, the unit commanders, and the type commanders. These automated reports include a ship's current maintenance project file, work requests, and preinspection and survey deficiency listings.

MAINTENANCE TESTING

Integrated maintenance tests must be scheduled to reduce redundancy wherever possible. Combat systems testing is conducted at three levels: (1) systems, (2) subsystems, and (3) equipments. These three testing levels are described in the following subsections.

SYSTEMS TESTING

Systems testing exercises the entire combat systems. It is the highest level of testing that can be done aboard ship. Combat systems tests are usually automated and monitored in the CDS subsystems.

Although these tests provide an overview of systems performance, they usually do not test the fill capabilities of the overall combat system itself. It is impractical, from an instrumentation and manpower standpoint, to test all the fictional requirements at the systems level. Therefore, confidence in operability or materiel readiness is mainly dependent on integrated testing at the subsystem or equipment level.

Systems-level tests provide a verification of the alignment between sensors; the on-line, real-time monitoring of combats system interfaces; and the overall test of the 3-D search radar and its interface with the CDS. These tests are described in the CSTOM.

SUBSYSTEMS TESTING

Subsystems testing exercises two or more pieces of equipment fictionally contained within the same subsystem. The intent of subsystems testing is to test intrasubsystem (within the subsystem). However, with the need for integrated testing, some functions are tested intersubsystem (outside the subsystem).

The subsystems operability/readiness test is the keystone of integrated subsystems testing. This test consists of a rigidly controlled sequence of steps designed to test all critical functions during a primary mode of operation. The subsystems operability/readiness test and a supporting family of tests use the concept of end-point testing, in which functions are stimulated at their terminal point, thereby verifiing all operations within the function. Subsystems tests are functionally grouped and mode oriented so that related functions can be tested by using the same setup, procedures, and stimuli.

EQUIPMENTS TESTING

Equipments testing generally concerns power levels, frequencies, servos, special features, and output functions. The equipment PMS may require special external stimulating equipment for test measurements. These test measurements are often time-consuming and difficult to complete, but are always checked by the SERT to ensure optimum readiness.

FAULT ISOLATION

The goal of fault isolation is to determine systematically the part or condition responsible for a fault or degraded operation during testing or tactical operation. The process often involves impact evaluation. Impact evaluation requires considering whether (1)

to ignore the problem for the time being; (2) to switch to alternate equipment; or (3) to perform corrective maintenance immediately. Impact evaluation information is provided in the CSTOM.

The CSTOM provides fault-isolation procedures, both for faults that were detected during operations and for faults that were known before the operations. After a fault has been isolated to a specific unit or interface, corrective action (repair, replacement, or alignment) must be taken. In the integrated maintenance concept, alignment is considered as corrective maintenance only and, like other corrective action, should be performed only when a fault is indicated.

Fault isolation leads to corrective maintenance. The corrective maintenance performed may or may not bring the system back to an operating condition.

There may have been more than one fault contributing to the out-of-tolerance condition that started the fault-isolation process. (The SERT's responsibility for fault isolation was discussed earlier in this chapter under the heading "SERT Corrective Maintenance Management.")

The possibility of faulty replacement parts and incorrect adjustment or alignment also exists. Corrective maintenance may not have solved the problem; it may even have added to it. Therefore, each corrective action must be followed by verification. Verification normally is done by re-creating the test environment and rechallenging the function. Where alignments are concerned, the verification process is complicated by a requirement that the effect of the maintenance upon other elements of the combat systems be determined.

RECOMMENDED READING LIST

> **NOTE:** Although the following reference was current when this TRAMAN was published, its continued currency cannot be assured. Therefore, you need to ensure that you are studying the latest revision.

COMNAVSURELANT Combat Systems Officers Manual, NAVSURFLANTINST 9093.3, Naval Surface Force, U.S. Atlantic Fleet, Norfolk, VA, 1986.

In addition:

Combat Systems Technical Operations Manual (CSTOM) for your class of ship.

CHAPTER 5

WEAPONS EXERCISES

LEARNING OBJECTIVES

Upon completing this chapter, you should be able to do the following:

1. Discuss the personnel training and fleet exercises necessary to test personnel and equipment readiness.

2. Identify the publications that contain antiair warfare, antisubmarine warfare, and antisurface warfare exercises.

3. Describe the naval gunfire support qualifications process.

4. Describe the documentation required during missile-firing exercises.

INTRODUCTION

This chapter discusses how combat systems/weapons personnel are trained, certified, and qualified. All ships have certain operational capabilities that provide invaluable training for the ship's combat systems/weapons teams.

Operational ships are in a competitive cycle controlled by their type commander (TYCOM). During each cycle, a ship is required to complete many graded exercises and inspections and to maintain qualifications in designated capabilities. All these requirements apply toward the department and ship battle efficiency "E" awards. Proficiency in these graded requirements is a result of preparation and extensive training. The survival of any ship in any hostile encounter is directly related to the proficiency and training level of its crew.

As a Fire Controlman supervisor, you will be responsible for ensuring that your division is fully capable of completing all required combat systems/weapons exercises.

TRAINING AND EXERCISES

The complex interrelationships between combat systems/weapons elements, compounded by the normal attrition of personnel, require that combat systems/weapons training programs be developed and practiced to maintain a high state of personnel readiness.

Combat systems/weapons personnel readiness is sustained through frequent gunnery, missile, electronic warfare, and combat information center (CIC) exercises. This includes a continuing program of individual and team training consisting of (1) ship and fleet operational training exercises, (2) training programs and simulators/stimulators, and (3) test programs and procedures.

OPERATIONAL TRAINING EXERCISES

Ship and fleet operational training exercises are designed to meet a variety of training objectives. The basic exercise objective is the demonstration of the

ship's personnel proficiency in detecting, tracking, and successfully engaging hostile threats.

The instructions that set forth specific training requirements include training and evaluation procedures for conducting (1) readiness and operational evaluations, (2) composite training unit exercises, (3) fleet exercises, and (4) battle readiness exercises.

Readiness and Operational Evaluations

Readiness and operational evaluations are a major part of fleet exercises to provide advanced training and to examine fleet capabilities and limitations in warfare aspects. Normally, the duration of the exercise is 8 to 10 days, with the first 3 or 4 days devoted to warm-up operations. The exercise scenario and the emphasis on particular warfare areas are adjusted to the number, type, and training state of the participants. Specific accomplishment objectives in a given readiness and operational evaluation are published in the instruction letter for that exercise.

