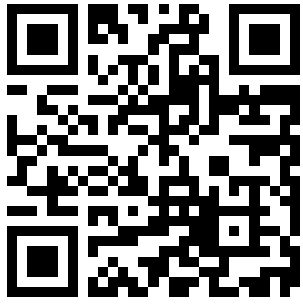

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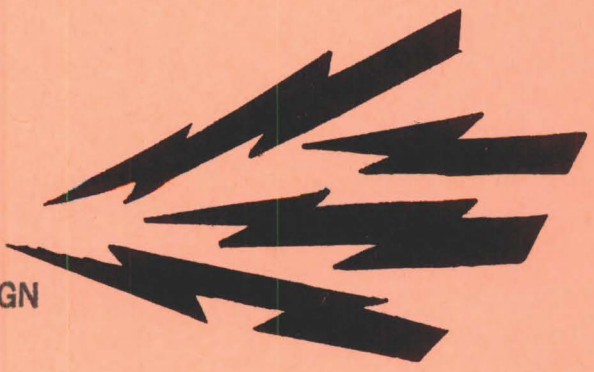
STUDENT GUIDE



RADIOMAN
CLASS A SCHOOL

A-202-0014

May 1984

FOREWORD

This Student Guide for the Radioman Class A School outlines the minimum skills and knowledge you will need to complete the course successfully. Outstanding students in each class will be recognized by special certificates.

This course has been developed through the joint efforts of the Instructors and Staff of Radioman Class A School at the Service School Command, Naval Training Center, San Diego CA 92133.

TABLE OF CONTENTS

LESSONS

* Lesson 9.2 contains Classified Information. The lesson will be promulgated under separate cover.

LESSONS

HOW TO USE THE STUDENT GUIDE

INTRODUCTION

This Student Guide is the text for your use while you are enrolled in the Radioman Class A (RMA) School. It identifies the kinds of knowledge and skills you need to gain to complete the course successfully. When you leave RMA School, the Student Guide will have to be checked in for use by other students. Treat it well! Do not write in the Guide!

In addition to this Student Guide, you will need to obtain and bring to class a notebook and writing tools. Any other material you need will be supplied by the school, as needed.

COURSE ORGANIZATION

Instruction in the course will be provided using lectures, demonstrations, lesson assignments, practice activities, and written and performance tests.

The First 12 Weeks

In this part of the course, instruction and practice will help you gain the basic information and skills needed to begin to work in radioteletype communication stations ashore or afloat. Knowing basic procedures for afloat and ashore units will help you understand the requirements, procedures, and problems of both kinds of units--so you will be able to work together better; or transfer from one to another more easily.

The basic systems you will be learning in this course include all the elements of radio teletype communication systems construction, systems operation, and message processing.

The Final Two Weeks

During the weeks before you reach weeks 13 and 14, the things you learned were studied as separate tasks and related information. In these final two weeks, those parts are put together; and you will be working in WORK STATION situations that match those in ship and shore stations as closely as possible.

It is here where the most important tests in the course will take place--when you will find out whether you can really get it all together!

STUDENT GUIDE COMPONENTS

1. Assignment Sheet

   a. The first page(s) of each lesson

   b. Introduces you to the topic being covered in the lesson

   c. States the TERMINAL OBJECTIVE for the lesson and any related lessons a Terminal Objective usually requires a number of lessons to be completed before it can be achieved.

(1) All Terminal Objectives (except 1.0 and 2.0) will be tested during weeks 13 and 14 of the course.

(2) All Terminal Objectives (except 2.0) will be tested by performance tests requiring 100 percent accuracy.

(3) Terminal Objective 2.0 is tested by written examination requiring at least 80 percent accuracy.

d. States the ENABLING OBJECTIVE(s) that are covered in part, or totally, by the lesson.

(1) Enabling Objectives (EOs) are knowledges or skills that need to be gained in order to perform a Terminal Objective.

(2) EOs may be tested by written or performance tests, depending upon the actions you are expected to achieve.

(3) Objectives tested by written tests require at least 80 percent accuracy; performance tests require 100 percent accuracy.

e. States any Study Assignment and Study Questions that will help you learn and remember the things taught in a lesson.

3. Note Taking Sheets

a. Lists the key points you will be held accountable for in the course.

b. Follows along with information and demonstrations provided by the instructor.

(1) Provides a guide to help you organize your class notes and note-taking. DO NOT WRITE IN THE STUDENT GUIDE.

c. Lists steps of procedure for performing work tasks.

d. Used as a study guide, along with your class notes, as you prepare for tests.

4. Information Sheets

a. Special sections in a lesson used to expand upon or clarify information in the lesson.

PREPARING FOR TESTS

Step 1. Read the objective for the lesson carefully.

They tell you what you will need to know or do to complete the lesson. They identify how your knowledge or performance will be tested. They specify or imply the minimum passing level for each objective (when not specifically stated, the minimum level is 100 percent).

Step 2. Make a note of the method of evaluating the objective that will be used when explained by the instructor at the beginning of the lesson.

The method will be written examination, or by evaluating actual performance as it is being done.

The kind of written test you will have is also indicated in the objectives. They indicate whether you will "match," "select," "write," "complete a statement," or "select" answers.

Step 3. Study the lesson material.

The Student Guide will identify all of the things you will be expected to know or do to complete the course.

a. Practice doing all exercises or activities.

   To prepare for performace tests, practice following steps provided in the Student Guide or in your notes. If you are having problems, ask your instructor for help.

b. Study with other students. Ask each other questions, check each other's work. Find out what you do not know for sure, and check it out with the instructor.

c. Check yourself against the lesson objectives. Do you know, and can you do, what the objective require?

ASSIGNMENT SHEET 1.1

Teletypewriter Operation: Typing Proficiency

INTRODUCTION

Preparing message tapes and operating teletypewriter circuits is a primary duty of a Radioman. In order to perform these tasks properly you must become proficient at typing on a teletypewriter. This lesson will introduce you to various message formats and also require you to type those formatted drafts at various functions per minute.

LESSON TOPIC LEARNING OBJECTIVES

1.0 Given the TT-47 Teletypewriter and a file of messages in ACP 126, Modified ACP 126 and JANAP 128 formats, TYPE MESSAGES at a minimum rate of 900 functions in five minutes with no errors in Format Lines 2, 4, 15, and 16; and five or less errors in Format Lines 5 through 13.

1.1 Given the TT-47 Teletypewriter, instructions for operating the keyboard, and file of straight text message drafts, type at a minimum rate of 500 functions in five minutes with five or less errors.

1.2 Given the TT-47 Teletypewriter and a file of messages prepared in ACP 126, Modified ACP 126, and JANAP 128 message formats, type at a minimum rate of 600 functions in five minutes with no errors in Format Lines 2, 4, 15, and 16; and five or less errors in Format Lines 5 through 13.

STUDY ASSIGNMENT

Review personal notes and Student Guide section 1.1. Familiarize yourself with the keyboard structure and fill-in assigned worksheets.

NOTETAKING SHEET 1.1

Teletypewriter Operation: Typing Proficiency

REFERENCES:

1. ACP 126, Communication Instructions, Teletypewriter (Teleprinter) Procedures, Chapter 1 & 4)
2. JANAP 128, Automatic Digital Network (AUTODIN) Operating Procedures, Chapter 4
3. NTP 4, Fleet Communications, Section 03, Chapter 8

NOTETAKING OUTLINE

II. PRESENTATION

A. Introduction to the TT-47 Teletypwriter

1. Primary use: For transmission and receipt of messages over a radiotelegraph system

a. Radio: Transmission of signals through space by means of electromagnetic waves

2. Navy Teletypewriter sets are manufactured by the Teletype Corporation

a. Most are Model 28 series equipment

b. Operating speeds: 60, 75, or 100 words per minute

(1) School machines operate at 100 WPM

c. Except for specific applications, keyboards are identical

(1) Example: Teletypewriters used on weather networks have special characters for weather reporting

d. The TT-47 teletypewriter will be used to develop teletypewriter typing proficiency in RM A School

B. Components Parts of the TT-47 Teletypewriter

1. Page Printer

a. Typing elements carrier

b. Typing element (type box)

c. Spindle and roll paper

2. Keyboard

a. Four rows of keys and a space bar

(1) Top Row

(a) LOC LF: Local linefeed

1. This key feeds the paper upward on the page printer

a. Continues to feed as long as key is depressed

(b) KBD LOCK: Keyboard lock

1. Locks-up the keyboard

a. Keys will not function

2. May be labeled REC on some teletypewriters

(c) KBD UNLK: Keyboard unlock

1. Unlocks the keyboard

2. May be labeled SEND on some teletypewriters

(d) BREAK

1. Interrupts circuit operation during message transmission

(e) REPT: Repeat

1. Used to type one character continuously or cause continuous machine functions

2. Depress and hold down

3. Depress desired key for character or machine function

a. Repeats continuously unitl REPT key is released

(f) LOC CR

1. Used to return carriage to left hand margin

(2) Second row from top

(a) Dual purpose keys

1. Letters (lower case)

a. Q, W, E, R, T, Y, U, I, O, P

2. Figures (upper case)

a. 1 through 0

(3) Third row from top

(a) Dual purpose keys

1. Letters (lower case)

a. A, S, D, F, G, H, J, K, L

2. Symbols (upper case)

a. - $! & # ' ( )

(b) Bell: Upper case S

1. Used to alert operators to important messages

(c) CAR RET: Carriage return

1. Returns the typing element carrier to the left margin

a. Must be depressed TWICE upon completion of typing each line

(4) Bottom row

(a) FIGS: Figures

1. Shifts the typing element carrier into figures position (upper case)

a. Allows numbers and symbols on top half of key to be typed

(b) Dual purpose keys

1. Letters (lower case)

a. Z, X, C, V, B, N, M

2. Symbols

a. " / : ; ? , .

(c) LTRS: Letters

1. Shifts the typing element carrier into letters position (lower case)

a. Allows letters to be typed

(d) LINE FEED

1. Moves the paper up one line

2. Must be depressed after typing each line

a. Used with CAR RET

(e) BLNK: Blank

1. No functions

(5) SPACE BAR

(a) Moves the typing element one space

1. Used for spacing between words

b. Typing Functions

(1) A function is any keyboard action

(a) The result of depessing any key, EXCEPT the top row of keys

(b) Example: Depressing A, B, C, SPACE BAR, CARRIAGE RETURN, CARRIAGE RETURN, LINE FEED counts as seven functions

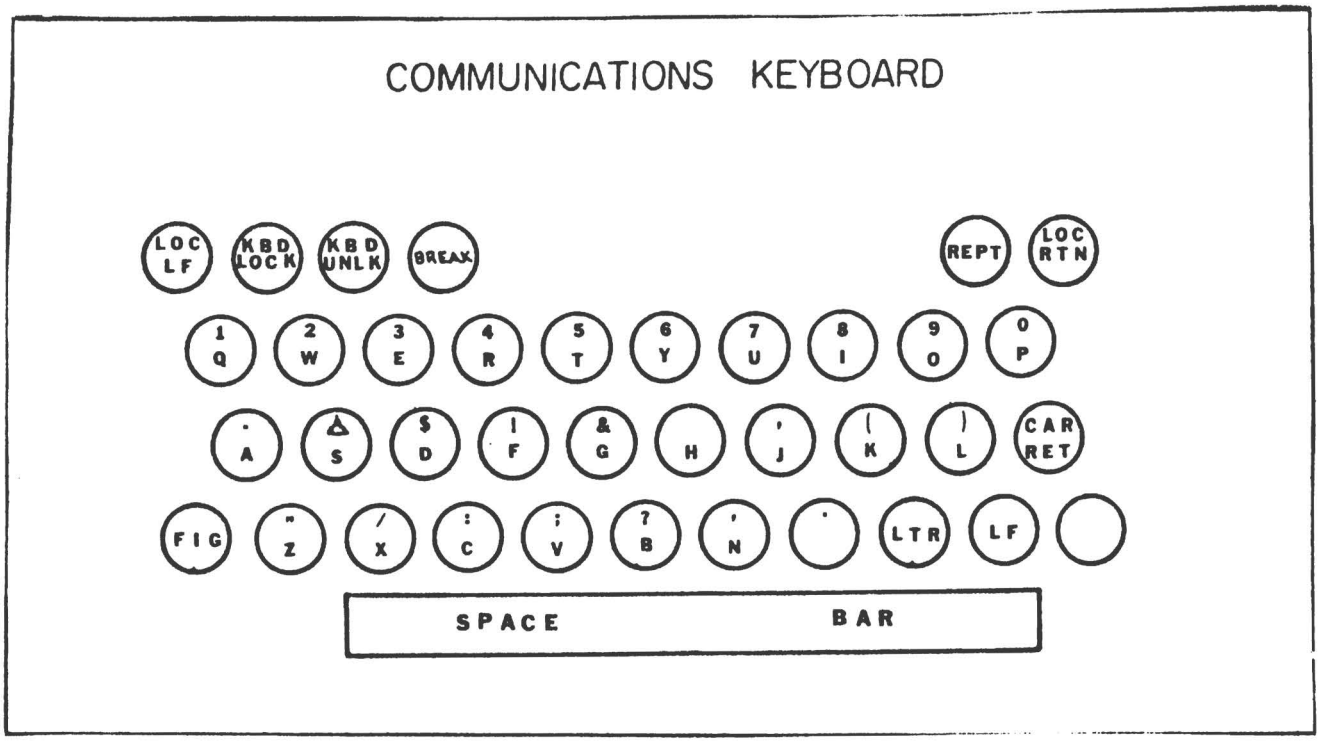


Figure 1.1-1

C. TYPING TECHINQUES

1. Basic techniques needed to gain speed and accuracy in typing

a. Typing Position

(1) Body erect

(2) Sit back in chair

(3) Feet on floor (for balance)

(4) Finger curved

(5) Wrist low and relaxed

(6) Forearms parallel to keyboard

(7) Eyes on copy to be typed

b. Hand/finger position

(1) Curve the fingers deeply

(2) Place over home row keys in an upright (not slanting) position

(a) Home row keys

1. Left hand

a. A: Little finger

b. S: Ring figer

c. D: Middle finger

d. F: Index (fore) finger

2. Right hand

a. J: Index (fore) finger

b. K: Middle finger

c. L: Ring finger

d. CAR RET: Little finger

(3) Wrists low

(a) Do NOT rest the hands on the frame of the teletypewriter

c. Keystroking

(1) Use quick, sharp keystroking

(a) Stroke each key with a sharp, quick movement of the finger

(b) Stroke should be downward toward the palm of the hand

(c) Release the key quickly

(d) Avoid pushing the keys or using up-down-up strokes

(2) Strike the key squarely

(a) To avoid glancing strokes, or striking two keys at once, keep your fingers upright and directly over home keys

(b) Do not permit your hands to slant over on the little fingers

(3) Center the keystroking action in your fingers

(a) You can type faster with your fingers than you can with your arms and wrists

(b) Make the reach to the keys without raising the wrists or moving your elbows in or out

(c) Sit far enough away from the teletypewriter to avoid buckling the wrists or forcing the elbows away from a comfortable position at your sides

(d) Center all the stroking action in your fingers

d. Rhythm Patterns

(1) You develop rhythm by

(a) Reading and typing each character/function as it appears.

(b) Typing at a continuous pace

(2) Whatever the ease or difficulty of the copy, use, EVEN FORCE in striking all the keys

D. Typing Practice Exercise

1. Typing practice exercises are designed to:

a. Improve your typing skills

b. Help you to develop good habits of keystroking and rhythm

2. The following procedures apply to all typing practice sessions

a. Instructor will issue applicable typing practice exercise workbooks

b. Read instructions in exercise workbook carefully

c. Type exercise

d. Return exercise workbook and copy to typed exercises to instuctors at end of exercise

E. Typing Qualifications

1. Performance in typing will be measured through five minute typing qualification runs

a. 500 function level

(1) Straight text paragraphs

(a) A maximum of five errors are allowed

(b) Function count stops when sixth error is made

b. 600 through 900 function level

(1) Naval Messages

(a) A maximum of five errors are allowed in format lines (FL's) five through thirteen

1. FL's will be covered in detail in following lessons

F. Typing Qualification Run Procedures

1. Activating the Teletype Input Message Evaluation System (T.I.M.E.S)

a. Push KYBD UNLK key

(1) Third RED key from the left on top row

b. Type two carriage returns and one line feed

(1) Response will be printed on TT-47 page printer

2. Following information will be requested:

   a. NAME

      (1) Type in LAST NAME only

   b. Social Security Number

      (1) Type in Social Security Number (SSN)

         (a) Separate each group with a dash

            1. Example: 999-99-9999

   c. Course Number

      (1) Type in the three-digit number 042

   d. Item Number

      (1) This is a six-digit number located in the learning guide

         (a) If only five digits are indicated, 0 (zero) will precede the five digits

   e. Test Number

      (1) Two digit number located in the learning guide

         (a) Preceded by word TEST

3. Verify Information

   a. Verify name, SSN, course number, item number and test number

   b. If any part of the information is incorrect:

      (1) Type NO, then two carriage returns and one line feed twice

   c. If all information is correct:

      (1) Type YES, then two carriage returns and one line feed

      (2) Response will be: "Your time begins when you key the first function."

4. Commence test

   a. No talking

   b. Do not rest palms on teletypewriter keyboard

   c. Do not abuse the teletypewriter

d. Do not stop typing

e. Remain seated until system grading is completd and response is printed on the page printer

(1) Instructor will indicate when student should turn in test material

ASSIGNMENT SHEET 2.1

Communications Organization

INTRODUCTION

During this lesson the three major communications control authorities and the supporting five command authorities of the Naval Telecommunications System will be discussed. In order for Radiomen to comprehend their role in this massive organization, the 8 basic tasks of the Radioman will also be covered.

LESSON TOPIC LEARNING OBJECTIVES

2.0 Given the names of communication organizational systems, and the purposes and components of those systems, and job tasks of Radiomen, MATCH ASSOCIATED ITEMS to show their relationships in Naval Telecommunications with at least 80 percent accuracy.

2.1 Given the major purposes of the three major communications control authorities, match the purposes to the designations of those commands.

2.2 Given a list of purposes for five command authorities of the Naval Telecommunications System match the purposes to the designations of those commands.

2.3 Given eight Radioman tasks, match each task with its basic function in Naval communications.

STUDY ASSIGNMENT

Review personal notes and Student Guide Section 2.1 in preparation for a written test. Complete study questions listed below.

STUDY QUESTIONS

Instructions: On a separate sheet of paper, answer the following questions. DO NOT WRITE ON THE ASSIGNMENT SHEET OR IN THE STUDENT GUIDE.

1. The _____ is the worldwide system comprising all long-haul, point-to-point communications ashore

2. The _____ is the system that is composed of both the civilian and DCS communications components.

3. What supporting command authority assists and advises the CNO on Naval communications?

4. The world is divided into how many geographic communications areas?

5. What specific component of a NAVCAMS maintains current status of area assets?

6. Why are the transmitter and receiver sites geographically separated?

7. Under normal conditions, what component of a NAVCOMMSTA acts as an interface between shore and afloat communications?

8. The abbreviation NAVCOMPARS stands for _____?

9. A major difference between a Message Center and a NTTC is _____?

10. List the eight basic jobs of a Radioman.

11. The document that is generated from a NAVCAMS that provides guidance to operating forces within the area is entitled _____?

NOTETAKING SHEET 2.1

Communications Organization

REFERENCES:

1. NTP 4, Naval Telecommunications Procedures, Fleet Communications
2. NWP 4, Basic Operational Communications Doctrine

NOTETAKING OUTLINE

A. National Communications System (See Figure 2.1-1)

   1. Purpose

      a. To Provide a unified government system which links together communication facilities for various federal agencies during peace and wartime.

   2. Administration

      a. Executive agent: Secretary of Defense
      b. Manager: Director, Defense Communication Agency (DCA)
      c. Navy point of contact: Chief of Naval Operations (CNO)

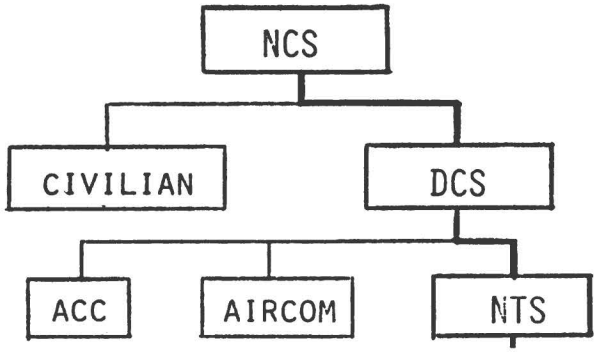


Figure 2.1-1 NCS/DCS Organization

3. System composition of the National Communciation System (NCS):

a. Two components: Civilian and DCS

(1) Civilian

(a) Includes such agencies as:

1. FAA - Federal Aviation Administration

2. FCC - Federal Communications Commission

3. NASA - National Aeronautics and Space Administration

(b) This lst is NOT all inclusive

(2) Defense Communications System (DCS)

(a) Individual military telecommunication organizations

1. ARMY - ACC (Army Communications Command)
2. AIR FORCE - AIRCOM (Air Force Communications)
3. NAVY - NTS (Naval Telecommunications System)

B. Defense Communications System (DCS)

1. Purpose

a. To maintain a single world-wide communications system to support the functions of the Department of Defense (DOD)

2. Administration

a. Director, Defense Communication Agency

(1) Active duty general staff or flag rank officer

3. Systems Composition

a. Worldwide system includes all

(1) Long-haul, point-to-point communications facilities, personnel, and resources
(2) SHORE COMMUNICATIONS ONLY

B. Includes 3 automated systems

(1) Automatic Digital Network (AUTODIN)

(a) Connectivity through Automatic Switching Centers (ASC's)

(2) Automatic Voice Network (AUTOVON)

(3) Automatic Secure Voice Communication Network (AUTOSEVOCOM)

c. DCS DOES NOT include:

(1) Mobile and transportable facilities assigned to

(a) Field Armies
(b) Fleets
(c) Air Forces
(d) Fleet Marine Forces (FMF)

C. Naval Telecommunications System (NTS) (See Figure 2.1-2)

1. Purpose

a. To provide and maintain reliable, secure and rapid telecommunications for the Naval operating forces based on wartime requirements.

2. Policies

a. Cooperate with other military services, other governmental agencies and the DCA.

b. Encourage development and improvement of amateur radio to make it more valuable to the military.

c. Promote safety in the air and at sea by providing communications for US and foreign merchant marines and aircraft over the sea.

3. Administration/Chain of Command Responsibilities

a. Chief of Naval Operations (CNO)

(1) Overall authority
(2) Promulgates guidance

b. Commander Naval Telecommunications Command (COMNAVTELCOM)

(1) Immediate administrative commander of both Naval Communications Area Master Stations (NAVCAMS) and Naval Communications Stations (NAVCOMMSTA's)

(a) NAVCAMS/NAVCOMMSTA's discussed later in this lesson

(2) Provides direction and management control for the operations of communications assets assigned to the Naval Telecommunications System.

(3) Assists and advises CNO on Naval communications.

c. Fleet Commander-in-Chiefs (FLTCINC's)

(1) Directs the control of Naval communications within their areas

(a) Identifies communication requirements of the operating forces
(b) Ensures adequate communications arrangements are made
(c) Monitors effectiveness of services rendered
(d) Promulgates directives concerning operations within their operating areas through issuance of:

1. CINCFLT Instructions
2. Communication Electronic Information (CEI)

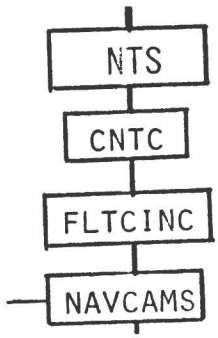


Figure 2.1-2 NTS Organization

d. Naval Communications Areas

(1) The world is divided into four Naval Communications Areas (NAVCOMMAREA)

(a) Each area has a master station

(b) Area designations and locations of the Master Stations

1. Atlantic: Norfolk Virginia (NAVCAMS LANT)
2. Mediterranian: Naples, Italy (NAVCAMS MED)
3. Eastern Pacific: Honolulu, Hawaii (NAVCAMS EASTPAC)
4. Western Pacific: Guam, Marianas Islands (NAVCAMS WESTPAC)

(2) Figure 2.1-3 illustrates geographic boundaries for each NAVCOMMAREA

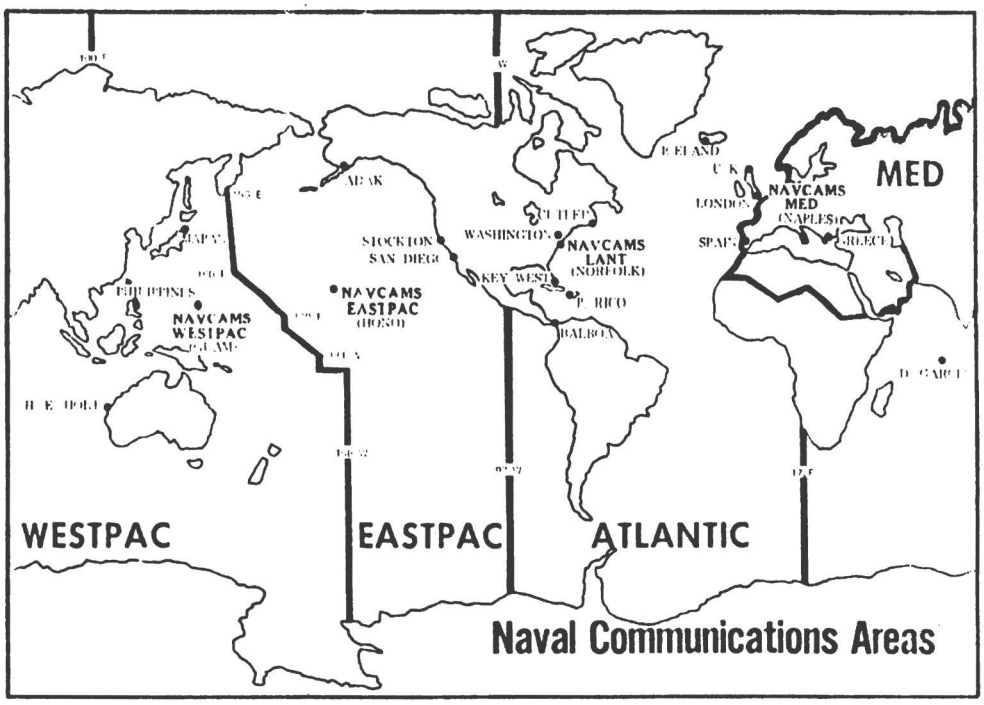


Figure 2.1-3 NAVCOMMAREAs

D. Naval Communications Area Master Station (NAVCAMS)

1. Purpose

a. Plan communications requirements for the NAVCOMMAREA
b. Operates Fleet Telecommunication Operation Centers (FTOC's)
c. Provides daily direction and control for all communications activity in their NAVCOMMAREA

(1) Ashore
(2) Afloat
(3) Airborne

d. Supports the communications needs of the operating forces within their area

(1) Example: fleet broadcast, on-call ship/shore circuits, full period terminations.

2. Control
   a. Exercised through the FTOC

      (1) Maintains current status of communications assets in their area

      (2) Keeps geographic plot of units operating within and around the adjacent areas

      (3) Acts upon requests from units in area

         (a) Terminations to support operations
         (b) Broadcast screening for missed broadcast messages
         (c) Additional circuit requirements
         (d) Circuit operating problems

      (4) Manages the assigned frequency spectrum

      (5) Controls keying of the area Fleet broadcast

         (a) Primary method for afloat units to receive messages

      (6) Drills with other FTOC's on transfering responsibilities to and from one another

      (7) Figure 2.1-4 shows block diagram of a NAVCAMS. Notice the similiarities between the NAVCAMS and NAVCOMMSTA shown in Figure 2.1-5

3. Communications Operating Procedures Guidance

   a. Provided to the operating forces through the issuance of Communication Information Bulletins (CIB's)

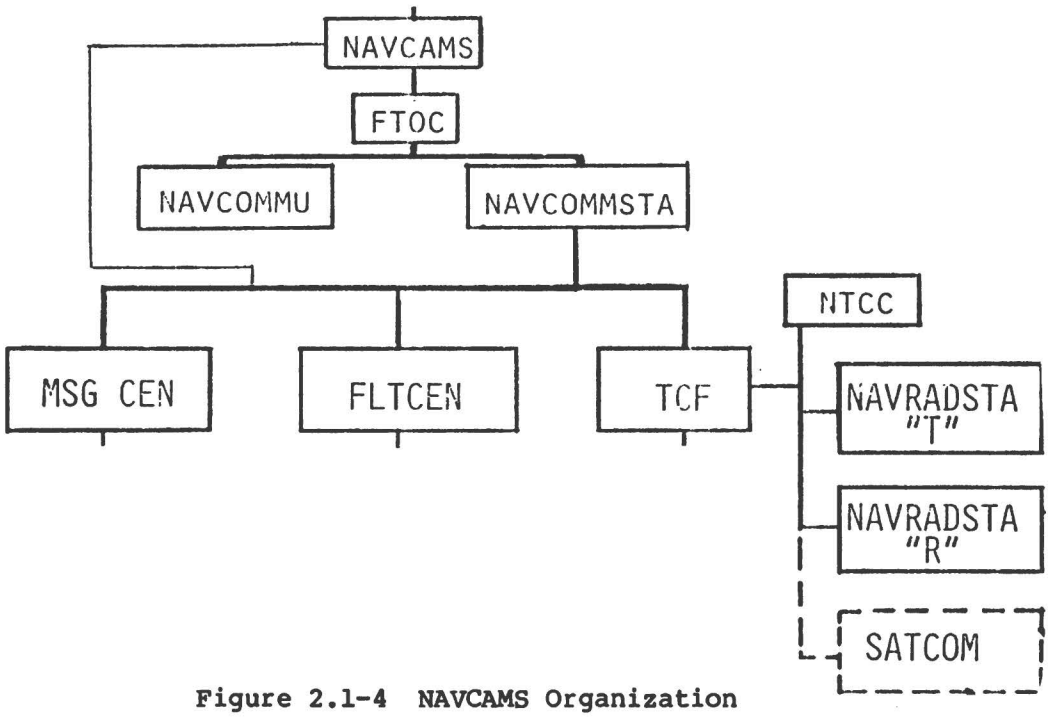


Figure 2.1-4 NAVCAMS Organization

E. Naval Communications Stations (NAVCOMMSTA's)

1. Purpose

a. Operate and maintain communication assets required to provide reliable communications between forces afloat and ashore

(1) Provide full-time and on-call ship/shore capabilities to supplement the NAVCAMS

(2) Assume function of keying the broadcast in the communications area if the primary keying station cannot provide this service

2. System Composition

a. Normally five components

(1) Number may vary depending on unit's mission

b. Typical Configuration (Refer to Figure 2.1-5)

(1) Technical Control Facility (TCF)

(a) Operates and maintains the radio and landline facilities to and from the transmitter and receiver sites, and associated patching equipment

1. Coordinates frequency changes/shifts

(b) Operates on-line cryptographic devices/communications equipments

(c) Establishes, controls and discontinues circuits which enter and leave the station

(d) Isolates and corrects equipment problems

(2) Transmitter Site (NAVRADSTA "T")

(a) Operates the necessary transmitting facilities to send messages/information to distant stations

1. Information to be transmitted is normally received from the Tech Control Facility

(b) Geographically separated from receiver site to minimize interference

(3) Receiver Site (NAVRADSTA "R")

(a) Operates the necessary receiving facilities to receive radio frequency (RF) energy and convert the energy into signals that comprise the information transmitted from the distant station

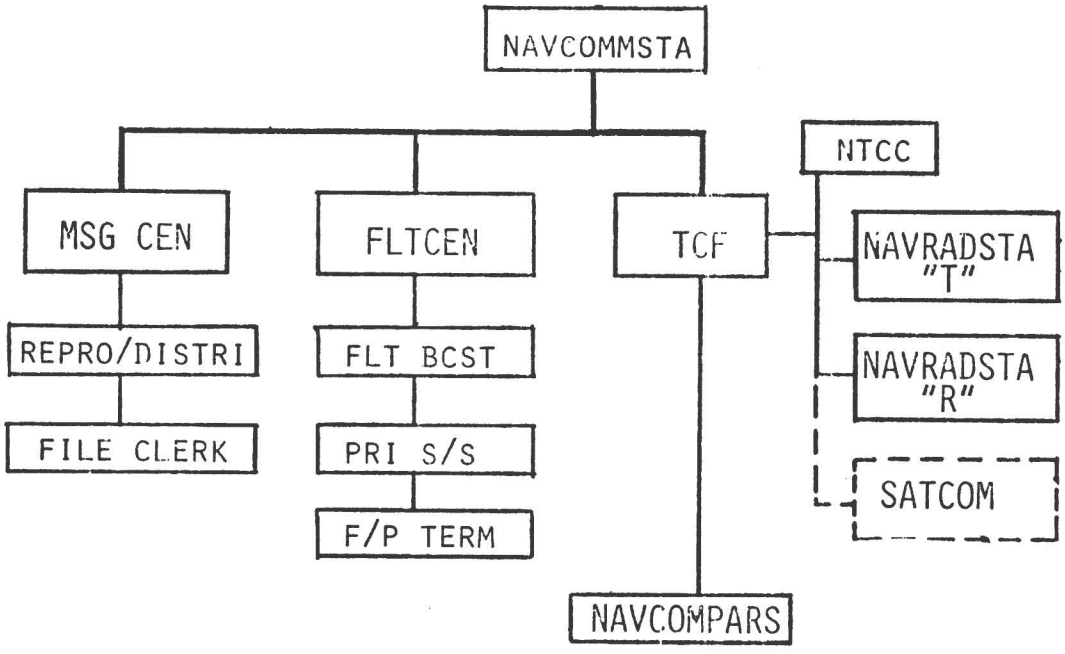


Figure 2.1-5 NAVCOMMSTA Organization

1. Received signals are normally passed to the Tech Control Facility for further processing

(b) Geographically separated from transmitter site to minimize interference

(4) Fleet Center (FLT CEN)

(a) Provides the interface between shore and afloat communication systems

1. Interfaces naval communication networks and DCS communication networks
   a. Majority of message traffic between shore and afloat commands is routed over DCS communication networks at some point

(b) Systems and circuits associated with Fleet Center operations include:

1. Naval Communication Processing and Routing System (NAVCOMPARS)
   a. Provides automatic message processing interface with DCS communication networks
2. Fleet Broadcast
   a. Primary method of message delivery to afloat commands
   b. Allows delivery of large volumes of message traffic with relatively small number of transmitting facilities

3. Primary and Secondary Ship/Shore
   a. Permits random, unscheduled access by fleet units for traffic delivery to shore command
   b. Normally referred to as an "on-call" circuit

4. Full-Period Ship/Shore Termination
   a. Dedicated circuits established between an afloat and ashore command when traffic volume exceeds speed and capability of Primary Ship/Shore circuits and Fleet Broadcast

(5) Message Center or Naval Telecommunications Center (NTCC)
   (a) Serves local shore based commands by processing incoming and outgoing message traffic
      1. Message center normally located at NAVCOMMSTA
      2. NTCC's normally located away from NAVCOMMSTA

   (b) NTCC's may assume communication guard for afloat units which are inport
      1. Reduce watchstanding requirement for communication personnel afloat
      2. Referred to as Shore Based Message Service System (SBMSS)

(6) Satellite Communications Ground Station (SATCOM)
   (a) Serves local shore based commands with transmit and receive capability via satellite
   (b) Serves as Transmitter/Receiver site for Fleet Satellite Operations

F. Naval Communication Unit (NAVCOMMU)
   1. Purpose
      a. Serves limited or specialized missions in specific locations

G. Basic Radioman Tasks (Refer to Figure 2.1-6)
   1. The following describes some of the basic tasks performed by Radiomen to support the Naval Telecommunications System

      a. INROUTER

         (1) Processes incoming message traffic by:

            (a) Logging messages
            (b) Verifying addresses
            (c) Assigning internal command distribution
            (d) Delivering messages to the Reproduction/Distribution Clerk

      b. REPRODUCTION/DISTRIBUTION CLERK

         (1) Prepares message for internal delivery by:

            (a) Reproducing desired quantities
            (b) Assembling and stapling multi-page messages
            (c) Putting message copies in pickup boxes

c. FILE CLERK

(1) Maintains central file of all incoming and outgoing messages

d. OUTROUTER

(1) Performs initial message processing of outgoing messages by:

(a) Logging messages
(b) Assigning message processing information for delivery over radio teletype circuits
(c) Delivering message to Tape Cutter

e. TAPE CUTTER

(1) Prepares messages for transmission over radioteletype circuits by:

(a) Preparing message tapes in required format

f. PRIMARY SHIP/SHORE OPERATOR

(1) Afloat operator

(a) Enters message into the Naval Telecommunication System by:

1. Transmitting to the NAVCAMS/NAVCOMMSTA via radioteletype circuits

(2) Shore operator

(a) Forwards the message transmitted from the afloat unit by:

1. Entering it into the NTS/DCS interface circuit

a. Normally NAVCOMPARS

(3) On-call circuit operator

g. FULL-PERIOD TERMINATION OPERATOR

(1) Afloat operator (Send/Receive)

(a) Enters messages into the NTS by:

1. Transmitting to the NAVCAMS/NAVCOMMSTA via radioteletype circuits

(b) Receives messages from the NAVCAMS/NAVCOMMSTA via radioteletype circuits

(2) Shore operator (Send/Receive)

(a) Forwards messages transmitted from the afloat unit by:

1. Entering it into the NTS/DCS interface circuit

a. Normally NAVCOMPARS

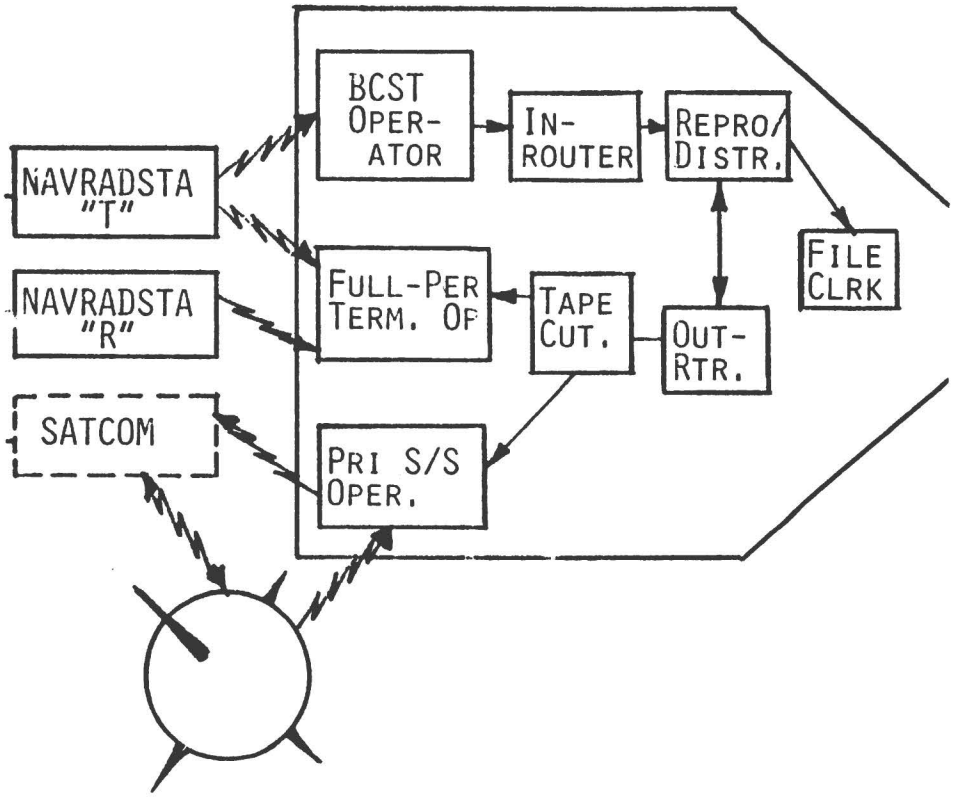
(b) Transmits messages to the afloat station via radioteletype circuits

(3) Dedicated circuit operator

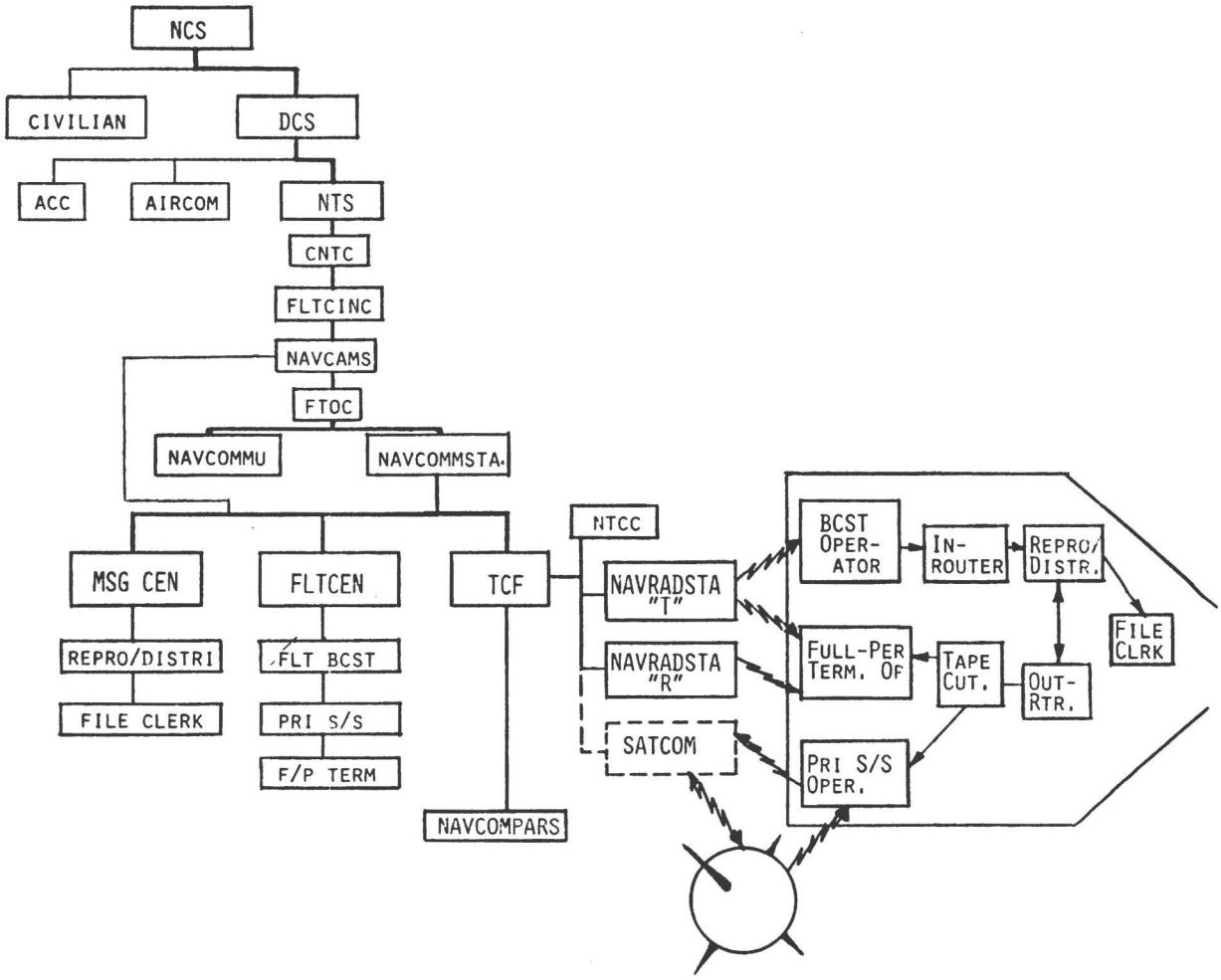
h. FLEET MULTI-CHANNEL BROADCAST OPERATOR (Afloat)

(1) Monitors the fleet broadcast for messages addressed to his unit

(a) Passes messages addressed to his unit to inrouter for internal processing



Incoming/Outoing Message Flow
Figure 2.1-6



COMMUNICATION ORGANIZATION
SUMMARY

ASSIGNMENT SHEET 3.1

Introduction to Security

INTRODUCTION

During this lesson the four major components of communications security (COMSEC) and the three security access areas will be described. The instructor will also define common security words to aid students in comprehending specific security terminology.

LESSON TOPIC LEARNING OBJECTIVES

3.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; controlled access to the spaces; classified material consisting of publications, instructions, cryptographic keying material, and cryptographic equipment; message drafts classified for training purposes only; stowage containers; burn bags; visitors' log; inventory sheets; and classification stamps and stamp pads, COMPLY WITH ALL SECURITY REGULATIONS GOVERNING CLASSIFIED MATERIAL including access to, handling, dissemination, storing, inventorying, and disposing of classified material during the performance of watch station qualifications in accordance with the following publications: OPNAVINST 5510.1, and 5510.45, ACP 121 US SUPP-1, ACP 122, CMS 4, KAG-1, NTP-4, NTP-5, NTP-7, and NWP-4.

3.1 Given a list of eleven security terms, match at least 9 terms with their definitions.

3.2 Given definitions of communication security (COMSEC) access areas, components, and materials/equipment classifications, state the basic COMSEC designations assigned to each for the control and maintenance of naval communications security with at least 80 percent accuracy.