All readiness and operational evaluation exercises have the following broad objectives:

● To train the fleet in various aspects of naval warfare and confrontation at sea, with emphasis on improving command and control.

● To provide specialized predeployment training for anticipated fleet operations.

● To identify, measure, and analyze the practicable extent of fleet performance, capabilities, and limitations, and to develop appropriate recommended corrective action.

● To develop and test new tactics and doctrine.

Composite Training Unit Exercises

The composite training unit exercise has the following overall goals:

● To enhance the readiness of participating units.

● To provide predeployment training.

● To test and evaluate new doctrine and procedures.

● To stimulate development of new concepts in naval warfare.

Ships participating in composite training unit exercises should make maximum use of underway time to the operating area for training and drilling. This en route period is an excellent opportunity for the combat systems/weapons team and participating units to perfect their skills in the tactics and procedures of the upcoming exercise.

In addition to intraship training, the units can also train in multiship operations and evolutions in preparation to accomplish the stated exercise objectives.

A composite training unit exercise has the following specific objectives:

● To permit participants to conduct exercises in a multithreat environment to enhance readiness.

● To complete the maximum feasible type commander exercises required to achieve unit training readiness levels and special predeployment requirements;

● To achieve unit familiarity and expertise in fleet report requirements and procedures required by higher authority.

● To train in operations under the minimum radiation concept, radiating electronic and communications equipment necessary to accomplish a specific mission or task, while, at the same time, ensuring safety.

● To identify all levels of performance degradation due to ship and system incompatibilities.

● To train and increase proficiency in all aspects of operational security.

Fleet Exercises

Fleet exercises are held in accordance with fleet exercise publications (FXPs), which combine the training prescribed for crews of all ship types. There are three FXPs.

● FXP 1, *Antisubmarine Warfare (ASW) Exercises,* contains submarine and antisubmarine exercises. It also contains exercises to familiarize ASW personnel with basic doctrine, tactics, and weapons; exercises to train air and surface units in coordinated operation against submarines; and exercises to train air, surface, and submarine forces to operate under the direction of shore-based headquarters.

● FXP 2, *Antiair Warfare (AAW) Exercises,* contains air and antiair warfare exercises. It also contains exercises to train and evaluate gunnery personnel in detecting, tracking, and destroying air targets; exercises to train and evaluate missile weapon subsystems personnel in detecting, tracking, and destroying air targets and antiship missiles; and exercises to evaluate CIC personnel in intercept control and AAW operations.

● FXP 3, *Strike Warfare (STW), AntiSurface Ship Warfare (ASQ), Intelligence (INT), Electronic Warfare (ELW), and Command, Control, and Communications (CCC) Exercises,* contains ship exercises. It also contains exercises for training gunnery personnel in naval gunfire support, surface firing, and spotting; exercises for antimine defense and surface-to-surface missile training; exercises for CIC and EW personnel training; and exercises to detect and combat antiship missile threats.

In addition, each publication contains safety precautions and exercise evaluation procedures. The force commander, the unit commanders, and the commanding officers are encouraged to use these publications to develop training programs to maintain maximum proficiency in the applicable mission of each ship.

Battle Readiness Exercises

Battle Efficiency Competition, CINCLANTFLT-INST 3590.11, outlines the requirements for training exercises and inspections that units must establish and maintain to ensure high battle readiness. This directive also contains the prerequisites and requirements that individual ships must satisfy to earn battle efficiency awards within the force. The evaluation of battle readiness is administered to accomplish the readiness objective in as flexible a manner as possible.

This evaluation is based on the following actions:

● Minimizing formal reporting on the conduct of exercises.

● Providing for self-observing exercises at the discretion of the unit commander.

● Providing for operational equivalents in lieu of conduct of required exercises.

● Providing for maximum application of unit commander judgment in supervising the program to achieve the readiness objective.

The exercise and inspection requirements prescribed are drawn from appropriate volumes of the FXP series and fleet instructions and are modified or extended with the appropriate performance standards and instructions for data collecting, evaluation, and reporting. The exercises specified are minimum requirements.

TRAINING PROGRAMS AND SIMULATORS/STIMULATORS

The proficiency exhibited by combat systems/weapons personnel during high-level operational training exercises is often a reflection of the degree of competent training obtained at the subsystem

level and the ability of the personnel to work together as a team. Various systems and subsystems can employ computer training programs and simulators/stimulators to provide equipment and systems operators with simulated operational environments for training purposes.

As a supervisor, you should be familiar with the training programs and simulators/stimulators applicable to your ship's equipment or systems configuration. And you should make maximum use of the capabilities to fine-tune your operators and combat systems team. This training can be very effective when a ship is not actively operating.

Combat Direction Systems
Operator Training

A variety of training is available for combat direction systems operators who perform duties in the combat information center (CIC). Team training is available at land-based facilities, as well as aboard ship, Land-based facilities combine classroom instruction and hands-on team training by using system mock-ups. Fleet technical support centers (FTSCs) may provide onboard team training by using the ship's actual equipment. Ship personnel may run individualized and team training by using training programs and simulators/stimulators aboard ship.

Ships that are equipped with naval tactical data systems (NTDSs) may conduct individualized training on the basic operation of CIC consoles with hands-on instruction combined with the lesson translator (L-TRAN) program. Further training is best accomplished with a combination of individualized and team training.

Combat systems team training is accomplished by using a variety of simulation/stimulation systems. These systems simulate data, commands, and responses required for real-time testing, training, and evaluation. They are (1) land-based, (2) part of the ship's equipment, or (3) a combination of both.

Additional team training may be conducted in pierside vans, such as the 20B5 or other pierside trainers, to provide coordinated stimulation of the ship's sensors with a variety of scenarios. The advantage of onboard training is that the operators can use the equipment in its own configuration, which is not always possible at land-based facilities.

Combat Systems/Weapons
Operator Training

Combat systems/weapons operator training is essential to an effective combat climate. In gun and missile fire-control systems, a test mode usually provides simulated targets and jamming. The targets can be tracked, and simulated engagements can be conducted.