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 3.1.
Complete Progress Check 3.1.

NOTETAKING SHEET 3.1

Introduction to Security

REFERENCES:

1. ACP 122, Communications Instructions - Security
2. ACP 167, Communications - Electronics Terms
3. OPNAVINST 5510.1, Department of the Navy Information Security Program Regulation
4. NTP 4, Naval Telecommunication Procedures, Fleet Communications

NOTETAKING OUTLINE

A. Introduction to Security

1. Purpose of Security

a. Protecting classified information, material and equipment from unauthorized disclosure to maintain the National Security

2. Security is maintained by

a. Classification of materials to limit their distribution

b. Control of areas containing classified materials and/or equipments.

(1) Classified: Material, equipment, or information designated by higher authority as essential to the National Security.

c. Handling of classified materials in secure spaces

(1) Handling: Use, processing of or action taken concerning classified materials.

d. Accounting for and inventorying classified materials

(1) Controlling distribution of classified materials

(2) Identifying holders of classified materials

(3) Documenting where classified materials are held

e. Proper stowage of classified materials

f. Routine and emergency destruction of classified material

B. Communication Security

1. Communication security (COMSEC) is the protection resulting from the application of cryptosecurity, transmission security, and emission security to telecommunications and from the application of physical security to classified information

a. These measures are taken to keep unauthorized persons from obtaining any information of value and to ensure authenticity of telecommunications

2. Cryptosecurity

a. The component of communication security that results from providing and properly using technically sound cryptosystems

(1) Technically sound: Equipment is properly selected and correctly adjusted

(2) Cryptosystem: Equipment and materials needed to encrypt and decrypt information

b. Maintaining Cryptosecurity

(1) Cryptographic operations constantly supervised

(a) Direct responsibility of Communications Officer

(b) At least one person, competent to select and set up cryptosystems, on watch at all times

(2) Use of proper and current crypto equipment

(a) Transmission and receiving crypto equipment properly matched

(b) Correct system for the classification of information being communicated

(3) Rigid adherence to current regulations/instructions

(a) Cryptosystems may not be used without specific authority

(b) Cipher materials may not be produced or reproduced without specific authority

3. Transmission Security

a. The component of communications security which results from measures designed to protect transmissions from interception and exploitation by means other than cryptoanalysis

(1) This includes:

(a) Interception: Searching for, listening to and recording transmissions to obtain information

(b) Imitative Deception: Transmission of false information into an enemy's communication channels for the purpose of deceiving the enemy

b. Transmission methods

(1) Radio transmissions

(a) Information radiated from a sender to a receiver through air, space or water

(b) Major advantage

1. Range

2. Speed of transmissions

3. Traffic volume capacity

(c) Major Disadvantage

1. Least secure of all types of transmissions

2. Highly vulnerable to interception

(d) Modes of transmission

1. Microwave

2. Telephone

3. Telegraph

4. Teletypewriter

5. Facsimile

6. Data

7. Television

(2) Wireline Transmissions

(a) Information carried from sender to receiver by wire, fiber optics or cable

(b) Less vulnerable to interception than radio transmissions

(c) Modes of Transmission

1. Telephone

2. Telegraph

3. Teletypewriter

4. Facsimile

5. Data

6. Intercom

7. Television

c. Maintaining Transmission Security

(1) General Rules

(a) Minimize transmissions

1. Accurate transmission limits necessary for

a. Retransmissions

b. Cancellations

c. Acknowledgements

2. Limit addressees to those with need-to-know

(b) Defensive Measures

1. Proper use of communications equipment

2. Adhere to current operating procedures

3. Use of cryptographic equipment and protected circuits whenever possible

4. Strict circuit discipline

a. Circuit discipline: Maintenance of specific rules while operating circuits or telecommunications equipment

4. Emission Security

a. The component of communication security which results from measures designed to deny unauthorized persons information of value which might be intercepted from compromising radiations from crypto equipment and telecommunications systems

(1) Compromising radiations: Unencrypted classified intelligence signals that are radiated out of secure communication spaces through unshielded cables and wiring or improperly enclosed work areas.

(2) Emission Security measures commonly called TEMPEST

b. Safeguards against compromising radiations

(1) TEMPEST instrumented testing is the only approved method of monitoring and maintaining emission security

(2) Safeguards against compromising radiations

(a) Type of equipment used

(b) Equipment condition

(c) Power Utilized

(d) Working area

1. Keep equipment and work area doors closed

2. Maintain proper door seals

3. Maintain properly shielded external wiring and connections

5. Physical Security

a. Measures taken to prevent unauthorized personnel from gaining access to or directly observing classified material

b. Protects against

(1) Loss

(2) Theft

(3) Capture

(4) Salvage

(5) Espionage

(6) Unauthorized observations/photography

(7) Verbal disclosure

c. Maintaining Physical Security

(1) Security Access Areas

(a) Work or operations space in which personal access to classified material or equipment is controlled for security purposes

(b) Basis for designating spaces as security access areas

1. Nature of work being performed

2. Type of classified material accessible in the space

(c) Security Access Area designations

1. Exclusion Area

2. Limited Area

3. Controlled Area

(d) Exclusion Area

1. An area in which access to the area itself provides access to classified material

2. Examples:

a. CMS Vault

b. Off-line Crypto Space

3. Minimum Security Requirements

a. Clearly defined boundary

b. Personnel identification and control system

c. All points of entry and exit guarded or secured by an alarm system

d. Only authorized personnel are allowed access

(e) Limited Area

1. An area containing classified information in which uncontrolled movement would permit access, but access may be controlled by an escort

2. Example:

a. Naval Telecommunications Center/Message Center

b. Technical Control

c. Radio Central

3. Minimum Security Requirements

a. Clearly defined boundary

b. Personnel identification and control system

c. All points of entry and exit guarded or secured by an alarm system

d. Only authorized personnel are allowed access

(f) Controlled area

1. An area within which uncontrolled movement does not permit access to classified information

2. Main purpose is administrative

a. Control Space utilization

b. Safety

c. Buffer area for other two security areas

3. Minimum security Safeguards

a. Clearly defined boundary

b. Personnel identification and control system

c. Checking stations at entry and exit as required

4. Admittance is based on an operational need for access

(g) All three security access areas will be identified by a sign stating "RESTRICTED AREA"

1. No security area sign will disclose the sensitivity of information contained in the space

a. Example: Radio Central WOULD NOT BE LABELLED:

RADIO CENTRAL
RESTRICTED AREA
TOP SECRET

b. Example: Radio Central COULD BE LABELLED:

RADIO CENTRAL
RESTRICTED AREA
UNAUTHORIZED PERSONNEL
KEEP OUT

(2) Accounting for and Safeguarding Classified Material

(a) Allowances and issues

1. Maintain correct allowance of classified material necessary to operate under normal conditions

2. Restrict the amount of classified material issued

(b) Accounting for Classified Material

1. Accurate and efficient system to prevent loss or physical compromise of classified material

2. Achieved by

a. Classification and registration of material

b. Establish custodial responsibilities

c. Maintain accurate records

d. Submission of timely communications reports

(3) Transportation of Classified Material

(a) Highly vulnerable to compromise

1. Compromise: A security violation which has resulted in confirmed or suspected exposure of classified information to unauthorized persons

(b) Strict procedures to prevent compromise

1. Packaging

2. Package receipts

3. Using only authorized means of transportation

a. Couriers

b. Certified/Registered mail

c. Weighted and perforated containers to prevent salvage recovery when transferring over water

(4) Stowage of Classified Material

(a) Housed within a building having constant security guard

(b) Safe or vault having:

1. Not less than a three-way combination lock

2. Sufficient size and weight to prevent theft

a. If portable, securely fastened to the surrounding structure

(c) Key-locked containers

1. Only two keys shall be in existence

a. Keys held by the CO and the person responsible for the container

(5) Destruction of Classified Material

(a) Routine Destruction

1. Destruction of classified material when its usefulness has ended

2. Destroyed by

a. Burning

b. Shredding

c. Pulping

d. Other authorized methods

3. Destruction performed only by authorized personnel

(b) Emergency Destruction

1. Timely destruction of classified material in response to a serious threat to physical security

2. Implemented by an Emergency Action Plan (EAP) providing for:

a. Precautionary destruction (all non-essential classified material) and complete emergency destruction

b. Responsibilities for destruction specified by billet

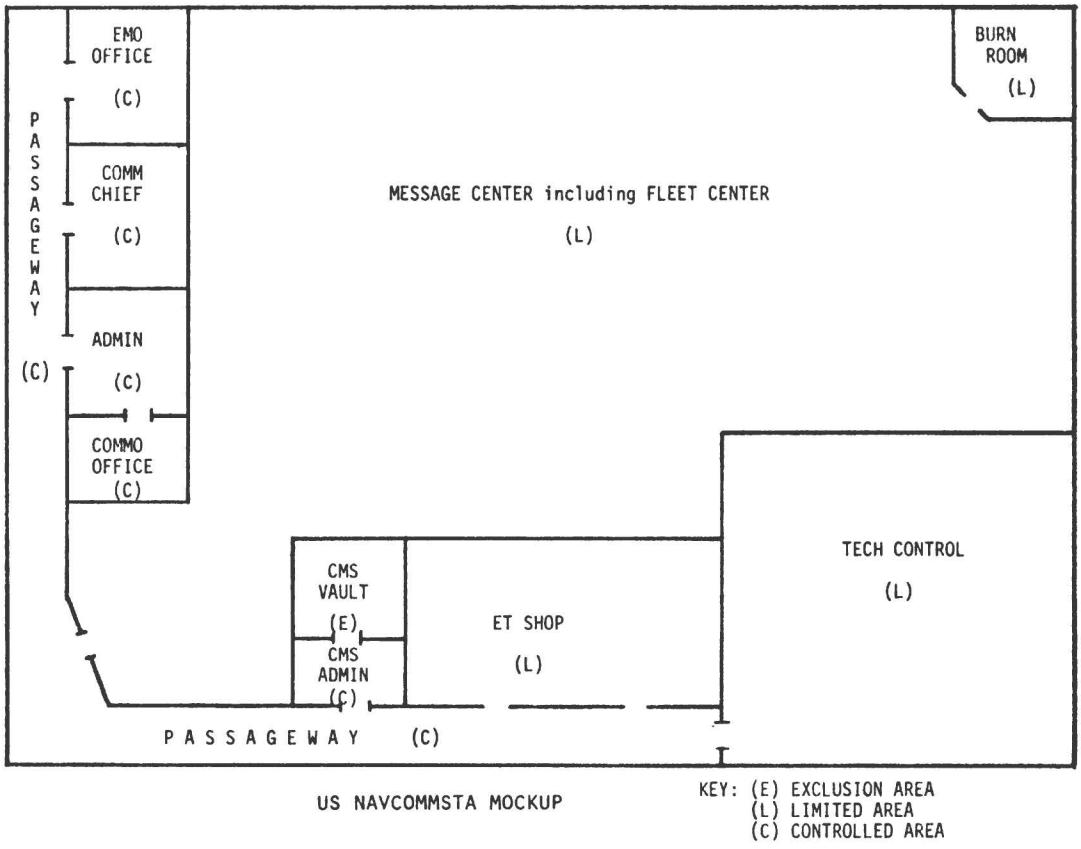
c. Conduct of training exercises for familiarization with emergency destruction procedures

d. Designated place for destruction

e. Location of keys for rooms, safes and cabinet vaults

f. Accountability of material destroyed

g. Reporting destruction to higher authority



NAVCOMMSTA MOCKUP
Figure 3.1-1

PROGRESS CHECK 3.1

INSTRUCTIONS: USE SEPARATE SHEET OF PAPER FOR ANSWERS -- DO NOT WRITE ON PROGRESS CHECK

1. Protecting information, materials, and equipments from unauthorized disclosure is the purpose of _____.

2. The four components of Communciation Security

   a. _____.
   b. _____.
   c. _____.
   d. _____.

3. Measures taken to prevent unauthorized personnel from gaining access to, or directly observing classified information, material, and equipment are defined in the _____ security component of Communication Security.

4. TEMPEST is related to what component of communication security?

   a. Physical
   b. Crypto
   c. Transmission
   d. Emission

5. Which component of communication security regulates the provision and use of technically sound crypto systems?

   a. Emission
   b. Crypto
   c. Transmission
   d. Physical

6. Protecting transmission from imitative deception falls under what component of communication security?

   a. Physical
   b. Crypto
   c. Transmission
   d. Emission

7. Information or messages that have not been encrypted are known as _____ _____.

8. To deny interception and analysis of compromising radiations from crypto and other telecommunications equipments are concerns of the _____ security component of communication security.

9. A work or operations space in which personal access to classified material or equipments is controlled for security purposes is called a/an

   a. Exclusion Area.
   b. Controlled Area.
   c. Limited Area.
   d. Security Area.

10. An area containing classified information in which uncontrolled movement would permit access, but access may be controlled by escort, describes a/an

   a. Exclusion Area.
   b. Controlled Area.
   c. Limited Area.
   d. Security Area.

11. A CMS Vault is normally located within what type of security area?

   a. Exclusion Area
   b. Controlled Area
   c. Limited Area
   d. Security Area

12. An area within which uncontrolled movement does not permit access to classified information is called a/an

   a. Exclusion Area
   b. Controlled Area
   c. Limited Area
   d. Security Area

13. A columized document which contains names, rank/rate, security clearance and authorized area of admittance for personnel is called an _____ _____.

14. All security areas are identified by a sign stating:

   a. Name of space
   b. Classification of space
   c. Restricted Area
   d. Room number

END OF PROGRESS CHECK 3.1

ASSIGNMENT SHEET 3.2

Accountability and Control of Classified Material

INTRODUCTION

This lesson topic will provide Radiomen with the basic rules for knowing where and how to keep track of communications materials, making sure everything needed to do the job is there, and how to properly store and destroy classified material.

LESSON TOPIC LEARNING OBJECTIVES

3.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; controlled access to the spaces; classified material consisting of publications, instructions, cryptographic keying material, and cryptographic equipment; message drafts classified for training purposes only; stowage containers; burn bags; visitors' log; inventory sheets; and classification stamps and stamp pads, COMPLY WITH ALL SECURITY REGULATIONS GOVERNING CLASSIFIED MATERIAL including access to handling, dissemination, storing, inventorying, and disposing of classified material during the performance of watch station qualifications in accordance with the following publications: OPNAVINST 5510.1, and 5510.45, ACP 121 US SUPP-1, ACP 122, CMS 4, KAG-1, NTP-4, NTP-5, NTP-7, and NWP-4.

3.1 Given a list of eleven security terms, match at least 9 terms with their definitions.

3.3 Given descriptions of specific types of special message handling requirements, rules for maintaining classified material accountability, categories of classified material, and information needed to inventory classified material, match procedures for management of classified materials to the given situations or conditions, including the utilization of special designators, inventorying, and accounting for classified material with at least 80 percent accuracy

3.4 Given specific types of classified materials, statements of routine and emergency conditions, and types of compromise situations, select the proper procedures needed to protect classified materials against their utilization by unauthorized persons, including proper storage, approved destruction, and reporting of compromise situations, with at least 80 percent accuracy.

STUDY ASSIGNMENT

Review personal notes and Student Guide Section 3.2.
Complete Progress Check 3.2

NOTETAKING SHEET 3.2

Accountability and Control of Classified Material

REFERENCE:

1. OPNAVINST 5510.1, Department of the Navy Information Security Program Regulation
2. OPNAVINST 5430.48, Security Manager Handbook
3. NTP 4, Naval Telecommunication Procedures Fleet Communications
4. NWP 4, Basic Operational Communications Doctrine
5. ACP 122, Communications Instructions - Security
6. DOD 5200.1 R, Department of Defense, Information Security Program Regulation
7. SECNAVINST 5720.42, Department of the Navy, Freedom of Information Act Program
8. CMS 4, Communications Security Material System

NOTETAKING OUTLINE

A. Accountability and Control

    1. Purposes of Accountability and Control

        a. Limit distribution of classified material

        b. Prevent unnecessary reproduction of classified material

        c. Determine appropriate person normally responsible for the material's security

        d. Identify holders of classified material

        e. Safeguard against unauthorized access or observation of classified material

    2. Accountability and Control of classified material maintained by:

        a. Proper handling

        b. Efficient Inventory system

        c. Correct storage

        d. Complete destruction

B. Security Classifications

    1. Classification: The determination that official information requires, in the interest of National Security, a specific degree of protection against unauthorized disclosure, coupled with a designation signifying that such a determination has been made

2. Classification Designations

a. Three classification designations

(1) TOP SECRET

(a) Information or material whose unauthorized disclosure could be expected to cause EXCEPTIONALLY GRAVE DAMAGE to National Security

(b) Highest classification designation

(c) Examples of TOP SECRET information

1. Armed hostilities against the U.S. or its allies (acts of war)

2. Disruption of foreign relations vitally affecting National Security

3. Sensitive intelligence operations

(d) Only those individuals so directed by the Secretary of the Navy shall determine that material requires a TOP SECRET designation

(2) SECRET

(a) Information or material whose unauthorized disclosure could be expected to cause SERIOUS DAMAGE to National Security

(b) Second highest classification designation

(c) Examples of SECRET information

1. Disruption of foreign relations significantly affecting National Security

2. Impairment of a program or policy directly related to National Security

(d) Only those individuals so directed by the Chief of Naval Operations shall determine that material requires a SECRET designation

(e) Officials authorized to designate material as TOP SECRET may also designate material as SECRET

(3) CONFIDENTIAL

(a) Information or material whose unauthorized disclosure could cause DAMAGE to National Security

(b) Lowest classification designation

(c) Examples of CONFIDENTIAL information

1. Disclosure of technical information used for training, maintenance, and inspection of classified munitions of war

2. Loss of information which indicates strength of ground, air and naval forces in the U.S. and outside the U.S.

(d) Officials authorized to designate material as Top Secret or secret may also designate material as Confidential

C. Handling Classified Material

1. Top Secret Material

a. Requires restricted handling because of its sensitivity

b. Handled by a minimum number of properly cleared, command designated personnel

c. Top Secret Control Officer responsible for all Top Secret material

(1) Receiving

(2) Maintaining and accounting for

(3) Distribution

d. All Top Secret material must be registered in the command accountability ledger

(1) Completely identifies the material including changes

(2) Shows number of copies

(3) Gives disposition of each copy

e. All copies must be serially numbered

(1) Serial number located at top right margin of first page

(2) Example: COPY 003 of 125 COPIES

f. All pages must be numbered

(1) Page number located at bottom right margin of every page

(2) Example: PAGE 04 OF 15 PAGES

g. Top Secret material will be accounted for by a continuous chain of receipts

(1) A disclosure record will be maintained showing every individual who has been given access to the material and the date of access

h. Retention of Top Secret material will be kept to a minimum

2. Secret Material

a. Local procedures are established for handling Secret material

b. Signed receipts are not required for distributing Secret material within the command

c. Copies need not be serialized as with Top Secret

d. Additional controls on Secret material must recognize the need for a practical balance between security and operating efficiency

3. Confidential Material

a. Local administrative procedures are established which provide protection for Confidential material

4. Special Handling Designations

a. Assigned to certain types of messages which require special handling in addition to that afforded by the assigned security classification

(1) Special Category (SPECAT)

(a) Processed and handled by only those communications personnel who actually encrypt and decrypt the message, or, in the case of on-line transmissions, only the send and receive operator

1. Only U.S. personnel who posses a final Top Secret clearance

2. Will be specifically designated by the Commanding Officer

(b) Will have the designator "SPECAT" inserted, by the originator, immediately following the message classification and preceeding the project or subject name

1. Classification must be AT LEAST CONFIDENTIAL

(c) Example: S E C R E T SPECAT GODZILLA

(2) SPECAT EXCLUSIVE FOR

(a) Used to provide administrative privacy and maximum accountability for sensitive messages in both the communications and distribution channels.

(b) For use by Officers of Flag Rank or in a Command status

(c) distribution limited to the eyes of the named recipient

(d) Designator SPECAT EXCLUSIVE FOR immediately follows the classification

(e) Example: S E C R E T SPECAT EXCLUSIVE FOR RADM JONES

(3) Limited Distribution (LIMDIS)

(a) Provides for limited distribution outside communications channels.

(4) PERSONAL FOR Messages

(a) Intended to convey information on a personal basis and insure greater privacy than a normal message

1. Contain matters of a personal nature which do not normally require staff action

(b) Use is reserved for Officers of Flag Rank and Officers in Command status

(c) Can be either classified or unclassified depending on the content of the message

(d) Handled only by personnel who posses the necessary clearance

(e) Not normally used OUTSIDE the Navy

(f) Distribution made SOLEY to the designated recipient

(g) Example: UNCLAS PERSONAL FOR RADM JONES

b. Other Handling Designations

(1) FOR Messages

(a) Message, classified or unclassified, marked "FOR" a person by name or title

(b) Do not warrant special handling

(c) Will be delivered to the person designated

1. Will also be disseminated within the command based on subject matter

(2) For Official Use Only (FOUO)

(a) Unclassified information, records and other material to be withheld from the general public

1. Personnel and medical file information constituting unwarranted invasion of privacy

2. Matters related solely to internal personnel rules and practices of an agency

(b) Handled and accounted for in accordance with SECNAVINST 5570.2

(c) Messages containing FOUO subjects which are to be transmitted outside the U.S. or to Non-Navy/Marine Corps DOD activities will have the designation "EFTO" included in the classification line

(d) Example: UNCLAS E F T O FOUO

(3) Encrypto for Transmission Only (EFTO)

(a) Indicates that the message cannot be transmitted over an uncovered circuit

(b) Mandatory only when Navy and Marine Corps unclassified messages marked FOUO are addressed to a Non-Navy/Marine Corps DOD activity outside CONUM

1. Air Force and Army overseas are examples of Non-Navy/Marine Corps DOD activities

D. Inventorying Classified Material

1. Purpose: To provide positive control of classified and selected unclassified publications within a designated communications space

2. Watch-to-watch Inventory

a. Watch: A specific time period, usually eight hours, spent working in the communications spaces

(1) Day Watch 0730-1630

(2) Eve Watch 1630-2330

(3) Mid Watch 2330-0730

NOTE: TIMES MAY VARY FROM ONE COMMAND TO ANOTHER

b. Change of Watch

(1) On-coming and off-going watch supervisors jointly conduct a sight inventory of every publication

(a) Sight: visual check of material inventoried

(2) Looseleaf materials require pagechecks in addition to sight inventory requirements

(a) Looseleaf material: Material that is not bound in its own binder, or extracts taken from another piece of material and held in that space

(3) On-coming watch signs inventory certifying:

(a) Material was sighted

(b) Required page checks were conducted

(4) On-coming watch now responsible for the material's safekeeping

(5) Any discrepancies found while conducting the inventory will be resolved prior to relieving the watch

(6) All signatures will be in ink

(7) Inventories may be destroyed after 30 days unless otherwise directed

(8) If aboard a command where a 24 hour watch is not maintained, a daily inventory is required

(9) Material held by custodians at activities that DO NOT stand watches will be inventoried at least every six months

Short Title	Ser. No.	Loc.	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
NTP-3	001	S-1																															
NTP-4	005	S-3																															
NWP-4	008	S-3																															
ACP 121	004	S-1																															
ACP 122	003	S-1																															
ACP 125	002	S-1																															
ACP 131	012	S-3																															
ACP 113	025	S-3																															
INITIALS																																	

MY INITIALS INDICATE THAT I HAVE COMPLETED THE DAILY INVENTORY AND NO DISCREPANCIES HAVE BEEN NOTED.