The combat systems/weapons equipment, including gun mounts and missile launchers, can be exercised by using simulated targets. Guided-missile training rounds that incorporate a guided-missile simulator are used with the missile launchers to simulate tactical missiles.

Many of the tests designed to verify operational capabilities of the combat systems and individual subsystems provide operational training of equipment operators by using procedural instructions identical or similar to the actual tactical operating procedures. The degree of training provided for each subsystem varies with the function of the equipment used and the testing philosophy of each subsystem.

NAVAL GUNFIRE SUPPORT
QUALIFICATION

All ships assigned shore bombardment or naval gunfire support (NGFS) have a required operational capability to maintain an NGFS qualification. Generally, this requirement includes ships with 5-inch-caliber and larger guns.

Unless revoked, qualification normally lasts for 15 months. For example, if a ship were to complete the first of several required exercises in January 1995 and the last required exercise in February 1995, it would be qualified until 30 April 1996. All exercises do not need to be completed at the same time, although that is encouraged for the maximum use of

the qualification period. Once qualified, the ship is expected to maintain its proficiency level throughout the qualification period. Frequent firing exercises are encouraged to maintain proficiency.

Type commanders (TYCOMs) require that the basic NGFS team training course be completed when (1) 30 percent of the NGFS team (less gun-mount personnel) have been reassigned to other duties or permanently transferred, or (2) more than 90 days have passed since the last NGFS exercise was fired.

NGFS qualification maybe terminated for any of the following reasons:

● When a ship is graded "unsatisfactory" for any NGFS exercise conducted for score. (This does not include exercises conducted as rehearsals or for proficiency training.)

● When a ship fires unsatisfactorily during a major exercise.

● When a ship commits a serious safety violation at any time.

QUALIFICATION PREREQUISITES

Ships are required to routinely maintain a high state of material and gunnery readiness. As a result, the ships must comply with following prerequisites before conducting live firing exercises for NGFS qualification:

● All required gunnery and gunfire control planned maintenance system (PMS) must be current.

● All records of alignment checks must be properly recorded in the smooth fire-control log.

● Formal team training, either at an NGFS trainer site or on board by an FTSC, must be completed within 90 days before firing qualification exercises.

● All ships with the design capability of acquiring the radar beacon must successfully complete the radar beacon acquisition (RBA) exercise within 30 days of firing qualification exercises.

In addition, other prerequisites may be required by the TYCOM. If so, refer to the appropriate TYCOM instructions.

QUALIFICATION RULES

NGFS qualification is based on the satisfactory completion of various elements and/or exercises. Both a numerical score and a grade of satisfactory or unsatisfactory are awarded. A score of 62.0 (60.0 SURFPAC) or higher is required for a satisfactory grade for each exercise or event.

The final qualification score is the average of the last score attained in each of the required exercises or events. The final score must be at least 62.0. SURFPAC allows a score of less than 60,0 on no more than one event, excluding the counter battery event, to qualify.

Only one exercise may be fired by unqualified ships during each range visit. This ensures efficient range use and maintains high qualification standards. All subsequent exercises are fired for score.

Exercises in progress maybe aborted because of foul range, ammunition malfunction, or equipment failure. Exercises may also be aborted to save time when, because of penalties or other point loss, the score will be unsatisfactory.

During a range visit, a ship achieving a satisfactory grade on an exercise fired for score may not refire that exercise to improve its score until all other required exercises have been satisfactorily completed.

EXERCISE DOCUMENTATION

TYCOMs and fleet commanders have specific data recording and reporting requirements for their exercises. Appropriate exercise manuals and applicable instructions identify the reporting requirements

and formats. In addition to the exercise reporting requirements, the Naval Sea Systems Command (NAVSEASYSCOM) requires additional data collection and firing reports for surface missile systems.

DATA COLLECTION

Before firings, during firings, and immediately after intercepts, data should be collected from various sources on the firing ship. In addition, telemetric (TIM) data should also be recorded; however, TLM is normally collected by other sources.

Data are collected from the fire-control systems by a combination of chart recorders, teletype printouts, and digital data extractions recorded on magnetic tapes. Additional data may be collected in video recordings of radar displays and charts plotting engagement data. The specific forms of data collection required vary with the fire-control systems and the TYCOMs.

Data extraction should start when a director is designated to a target. It should continue until the missile destructs (intercept plus approximately 10 seconds). Teletype printouts should cover the same time interval. Complete instructions for data collection by missile systems are available from range personnel.

STANDARD MISSILE SYSTEM FIRING REPORTS

Standard missile system (SMS) firing reports are required for each missile firing (with the firing key closed with the intent to fire). In addition to the firing report data, an SMS firing report message is required to be submitted within 48 hours for each firing test.

Performance analysis of Navy missile weapons systems is a complex task that requires specific data that are furnished on SMS firing reports. These data can be obtained from missile firing ranges and missile firing ships.

The STANDARD MWTARTAR missile firing report for DDG-, FFG-, CGN-, and CG-ship classes is a five-page form that is required to be submitted within 4 days of each exercise. Other missile systems have similar requirements.

ABORTED EXERCISE MESSAGES

An aborted exercise message must be submitted after a commitment of range or target services to a firing unit, and before firing the key closure.

This message contains the following information:

1. The applicable data elements of the firing report.

2. The number of valid target presentations.

3. The reason for failure to fire.

4. The identification of the equipment, the nature of the casualty, and the date-time-group (DTG) of the casualty report (CASREP), if applicable, if the reason for no-fire is a ship equipment casualty.

5. A brief narrative of the exercise.

All pertinent firing report information should also be entered into the fire-control smooth log and into the applicable equipment logs.

RECOMMENDED READING LIST

NOTE: Although the following references were current when this TRAMAN was published, their continued currency cannot be assured. Therefore, you need to ensure that you are studying the latest revision.

Antiair Warfare (AAW) Exercises, FXP 2, Chief of Naval Operations, Washington, DC, 1987.

Antisubmarine Warfare (ASW) Exercises, FXP 1, Chief of Naval Operations, Washington, DC, 1992.

Strike Warfare (SW), Intelligence (INT), Electronic Warfare (ELW), and Command, Control, and Communications (CCC) Exercises, FXP 3, Chief of Naval Operations, Washington, DC, 1987.

APPENDIX I

REFERENCES USED TO DEVELOP THIS TRAMAN

Antiair Warfare (AAW) Exercises, FXP 2, Chief of Naval Operations, Washington, DC, 1987.

Antisubmarine Warfare (ASW) Exercises, FXP 1, Chief of Naval Operations, Washington, DC, 1992.

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Department of the Navy Directives Issuance System Consolidated Subject Index, DPSINST 5215.1, Washington, DC, 1994.

Format and Procedures for Validation of Enlisted Distribution and Verification Report (EDVR), NAVMILPERSCOMINST 1080.1, Naval Military Personnel Command, Washington, DC, 1989.

Guide for User Maintenance of NAVSEA Technical Manuals, NAVSEA S005-AA-GYD-030/ TMMP, Naval Sea Systems Command, Washington, DC, 1988.

Navy Stock List of Publications and Forms, NAVSUP 2002, Navy Publications and Forms Center, Philadelphia, PA, 1994.

PQS Management Guide, NAVEDTRA 43100-1D, Naval Education and Training Support Center, Pacific, San Diego, CA, 1991.

Requirements for Petty Officer First Class, NAVEDTRA 12046, Naval Education and Training Program Management Support Activity, Pensacola, FL, 1991.

Requirements for Senior and Master Chief Petty Officer, NAVEDTRA 12048, Naval Education and Training Program Management Support Activity, Pensacola, FL, 1991.

Standard Organization and Regulations of the US. Navy, OPNAVINST 3120.32, Chief of Naval Operations, Washington, DC, 1994.

Strike Warfare (STW), Intelligence (INT), Electronic Warfare (ELW), and Command, Control, and Communications (CCC) Exercises, FXP 3, Chief of Naval Operations, Washington, DC, 1987.

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Assignment Questions

ASSIGNMENT 1

Textbook Assignment: Chapter 1, "Fire Controlman Supervisor Responsibilities," pages 1-1 through 1-8.
Chapter 2, "Organization, Administration, Inspections, and Maintenance," pages 2-1 to 2-17
Chapter 3, "Supervision and Training," pages 3-1 to 3-16.

1-1. Advancement brings not only increased responsibilities but also increased rewards.

 1. True
 2. False

1-2. As a supervisor, you can find generalized information on your increased responsibilities in which of the following publications?

 1. *Military Requirements for Petty Officer First Class*
 2. *Occupational Standards Manual for the FC Rating*
 3. *Advancement Handbook for Petty Officers*
 4. *PQS Manual for the FC Rating*

1-3. In your career as an FC supervisor, you will be valuable in which of the following capacities?

 1. Leader only
 2. Trainer only
 3. Technical specialist only
 4. Leader, trainer, and technical specialist

1-4. As a training specialist, you will be required to conduct which of the following types of training?

 1. Formal only
 2. Informal only
 3. Formal and informal
 4. Shipboard

1-5. As a supervisor, what is your overriding responsibility?

 1. To know your people personally
 2. To ensure that your people are promoted
 3. To ensure that your people are well trained
 4. To take care of your people before taking care of yourself

1-6. Since your decisions as an FC supervisor affect people outside your rating, it is important that you understand their

 1. career goals
 2. personal problems
 3. collateral interests
 4. duties and responsibilities

1-7. Which of the following basic knowledge requirements is/are necessary for effective communications?

 1. Technical terms only
 2. Your own language only
 3. Standard naval terminology only
 4. Technical terms, your own language, and standard naval terminology

1-8. What is the basic purpose of communications?

 1. Empathy
 2. Listening
 3. Knowledge
 4. Understanding

1-9. Accuracy and clarity are necessary when communicating with which of the following groups of people?

 1. Juniors only
 2. Superiors only
 3. Juniors and superiors
 4. Civilians

1-10 Which of the following standards pertain to military requirements?

 1. Naval standards
 2. Equipment standards
 3. Occupational standards
 4. Personnel qualification standards

1-11. Which of the following standards are rating specific and are used to develop training manuals and rating advancement examinations?

1. Naval standards
2. Equipment standards
3. Occupational standards
4. Personnel qualification standards

1-12. As a supervisor, you may be responsible for your division's PQS program. What are some of the duties within that program?

1. Training personnel within their rating only
2. Identifying personnel who are delinquent in their job qualifications only
3. Ensuring that enlisted evaluations reflect PQS accomplishments only
4. Training personnel within their rating, identifying personnel who are delinquent in their job qualifications, and ensuring that enlisted evaluations reflect PQS accomplishments

1-13. Which of the following types of publications is/are based on OCCSTDs?

1. Advancement study guide
2. Advancement handbooks only
3. Training manuals only
4. Advancement handbooks and training manuals

1-14. You should be able to provide each person in your division with detailed information on material for advancement. To obtain this information, you should consult which of the following publications?

1. *Manual of Qualifications for Advancement*
2. *Advancement Handbook for the FC Rating*
3. *Shipboard Training Manual*
4. *Guide for Enlisted Qualification*

1-15. An effective and efficient division organization has a relatively undefined organizational structure but has definite policies and procedures.

1. True
2. False

1-16. A sound division organization should have which of the following qualities?

1. High morale
2. Clear structure
3. Generic policies
4. Good housekeeping

1-17. The basic shipboard administrative and functional organization is prescribed by which of the following publications?

1. OPNAVINST 3120.23
2. OPNAVINST 3120.32
3. SECNAVINST 4790.5
4. SECNAVINST 5215.3

1-18. As the leading FC, you will normally be responsible for which of the following duties?

1. Assisting the combat systems/weapons officer only
2. Assisting the engineering officer only
3. Assisting the combat systems/weapons officer and the engineering officer
4. Supervising the preventive and corrective maintenance of equipment

1-19. Aboard ship, all personnel are assigned a general quarters station by the

1. division officer
2. commanding officer
3. combat systems officer
4. division watch, quarter, and station bill

1-20. An FC on the underway watch may leave his assigned space only for which of the following reasons?

1. To assist in cleaning spaces
2. To check weather bulletins
3. To check a watch bill
4. To handle a casualty

1-21. What is the primary function of the ship manning document?

1. To ascertain excess personnel
2. To request additional manpower
3. To document manpower requirements
4. To assign billets

1-22. Which of the following statements lists all the required operational capabilities for a class of ship?