Naval Warfare Publication Inventory
Figure 3.2-1

E. Storage of Classified Material

1. Commanding Officers are responsible for safeguarding all classified material within their commands and for ensuring that classified material not in actual use is properly stored

a. Storage Requirements

(1) Top Secret material storage

(a) Safe-type steel file with built-in three-position dial type combination approved by Government Services Agency (GSA) or,

(b) Class A vault-type room

(c) Top Secret material located in bulding, structural enclosures or other areas not under U.S. control must also be protected by an alarm system

(2) Secret and Confidential Material Storage

(a) In same manner prescribed for Top Secret, or

(b) Class B vault or,

(c) Vault type room, strong room, or secure storage room (as prescribed in the Security Manager Handbook, Chapter 11)

(3) Unclassified storage is a local decision

b. Storage Precautions

(1) Valuables <u>shall not</u> be stored in containers holding classified material

(a) Examples of valuables: money, jewelry, narcotics

(2) Containers will be identified externally by assigned number or symbol system only

(a) Containers will NEVER show the level of classified material contained within

F. Destruction of Classified Material

1. Procedure for permanently eliminating classified material from use

2. Types of Destruction

a. Routine Destruction

(1) Routine: Normal, regularly planned elimination of classified material

(a) Assists in reducing security risks

(b) Prepares for emergency situations

(2) Authorized Destruction Methods

(a) Burning

1. Most common ashore

(b) Shredding

1. Most common at sea

(c) Pulverizing

1. For circuit boards, printing plates

(d) Wet-process Pulping

1. For water soluable materials

(e) Tearing and Scattering

(f) Jettisoning

(g) Chopping

(3) Routine Destruction Requirements

(a) Top Secret material

1. Record document destroyed

2. Record date of destruction

3. Two witnesses' signatures required

a. Witnesses must have Top Secret Clearance

4. Top Secret destruction records retained for 2 years

(b) Secret Material

1. Destruction same as for Top Secret

a. Witnesses must have Secret clearance

b. Record of individual destruction may be waived by CNO for extremely large quantities of material

(c) Confidential Material

1. Must be destroyed by authorized means

2. Records of destruction not required

3. One witness is required

a. Must have at least a Confidential clearance

(d) Unclassified Destruction

1. CO's discretion as to method of destruction

2. Routinely discarded in burn bags

b. Emergency Destruction

(1) Purpose: To guard against possible compromise of classified material when a serious threat to the physical security of the material develops

(2) ALL commands that hold classified material will have an Emergency Action Plan (EAP) which provides:

(a) A systematic, practical plan for destruction

(b) Assignment of destruction duties by billet or operator task

(c) Assigned alternates in case of injury or lack of personnel

(d) Assigned priorities for destruction of material

1. Destruction priorities will be discussed in following lesson

(3) Emergency Destruction Methods

(a) Shore stations

1. Burn documents in incinerators, or in gasoline/kerosene primed altered 50-gallon drums

a. Use several small fires, rather than one large fire to ensure complete destruction

(b) On-board ships

1. In deep water (1,000 fathoms or more)

a. One fathom equals six feet

b. Crypto equipment jettisoned overboard

c. Documents jettisoned in weighted bags

d. Equipment and documents may be permitted to go down with a sinking ship

2. In shallow water (less than 1,000 fathoms)

   a. Burn combustible material

   b. Jettisoning documents in weighted bags permitted when burning is impractical

   c. Some ships may have burn-drums as described for shore stations

3. On aircraft

   a. Over water, material may be sunk in weighted bags as for ships

   b. When over enemy territory, documents should be burned and communication equipment should be destroyed beyond salvage

G. Compromise of Classified Material

1. Compromise

   a. A security violation which has resulted in confirmed or suspected exposure of classified material or information to an unauthorized person

      (1) Security Violation: Any failure to comply with the regulations relative to the security of classified material

      (2) Unauthorized person: One who does not possess the "need-to-know" to view classified material

         (a) Need-to-know: The necessity for access to, knowledge of, or possession of classified information in order to carry out official military or other government duties

   b. Compromise is considered:

      (1) CONFIRMED when CONCLUSIVE evidence exists that classified material was compromised

      (2) SUSPECTED when SOME evidence exists that classified material has been subjected to compromise

      (3) DELIBERATE when an intentional act was done with the object of conveying classified material to an individual not officially authorized to receive it

2. Threats to Security

   a. The compromise of classified information presents a threat to national security

(1) The seriousness of the threat must be determined and measures taken to negate or minimize the adverse effect of the compromise

(a) Any individual becoming aware of the compromise or subjection to compromise of classified material must report the incident to his/her superior immediately

b. When classified material has been reported as compromised or subjected to compromise, action is initiated to accomplish the following:

(1) Regain custody of the material, if feasible, and afford it proper protection

(2) Evaluate the information compromised or subjected to compromise to determine the extent of potential damage to the national security

(a) Take action as necessary to minimize the effects of the damage

(3) Discover the weakness in security procedures which caused or permitted the compromise or subjection to compromise

(a) Revise procedures as necessary to prevent recurrence

(4) If individual responsibility is established, take appropriate discipinary action

H. Safeguarding Classified Material

1. General

a. Classified information may be used only under conditions adequate to prevent unauthorized persons from gaining access to it

(1) The exact nature of security requirements will depend on a thorough security evalution of local conditions and circumstances

(a) Security requirements must permit the accomplishment of essential functions while affording classified information appropriate security

2. Responsibilities of Custodians

a. Custodian: An individual who has possession of, or is otherwise charged with, the responsibility for safeguarding and accounting for classified information

b. Custodians of classified material shall be responsible for:

(1) Safeguarding the material at all times

(2) Locking the material in an appropriate security container when it is not in use or under direct supervision

(3) Ensuring that unauthorized persons do not gain access to classified information by sight, sound or other means

(4) Ensuring that classified information is not discussed with, or in the presence of, unauthorized persons

3. Security Precautions

a. Precautions to prevent access to classified information by unauthorized persons include:

(1) Keeping classified documents removed from storage for working purposes under constant surveillance and face down or covered when not in use

(2) Discussing classified information only when unauthorized persons cannot overhear the discussion

(3) Securing classified information properly at the end of each working day

(a) A security check will be conducted to ensure that

1. All classified material is stored in the manner prescribed

2. Burn bags are properly stored or destroyed

3. Classified notes, carbon paper, rough drafts and similar papers have been properly stored or destroyed

4. Security containers have been locked

a. The dial of combination locks shall be rotated at least four complete times in the same direction when securing safes, files or cabinets.

PROGRESS CHECK 3.2

INSTRUCTIONS: USE SEPARATE SHEET OF PAPER FOR ANSWERS - - DO NOT WRITE ON PROGRESS CHECK

1. The highest level security classifications designation is _____.

2. Information whose unauthorized disclosure may cause serious damage to National Security is classified

   a. Top Secret
   b. Secret
   c. Restricted Data
   d. Confidential

3. Only individuals designated by SECNAV shall assign the classification level of

   a. Unclassified
   b. Secret
   c. Top Secret
   d. Confidential

4. The marking that identifies a specific person or billet concerning a personal matter is

   a. FOR
   b. EXCLUSIVE FOR
   c. PERSONAL FOR
   d. FOUO

5. Only personnel designated by the CL and possessing a final Top Secret clearance may handle what specially marked message?

   a. LIMDIS
   b. SPECAT
   c. NOFORN
   d. FOUO

6. Maintaining, receiving, and distribution of Top Secret information is the responsibility of the

   a. COMSEC Officer
   b. Communications Officer
   c. Top Secret Control Officer
   d. Crypto Security Officer

7. What level of classified information must always be serialized?

   a. Restricted Data
   b. Top Secret
   c. Secret
   d. Confidential

8. The specific time periods spent working in communications spaces is called the _____ period

9. An inventory that requires a visual check of materials is the _____ inventory

10. Who has overall responsibility for the watch-to-watch inventory?

    a. Watchstander taking the inventory
    b. CWO
    c. Supervisor of the Watch
    d. Communications Officer

11. Publications held by custodians at activities that do not stand watches must be inventoried at least

    a. Daily
    b. Weekly
    c. Monthly
    d. Semi-annually

12. Information or material, whose unauthorized disclosure could cause identifiable damage to National Security, describes the classification designation of

    a. SPECAT
    b. Top Secret
    c. Confidential
    d. Secret

13. Security containers must never show the _____ or the _____ of classified material stored within.

14. What class of vault-type room can be used to store Top Secret information?

    a. A
    b. B
    c. C
    d. D

15. Normal, regularly planned elemination of classified material is called _____ destruction.

16. List four authorized methods for destruction of classified material

    _____

    _____

    _____

    _____

17. How many witnesses must sign for Top Secret material destruction?

    a. 1
    b. 2
    c. 3
    d. 4

18. A security violation which shows conclusively that an unauthorized person has had exposure to classified information or material is called a _____ _____.

19. An insecurity resulting from non-adherence to security regulations regarding classified information but not causing a compromise is called a _____ _____.

20. An intentional act done with the object to convey classified information to an unauthorized person is called a _____ _____.

21. A security violation that shows some evidence exists that classified material has been subject to unauthorized persons is called a _____ _____.

22. When classified material has been reported as compromised, list three things that must try to be accomplished:

    _____

    _____

    _____

23. An individual who has possession of, or is charged with, the responsibility of safeguarding classsified material is called the _____.

ASSIGNMENT SHEET

Accountability and Control of the Communication Security Material System

INTRODUCTION

The last lesson topic within security deals with the accountability and control of the Communication Security Material System (CMS).

LESSON TOPIC LEARNING OBJECTIVES

3.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; controlled access to the spaces; classified material consisting of publications, instructions, cryptographic keying material, and cryptographic equipment; message drafts classified for training purposes only; stowage containers; burn bags; visitors' log; inventory sheets; and classification stamps and stamp 3.1Given a list of eleven security terms, match at least 9 terms with their definitions. pads, COMPLY WITH ALL SECURITY REGULATIONS GOVERNING CLASSIFIED MATERIAL including access to, handling, dissemination, storing, inventorying, and disposing of classified material during the performance of watch station qualifications in accordance with the following publications: OPNAVINST 5510.1 and 5510.45, ACP 121 US SUPP-1, ACP 122, CMS 4, KAG-1, NTP-4, NTP-5, NTP-7, and NWP-4.

3.3 Given descriptions of specific types of special message handling requirements, rules for maintaining classified material accountability, categories of classified material, and information needed to inventory classified material, match procedures for management of classified materials to the given situations or conditions, including the utilization of special designators, inventorying, and accounting for classified material with at least 80 percent accuracy

3.4 Given specific types of classified materials, statements of routine and emergency conditions, and types of compromise situations, select the proper procedures needed to protect classified materials against their utilization by unauthorized persons, including proper storage, approved destruction, and reporting of compromise situations, with at least 80 percent accuracy.

STUDY ASSIGNMENT

Review personal notes and Student Guide Section 3.3.
Complete Progress Check 3.3. Review all personal notes, Progress Checks 3.1 - 3.3 and Student Guide on entire security area.

NOTETAKING SHEET 3.3

Accountability and Control of the
Communication Security Material System

REFERENCES:

1. OPNAVINST 5510.1, Department of the Navy Information Security Program Regulation
2. OPNAVINST 5430.48, Security Manager Handbook
3. CMS 4, Communication Security Material System
4. ACP 122, Communication Instructions - Security

NOTETAKING OUTLINE

A. Introduction to the Communications Security Material System (CMS)

   1. Mission: To ensure the proper distribution, control, security and accountability of CMS material used throughout the Navy to provide security for Naval Communications

      a. Primary source of information for CMS procedures is CMS4

   2. Operating principles of the system are based on the following safeguards:

      a. A continuous chain of custody receipts for CMS material by use of transfer reports and local custody documents

      b. Positive accounting records, such as periodic inventory receipts, destruction records, transfer reports and local custody documents

      c. The immediate reporting of loss, compromise, or possible compromise of CMS material

B. Introduction to CMS Material

   1. The classification, nature, accountability legend and status of CMS material determine how it will be handled, safeguarded and accounted for

      a. Classification

         (1) Use standard classification designations

            (a) Top Secret

            (b) Secret

            (c) Confidential

      b. Accountability Legends

         (1) Determine how CMS material is accounted for within the Communication Security Material System

(2) Four Accountability Legends are used to identify the minimum controls required

(a) Accountability Legend 1 (AL1)

1. Accountable by serial/register number throughout its lifespan

a. Lifespan: From production to destruction

2. Accountable to Director, Communications Security Material System, Central Office of Records (DCMS COR)

(b) Accountability Legend 2 (AL2)

1. Accountable by quantity throughout its lifespan

2. Accountable to DCMS COR

(c) Accountability Legend 3 (AL3)

1. Accountable by serial/register number until it becomes effective

a. AL3 is limited to keying material only

2. Accountable to DCMS COR

(d) Accountability Legend 4 (AL4)

1. Controlled by quantity only

2. Except for losses and other insecurities, not accountable to DCMS COR after receipt

a. After receipt accountable only by classification

C. Handling CMS Material

1. The CMS account Custodian has primary responsibility for all CMS material held

2. For CMS material issued on Local Custody, the CMS Custodian's responsibilities are to:

a. Maintain signed local custody documents and submit the required accounting reports to DCMS

b. Provide written guidance to each person to whom material is issued detailing procedures for proper handling, safeguarding, accounting and destruction of the material issued

c. Conduct periodic visits and training with local holders and users to assure they are properly protecting the CMS material they hold

3. Local Custody

a. The acceptance of responsibility for the proper handling, safeguarding, disposition, accounting and destruction of CMS material

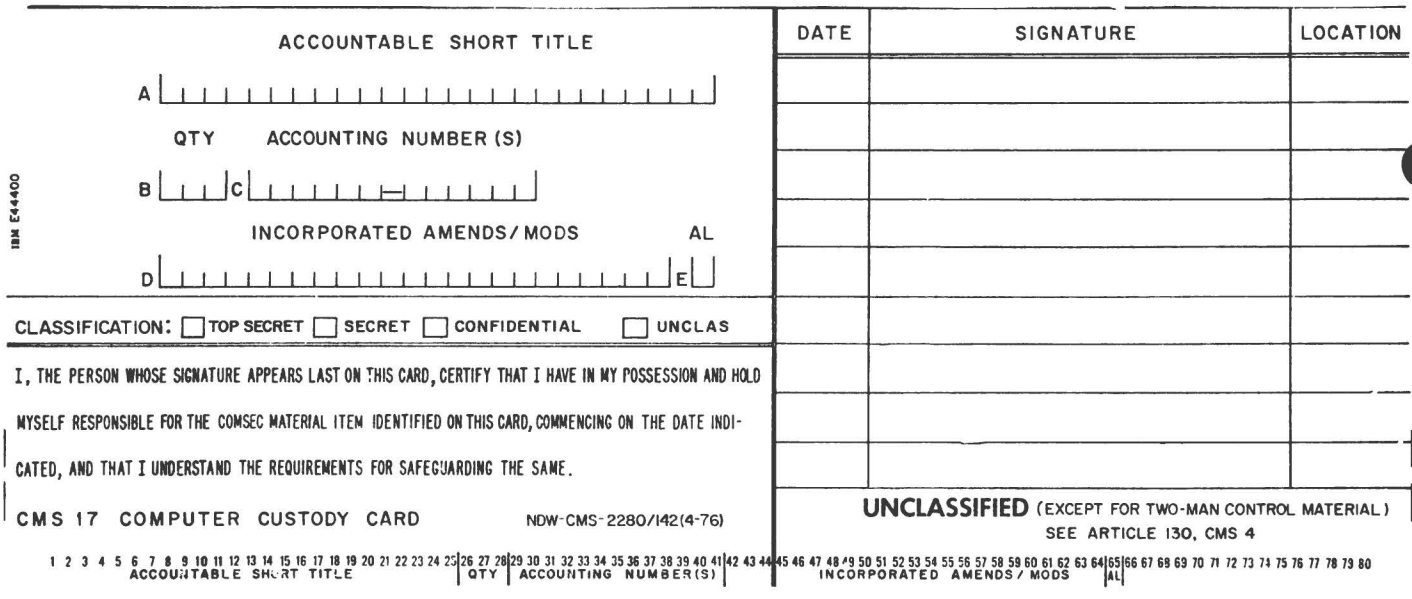
b. Whenever CMS material is issued, a CMS17 Computer Custody Card will be prepared listing:

(1) Short title and accounting number of the material

(2) Classification of the material

(3) Where the material is located

(4) Signature of the person accepting the material



CMS 17
Figure 3.3-1

D. Inventorying CMS Material

1. Progressive (or Watch-to Watch) Inventory

a. Watch Supervisor is responsible for all CMS material in his/her area while on watch

b. Each Watch Supervisor must inventory

(1) Primary keying material

(2) Secondary variables

(a) Rotors

(b) Card Reader Insert Board (CRIB's)

(3) Publications

(4) CMS equipment

c. Inventory will include

(1) All material (less equipment) listed by short title and edition, accounting number, and accountability legend code

(a) As new material is received by the watch, it must be added to the inventory

(b) As material is destroyed, it must be deleted from the inventory

(c) Segmented material listed on separate inventory sheet

1. Segmented material: Material that can be pulled out or separated from its original document

(2) Equipment listed by short title and accounted for by quantity, serial number and acountability legend code

d. The inventory may be conducted by any appropriately cleared individual designated by the Watch Supervisor

e. Sight Requirements

(1) All sealed CMS material and equipment need only be sighted for the inventory

(a) Operational equipment need not be opened for sight inventory of keying material segments or cribs

1. If the circuit is operational, the keying material and crib must be correct and in place

(2) All material should be sighted for effective and supersession dates

f. Page Check Requirements

(1) All <u>unsealed</u> primary keying material and rotors held by the watch station must be page checked to ensure all pages are accounted for

(2) Required on all segmented material

(3) Page check completion must be recorded

(a) on the material itself, or

(b) on the inventory, or

(c) on documentation provided to verify that page checks were performed

PROGRESSIVE LISTING OF SEGMENTED MATERIAL

CONFIDENTIAL (WHEN FILLED IN)

KEYLIST USKAY0001				KEYLIST USKAY0002				KEYLIST USKAY 0003				KEYLIST				KEYLIST			
REG # 00094				REG # 00123				REG # 00043				REG #				REG #			
AL 1				AL 1				AL 1				AL				AL			
SEG	INT	INT	INT	SEG	INT	INT	INT	SEG	INT	INT	INT	SEG	INT	INT	INT	SEG	INT	INT	INT
1	CS			1	CS			1	CS			1				1			
2	CS			2	CS			2	CS			2				2			
3	CS			3	CS			3	CS			3				3			
4	CS			4	CS			4	CS			4				4			
5	CS			5	CS			5	CS			5				5			
6	CS			6	CS			6	CS			6				6			
7	CS			7	CS			7	CS			7				7			
8	CS			8	CS			8	CS			8				8			
9	CS			9	CS			9	CS			9				9			
10				10				10				10				10			
11				11				11				11				11			
12				12				12				12				12			
13				13				13				13				13			
14				14				14				14				14			
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17				17				17				17				17			
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19				19				19				19				19			
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25				25				25				25				25			
26				26				26				26				26			
27				27				27				27				27			
28				28				28				28				28			
29				29				29				29				29			
30				30				30				30				30			
31				31				31				31				31			
32				32				32				32				32			
33				33				33				33				33			
34				34				34				34				34			

INITIALS IN THE COLUMN ADJACENT TO THE CURRENT DAILY SEGMENT OF THE KEYLIST IDENTIFIED, INDICATES THAT I INVENTORIED/PAGECHECKED THAT DAYS MATERIAL AND ALL SUBSEQUENT SEGMENTS, AND THAT THE PREVIOUS DESTRUCTION LINE OUT OF SEGMENTS HAVE BEEN REPORTED ON CMS-25.

PROGRESSIVE LISTING OF CMS MATERIAL (LESS SEGMENTED MATERIAL)

Short Title	QTY	SER.	AL	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
KW-7	1	27	1																															
KW-37	1	35	1																															
KG-54	1	29	1																															
KY-8	1	01	1																															
KOI-3	1	03	2																															
KOI-3	1	05	2																															
KG-26	1	13	1																															
KG-13	1	27	1																															
INITIALS																																		

MY INITIALS INDICATE THAT I HAVE COMPLETED THE DAILY INVENTORY AND PAGE CHECKS (WHERE REQUIRED) AND NO DISCREPANCIES HAVE BEEN NOTED. (ACCOUNTABILITY LEGEND 2 ITEMS ARE ACCOUNTABLE BY TOTAL QUANTITY ONLY) # INDICATES DAILY PAGE CHECKS ARE REQUIRED. SUPERSEDED PROGRESSIVE LISTINGS ARE TO BE RETAINED FOR 30 DAYS. FORWARD TO CMS CUSTODIAN FOR DESTRUCTION.

WATCH_____ --PAGE_____OF_____PAGES-- MONTH_____ YEAR_____

Progressive Inventory
Figure 3.3-2

(4) Disposition of Superseded segments must be confirmed by

(a) Local destruction records

(b) Local custody records

(c) Other disposition documents

g. Any discrepancies discovered during the inventory or during page checks must be immediately reported to the CMS Custodian or other appropriate personnel as directed by local policy

h. The watch will not be relieved until the CMS inventory is complete and correct

E. Storage of CMS Material

1. Top Secret CMS Material must be stored in

a. Class 1, 2 or 5 Government Services Agency (GSA) approved steel file cabinet with group 1 or 1R combination lock, or

b. In a strong room with an approved vault door, or

c. Class A Vault

2. Secret CMS Material must be stored in:

a. Any container approved for Top Secret, or

b. Class B vault, or

c. Steel Security filing cabinet of GSA standards

d. Aboard Ship:

(1) Steel security filing cabinet having a lockbar secured with an approved padlock, or

(2) Strong room as described in OPNAVINST 5510.1

(a) OPNAVINST 5510.1 is the Navy's primary source of information concerning security regulations

3. Confidential CMS Material may be stored in any container approved for Top Secret or Secret CMS material

4. Any other CMS material will be held by the CMS Custodian in the main CMS vault

F. Destruction of CMS Material

1. Destruction of keying material marked CRYPTO

a. Regardless of classification or accountability legend, must be destroyed as soon as possible after it is superseded

(1) ALWAYS within 72 hours after supersession

b. Segmented material

(1) Each segment will be destroyed as it is superseded

c. Destruction must be conducted by two persons

(1) The custodian or local user of the material, and

(2) Any U.S. Military or civilian employee who possesses a security clearance equal to or higher than the classifiation of the material

d. Both witnesses must sign and date the destruction record

(1) CMS 25 normally used to record destruction of keying material

2. Destruction of CMS material NOT marked CRYPTO

a. Must be destroyed within five days of supersession

b. Destruction need not be witnessed by a second person

c. Person destroying the material will sign and date the destruction record if one is required

3. Destruction Techniques

a. Authorized for paper CMS Material

(1) Burning

(2) Cross-cut shredding

(a) must reduce material to shreds not more than 3/64" wide and 1/2" long

(3) Strip-shredding

(a) strips no wider than 1/32"

(4) Chopping or pulverizing

(a) Must reduce material to residue no larger than 5mm in any dimension

(5) Pulping or disintegrating

(a) Must reduce material to residue no larger than 5mm in any dimension

CONFIDENTIAL (When Filled In) CMS 25

ONE-TIME KEYING MATERIAL DESTRUCTION REPORT

Retain this form locally in the CMS file. See Chapter 9, CMS 4 for instructions on destroying one-time keying material.

These individual one-time keying material cards or segments were destroyed on the dates and by the two individuals indicated below:

Card No.	Date of extract	Signature	Signature	Date destroyed
1	Ø1 Apr 84	JR Wilson	CSSmith	Ø2 Apr 84
2	Ø2 Apr 84	JR Wilson	CSSmith	Ø3 Apr 84
3	Ø3 Apr 84	JR Wilson	CSSmith	Ø4 Apr 84
4	Ø4 Apr 84	JR Wilson	CSSmith	Ø5 Apr 84
5	Ø5 Apr 84	JR Wilson	CSSmith	Ø6 Apr 84
6	Ø6 Apr 84	JR Wilson	CSSmith	Ø7 Apr 84
7	Ø7 Apr 84	JR Wilson	CSSmith	Ø8 Apr 84
8	Ø8 Apr 84	JR Wilson	CSSmith	Ø9 Apr 84
9	Ø9 Apr 84			
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

CLASSIFIED FOR TRAINING PURPOSES ONLY

(Continued)

USKTY0001 — SHORT TITLE | 00094 — REG NO/ACCOUNTING NO | 1 — AL

CLASSIFIED BY NACSI 4003.

DECLASSIFY ON: ORIGINATING AGENCY'S DETERMINATION REQUIRED.

CONFIDENTIAL (When Filled In)

NDW-CMS-2280/82 (Rev. 11/82)

CMS 25
Figure 3.3-3

(6) Tearing and scattering

(a) Must be torn as completely as possible by hand and scattered over a very wide area

(7) Jettisoning

b. Authorized for non-paper CMS Material

(1) Burning

(2) Chopping or pulverizing

(3) Jettisoning

(4) Chemically altered

(5) Shredding

4. Emergency Destruction

a. Purpose: To guard against the possible compromise of CMS material when a serious threat to the physical security of the material develops

(1) Examples:

(a) Natural emergency: natural disaster or act of God - fire, flood, tornado, hurricane

(b) Casualty emergency: casualty to an operating unit - ship or vehicle collision, aircraft crash

(c) Operational emergency: enemy actions or other hostile forces - enemy attack, expected capture by the enemy, mob or riot action, civil war

b. ALL commands that hold CMS material will have an Emergency Action Plan (EAP)

(1) A systematic, practical plan for destruction

(2) Implemented by the CO

(3) Assignment of destruction duties by billet or operator task

(4) Assigns alternates in case of injury or lack of personnel

(5) Assigns priorities of destruction

c. Emergency Destruction Priorities

(1) Priority 1 (TOP SECRET)

(a) Superseded Crypto keying material

(b) Current Crypto keying material on non-essential circuits

(c) Reserve Crypto keying material

(d) Top Secret documents and select equipment components

(2) Priority 2 (SECRET)

(a) Superseded Crypto keying material

(b) Current Crypto keying material on non-essential circuits

(c) Reserve Crypto keying material

(d) Secret documents and select equipment components

(3) Priority 3 (CONFIDENTIAL)

(a) Superseded Crypto keying material

(b) Current Crypto keying material on non-essential circuits

(c) Reserve Crypto keying material

(d) Confidential documents and select equipment components

PROGRESS CHECK 3.3

INSTRUCTIONS: USE SEPARATE SHEET OF PAPER FOR ANSWERS -- DO NOT WRITE ON PROGRESS CHECK

1. The abbreviation CMS stands for

   a. Confidential Material System
   b. Communications Material System
   c. Communication Security Material System
   d. Consolidated Material Security System

2. What is the primary source of information for CMS procedures?

   a. CSP1
   b. OPNAVINST 5510.1
   c. CMS4
   d. SECNAVINST 5770.1

3. Under what AL code is material accounted for by serial/register number throughout its lifespan?

   a. AL1
   b. AL2
   c. AL3
   d. AL4

4. Under what AL code is material accountable by serial/register number until it becomes effective?

   a. AL1
   b. AL2
   c. AL3
   d. AL4

5. Under what AL code is material accounted for by quantity throughout its lifespan?

   a. AL1
   b. AL2
   c. AL3
   d. AL4

6. Local Custody is the _____ for the proper handling, safeguarding, accounting and destruction of CMS material.

7. CMS17 is a/an

   a. Inventory card
   b. Storage report
   c. Destruction report
   d. Custody card

8. Material that can be pulled out or separated from its original document describes:

   a. Separated material
   b. Segmented material
   c. Sectioned material
   d. Fragmented material

9. Another name for the Progressive Inventory is the _____ inventory

10. All segmented material must be _____ during inventory.

11. What class of vault can be used to store Top Secret CMS material?

   a. A
   b. B
   c. C
   d. D

12. All keying material marked CRYPTO must be destroyed as soon as possible but always within _____ hours after supersession.

13. Keying material marked CRYPTO requires how many witnesses for destruction?

   a. 1
   b. 2
   c. 3
   d. 4

14. List 4 authorized destruction techniques for paper CMS material.

   _____

   _____

   _____

   _____

15. List 3 authorized destruction techniques for non-paper CMS material.

   _____

   _____

   _____

16. Give 3 examples of emergencies that might warrant emergency destruction:

   _____

   _____

   _____

17. Which emergency destruction priority includes Reserve Secret Crypto Keying material?

    a. Priority 1
    b. Priority 2
    c. Priority 3
    d. Priority 4

18. What form is used to ducument destruction of CMS Marerial?

    a. CMS4
    b. CMS17
    c. CMS25
    d. CMS36

ASSIGNMENT SHEET 4.1

Basic Message Format

INTRODUCTION

Previous units discussed overall communication organization and security as relatd to the Navy. Within all these units the term "message" was repeatedly used. This unit will outline for Radioman what a message is, how it is formatted, and reasons for each type format in Naval communications.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.1 Given the AN/UGC-6 teletypewriter and three outgoing message drafts, prepare teletype tapes of the messages in ACP 126, Modified ACP 126, or JANAP 128 formats as noted on message drafts with no errors in format lines 2, 4, 15, and 16 and no uncorrected errors in format lines 5 through 13. The tapes will be completed within 45 minutes and will be prepared in accordance with appropriate publications: ACP 126, NTP 4, or JANAP 128.

6.1.1 Given a format relationship chart, write in the three parts, five components, and the nineteen elements of the sixteen format lines in correct relationship to, and sequential order of, appearance in basic message format with at least 80 percent accuracy.

STUDY ASSIGNMENT

Review personal notes and Student Guide section 4.1.

NOTETAKING SHEET 4.1

Basic Message Format

REFERENCES:

1. ACP 126, Communication Instructions, Teletypewriter, (Teleprinter), Procedures, Chapter 1 & 4

NOTETAKING OUTLINE

A. Basic Message Formats

1. ACP 126

a. Operationally defined in Allied Communiction Publication (ACP) 126

b. Primary use: Ship to ship communications

c. Simplest format

2. JANAP 128

a. Operationally defined in Joint Army-Navy-Air Force publication (JANAP 128)

b. Primary use: Communications using AUTODIN systems (Automatic Digital Network)

3. Modified ACP 126

a. Operationally defined in Naval Telecommunication Publication (NTP) 4

b. Primary use: Ship to shore communications

c. A variation of JANAP 128

B. Introduction to Basic Message Format

1. Basic Message Format: The common arrangement (format) of information on Naval messages

a. Some format items are changed (modified) for certain types of transmission

b. Format variations discussed in following lessons

2. Three Message parts

a. Heading

(1) Four message components

b. Text

(1) No separate component

c. Ending

(1) One message component

3. Four Heading Components

a. Beginning procedure

(1) Four message elements

b. Preamble

(1) Three message elements

c. Address

(1) Four message elements

d. Prefix

(1) Two message elements

4. Text

a. No separate component

(1) Three message elements

5. Ending component

a. Ending procedure

(1) Four message elements

6. Nineteen Message Elements

a. Beginning procedure elements (Four elements)

(1) Transmission identification

(a) Format Line One (FL 1)

(2) Called Station(s) (FL 2)

(3) Calling station and station serial number (FL 3)

(4) Transmission Instructions (FL 4)

b. Preamble elements (Three elements)

(1) Precedence; Date-Time-Group; Message Instructions (FL 5)

c. Address elements (Four elements)

(1) Originator (FL 6)

(2) Action addressee(s) (FL 7)

(3) Information addressee(s) (FL 8)

(4) Exempted addressee(s) (FL 9)

d. Prefix elements (Two elements)

(1) Accounting Information; Group Count (FL 10)

e. Text elements (Three elements)

(1) Classification; Internal Instructions; Thought or idea expressed by originator (FL 12)

f. Ending Procedure Elements (Three elements)

(1) Confirmation (FL 14)

(2) Corrections (FL 15)

(3) Ending sign (FL 16)

7. Separators

a. Not considered as Parts, Components, or Elements of a message.

b. Separates heading from text (FL 11)

c. Separates text from ending (FL 13)

C. Message Types

1. Four types of messages transmitted by commnication means

a. Single address

(1) Destined for only one addressee

(a) Addressees are stations or units, not persons

b. Multiple address

PARTS	COMPONENTS	ELEMENTS	FORMAT LINE
H	BEGINNING PROCEDURE	TRANSMISSION IDENTIFICATION	1
E		CALLED STATION(S)	2
A		CALLING STATION AND STATION SERIAL NUMBER	3
D		TRANSMISSION INSTRUCTIONS	4
I	PREAMBLE	PRECEDENCE	5
N		DATE-TIME-GROUP (DTG)	5
G		MESSAGE INSTRUCTIONS	5
	ADDRESS	ORIGINATOR	6
		ACTION ADDRESSEE(S)	7
		INFORMATION ADDRESSEE(S)	8
		EXEMPTED ADDRESSEE(S)	9
	PREFIX	ACCOUNTING INFORMATION	10
		GROUP COUNT	10
SEPARATOR (BT)			11
T		CLASSIFICATION	12
E		INTERNAL INSTRUCTIONS	12
X		THOUGHT OR IDEA EXPRESSED BY ORIGINATOR	12
T			
SEPARATOR (BT)			13
E	ENDING PROCEDURE	CONFIRMATION	14
N		CORRECTIONS	15
D		ENDING SIGN	16
I			
N			
G			

Figure 4.1-1, Basic Format Chart

(1) Destined for two or more addressees

(a) Each addressee must be informed of all other addressees

(b) Each must be indicated as ACTION or INFORMATION

1. Action: A response required to the message

2. Information: To acquaint addressee with information; no action required

c. Book

(1) Destined for two or more addressees

(a) Addressees do not need to be informed of any other addressee

(b) Each addressee must be indicated as ACTION or INFORMATION addressee

d. General

(1) Wide standard distribution

(2) Assigned an identifying title and sequential serial number

(a) EXAMPLE: ALCOM 002/84

2. Basic Transmission Procedures

a. May be transmitted using plaindress, abbreviated plaindress, or codress procedures

b. Plaindress

(1) Originator and addressee designations indicated in heading

(a) Outside of text

(2) Contains all message components

(a) Prefix (FL 10) may be omitted

(3) Must include the following FL 5 elements

(a) Precedence

(b) Date-time-group

c. Abbreviated Plaindress

(1) Operational requirements for speed of handling may require shortening the plaindress message heading

(2) Any or all of the following elements may be omitted

(a) Precedence (FL 5)

(b) Date-time-group (FL 5)

(c) Group count (FL 10)

d. Codress

(1) The entire address is contained only in the encrypted text

(2) Contains all message components

3. Service Message

a. Message between communications personnel referring to any phase of traffic handlng, communication facilities, or circuit conditions

(1) Identified by the abbreviation SVC immediately following the classification

(2) Assigned a precedence equal to, or higher than, the message being serviced

(3) Classification assigned according to service message content

D. Basic Message Preparation Requirements

1. Communications requiring quick delivery are normally prepared for trans-mission as brief messages

a. Originator

(1) Authority under whose name a message is sent or the command or agency under the direct control of the authority which can approve a message for transmission

(2) Responsible for the actions of the drafter and releasing officer

(a) Drafter actually composes the message for release by the originator or the releasing officer

(b) Releasing officer may authorize the transmission of message for and in the name of the originator

b. Originator responsibilities

(1) Determining whether the message is necessary

(a) Not used if a letter or other form of communication will do the job as well

(2) Determining the addressee(s) and type of message

(a) Addressee: Station or agency expected to receive or act on a message

(3) Ensuring that prescribed message forms are used

(4) Ensuring the text is drafted correctly

(5) Determining the security classification

(6) Determining the precedence

(a) Precedence: The order in which a message is processed

(7) Ensuring the message is signed by the releasing officer

(8) Forwarding the message to the appropriate communication center

2. Procedural Signs (PROSIGNS)

a. Purpose: Letters used in place of frequently used orders, instructions, requests or information to speed up communications

(1) One or more characters

(2) Defined in ACP 126

b. Message format PROSIGNS

(1) DE: FROM

(a) This transmission is from the station whose designation follows

(2) BT: LONG BREAK

(a) Indicates the separation of the text from other portions of the message

1. Separator

(3) FM: ORIGINATORS SIGN

(a) Identifies message originator

(4) TO: ACTION ADDRESSEE SIGN

(5) INFO: INFORMATION ADDRESSEE SIGN

(6) XMT: EXEMPT

(a) Indicates station or command exempted from a collective call or address designation

(7) T: TRANSMIT TO

(a) Instruction to addressee to relay message to additional specified addressee(s)

(8) Y: EMERGENCY COMMAND PRECEDENCE (ECP)

(a) Precedence meanings and use described later in this lesson

(9) Z: FLASH PRECEDENCE

(10) O: IMMEDIATE PRECEDENCE

(11) P: PRIORITY PRECEDENCE

(12) R: ROUTINE PRECEDENCE

(13) GR: (numerical) GROUP COUNT

(a) GR followed by numeral(s) is the group count indicating the message text contains the number of groups indicated

(14) GRNC: GROUPS NOT COUNTED

3. Message Form (See Figure 4.1-2)

a. Designed to speed up processing of messages

(1) Size of form may vary

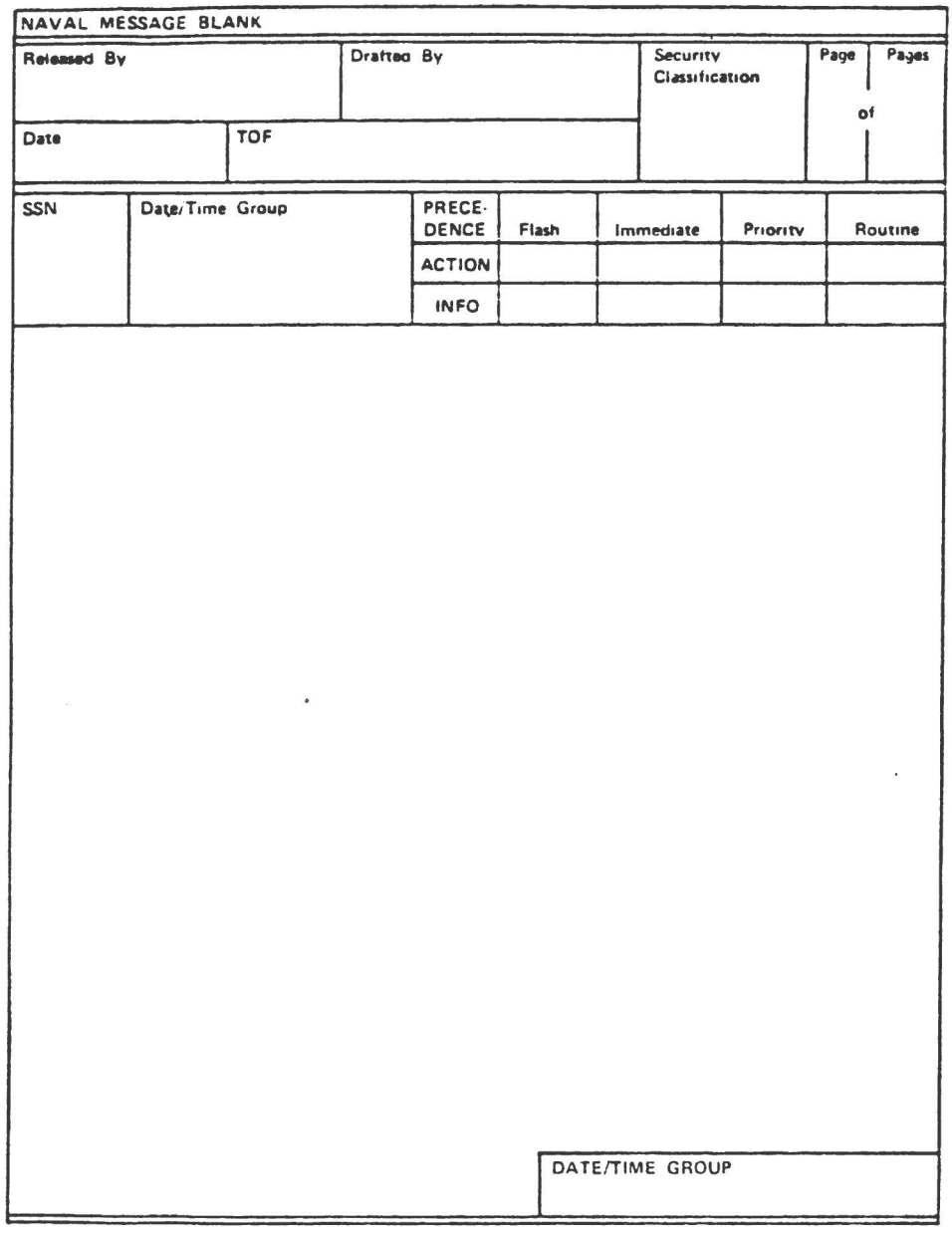
(2) Required information normally indicated in same relative position on form

(3) Instructions for filling out message form applies to all message preparation

(a) Messages may be prepared on blank paper

4. Outgoing Message Draft (OMD) Construction

a. Drafter information



NAVAL MESSAGE BLANK

Released By	Drafted By	Security Classification	Page	Pages
Date	TOF		of	

SSN	Date/Time Group	PRECE-DENCE	Flash	Immediate	Priority	Routine
		ACTION				
		INFO				

DATE/TIME GROUP

Figure 4.1-2, Message Form

(1) Drafter's name, rank, and position

b. Releaser information

(1) Releaser's name, rank, position, and signature

c. Message classification

(1) Indicates the message is Unclassified or the overall classification of the message

(a) Must be the same as the highest classification of information in any part of the message

(b) Classifications

1. CONFIDENTIAL
2. SECRET
3. TOP SECRET

(c) Placed at top and bottom of message form

1. Must be in type larger than any other used in the message

d. Page number of multiple page messages

(1) Each page must be numbered

(2) Total number of pages must be indicated on final page

(a) If total number of pages is given on any page other than the final page, it must be indicated on all pages

e. Date prepared

(1) Date drafter wrote the message

f. Precedence

(1) Used to specify the relative order in which messages are to be handled

(a) For the originator: The required speed of delivery of the message to the addressee(s)

(b) For communication personnel: The relative order of message processing, transmission, and delivery

(c) For the addressee(s): The relative order in which to respond to the message

(2) Basic precedence categories

(a) Flash (Z precedence)

1. Reserved for initial enemy contact messages or operational combat messages of extreme urgency

2. Brevity mandatory

3. Processed, transmitted, and delivered ahead of all other messages

a. If more then one Z message, handle in order received

b. Messages of lower precedence will be interrupted on all circuits involved until Flash message handling is completed

(b) Immediate (O precedence)

1. Reserved for very urgent messages relating to situations which gravely affect the security of national/allied forces or civilians

2. Processed, transmitted, and delivered ahead of all other messages having lower precedence, in the order received

(c) Priority (P precedence)

1. Reserved for messages concerning the conduct of operations in progress, and for other important and urgent matters when Routine precedence is not adequate

2. Processed, transmitted and delivered ahead of all messages of Routine precedence, in the order received

(d) Routine (R precedence)

1. Used for all types of messages that require transmission by rapid means but are not of sufficient urgency and importance to require a higher precedence

2. Processed, transmitted and delivered in the order received; after all messages of a higher precedence

(3) Emergency Command Precedence (Y precedence)

(a) In addition to the four basic precedences

(b) Emergency Command Precedence (ECP) has Flash preempt capability

1. For Emergency Action Messages (EAM's)

a. Designated as time-sensitive, command and control messages using prosign Y

2. Processed, transmitted, and delivered before Z, O, P, or R precedence

3. Interrupts any lower-precedence messages already in processing

(4) Speed-of-service Objectives

(a) Goal: To provide the fastest communications support possible

(b) Refers to the total elapsed communication handling time

1. From the time of file (TOF) at the message originator's communication center to the time available for delivery at addressee's communication center

(c) Speed-of-service objective time frames

1. Flash: As fast as humanly possible with an objective of less than 10 minutes

2. Immediate: Within 30 minutes

3. Priority: witnin 180 minutes (3 hours)

4. Routine: Within 360 minutes (6 hours)

g. Originator's address

h. Addressee(s)

(1) May be designated as either ACTION or INFORMATION

i. Text

(1) Originator's thought or idea

j. Date-time-group (DTG)

(1) Either the date and time when the message was officially released by the releasing officer or

(2) The date and time when the message was handed into a communication facility for transmission

(a) Assigned for identification purposes only

(3) Day and time expressed in six digits followed by a zone suffix, the month expressed by the first three letters, and the last two digits of the year of origin

(4) Date-time-group arrangement

(a) Day: First two digits

1. 01-28, 29, 30, 31 (last day of month)

(b) Time: Coordianted Universal Time

1. Hour: Third and fourth digits (24 hour clock)

2. Minutes: Fifth and sixth digits

(c) Zone prefix

1. Greenwich Mean Time (GMT) (Zone prefix Z)

a. May be referred to as GMT, Zulu time or Coordinated Universal Time

2. Local area commander may prescribe use of local time for local tactical situations

a. Zone prefix corresponding to the local time in use would be used

(d) Month: Three letter abbreviation

1. One blank space between day/time digits, and month

(e) Year: Last two digits of year

1. One blank space between month and year

(5) DTG may be assigned by the releasing Officer or communication personnel

k. Time-of-File (TOF)

(1) Time message form is delivered to the communication facility

(2) Expressed in seven digits

(a) Julian date (day of the year)

1. Three digits
2. Starts January 1 as 001
3. Ending December 31 as 365 (or 366 in leap years)

(b) Time (Coordinated Universal Time)

1. Hour: Two digits following Julian date
2. Minutes: Two digits following hour

(3) Assigned by communication personnel

NAVAL MESSAGE BLANK

Released By	Drafted By	Security Classification	Page	Pages
CAPT. A. MCGILVRAY, USN, C.O.	CDR. R.B. TAYLOR, OPS	UNCLASSIFIED	1 of	1
Date: 5 FEBRUARY 1984	TOF: 0361818			

SSN	Date/Time Group	PRECEDENCE	Flash	Immediate	Priority	Routine
4253	051818Z FEB 84	ACTION			XXXX	
		INFO				XXXX

FM SERVSCOLCOMD SAN DIEGO CA

TO CNTECHTRA MILLINGTON TN

INFO CINCPACFLT MAKALAPA HI

CNO WASHINGTON DC

UNCLAS

1. RADIOMAN CLASS A SCHOOL REVISION COMPLETED. REVISED COURSE IMPLEMENTED ON SCHEDULE.

DATE/TIME GROUP
051818Z FEB 84

Figure 4.1-3, Sample Message

PROGRESS CHECK

Basic Message Format

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

In the blanks in front of each format, write the number of the method where it is used.