1. Required operational capability
2. Submarine required operational capability
3. Projected operational environment
4. Ship manning document

1-23. Billet reviews are conducted periodically at which of the following levels?

1. TAO
2. CSO
3. CNO
4. CO

1-24. The ship manning document has what total number of sections?

1. VII
2. II
3. III
4. IV

1-25. The enlisted distribution and verification report is published by what command?

1. EPMAC
2. NODAC
3. BUPERS
4. CNO

1-26. The enlisted distribution and verification report has what total number of sections?

1. 12
2. 9
3. 3
4. 6

1-27. What part of the enlisted distribution and verification report covers prospective losses?

1. Section 1
2. Section 2
3. Section 3
4. Section 7

1-28. The daily equipment status reports, given to the commanding officer by the executive officer, are known by which of the following names?

1. Casualty reports
2. Eight o'clock reports
3. Equipment reports only
4. Equipment and personnel reports

1-29. The CASREP system contains what total number of report types?

1. One
2. Two
3. Three
4. Four

1-30. Equipment status reports are required before a ship gets under way. The requirements for these reports are normally set by which of the following persons?

1. Commanding officer only
2. Type commander only
3. Commanding officer and type commander
4. Chief of Naval Operations

1-31. Most accidents directly result from some deviation from prescribed safe operating procedures.

1. True
2. False

1-32. As a leading FC, your safety-related responsibilities may fall into which of the following areas?

1. Division responsibilities
2. Petty officer responsibilities
3. Nonelectrical rating responsibilities
4. All the above

1-33. The voltage necessary to produce a fatal current is dependent on which of the following factors?

1. Body resistance
2. Type of current
3. Amount of insulation
4. Clothing worn

1-34. As an FC supervisor, you should be familiar with what section of the *Navy Safety Precautions for Forces Afloat,* OPNAVINST 5100.19?

1. D1
2. D3
3. D5
4. D7

1-35. What instruction deals with the Navy Information and Personnel Security Program?

1. OPNAVINST 3120.32
2. OPNAVINST 5510.1
3. SECNAVINST 3120.23
4. SECNAVINST 5510.1

1-36. What type of inspection is conducted to determine the material readiness of the ship's equipment and systems?

1. INSURV
2. TYCOM
3. MAI
4. MRI

1-37. INSURV inspections for active duty ships are conducted at what minimal intervals?

1. Every year
2. Every 3 years
3. Every 5 years
4. Every 7 years

1-38. Material readiness inspections have what total number of types of inspections?

1. One
2. Two
3. Three
4. Four

1-39. Preoverhaul tests and inspections are held approximately how long before overhaul?

1. 6 months
2. 8 months
3. 10 to 12 months
4. 15 to 18 months

1-40. Regular overhauls are normally scheduled at what frequency?

1. Every 36 months
2. Every 48 months
3. Every 60 months
4. Every 72 months

1-41. Besides regular overhauls, there are what total number of availability tyes?

1. One
2. Five
3. Three
4. Four

1-42. The first scheduled overhaul is normally granted to a ship after an initial operating period of approximately what length?

1. l year
2. 2 years
3. 3 years
4. 4 years

1-43. As a member of the ship's QA team, you should be familiar with which of the following instructions?

1. COMNAVSURFLANTINST 9090.1.
2. COMNAVSURFPACINST 9109.2
3. OPNAVINST 9212,1
4. OPNAVINST 9305.7

1-44. The TYCOM finds which of the following types of ship alterations?

1. D and F
2. TIA
3. K/P
4. K

1-45. As a senior petty officer, you may be called on frequently for which of the following reasons?

1. Your technical opinion
2. Your ability to communicate
3. Your sense of responsibility
4. Your willingness to assist others

1-46. As a supervisor, your primary job is to ensure that which of the following events occur?

   1. Your personnel get liberty
   2. Your technical manuals are current
   3. Your work center functions smoothly
   4. Your maintenance records are completed correctly and on time

1-47. The requirements that must be met by the supervisor and maintenance personnel are of which of the following types?

   1. Military only
   2. Technical only
   3. Military and technical
   4. Commercial and technical

1-48. To ensure that work is completed properly and on time, the supervisor must take which of the following steps?

   1. Control the workload only
   2. Organize the workload only
   3. Delegate as much authority as feasible, but maintain responsibility only
   4. Control and organize the workload, and delegate as much authority as feasible, but maintain responsibility

1-49. When should safety be incorporated into a work plan?

   1. As soon as a minor injury occurs
   2. When it is directed by the safety officer
   3. As soon as an unsafe procedure is noticed
   4. When the work plan is in the initial stages

1-50. One of the greatest contributions you can make as a supervisor is revealed by which of the following accomplishments?

   1. The development of your people
   2. The morale of your work center
   3. The number of training programs you sponsor
   4. The extracurricular activities of your personnel

1-51. Inadequate training is often due to which of the following factors?

   1. A new supervisor
   2. A long sea period
   3. An equipment overhaul
   4. A large number of new personnel

1-52. One of the supervisor's responsibilities is to support the goals and requirements of

   1. upper management only
   2. subordinates only
   3. peers only
   4. upper management, subordinates, and peers

1-53. Loyalty, one of the most important traits a good supervisor can show, can best be demonstrated by which of the following actions?

   1. Requiring the troops to cover up mistakes made by shipmates
   2. Believing and practicing the maxim "loyalty encourages loyalty"
   3. Maintaining a buddy-buddy relationship with the troops
   4. Running a very restrictive work center

1-54. Positive thinking is a hallmark of a good leader who has which of the following characteristics?

   1. Shows indifference to change
   2. Talks about the way things should be
   3. Goes about the work methodically
   4. Looks to the future with confidence

1-55. The supervisor who stalls, puts off, evades, or refuses to give a decision is best described by which of the following terms?

   1. A bottleneck
   2. A perfectionist
   3. A cautious person
   4. An organizational impetus

1-56. Which of the following actions is considered an important feature in furthering cooperation with a superior?

   1. Being a "yes" person to improve your image
   2. Being a "no" person to prove to your boss you have a mind of your own
   3. Being tactful but truthful
   4. Being firm and fair

1-57. Which of the following traits is NOT desirable for a supervisor to show when dealing with a superior?