FORMAT	METHOD
1. _____ JANAP 128	1. Ship to Shore
2. _____ ACP 126	2. AUTODIN
3. _____ Mod ACP 126	3. Ship to Ship

4. There are _____ message parts.

   1. Two
   2. Nineteen
   3. Three
   4. Five

5. There are _____ message components.

   1. Two
   2. Nineteen
   3. Three
   4. Five

6. There are _____ message elements.

   1. Two
   2. Nineteen
   3. Three
   4. Five

7. Separators

   1. Are part of the heading component.
   2. Separate text from other parts of the message.
   3. Are part of the ending procedure.
   4. Are part of the text.

In the blanks in front of each message type, write the number that corresponds to its use.

MESSAGE TYPE		USE
8. _____	Multiple address	1. Destined for only one addressee
9. _____	Book	2. Wide standard distribution
10. _____	Single address	3. Destined for two or more addresses who do not need to be informed of other addresses
11. _____	General	4. Destined for two or more addresses who must be informed of all other addresses

In the blank in front of each prosign, write the number of the meaning

PROSIGN		MEANING
12. _____	DE	1. Long break: includes separation of text from other parts of message
13. _____	BT	2. Transmit to
14. _____	T	3. Information addee sign
15. _____	TO	4. From: This transmission is from the station whose designator follows
16. _____	INFO	5. Action addee sign

In the blanks in front of each precedence, write the number which corresponds to its use.

PRECEDENCE		USE
17. _____	Z	1. Has Flash preempt capability
18. _____	O	2. Reserved for messages concerning the conduct of operations in progress
19. _____	P	3. Reserved for initial enemy contact messages
20. _____	R	4. Reserved for very urgent messages relating to situations which gravely affect the security of National/Allied forces or civilians
21. _____	Y	5. Used for messages that require transmission by rapid means but are not of sufficient urgency and importance to require a higher precedence

In the blanks in front of each precedence, write the number that corresponds to its speed of service.

PRECEDENCE		SPEED OF SERVICE
22. _____	R	1. Within 30 minutes
23. _____	P	2. Within 360 minutes (6 hrs)
24. _____	O	3. As fast as humanly possible
25. _____	Z	4. Within 180 minutes (3 hrs)

ASSIGNMENT SHEET 4.2

ACP 126 Message Format

INTRODUCTION

This lesson is the first of three on how to type specific kinds of formatted lessons. It describes the ACP 126 format. By learning this message format, and understanding the information provided on its format lines, you will be able to understand the formats given in the next two lessons better.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.1 Given the AN/UGC-6 teletypewriter and three outgoing message drafts, prepare teletype tapes of the messages in ACP 126, Modified ACP 126, or JANAP 128 formats as noted on message drafts with no errors in format lines 2, 4, 15, and 16 and no uncorrected errors in format lines 5 through 13. The tapes will be completed within 45 minutes and will be prepared in accordance with appropriate publications: ACP 126, NTP 4, or JANAP 128.

6.1.2 Given an AN/UGC-6 teletypewriter and one outgoing message draft with the date-time-group assigned, prepare one teletype tape of the message in ACP 126 format with no uncorrected errors in 15 minutes.

6.1.7 Given specific information or format lines used for Naval Message construction in ACP 126, JANAP 128, or Modified ACP 126 format, select the corresponding information or format line that applies in each case with at least 80 percent accuracy.

STUDY ASSIGNMENT

Study class notes, Student Guide sections 4.2 and 4.1 (previous lesson).

NOTETAKING SHEET 4.2

ACP 126 Message Format

REFERENCES:

1. ACP 126, Communication Instructions, Teletypewriter (Teleprinter) Procedures, Chapter 1 & 4)

NOTETAKING OUTLINE

A. ACP 126 Message Format

1. ACP: Allied Communication Publication

2. ACP 126 format used for ship to ship radioteletype communication

3. Simplest message format

a. Basis for all radioteletype message formats

b. Contains minimum number of format lines

B. ACP 126 Message Format Construction

1. Format Line 1 (FL 1)

a. Not used in ACP 126 format messages

2. FL 2: the call

a. Serves to identify the station(s) to which that particular message is being transmitted

b. Contents of call

(1) Individual call sign(s) identifying specific station(s)

(a) Identified by international call sign

(b) Reference ACP 113, Call Sign Book for Ships

(c) EXAMPLE: NHKG, NEDS

(2) Collective call sign(s) identifying a pre-determined group of stations

(a) Task Organizations

(b) Reference ACP 112, Task Organization Call Sign Book

(c) EXAMPLE: ZIZZ

(3) A combination of both individual and collective call signs

(4) Net call sign identifying all stations on a given net

(a) EXAMPLE: YAPD - All stations this net

(5) Call signs will be covered in detail in later lessons

c. Types of call

(1) Single call

(a) Only one call sign appears in format line 2

1. May be an individual, collective, or net call sign

(2) Multiple call

(a) Two or more call signs appear in format line 2

1. May be individual, collective, or net call signs or a combination of any of these call signs

d. May contain prosign XMT

(1) Used only with collective call signs

(a) EXAMPLE: BABR XMT NHKG

(2) Indicates unit not requiring deliver

3. FL 3: Calling station; Transmission Identification; Day of Month

a. Call sign of station initiating transmission

(1) Follows prosign DE

b. Transmission Identification (Channel Sequence Number - CSN)

(1) Three digit channel sequence number

(2) Follows calling station call sign

c. Day of month

(1) Two digit designator (01-30/31)

(2) Separated from CSN by single slash (/) mark

d. FL 2 and FL 3 are normally typed on one line

(1) EXAMPLE: NHKG NEDS DE NUMO 001/29

4. FL 4: Transmission Instructions; Operating Signal

   a. Relay Instructions

      (1) Identifies specific delivery responsibility for relaying messages

         (a) Identified by prosign T, followed by station(s) message is to be relayed to

      (2) On multiple call message requiring relay

         (a) Station required to relay message identified on FL 4 before prosign T

            1. EXAMPLE: NHKG T NEDS

      (3) On single call message requiring relay

         (a) Relaying station not indicated on FL 4

            1. EXAMPLE: T NEDS

      (4) Relay responsibility may require relaying message to more than one station

         (a) EXAMPLE: NHLG T NEDS NAMY NAVY

   b. Operating signal

      (1) The operating signal ZWL may be used in conjuction with relay instructions

         (a) Meaning: No forwarding action to the designation(s) immediately following is required

      (2) Used only with collective address

         (a) EXAMPLE: T ZWL NVSL

5. FL 5: Preamble

   a. Precedence

      (1) Appropriate precedence prosign

         (a) Y, Z, O, P, or R

      (2) Multiple address messages having both action and information addressees may either be assigned a single precedence or a dual precedence

         (a) Single precedence indicates the precedence for all addressees

(b) Dual precedence indicates one precedence for the action addressee(s) and a lower precedence assigned for the information addressee(s)

1. Precedences are separated by one space

b. Date-time-group

c. Message instructions

(1) Operating signals

(a) Reference ACP 131, Communication Instructions, Operating Signals

(b) Added by Radiomen

(c) EXAMPLE: ZDK

1. ZDK: "The following repetition is made in accordance with your request

d. EXAMPLE: P R 180832Z JAN 84

6. FL 6: Originator

a. Station or command sending message

(1) Not the person who drafted message

b. Includes

(1) Prosign FM (FROM)

(2) Plain language address of originating station

(3) EXAMPLE: FM USS SAMUEL GOMPERS

7. FL 7: Action Addressee(s)

a. The station(s) or command(s) expected to take action on the message.

b. Includes

(1) Prosign TO

(2) Plain language address of action addressee(s)

(a) May be a single, multiple or collective plain language address

1. EXAMPLE: (Single address): TO USS FORRESTAL

2. EXAMPLE: (Multiple address): TO USS FORRESTAL
USS BRADLEY

(b) Plain language collective address may be a Collective Address Designator (CAD) or Address Indicating Group (AIG)

1. CAD: Address group which represents a predetermined set of four or more activities linked by an operational or administrative chain of command

a. EXAMPLES: ALL SHIPS PRESENT SAN DIEGO
ALCARPAC
DESRON NINE
TF THREE SIX

2. AIG: Address with represents a perdetermined list of specific and frequently recurring combination of action and/or information addressees

a. Normally assigned to a message which concerns a specific subject and is repetitively addressed to a constant composition of addressees

b. Identified by the word AIG followed by a number

c. EXAMPLES: (SPECIFIC SUBJECT): Ship movements
Weather messages
(AIG LISTING): AIG TWO THREE
AIG FOUR ONE SIX

3. Both AIG's and CAD's are short forms of address which reduce the size of a multiple address message headings

a. Increases the speed of message processing

8. FL 8: Information Addressee(s)

a. The station(s) or command(s) receiving a message for information purposes only

b. Includes

(1) Prosign INFO

(2) Plain language address of information addressee(s)

(a) May be a single, multiple or collective address

1. EXAMPLE: (Single address): INFO USS FORRESTAL

2. EXAMPLE: (Multiple address): INFO USS FORRESTAL
USS BRADLEY

3. EXAMPLE: (Collective address): INFO DESRON NINE
AIG THREE SIX

9. FL 9: Exempted Addressee(s)

   a. A station or command included in the Collective Address Designator (CAD) or address Indicator Groups (AIG) for whom the message is not intended for action or information

   b. When used, includes:

      (1) Prosign XMT

      (2) Plain language address of exempted addressee(s)

   c. EXAMPLE: XMT USS FORRESTAL

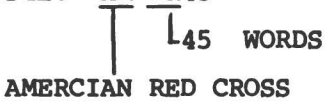
10. FL 10: Accounting Symbol; Group Count

   a. Used to identify agency/organization that will be charged for messages transmitted, totally or in part, via commercial systems.

      (1) Accounting symbols: Letters used to identify agency/organization to be charged

      (2) Group count (GR): Number of words in message to be charged to account

      (3) EXAMPLE: AR GR45



   b. Not normally used on Naval messages

11. FL 11: Separator

   a. Separates heading and text

   b. Prosign BT

   c. Not considered a PART, COMPONENT, or ELEMENT of a message

      (1) Inserted by communication personnel

12. FL 12: Message Text

   a. The thought or idea expressed by the message drafter

   b. In Naval message includes the following:

      (1) Classification line

         (a) First line of the text

(b) Contain the message's classifiction, special handling instructions (if required), and the Standard Subject Identification Code (SSIC)

(c) The first word must be one of the three classification designators, or the word UNCLAS

1. Type CLASSIFIED designators with one space between each letter.

a. EXAMPLE: S E C R E T

(d) The SSIC is the last element of the classification line

1. Six character code derived from SECNAVINST 5210.11

a. The letter N followed by five numbers

2. Preceded and followed by two slant lines

3. Assigned by message originator

a. One method for determining internal message distribution

(e) Classification Line Example:
C O N F I D E N T I A L //N01234//

(2) Passing Instructions Line

(a) Indicates delivery to a specific department or code

1. Example: NMPC for code 406D

(b) Not normally used

(3) Subject line

(a) First line following the classification line

(b) Identifies the basic content of the message

(c) Begins with the abbreviation SUBJ: followed by the subject

1. On classified messages, subject line must carry a classification designation (C, S, TS), or designation U for unclassified, following the subject

(d) EXAMPLE: SUBJ: Radioman A School Course Revision (U)

(4) Reference line

(a) Used as an alternative to repeating lengthy references within the text of a message.

(b) Any identifiable document, all messages, and telephone conversations may be referenced in a message

(c) Each reference is lettered consecutively, one beneath the other

(d) EXAMPLES: (LETTER): A. CNO LTR SER 376/941 OF 3 JAN 83
(MESSAGE): B. USS BRADLEY 181823Z FEB 83

(5) Text

(a) The thoughts or ideas the drafter wants to communicate

(6) Paragraph marking

(a) On classified messages, each paragraph or subparagraph must be marked to show the level of classification; or that it is unclassified

(b) EXAMPLES: (Paragraph): 1. (C)..This paragraph contains CONFIDENTIAL information
(Subparagraph): A. (U)...This subparagraph is Unclassified

(7) Downgrading and declassification markings

(a) Must be applied to all classified messages (EXCEPT those addressed to foreign addressees only)

(b) Last line of text

(c) EXAMPLES:

1. DECL 6 JAN 84

a. Message is declassified on 6 JUN 84

2. REVW 6 JUN 84

a. Message will be REVIEWED for declassification on 6 JUN 84

3. DG/C/6 JUN 84

a. Message will be DOWNGRADED from higher classification to CONFIDENTIAL on 6 JUN 84

13. FL 13: Separator

a. Separates text and ending

b. Prosign BT

c. Not considered as a PART, COMPONENT or ELEMENT of a message

(1) Inserted by communication personnel

14. FL 14: Confirmation

    a. May contain the prosign CFN (Confirmation) and confirmed portions of the message as necessary

    b. Not normally used in Naval messages

15. FL 15: Corrections

    a. May contain the prosign C (Correction) and corrections to the message as necessary

    b. Not normally used in Naval messages

16. FL 16: Ending sign

    a. Identified by the prosign K

C. Readdressing Messages

1. A method for adding new addressees to previously transmitted messages

2. Message to be readdressed identified by indicating the originator, date-time-group, and internal reference (if any)

3. The readdressing authority will identify to whom the message is to be delivered; and will specify whether it is for ACTION or INFORMATION

    a. Readdressing authority: Message drafter or original addressee

4. All parts of the original message heading preceding the preamble (FL 5) are omitted

    a. Under no circumstances is the original date-time-group to be omitted or altered

5. A supplemental heading is inserted in front of the original preamble (FL 5).

    a. Includes format lines two through ten, as required

6. EXAMPLE: (ORIGINAL MESSAGE)

```
NEDS DE NUMO 001/23
R 232302Z JAN 84
FM USS DUNCAN
TO USS BRADLEY
BT
UNCLAS //NO1234//
SUBJ:  TELETYPE PARTS REQUISITION
A.  USS BRADELY 212103Z JAN 84
1.  REGRET PARTS NOT AVAILABLE
BT
K
```

7. **EXAMPLE: (READDRESSED MESSAGE)**

```
NBCX DE NEDS 005/25
R 252303Z JAN 84
FM USS BRADLEY
TO USS KITTY HAWK
R 232302Z JAN 84
FM USS DUNCAN
TO USS BRADLEY
BT
UNCLAS //NO1234//
....TEXT....
K
```

PARTS	COMPONENTS	ELEMENTS	FORMAT LINE	REMARKS
H E A D I N G	BEGINNING PROCEDURE	TRANSMISSION IDENTIFICATION	1	NOT USED
		CALLED STATION(S)	2	ONE LINE
		CALLING STATION AND STATION SERIAL NUMBER	3	ONE LINE
		TRANSMISSION INSTRUCTIONS	4	
	PREAMBLE	PRECEDENCE	5	
		DATE-TIME-GROUP (DTG)	5	
		MESSAGE INSTRUCTIONS	5	
	ADDRESS	ORIGINATOR	6	
		ACTION ADDRESSEE(S)	7	
		INFORMATION ADDRESSEE(S)	8	
		EXEMPTED ADDRESSEE(S)	9	
	PREFIX	ACCOUNTING INFORMATION	10	
		GROUP COUNT	10	
SEPARATOR (BT)			11	
T E X T		CLASSIFICATION	12	
		INTERNAL INSTRUCTIONS	12	
		THOUGHT OR IDEA EXPRESSED BY ORIGINATOR	12	
SEPARATOR (BT)			13	
E N D I N G	ENDING PROCEDURE	CONFIRMATION	14	
		CORRECTIONS	15	
		ENDING SIGN	16	

ACP 126 MESSAGE FORMAT
Figure 4.2-1

PROGRESS CHECK 4.2
ACP 126 Message Format

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. ACP 126 Message Format is commonly used for

    1. Ship to Shore radioteletype messages
    2. Ship to Ship radiotelephone messages
    3. Ship to Ship radioteletype messages
    4. Ship to Shore radiotelephone messages

2. The calling station is contained in format line (FL)

    1. Four
    2. Six
    3. Three
    4. Two

3. The date-time-group (DTG) is contained in FL

    1. Seven
    2. Nine
    3. Four
    4. Five

4. Transmission Instructions are contained in FL

    1. Six
    2. Four
    3. Eight
    4. Three

5. The Text is contained in FL

    1. Ten
    2. Twelve
    3. Thirteen
    4. Eleven

6. The call is contained in FL

    1. Two
    2. Four
    3. Five
    4. Three

7. Accounting symbols are contained in FL

    1. Ten
    2. Twelve
    3. Thirteen
    4. Eleven

8. The originator is contained in FL

    1. Eight
    2. Five
    3. Seven
    4. Six

9. The precedence is contained in FL

    1. Four
    2. Three
    3. Five
    4. Six

10. Information addresses are contained in FL

    1. Seven
    2. Six
    3. Eight
    4. Five

11. Confirmation is contained in FL

    1. Thirteen
    2. Eleven
    3. Twelve
    4. Fourteen

12. Action addressee(s) are contained in FL

    1. Six
    2. Seven
    3. Eight
    4. Nine

13. An address which represents a predetermined set of four or more activities linked by an operational or administrative chain of command is a (an)

    1. AIG
    2. CAD
    3. Multiple address
    4. General Message address

14. The message text includes

    1. Originator
    2. Exempted addresses
    3. Reference line(s)
    4. Group Count

15. Sending a previously transmitted message to new addressee(s) is called a

    1. Retransmission
    2. Suspected duplicate
    3. Readdressal
    4. Supplemental message

ASSIGNMENT SHEET 4.3

JANAP 128 Message Format

INTRODUCTION

This lesson will introduce the format parts, components, and elements of JANAP 128 messages. In most cases, the JANAP 128 format is used at shore installations; yet, most radiomen need to know this format--especially since its format is the basis for the Modified ACP 126 format discussed in the next lesson.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.1 Given the AN/UGC-6 teletypewriter and three outgoing message drafts, prepare teletype tapes of the messages in ACP 126, Modified ACP 126, or JANAP 128 formats as noted on message drafts with no errors in format lines 2, 4, 15, and 16 and no uncorrected errors in format lines 5 through 13. The tapes will be completed within 45 minutes and will be prepared in accordance with appropriate publications: ACP 126, NTP 4, or JANAP 128.

6.1.4 Given the AN/UGC-6 teletypewriter and one outgoing message draft with station serial number, time of file, addressee routing indicator(s), and date-time-group assigned, prepare one teletype tape of the message in (JANAP) 128 format including construction of format lines 2, 4, 15, and 16 in 15 minutes with no errors in format lines 2, 4, 15 and 16, and no uncorrected errors in format lines 5-13.

6.1.7 Given specific information or format lines used for Naval Message construction in ACP 126, JANAP 128, or Modified ACP 126 format, select the corresponding information or format line that applies in each case with at least 80 percent accuracy.

STUDY ASSIGNMENT

Study personal notes, Student Guide section 4.3, and materials from prior lesson 4.1 and 4.2.

NOTETAKING SHEET 4.3

JANAP 128 Message Format

REFERENCES:

1. ACP 126, Communication Instructions, Teletypewriter (Teleprinter) Procedures, Chapters 1 & 4
2. JANAP 128, Automatic Digital Network Operating Procedures, Chapter 4
3. ACP 121, Communication Instructions, General, Chapter 5

NOTETAKING OUTLINE

A. JANAP 128 Message Format

1. JANAP: Joint Army-Navy-Air Force Publication

2. JANAP 128 message format is used for the preparation and transmission of traffic exchanged between communication facilities served by the Defense Communication System (DCS), Automatic Digial Network (AUTODIN)

a. AUTODIN: World-wide, Department of Defense computerized general purpose communication system

(1) Provides for transmission of traffic on a store and forward (messages switching) basis through Autodin Switching Center (ASC's)

3. Most complex message format

a. Contains maximum number or format lines

b. Format line 1, 2, 4, 15, and 16 must be accurately prepared

(1) Back spacing, lettering out, double spacing, or the use of two or more LETTERS and FIGURES functions in sequence will cause the ASC to reject the message during attempted transmission from the originating station

(a) Machine functions will be discussed in detail in message tapecutting lessons

B. JANAP 128 Message Format Construction

1. FL 1: Transmission Identification

a. Means of maintaining traffic continuity

b. Contents of FL 1

(1) Start of Transmission function

(a) Letter V

1. Ensures the first character of following intelligence is not lost or garbled

(2) Start of Message Indicator

(1) Letter ZCZC

(3) Three letter station/channel designator

(4) Three digit number to indicate sequential number of transmission

(a) 001 through 000 (1000)

(5) EXAMPLE: VZCZCABA001

2. FL 2: The Header

a. Minimum of 43 positions in the header

b. Contents of header

(1) Position 1

(a) Precedence prosign

1. Y, Z, O, P, or R

(b) If dual precedence, highest precedence will appear in position 1

(2) Position 2 and 3

(a) Language Media and Format (LMF)

1. Consists of two letters

a. Position 2: LMF of orginiating station source device

b. Position 3: LMF of the perferred output device of addressee(s)

2. Commonly used source/output devices

a. Paper tape (teletypewriter): Letter T

b. Punched cards (Data pattern): Letter C

(3) Position 4

(a) Classification

1. Appropriate classification letter designation

a. T: TOP SECRET
b. S: SECRET
c. C: CONFIDENTIAL
d. E: UNCLASSIFIED EFTO
e. U: UNCLASSIFIED

(4) Position 5 through 8

(a) Content Indicator Code/Communication Action Identifier (CIC/CAI)

1. Consists of four characters

2. Position 5: Activity Identifier

a. Letter A through Z

3. Commonly used Activity Identifiers

a. A: US ARMY
b. D: DEPARTMENT OF DEFENSE
c. F: US AIR FORCE
d. K: EXERCISE MESSAGE
e. N: US NAVY
d. Z: Communication Action Identifier

4. Position 6 through 8: Content Identifier

a. 3 Letters or 2 letters and one number

5. Commonly used Content Identifiers

a. DKW: Following repetition is made in accordance with your request

b. FDY: This message is a suspected duplicate

c. FH1; 2: This message is being passed for (1 Action; 2 Information)

d. YUW: This is a narrative message

e. YVW: This is a service message

(b) EXAMPLES: ZDKW, ZFDY, ZYUW, ZYVW

(5) Position 9

(a) Separator

1. ONE space

(6) Position 10 through 16

(a) Originating station routing indicator (OSRI)

1. Seven letters

(b) Will be discussed in detail later in this lesson

(7) Position 17 through 20

(a) Station Serial Number (SSN)

(b) Used for two purposes

1. In combination with the OSRI, provides positive identification of each transmission

2. As the end of message validation appearing in format line 15, provides a means by which the ASC's can check for straggler messages

a. Message which either trail or are attached to a preceding message

b. Caused by garble during transmission, equipment malfunction, improperly positioned, or omitted end of message validation signal for first message

(c) Four numbers

1. 0001 through 9999

(8) Position 21

(a) Separator

1. ONE space

(9) Position 22 through 24

(a) Date message received from originator by communication center for transmission

1. Julian date

2. 001 through 365 (366 in Leap year)

(10) Position 25 through 28

(a) Time filed: Time message received from originator by communication center for transmission

1. Coordinated Universal Time (Z)

2. Hours/minutes

(11) Position 29 through 33

(a) Classification redundancy

1. Redundancy: Means repeated

2. Position 29: Sentinel (Guard)

a. Hyphen (-)

3. Position 30 through 31: Classification designator

(b) EXAMPLE: -CCCC

(12) Postion 34 through as required

(a) Routing

1. Position 34 and 35: Start of routing signal

a. Two consecutive hyphens (--)

2. Position 36 through as required: Addressee(s) routing indicator

a. Maximum of 500

b. One space between each

(13) End of routing signal

(a) Immediately following the last addressee(s) routing indicator

(b) A period (.)

c. EXAMPLE HEADER: RTTUZYUW RUWTAAA1234 0231915-UUUU--RUWJAAA.

3. FL 3: Calling station and filing time

a. Not used in JANAP 128 message format

4. FL 4: Transmission Instructions

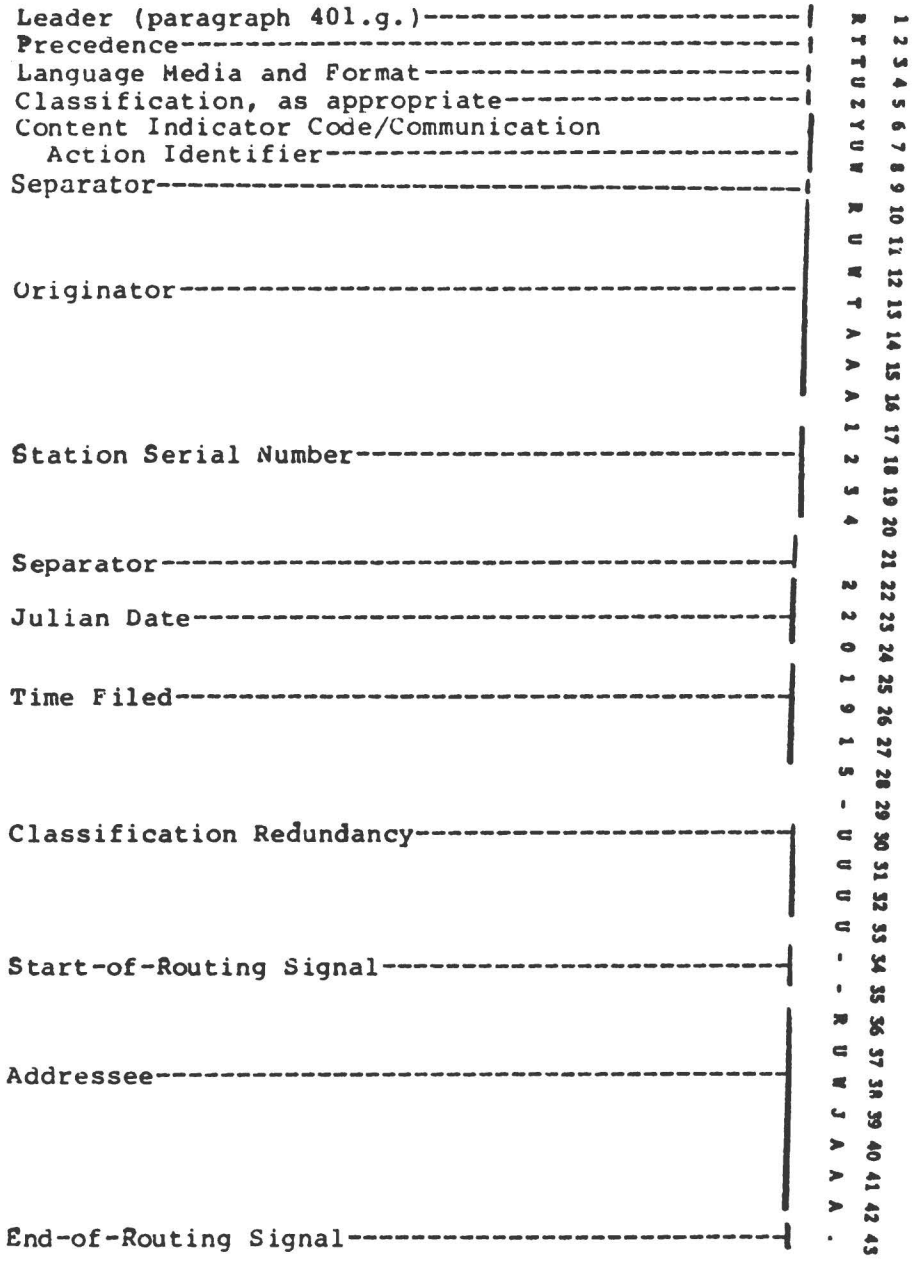
a. Contents of FL 4

(1) Security warning operating signal (OPSIG)

(a) ZNR: The message which follows is unclassified or is acceptable for transmission over any circuit in its present form

(b) ZNY: Do not forward this message by non-approved circuit

1. A letter repeated five times after the OPSIG indicates classification for which circuit must be approved before message can be forwarded over it



JANAP 128 HEADER CHART
Figure 4.3-1

(2) Classification designator repeated five times or designator U for unclassified messages

(3) Transmission Instructions

(a) Indicates any specific transmission (delivery) responsibiliti not apparent in other components of the message heading

1. Normally required on messages which contain an AIG or CAD

2. May be required on multiple call messages

(b) Prosign T followed by identification of the addressee(s) to whom delivery must be made

1. EXAMPLE: T USS JOHN P JONES

(c) In multiple call messages, the routing indicator of the station having transmission responsibility will immediately precede the prosign T, followed by the identification of the addressee(s)

1. EXAMPLE: RUHPABA T USS JOHN P JONES

b. EXAMPLES OF FL 4 variations:

(1) ZNR UUUUU

(2) ZNY CCCCC

(3) ZNR UUUUU T USS JOHN P JONES

(4) ZNY CCCCC RUHPABA T USS JOHN P JONES

5. FL 5: Preamble

a. In accordance with ACP 126

6. FL 6: Originator

a. In accordance with ACP 126

7. FL 7: Action Addressee(s)

a. Similar to ACP 126

(1) Prosign TO

(2) Plain language address of action addressee(s)

(a) Preceded by the operating signal ZEN (Delivered by other means) and a slant sign (/) OR

(b) Preceded by the routing indicator of the station responsible for delivery and a slant sign (/)

(c) AIG's and CAD's are NOT preceded by routing indicator due to multiple station delivery responsibility

1. Delivery responsibility indicated in FL 4

(d) Commonly referred to as "SIDE ROUTING"

(3) EXAMPLE: TO ZEN/USS JOHN P JONES
RUHPABA/USS BRADLEY
DESRON SEVEN
AIG SIX THREE

8. FL 8: Information addressee(s)

a. Same as for format line 7, except FL 8 pertains to information addressee(s)

9. FL 9: Exempt addressee(s)

a. In accordance with ACP 126

10. FL 10: Accounting information; Group count

a. In accordance with ACP 126

11. FL 11: Separator (BT)

a. In accordance with ACP 126

12. FL 12: Text

a. In accordance with ACP 126

13. FL 13: Separator (BT)

a. In accordance with ACP 126

14. FL 14: Confirmation

a. Not used in JANAP 128 message format

15. FL 15: Corrections and End Of Message (EOM) validation

a. Corrections: In accordance with ACP 126

b. EOM validation

(1) Provides a means by which ASC's can check for straggler messages

(2) Number sign (#) followed by the four digit SSN appearing in format line 2

(3) EXAMPLE: #1234

16. FL16: End of Message (EOM) functions

    a. Combination of machine functions and the letter N repeated four times

    b. Sequence

        (1) TWO carriage returns

        (2) EIGHT line feeds

        (3) Letter N repeated four times (NNNN)

17. EXAMPLE: Message

    a. RTTUZYUW RUHPABA0123 0231818-UUUU--RUHPSUB RUHPSAB RUHPSBB RUHPSBC RUHPSBD.
    ZNR UUUUU RUHPSBB T USS WADELL
    RUHPSBC T USS GRIDLEY
    RUHPSBD T USS BAGLEY
    R 231818Z JAN 84
    FM USS KITTY HAWK
    TO RUHPSUB/USS BRADLEY
    INFO RUHPSAB/USS WILSON
    DESRON SEVEN
    BT
    UNCLAS //NO1234//
    SUBJ: OPERATIONAL TRIALS
    A. USS BRADLEY 201514Z JAN 84
    1. TRIALS TO BE CONDUCTED IAW REF A
    BT
    #0123

    NNNN

C. Routing Indicators

1. Routing indicators (RI's) are primarily station designators

    a. Indicate routing through torntape or automated teletypewriter tape relay systems

    b. Consist of not less than four, and not more than seven, letters

        (1) First letter

            (a) Distinguishes world-wide RI's from call signs

                1. Letter R

        (2) Second letter

(a) Identifies the nation or international alliance to which allotted

1. A: AUSTRALIA
2. B: BRITISH COMMONWEALTH
3. C: CANADA
4. H: UNITED STATES
5. U: UNITED STATES

(3) Third letter

(a) Identifies geographical area in which station is located or from which it is served

1. A: EASTERN ASIA
2. E: EASTERN NORTH AMERICA
3. F: CONTINENTIAL EUROPE
4. H: CENTRAL AND SOUTH PACIFIC
5. L: CARRIBEAN AND SOUTH AMERICA
6. W: WESTERN NORTH AMERICA
7. Y: AUSTRALIA and NEW ZEALAND

(4) Fourth letter

(a) Indictes major relay station

1. Has message relay responsibilities and provides alternate relay routes to a designated station

(b) Assignments found in ACP 117, Allied Routing Indicator Book

(5) Fifth through seventh letters

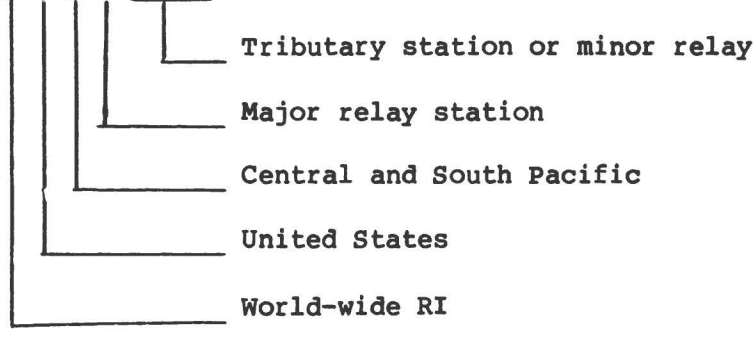
(a) When added to the four letters of a major relay station RI, designate the minor relay or tributary station of that major relay station

1. Minor Relay station: Has relay responsibilities but does NOT provide an alternate relay route

2. Tributary station: Has no relay responsibilies

b. EXAMPLE of RI:

(1) R U H P S A A (NAVCAMS EASTPAC HONOLULU HI)



D. Readdressing Messages

1. Similar to ACP 126 format

a. All parts of the original message heading preceding the preamble (FL 5) are omitted

(1) Under no circumstances is the original date-time-group to be omitted or altered

b. Supplemental heading is inserted in front of the original preamble (FL 5)

(1) Includes format lines 1 through 10, as required

c. Addressee(s) routing indicators are deleted in original message format lines 7 and 8

d. EOM validation is changed to reflect the SSN in supplemental header (FL 2)

2. EXAMPLE: (Original Message)

a.
```
VZCZCABA123
RTTUZYUW RUHPEDS0123 0341814--UUUU-RUHPABA.
ZNR UUUUU
R 031814Z FEB 84
FM USS BRADLEY
TO USS DUNCAN
BT
UNCLAS //NO1234//
SUBJ:  TELETYPE PARTS REQUISITION
A.  USS DUNCAN 021918Z FEB 84
1.  REGRET PARTS NOT AVAILABLE
BT
#0123
```

3. EXAMPLE: (Readdressed Message)

a.
```
VZCZCBBA342
RTTUZYUW RUHPABA0342 0350940-UUUU--RUHPAWK.
ZNR UUUUU
R 040940  FEB 84
FM USS DUNCAN
TO USS KITTY HAWK
031814Z FEB 84
FM USS BRADLEY
TO USS DUNCAN
BT
UNCLAS //NO1234//
TEXT
BT
#0342
```

PARTS	COMPONENTS	ELEMENTS	FORMAT LINE	REMARKS
H	BEGINNING PROCEDURE	TRANSMISSION IDENTIFICATION	1	
E		CALLED STATION(S)	2	HEADER
A		CALLING STATION AND STATION SERIAL NUMBER	3	NOT USED
D		TRANSMISSION INSTRUCTIONS	4	
I	PREAMBLE	PRECEDENCE	5	
N		DATE-TIME-GROUP (DTG)	5	
G		MESSAGE INSTRUCTIONS	5	
	ADDRESS	ORIGINATOR	6	
		ACTION ADDRESSEE(S)	7	
		INFORMATION ADDRESSEE(S)	8	
		EXEMPTED ADDRESSEE(S)	9	
	PREFIX	ACCOUNTING INFORMATION	10	
		GROUP COUNT	10	
SEPARATOR (BT)			11	
T		CLASSIFICATION	12	
E		INTERNAL INSTRUCTIONS	12	
X		THOUGHT OR IDEA EXPRESSED BY ORIGINATOR	12	
T				
SEPARATOR (BT)			13	
E	ENDING PROCEDURE	CONFIRMATION	14	NOT USED
N		CORRECTIONS	15	EOM VALIDATION
D		ENDING SIGN	16	EOM FUNCTIONS
I				
N				
G				

JANAP 128 MESSAGE FORMAT
Figure 4.3-2

PROGRESS CHECK 4.3

JANAP 128 Message Format

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. JANAP 128 message format is commonly used for

    1. Ship to Ship radioteletype messages.
    2. Ship to Shore radioteletype messages.
    3. Exchange of traffic between communication facilities served by the DCS AUTODIN.
    4. Shore to Ship radioteletype messages.

2. Which format lines must be accurately prepared to prevent the ASC from rejecting the message during transmission?

    1. 1, 3, 4, 15 and 16
    2. 1, 2, 4, 15 and 16
    3. 1, 4, 15 and 16
    4. 1, 2, 3, 15 and 16

3. VZCZCABA001 is an example of

    1. FL 3.
    2. FL 4.
    3. FL 1.
    4. FL 2.

4. FL 2 in JANAP 128 format is referred to as the

    1. Transmission Identification.
    2. Content Indicator.
    3. Transmission Instructions.
    4. Header.

5. The letter T in the LMF positions of FL 2 indicates the use of

    1. Paper tape.
    2. Punched cards.
    3. Magnetic tape.
    4. Data pattern.

6. The OSRI is composed of _____ letters.

    1. Six
    2. Five
    3. Eight
    4. Seven

7. The SSN is composed of _____ numbers.

   1. Three
   2. Four
   3. Five
   4. Six

8. The classification redundancy consists of the classification symbol repeated _____ times.

   1. Two
   2. Three
   3. Four
   4. Five

9. The end of routing signal is indicated by a

   1. Period.
   2. Hyphen.
   3. Slant sign.
   4. Quotation mark.

10. The operating signal ZNR indicates the message is

    1. Routine precedence.
    2. Unclassified.
    3. Classified.
    4. To be delivered by other means.

11. T USS JOHN PAUL JONES would appear in FL

    1. Three
    2. Four
    3. Five
    4. Six

12. The OPSIG ZEN indicates the message

    1. Has been delivered by other means.
    2. Is classified.
    3. Is unclassified.
    4. Is garbled.

13. EOM validation consists of

    1. The letter N repeated four times.
    2. Two carriage returns and eight line feeds.
    3. Number sign (#) followed by four digit SSN.
    4. Hyphen (-) followed by four digit SSN.

14. Routing Indicators (RI) consist of

    1. Not less than three, not more than seven letters.
    2. Not less than three, not more than six letters.
    3. Not less than four, not more than six letters.
    4. Not less than four, not more than seven letters.

In the blanks in front of each letter position, write the number which describes its function.

LETTER POSITION		FUNCTION
15. _____	First Letter	1. Identifies geographical area
16. _____	Second Letter	2. Indicates major relay station
17. _____	Third Letter	3. Distinguishes world-wide RI's from call signs
18. _____	Fourth Letter	4. Indicates minor relay or tributary station
19. _____	Fifth through seventh Letters	5. Identifies the nation or international alliance

20. DESRON SEVEN is an example of a (an)

    1. General Message Title.
    2. AIG.
    3. CAD.
    4. Multiple Address.

ASSIGNMENT SHEET 4.4

Modified ACP 126 Format

INTRODUCTION

This is the last message format that will be covered in the course. Modified ACP 126 Format is like JANAP 128 format in style but it still has its own structure. You will learn the parts, components, and elements that make up this format in this lesson.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.1 Given the AN/UGC-6 teletypewriter and three outgoing message drafts, prepare teletype tapes of the messages in ACP 126, Modified ACP 126, or JANAP 128 formats as noted on message drafts with no errors in format lines 2, 4, 15, and 16 and no uncorrected errors in format lines 5 through 13. The tapes will be completed within 45 minutes and will be prepared in accordance with appropriate publications: ACP 126, NTP 4, or JANAP 128.

6.1.3 Given the AN/UGC-6 teletypewriter and one outgoing message draft with station serial number, time of file, routing indicators, and date-time-group assigned, prepare one teletype tape of the message in Modified ACP 126 format including construction of format lines 2, 4, 15, and 16 with no errors in format lines 2, 4, 15, and 16, and no uncorrected errors in format lines 5-13 within 15 minutes.

6.1.7 Given specific information or format lines used for Naval Message construction in ACP 126, JANAP 128, or Modified ACP 126 format, select the corresponding information or format line that applies in each case with at least 80 percent accuracy.

STUDY ASSIGNMENT

Review personal notes, study Student Guide section 4.4, and materials from preceding lesson 4.1 - 4.3.

NOTETAKING SHEET 4.4

Modified ACP 126 Format

REFERENCES:

1. ACP 126, Communication Instructions, Teletypewriter (Teleprinter) Procedures, Chapter 1 & 4)
2. JANAP 128, AUTODIN Operating Procedures, Chapter 4
3. NTP 4, Fleet Communications, Section 03, Chapter 8

NOTETAKING OUTLINE

A. Modified ACP 126 Message Format

1. ACP: Allied Communication Publication

2. Modified ACP 126 message format is used for the preparation and transmission of traffic exchanged between afloat units and NAVCAMS/ NAVCOMMSTA's served by the Naval Communication Processing and Routing System (NAVCOMPARS).

a. NAVCOMPARS: Baseline computer system of the NTS

(1) Provides interface between ashore circuits and networks and afloat circuits.

(2) Located at

(a) NAVCAMS EASTPAC, HONOLULU HI
(b) NAVCAMS WESTPAC, GUAM
(c) NAVCAMS LANT, NORFOLK VA
(d) NAVCAMS MED, NAPLES, IT
(e) NAVCOMMSTA STOCKTON, CA

B. NAVCOMPARS Advantages:

1. Automatic message processing

2. Format conversion from Modified ACP 126 to JANAP 128

3. Routing Indicator look-up and assignment

a. Eliminates requirements for afloat units to maintain routing indicator information

4. Allows afloat units to input message via full-period terminations, primary ship/shore, and Satellite in Modified ACP 126 format

a. Combines simplicity and convenience of ACP 126 and enhancements offered by JANAP 128.

(1) ACP 126 format modified to include JANAP 128 FL's 1, 2, 4, 15, and 16

C. Modified ACP 126 Message Format Construction

1. FL 1: Transmission Identification

a. Similar to JANAP 128

(1) Uses four digit number to indicate sequential number of transmissions

(2) Example: VZCZCABA1234

b. EXAMPLE: VZCZCABA123

2. FL 2: Header

a. Similar to JANAP 128

(1) The ONLY addressee routing indicator required is the unique routing indicator for NAVCOMPARS

(2) NAVCOMPARS Routing Indicator constructed as follows:

(a) First four letters

1. Major relay station RI assigned to the NAVCAMS/ NAVCOMMSTA

a. NAVCAMS EASTPAC: RUHP

b. NAVCAMS WESTPAC: RUHG

c. NAVCAMS LANT: RULY

d. NAVCAMS MED: RUFR

e. NAVCOMMSTA STOCKTON: RUWN

(b) Last three letters

1. Unique suffix SUU

a. Unique suffix: An ending used only for a single purpose

(c) Example: (NAVCOMMSTA Stockton): RUWNSUU

(3) The unique routing indicator suffix SUU activates the processing modules within the NAVCOMPARS

(a) Performs routing indicator look-up, and format conversion to JANAP 128 format.