1. Tact
2. Loyalty
3. Bluntness
4. Dependability

1-58. If your division officer gives you an assignment that is obviously a mistake, you should best handle it by which of the following methods?

1. Do it without question
2. Do it but show your feelings
3. Tell him frankly that it is a mistake
4. Ask tactfully about handling it from another angle

1-59. If you make a serious mistake, it is better to

1. ask your subordinates to say nothing
2. let your boss find out about it himself
3. tell your boss immediately
4. justify the mistake

1-60. Which of the following factors is/are usually the principal obstacle(s) to establishing a genuine cooperative spirit with fellow supervisors?

1. Job competition
2. Large work loads
3. Misunderstandings
4. Friction and jealousy

1-61. When is it most important to give credit for something well done?

1. Always
2. Sometimes
3. When it is in your best interests
4. All the above

1-62. What is usually the best course of action for dealing with problems?

1. Face them squarely and honestly
2. Hope they will resolve themselves
3. Let your subordinates deal with them
4. Talk about them only as a last course of action

1-63. Which of the following ways are recommended for handling new crewmembers?

1. Put them at ease only
2. Show personal interest in them only
3. Give them the right point of view only
4. Put them at ease, show personal interest in them, and give them the right point of view

AN EXCELLENT PROCEDURE FOR PROBLEM SOLVING IS THE SIX-COLUMN APPROACH. IN QUESTIONS 1-64 THROUGH 1-66, MATCH THE ELEMENT STATED IN THE QUESTION WITH THE SIX-COLUMN APPROACH STEP IN FIGURE 1A.
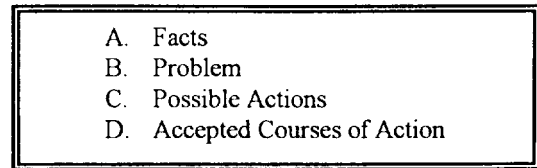
A. Facts
B. Problem
C. Possible Actions
D. Accepted Courses of Action

Figure 1A

1-64. The final decision is your responsibility as leader, based on your personal evaluation of the facts and recommendations submitted.

1. A
2. B
3. C
4. D

1-65. You are not evaluating the course of action; you are merely listing the alternatives.

1. A
2. B
3. C
4. D

1-66. Manpower and/or materials are involved.

1. A
2. B
3. C
4. D

1-67. Which of the following human relations factors leads to positive discipline?

　　1. Keeping a distance between you and your sub-ordinates
　　2. Maintaining authority at your level
　　3. Making issues of minor infractions
　　4. Using authority sparingly

1-68. Discipline is always positive.

　　1. True
　　2. False

1-69. By building a spirit of cooperation within your division, you establish a basis for what type of discipline?

　　1. Self-discipline
　　2. Positive discipline
　　3. Negative discipline
　　4. Authoritative discipline

1-70. With most personnel, a sense of cooperative effort and teamwork is normally fostered by which of the following types of commands?

　　1. Request
　　2. Suggestion
　　3. Direct command
　　4. All the above

1-71. Which of the following statements best describes a reprimand?

　　1. It is constructive in nature
　　2. It is used as often as possible
　　3. It is used to get even with a person
　　4. It is severe to ensure discipline

1-72. Communications may be broken down into what two categories?

　　1. Verbal and written
　　2. Verbal and non-verbal
　　3. Internal and external
　　4. External and verbal

1-73. What type of assets are the most complex to manage?

　　1. Material
　　2. Personnel
　　3. Equipment
　　4. Structural

1-74. Which of the following items are considered to be material assets that are needed to perform maintenance roles?

　　1. Tools only
　　2. Workspaces only
　　3. Test equipments only
　　4. Tools, workspaces, and test equipments

1-75. Which of the following questions might be asked when a maintenance area is being designed?

　　1. Are special safety devices or safety precautions needed in the work center
　　2. Are adequate power receptacles available
　　3. Both 1 and 2 above
　　4. Are there enough eye wash stations available

ASSIGNMENT 2

Textbook Assignment: Chapter 3, "Supervision and Training," pages 3-17 to 3-25.
Chapter 4, "Combat Systems, Subsystems, and Maintenance," pages 4-1 to 4-24.
Chapter 5, "Weapons Exercises," pages 5-1 to 5-7.

2-1. Which of the following types of formal off-site training is usually more expensive to the government but is often the only source of training available?

1. Class A schools
2. Class C schools
3. Factory schools
4. Fleet schools

2-2. When you are giving extra training for new FCs, which of the following methods may you use?

1. Personnel qualification standards
2. Formal shipboard training
3. On-the-job training
4. All the above

2-3. Which of the following statements is characteristic of on-the-job training?

1. It requires the greatest amount of advance planning
2. It can be used almost any time a supervisor desires
3. It is the most time consuming
4. It is the most difficult way to train

2-4. To maintain a successful PQS program, which of the following procedures should be carried out by an FC supervisor?

1. Monitor individual qualification progress
2. Establish realistic individual qualification goals and time limits
3. Establish a program to prepare work-center supervisors as PQS qualifiers
4. All the above

2-5. When you are preparing for a formal training session, which of the following factors should you consider?

1. Class size and location
2. Class schedule and subject
3. Class length and achievement
4. Class lesson plans and schedule

2-6. What are the two primary methods of measuring class achievement?

1. Written tests and performance tests
2. Attention and participation
3. Morale and esprit de corps
4. Attendance and interest

2-7. You should never take which of the following actions in a formal training session?

1. Talk down to the class
2. Talk in a lilting voice
3. Make friends with students
4. Plan class social activities

2-8. As a basis for your training program, you may use which of the following standards?

1. Occupational standards only
2. Naval standards only
3. Occupational standards and naval standards
4. Equipment standards

2-9. What is the only justification for a record of training?

1. It provides continuity to the training program by indicating what training has been done
2. It makes the supervisor look like he is doing his job
3. It aids in morale within the work group
4. It promotes cohesiveness among personnel

2-10. The long-range training schedule is the frame-work for preparing which of the following sched-ules?

1. Monthly training schedules
2. Quarterly forecast of evolutions
3. Weekly training schedules
4. Quarterly forecast of evolutions and weekly training schedules

2-11. For training purposes, the work week is based on what total number of hours?

1. 30
2. 35
3. 36
4. 40

2-12. To develop weekly training, the supervisor should first look at which of the following docu-ments?

1. Quarterly training schedule
2. Availability schedule
3. Operating schedule
4. Watch bill

2-13. The weekly training schedule should provide which of the following types of training?

1. All-hands training only
2. Military training only
3. All-hands and military training only
4. All-hands, military, and professional training

2-14. To standardize record keeping for training, the CNO has developed a total of how many forms that you may use?

1. One
2. Two
3. Three
4. Four

2-15. Of the CNO-developed forms for training, what form is reserved for scheduling instructional per-iods?

1. Type I
2. Type II
3. Type III
4. Type IV

2-16. In current shipboard practice, which of the fol-lowing personnel has the responsibility for all the subsystems of a combat system?

1. Combat systems/weapons officer
2. Electronics material officer
3. Tactical action officer
4. Operations officer

2-17. In some ship configurations, which of the follow-ing resources would the engineering department possibly supply?

1. Heating systems
2. Alternating power
3. Gyro distribution
4. Maintenance personnel

2-18. When you are training personnel in the operation of combat systems equipment aboard ships, which of the following reference manuals is vital?

1. *Combat Systems Training Requirements Manual*
2. *Personnel Qualifcations Requirements Man-ual*
3. *Occupational Standards Manual*
4. *3-M Systems Manual*

2-19. The CSTOM is a reference for which of the fol-lowing topics?

1. The training of new personnel
2. The NEC requirements for your class of ship
3. The integration of systems and subsystems
4. The ship's overhaul requirements

2-20. Which of the following information is provided by the CDS subsystem?

1. Integration, control, monitoring, and tactical employment of own ship
2. Analysis of radiated electromagnetic energy
3. Blanking pulses to prevent emitter interfer-ence
4. Communications control for the ship

2-21. The CDS is composed of which of the following major equipment groups?

1. Electronic attack
2. Electronic countermeasures
3. Data display and transmitting
4. Data processing, display, and communications

2-22. The ACM group has which of the following major components?

1. Torpedo countermeasures transmitting set
2. Electronic countermeasures set
3. Data-processing display
4. Blanker-video mixer

2-23. To employ against an air threat that has penetrated the ship's primary defense envelope, what would normally be the primary choice of weapon subsystem?

1. MK-92 fire-control subsystem
2. Close-in weapons subsystem
3. Harpoon subsystem
4. Chaff

2-24. The missile/gun weapons subsystem onboard an FFG 7-class ship supports which of the following missions?

1. AAW, ASUW, and ASW
2. ASW, ASUW, and ASM
3. ASM, ASf, and AAW
4. ASW, ASM, and AST

2-25. What is the primary missile used against a surface threat?

1. SM1
2. Harm
3. Harrier
4. Harpoon

2-26. The combat systems test and evaluation program has what total number of basic purposes?

1. One
2. Two
3. Three
4. Four

2-27. What are the specific objectives of the CSTEP?

1. Maintenance and administration
2. Overhaul planning, combat readiness, and personnel planning
3. Overhaul planning, overhaul, and administration
4. Maintenance, overhaul planning, overhaul, post-overhaul, and combat readiness

2-28. Which of the following specific actions may be taken by a group commander's combat systems coordinating support team?

1. Assisting in conducting OCSOT
2. Evaluating the ship's self-defense force
3. Evaluating the ship's electronic readiness team
4. Instructing personnel in equipment maintenance

2-29. The purpose of the NAVSEACEN is to provide the assistance necessary to further self-reliance of the ship by improving which of the following elements?

1. Operational readiness of installed ordnance
2. Identification of ship encounters
3. Pre-overhaul assessments
4. Equipment maintenance

2-30. The combat systems readiness review is essential to the ship for which of the following reasons?

1. To assist in correcting material problems
2. To evaluate the SERT's effectiveness
3. To review the combat systems administrative support
4. To assist in the combat systems pre-overhaul assessment

2-31. Ordnance equipment includes which of the following systems?

1. Gun battery only
2. Underwater battery only
3. Gunfire control only
4. Gun battery, underwater battery, and gunfire control

2-32. The combat systems operational readiness examination has a total of how many phases?

1. One
2. Two
3. Three
4. Four

2-33. The CSPOE provides prerequisite testing and preparation for which of the following elements?

1. CSCST
2. CSSQT
3. CSRR
4. CART

2-34. The overall combat systems operability test is what type of PMS test?

1. Level 1
2. Level 2
3. Level 3
4. Level 4

2-35. Detailed procedures for conducting all combat systems tests through the systems level during overhaul are established in the

1. CSIP
2. CSSQT
3. OSCOT
4. CSITP

2-36. The combat systems test coordinator is responsible for coordinating which of the following items?

1. The complete overhaul package
2. All testing with the shipyard
3. All testing outside the shipyard
4. All PMS testing

2-37. Administratively, the SERT reports directly to which of the following officers?

1. Combat systems/weapons officer
2. Systems testing officer
3. Commanding officer
4. Executive officer

2-38. What is the basic reference used by the SERT team?

1. SORM
2. CSTP
3. CSTOM
4. CSCST

2-39. SERT members should have a working knowledge in which of the following areas?

1. PMS philosophy
2. Logistics support
3. Maintenance data system
4. All the above

2-40. The duties of the SERT team members are considered to be of which of the following types?

1. Primary
2. Secondary
3. Collateral
4. Extracurricular

2-41. The SERT is responsible for coordinating preventive and corrective maintenance of the combat systems/weapons department.

1. True
2. False

2-42. In what condition should SERT members be assigned as roving evaluators?

1. I
2. II
3. III
4. IV

2-43. Each inport duty section should have assigned at least how many SERT members?

1. One
2. Two
3. Three
4. Four

2-44. The responsibilities of the SERT are broadly defined by which of the following terms?

1. Operational training guidance only
2. Maintenance management only
3. Readiness assessment only
4. Operational training guidance, maintenance management, and readiness assessment

2-45. The SERT material readiness assessment is directed toward which of the following major mission areas?

1. ASM
2. ASW
3. ASMD
4. ASMDS

2-46. Readiness assessment uses which of the following basic types of techniques?

1. Qualitative only
2. Quantitative only
3. Qualitative and quantitative
4. Quantitative and performance

2-47. Which of the following readiness criteria is/are assigned after an assessment?

1. Substantially combat-ready
2. Marginally combat-ready
3. Not combat-ready
4. All the above

2-48. What are the two basic SERT corrective maintenance categories?

1. Fault isolation and corrective maintenance
2. Fault isolation and preventive maintenance
3. Testing and corrective maintenance
4. Testing and fault isolation

2-49. As a measurement of personnel readiness, which of the following techniques should be used?

1. PMS tests only
2. Simulators or computer programs only
3. Monitoring of ship or fleet exercises only
4. PMS tests, simulators or computer programs, and monitoring of ship or fleet exercises

2-50. In which of the techniques must the hardware be operating properly?

1. PMS tests
2. Monitoring of ship or fleet exercises
3. Simulators or computer programs
4. All the above

2-51. The SERT has the knowledge and training capability to assist the ship's training officer in identifying the topics and content necessary for training enlisted personnel only.

1. True
2. False

2-52. The integrated approach to testing is based on which of the following actions?

1. Defining PMS
2. Defining fictional test requirements
3. Defining personnel requirements
4. All the above

2-53. After a readiness assessment has been completed, the readiness status should be reported by using which of the following methods?

1. Verbal report
2. Summary report
3. Message report
4. Detailed report

2-54. During PMS activities and exercises, the responsibility for determining mechanical and electrical alignments of interrelated combat systems functions lies with which of the following entities?

1. TAO
2. SERT
3. CSRR team
4. Combat systems/weapons officer

2-55. Combat systems integrated maintenance is based on a comprehensive schedule of tests performed at what total number of supporting levels?

1. One
2. Two
3. Three
4. Four

2-56. What manual sets forth an effective PMS and assigns PMS management responsibility?

1. OPNAVINST 4970.4
2. OPNAVINST 4790.4
3. OPNAVINST 4770.4
4. OPNAVINST 4490.7

2-57. Shipboard maintenance falls into three categories. Assistance from outside the ship is required by which of the following maintenance-level categories?

1. Organization
2. Intermediate only
3. Depot only
4. Intermediate and depot

2-58. The goal of PMS is minimal operational efficiency of all equipments and the reduction of equipment downtime, maintenance man-hours, and maintenance costs.

1. True
2. False

2-59. Which of the following phrases best describes the primary ingredients of the PMS program?

1. The description of the methods, materials, tools, and personnel required for maintenance only
2. The scheduling and control of maintenance task performance only
3. The systems fault-isolation procedures only
4. The description of the methods, tools, and personnel required for maintenance; the scheduling and control of the maintenance task performance; and the systems fault-isolation procedures

2-60. Which of the following schedules should be posted in the working area of each maintenance group?

1. Quarterly
2. Monthly
3. Weekly
4. Cycle

2-61. The maintenance data system provides which of the following means?

1. Recording maintenance actions
2. Taking stock of inventory
3. Requesting repairs
4. Isolating faults

2-62. Combat systems testing is conducted at which of the following levels?

1. Division, components, and systems
2. Components, subsystems, and equipments
3. Equipments, systems, and subsystems
4. Department, systems, and components

2-63. After fault isolation has led to corrective action, the next sequence of the combat systems testing procedure is which of the following actions?

1. Verifying the function that was previously faulty
2. Putting the equipment systems back on line for regular use
3. Conducting a complex and extensive test of the entire combat systems
4. Shipping the equipment to other ships for use

2-64. Which of the following programs are used to train combat systems personnel?

1. Ship and fleet operational training exercises only
2. Training programs and simulators/stimulators only
3. Test programs and procedures only
4. Ship and fleet operational training exercises, training programs and simulators/stimulators, and test programs and procedures

2-65. Which of the following broad objectives pertain(s) to all readiness and operational evaluation exercises?

1. To provide specialized predeployment training for anticipated fleet operations only
2. To develop and test new tactics and doctrine only
3. To provide specialized predeployment for anticipated fleet operations and to develop and test new tactics and doctrine
4. To minimize formal reporting of exercises

2-66. Which of the following overall goals pertain(s) to composite training unit exercises?

    1.   To provide predeployment training
    2.   To test and evaluate new doctrine and procedures
    3.   To stimulate development of new concepts in naval warfare
    4.   All the above

2-67. Which of the following fleet exercise publications would assist you in NGFS training?

    1. FXP 1
    2. FXP 2
    3. FXP 3
    4. FXP 4

2-68. Each fleet exercise publication contains safety procedures and exercise evaluation procedures.

    1. True
    2. False

2-69. Which of the following publications outlines the requirements for training exercises and inspections that ensure high battle readiness?

    1. OPNAVINST 3590.11
    2. OPNAVINST 3230.11
    3. CINCLANTFLTINST 3590.11
    4. CINCLANTFLTINST 3230.11

2-70. Combat systems team training may be accomplished by using a variety of simulation/stimulation systems. What can these systems simulate for real-time testing, training, and evaluation?

    1. Data only
    2. Responses only
    3. Commands only
    4. Data, responses, and commands

2-71. Generally, which of the following ships must maintain NGFS qualification?

    1. Gunnery ships
    2. Combatant ships
    3. Ships assigned shore bombardment
    4. Ships with 5-inch-caliber and larger guns

2-72. NGFS qualification maybe terminated for which of the following reasons?

    1. When a ship commits a serious safety violation only
    2. When a ship fires unsatisfactorily during a major exercise only
    3. When a ship commits a serious safety violation or when a ship fires unsatisfactorily during a major exercise
    4. When the NGFS team has changed by at least 30 percent

2-73. NGFS exercises in progress may be aborted for which of the following reasons?

    1. Commanding officer's discretion
    2. NGFS team not manned
    3. Ammunition malfunction
    4. Both 2 and 3 above

2-74. When a missile-firing exercise is being conducted, data extraction should begin at what specific point?

    1. 10 seconds before director assign
    2. Immediately upon director designation
    3. 10 seconds before launcher assign
    4. Immediately upon director lock on

2-75. Normally, a missile firing report is required to be filed within what maximum time after a ship's operational exercise?

    1. 1 day
    2. 2 days
    3. 3 days
    4. 4 days