1. OSRI/SSN replaced by that of NAVCAMS/NAVCOMMSTA Service Center

a. Places responsibility for answering service requests on NAVCAMS/NAVCOMMSTA rather than afloat unit.

2. Assigns all addressee routing indicators in FL 2

3. Assigns addressee side routing in FL's 7 and 8

3. FL 3: Calling station and filing time

a. Not used in Modified ACP 126 format

4. FL 4: Transmission Instructions

a. In accordance with JANAP 128

5. FL 5: Preamble

a. In accordance with ACP 126

6. FL 6: Originator

a. In accordance with ACP 126

7. FL 7: Action Addressee(s)

a. In accordance with ACP 126

(1) NAVCOMPARS will protect delivery by assigning addressee side routing during format conversion to JANAP 128.

8. FL 8: Information Addressee(s)

a. Same as for FL 7 except FL 8 pertains to information addressee(s)

9. FL 9: Exempt Addressee(s)

a. In accordance with ACP 126

b. NAVCOMPARS will recognize the prosign XMT in FL 9

(1) Automatically deletes the affected command's routing indicator from FL 2 during conversion to JANAP 128

10. FL 10: Accounting information; Group count

a. In accordance with ACP 126

11. FL 11: Separator (BT)

a. In accordance with ACP 126

12. FL 12: Text

a. In accordance with ACP 126

13. FL 13: Separator (BT)

a. In accordance with ACP 126

14. FL 14: Confirmation

a. In accordance with ACP 126

15. FL 15: Corrections and EOM validation

a. In accordance with JANAP 128

16. FL 16: EOM functions

a. In accordance with JANAP 128

17. EXAMPLE of Modified ACP 126 formatted message

a.
```
VZCZCABA0121
RTTUZYUW RUHPEDS0123 0231818-UUUU-RUHPSUU.
ZNR UUUUU
R 231818Z JAN 84
FM USS BRADLEY
TO USS DUNCAN
BT
UNCLAS //NO1234//
SUBJ:  TELETYPE PARTS REQUISITION
A.  USS DUNCAN 201514Z JAN 84
1.  REGRET PARTS NOT AVAILABLE
BT
#0123

(8 spaces)
NNNN
```

18. EXAMPLE after NAVCOMPARS format conversion

a.
```
RTTUZYUW RUHPSGG0346 0231818-UUUU--RUHPCAN.
ZNR UUUUU
R 231818Z JAN 84
FM USS BRADLEY
TO USS DUNCAN
BT
UNCLAS //NO1234//
SUBJ:  TELETYPE PARTS REQUISITION
A.  USS DUNCAN 201514Z JAN 84
1.  REGRET PARTS NOT AVAILABLE
BT
#0346

(8 spaces)
NNNN
```

D. Readdressing Messages

1. In accordance with JANAP 128 procedure for those messages processed through
systems other than NAVCOMPARS

2. In accordance with following procedures for those messages processed through NAVCOMPARS (i.e. Fleet Broadcasts, Full-period terminations, Over-the-counter)

a. Messages of any classification may be readdressed

(1) Readdressal request will be assigned same classification as original message.

b. Communications Action Identifier (CAI) code ZYUW must be used in FL 2

c. The routing indicator of the NAVCAMS/NAVCOMMSTA Service Center will be assigned as the addressee(s) routing indicator.

(1) First four letters

(a) Major relay station routing indicator

(2) Last three letters

(a) Unique suffix SGG

(3) EXAMPLE: (NAVCAMS WESTPAC): RUHGSGG

d. FL 7 and 8 will contain the plain language address of the command or unit message is being readdressed to

e. Text of readdressal request limited to the following:

(1) First line: Classification

(a) Must be the same as original message

(b) SSIC will NOT be assigned

(2) Second line

(a) Abberviation RADDR

(b) Channel identifier/designator or channel sequence number of message to be readdressed; slant sign (/); and Julian date of receipt

(3) Third line

(a) Plain language address of originator from original message

(b) Two slant signs (//)

(c) Date-time-group of message to be readdressed

1. If message was received with supplemental heading Originator and Date-Time-Group of LATEST supplemental heading will be cited.

f. Requests for readdressal service is limited to the last TEN days of traffic

g. EXAMPLE:

```
VZCZCABA0020
RUHPEDS0033 0331918-UUUU--RUHGSGG
ZNR UUUUU
R 021918Z FEB 84
FM USS BRADLEY
TO USS KITTY HAWK
INFO USS DUNCAN
BT
UNCLAS
RADDR SAA113/025
USS STERETT//252359Z JAN 84
BT
#0033
```

PARTS	COMPONENTS	ELEMENTS	FORMAT LINE	REMARKS
H	BEGINNING PROCEDURE	TRANSMISSION IDENTIFICATION	1	
E		CALLED STATION(S)	2	HEADER
A		CALLING STATION AND STATION SERIAL NUMBER	3	NOT USED
D		TRANSMISSION INSTRUCTIONS	4	
I	PREAMBLE	PRECEDENCE	5	
N		DATE-TIME-GROUP (DTG)	5	
G		MESSAGE INSTRUCTIONS	5	
	ADDRESS	ORIGINATOR	6	
		ACTION ADDRESSEE(S)	7	
		INFORMATION ADDRESSEE(S)	8	
		EXEMPTED ADDRESSEE(S)	9	
	PREFIX	ACCOUNTING INFORMATION	10	
		GROUP COUNT	10	
SEPARATOR (BT)			11	
T		CLASSIFICATION	12	
E		INTERNAL INSTRUCTIONS	12	
X		THOUGHT OR IDEA EXPRESSED BY ORIGINATOR	12	
T				
SEPARATOR (BT)			13	
E	ENDING PROCEDURE	CONFIRMATION	14	NOT USED
N		CORRECTIONS	15	EOM VALIDATION
D		ENDING SIGN	16	EOM FUNCTIONS
I				
N				
G				

Modified ACP 126 Message Format

Figure 4.4-1

PROGRESS CHECK 4.4

Modified ACP 126 Format

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. Modified ACP 126 message format is commonly used for

    1. Ship to Ship radioteletype messages.
    2. Ship to Shore radioteletype messages.
    3. Exchange of traffic between communication facilities served by the DCS AUTODIN.
    4. Ship to Shore radiotelephone messages.

2. NAVCOMPARS

    1. Is used extensively within the DCS AUTODIN.
    2. Is located aboard every Navy Ship.
    3. Provides interface between ashore circuits and networks, and afloat circuits.
    4. Is used only for data pattern messages.

3. The unique suffix assigned for NAVCOMPARS which activates the processing modules is

    1. SGG.
    2. SXX.
    3. SYY.
    4. SUU.

4. RUHP is an example of a

    1. Major relay station routing indicator.
    2. Minor relay station routing indicator.
    3. NAVCOMPARS routing indicator.

5. The preamble is contained in FL

    1. Three.
    2. Four.
    3. Five.
    4. Six.

6. Exempted addressee(s) are contained in FL

    1. Seven.
    2. Eight.
    3. Nine.
    4. Ten.

7. The separators are contained in FL's

    1. Nine and twelve.
    2. Eleven and thirteen.
    3. Ten and thirteen.
    4. Eleven and twelve.

8. Transmission instructions are contained in FL

    1. Four.
    2. Three.
    3. Five.
    4. Two.

9. Information addresses are contained in FL

    1. Nine.
    2. Six.
    3. Eight.
    4. Seven.

10. The originator is contained in FL

    1. Nine.
    2. Seven.
    3. Eight.
    4. Six.

11. The HEADER is contained in FL

    1. Two.
    2. Three.
    3. Four.
    4. Five.

12. ZNR UUUUU is an example of FL

    1. Five.
    2. Three.
    3. Four.
    4. Six.

13. #0123 is an example of FL

    1. Fourteen.
    2. Fifteen.
    3. Sixteen.
    4. Thirteen.

14. TO USS JOHN PAUL JONES is an example of FL

    1. Six.
    2. Seven.
    3. Eight.
    4. Nine.

15. XMT USS JOHN PAUL JONES is an example of FL

    1. Six.
    2. Seven.
    3. Eight.
    4. Nine.

ASSIGNMENT SHEET 4.5

Teletypewriter Operation: Introduction to AN/UGC-6 Teletypewriter

INTRODUCTION

No matter where you are stationed as a Radioman, you will have to know how to operate and type on a teletypewriter. The teletypewriters you will operate here at RM A School are the AN/UGC-6 model. The following outline will enable you to learn the functions and operations of the this teletypewriter.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.1 Given the AN/UGC-6 teletypewriter and three outgoing message drafts, prepare teletype tapes of the messages in ACP 126, Modified ACP 126, or JANAP 128 formats as noted on message drafts with no errors in format lines 2, 4, 15, and 16 and no uncorrected errors in format lines 5 through 13. The tapes will be completed within 45 minutes and will be prepared in accordance with appropriate publications: ACP 126, NTP 4, or JANAP 128.

6.1.5 Given the AN/UGC-6 teletypewriter and three outgoing message drafts with prepared tapes containing uncorrected errors, correct the tapes to match the outgoing message drafts in 45 minutes.

STUDY ASSIGNMENT

Study class notes and Student Guide section 4.5

NOTETAKING SHEET 4.5

Teletypewriter Operation: Introduction to AN/UGC-6 Teletypewriter

REFERENCES:

1. AN/UGC-6 Maintenance Manual

NOTETAKING OUTLINE

A. Introduction to AN/UGC-6 Teletypewriter

1. The AN/UGC-6 teletypewriter can operate as a self-contained message origination and receiving center

a. Used to exchange printed and tape perforated messages between two or more stations

(1) Connected by appropriate transmission facilities

(a) Telegraph lines
(b) Telephone networks
(c) Radio channels

b. Messages received electrically, via the transmission facility

(1) Printed on page size copy paper and/or perforated tape

c. Message transmitted electrically

(1) Either by perforated tape or by keyboard operation

(2) Both methods allow for simultaneous printed page monitoring during transmission

d. When electrically disconnected from the transmission facilities, teletype can be used for tape/page copy preparation

(1) Teletypewriters in the tape preparation area of lab are for tape/page copy preparation

(2) Teletypewriters in the test center are electrically connected to the Teletype Input Message Evaluation System (TIMES)

B. Component parts of the AN/UGC-6 Teletypewriter

1. Communications keyboard

a. Identical to TT-47 except for one additional <u>RED KEY</u> on the top row

(1) TAPE B. SP: Tape backspace

(a) Depressing this key moves tape back one space in the perforator

1. Used to correct typing error

(2) Located above and to the left of the letter "I" key

b. KYBD LK/UNLK keys are labeled SEND/RECV

c. Controls mechanical input to the perforator

2. Page Printer

a. Similar to TT-47

3. Typing perforator

a. Mechanically converts teletype character and functions into perforations (holes) in the tape

(1) 5 level code

(a) Devised by Emile Baudot; French signal officer

(b) Each character identified by a certain combination of current and no current impulses

4. Typing reperforator

a. Similar to perforator

(1) Input: From keyboard or Transmitter Distributor (TD)

(2) Used mostly for correcting perforated tapes

5. Transmitter Distributor (TD)

a. Converts the 5 unit, coded tape message to electrical impulses

6. Character Counter

a. Alerts operator to number of characters typed on a line

(1) Teletype messages cannot exceed 69 characters (including spaces) per line

7. Keyboard Control Mechanism

a. Allows operator to select his mode of operaiton

(1) K: Use of keyboard produces printed copy only

(a) Perforator and TD will not operate

(2) KT: Produce printed copy and perforated tape

(a) TD will operate

(3) T: Use of keyboard produces perforated tape only

(a) Page printer will not operate

(b) Use of TD will produce page copy

b. Keyboard control mechanism selectors have been removed from tapecutting machines in tapecutting laboratories

C. Tape Correction on AN/UGC-6

1. Two methods can be used to correct tapes on the AN/UGC-6

a. Tape Back Space function

(1) Used to correct errors detected while cutting tape

(2) Depress tape backspace to move tape back in perforator one space at a time

(a) Maximum of 10 spaces

(3) When tape has been backspaced to character where mistake has occurred, correction can be made

(a) Depress letter (LTRS) key

1. Causes perforator to replace character with letter function code

a. Five perforations (holes)

(b) Press LTRS key once for each letter(s) or function(s) already typed after the error

(c) Then type in the correct letter(s) / functions(s), and continue cutting tape

b. Reperforator

(1) Used to correct errors detected after cutting tape

(2) Turn on reperforator

(3) Feed out tape leader: At least 6 inches of BLANKS

(4) Place original tape on TD

(a) TD in stop position

(b) Start at beginning of letter functions

(5) Place TD in run position

(6) Depress and hold down both REC and SEND keys on keyboard to start TD

(7) Release the SEND KEY 3-5 characters or functions before the error to prevent missing the error

(a) This stops the TD

(8) Continue to hold down REC key

(9) Tap the SEND KEY lightly to move tape one space at a time until error is reached

(10) Place TD in STOP position

(11) Release SEND and REC keys

(12) Press the SEND key to free the REC key and keyboard

(13) Make correction

(a) To DELETE Characters: Manually advance original tape past error(s)

1. Start TD to run off remainder of tape

(b) To Correct Characters: Manually advance original tape past error(s)

1. Type required character/function using the keyboard

2. Start TD to run off remainder of tape

ASSIGNMENT SHEET 4.6

Teletypewriter Operation: Tapecutting

INTRODUCTION

In the previous lesson, you learned how to operate a teletypewriter. In this lesson you will be concerned with the tapecutting procedures used to prepare messages for transmission from your command by perforated tape.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.1 Given the AN/UGC-6 teletypewriter and three outgoing message drafts, prepare teletype tapes of the messages in ACP 126, Modified ACP 126, or JANAP 128 formats as noted on message drafts with no errors in format lines 2, 4, 15, and 16 and no uncorrected errors in format lines 5 through 13. The tapes will be completed within 45 minutes and will be prepared in accordance with appropriate publications: ACP 126, NTP 4, or JANAP 128.

6.1.2 Given an AN/UGC-6 teletypewriter and one outgoing message draft with the date-time-group assigned, prepare one teletype tape of the message in ACP 126 format with no uncorrected errors in 15 minutes.

6.1.3 Given the AN/UGC-6 teletypewriter and one outgoing message draft with station serial number, time of file, routing indicators, and date-time-group assigned, prepare one teletype tape of the message in Modified ACP 126 format including construction of format lines 2, 4, 15, and 16 with no errors in format lines 2, 4, 15, and 16, and no uncorrected errors in format lines 5-13 within 15 minutes.

6.1.4 Given the AN/UGC-6 teletypewriter and one outgoing message draft with station serial number, time of file, addressee routing indicator(s), and date-time-group assigned, prepare one teletype tape of the message in JANAP 128 format including construction of format lines 2, 4, 15, and 16 in 15 minutes with no errors in format lines 2, 4, 15 and 16, and no uncorrected errors in format lines 5-13.

6.1.5 Given the AN/UGC-6 teletypewriter and three outgoing message drafts with prepared tapes containing uncorrected errors, correct the tapes to match the outgoing message drafts in 45 minutes.

STUDY ASSIGNMENT

Study class notes and Student Guide section 4.6

NOTETAKING SHEET 4.6

Teletypewriter Operation: Tapecutting

REFERENCES:

1. ACP 126, Communication Instructions, Teletypewriter (Teleprinter) Procedures, Chapter 1 & 4)
2. JANAP 128, AUTODIN Operating Procedures, Chapter 4
3. NTP 4, Fleet Communications, Section 03, Chapter 8

NOTETAKING OUTLINE

A. Tapecutter Orientation

1. Message flow

a. Outgoing Message Draft (OMD) received in communication center

(1) Shipboard departments

(2) Shore station departments or subscriber commands

b. Outrouter

(1) Screens message for completeness

(2) Determines message transmission format

(a) ACP 126: Ship to ship

(b) Modified ACP 126

1. Ship to shore

2. Direct shore input into NAVCOMPARS

(c) JANAP 128: AUTODIN

(3) Logs message

(4) Assigns message processing information

(a) Station Serial Number (SSN)

(b) Time of File (TOF)

(c) Originating Station Routing Indicator (OSRI)

1. JANAP 128 and Modified ACP 126

(d) Addressee(s) Routing Indicator (RI)

1. JANAP 128 and Modified ACP 126

a. NAVCOMPARS RI assigned to Modified ACP 126

(5) Transmission Instructions

(a) If applicable

(6) Content Indicator Code/Communication Action Identifier (CIC/CAI)

(a) ONLY if other than ZYUW

(1) ZYUW: This a narrative message

c. Tapecutter

(1) Obtains OMD

(2) Checks for paging requirement/message sectioning

(a) ACP 126 and JANAP 128

1. Maximum of 20 lines per typed page

2. Start with FL 5

3. Maximum of 5 pages of text per message section

a. Page containing heading and text does NOT count as page of text

(b) Modified ACP 126

1. Paging not required

a. NAVCOMPARS will page message

2. Maximum of 550 lines per section

(3) Prepares message tape in required format

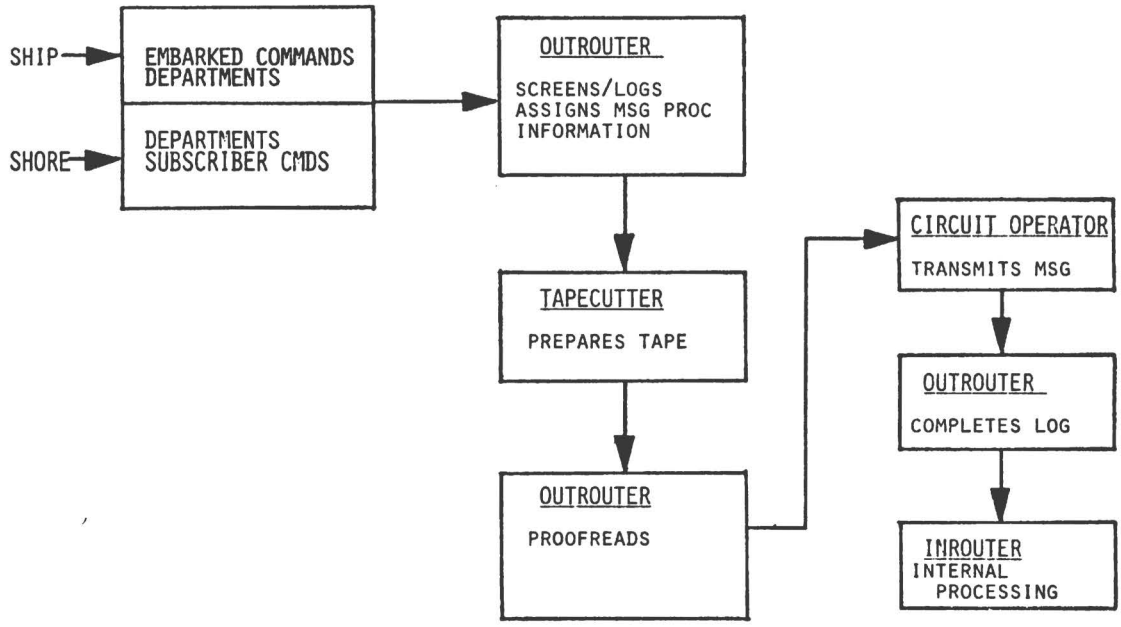
(a) Start with highest precedence message with oldest TOF

(4) Proofreads and corrects message as necessary

(5) Passes to Outrouter for final proofreading prior to transmission

d. Outrouter

(1) Passes OMD, smooth typed copy and message tape to circuit operator



OUTGOING MESSAGE FLOW

FIGURE 4.6-1

(a) Circuit operator responsible for adding

1. FL 2 and 3: ACP 126

2. FL 1: Modified ACP 126 and JANAP 128

2. Machine Functions

a. Start of tape function (tape leader)

(1) ACP 126/Modified ACP 126

(a) 6 Inches of blanks

(b) 30-40 letter functions

(2) JANAP 128

(a) 6 Inches of blanks

(b) 6 letter functions

b. End of Line (EOL) functions

(1) 2 Carriage Returns (CR)

(2) 1 Line Feed (LF)

c. Paging functions

(1) 2 CR, 4 LF

d. End of Message (EOM) functions

(1) 2 CR's, 8 LF's

(2) Letter N repeated four times

(a) End of message indicator

(3) Minimum of 12 letter functions

(4) Although ACP 126 format only requires 2 CR's, 1 LF, EOM functions as described will be used for all formats to standardize EOM functions of Navy circuits

B. Tapecutting Procedures: ACP 126

1. Preparation

a. Prepare tape leader

b. FL 4 (Optional)

(1) Prosign T

(2) Addressee designator

(3) EXAMPLE: T NEDS

c. FL 5

(1) Precedence

(2) Date-time-group (DTG)

(3) Message instructions (optional)

d. FL 6

(1) Prosign FM

(2) Originator's Plain Language Address (PLA)

e. FL 7

(1) Prosign TO

(2) Opsig ZEN followed by slant sign (/)

(a) If delivery to an addressee is to be made by other means

(3) Addressee(s) PLA

(a) Numbers 1 through 19 spelled out as one word

1. EXAMPLE: TWELVE

(b) Number 20 and above spelled out digit by digit

1. EXAMPLE: TWO FIVE

(c) Each addressee must be typed on separate line

f. FL 8

(1) Prosign INFO

(2) Opsig ZEN followed by slant sign (/)

(a) If delivery to an addressee is to be made by other means

(3) Addressee(s) PLA

(a) Number 1 through 19 spelled out as one word

1. EXAMPLE: THIRTEEN

(b) Numbers 20 and above spelled out digit by digit

1. EXAMPLE: FOUR FIVE

(4) Each addressee must be typed on separate line

g. FL 9 (If applicable)

(1) Prosign XMT

(2) Addressee(s) PLA

(3) Each addressee must be typed on separate line

h. FL 10

(1) Group count and accounting symbol

(a) Not normally used

i. FL 11

(1) Prosign BT

(2) Separates headling from text

j. FL 12

(1) Text

(2) MAXIMUM of 69 characters per line, including spaces

(3) If paging is required, following information typed on paging line

(a) Word PAGE and two digit page number

(b) Originator identification (OSRI)

(c) Message SSN

(d) Classification

(e) EXAMPLE: PAGE02 RUHPEDS01234 UNCLASSIFIED

k. FL 13

(1) Prosign BT

(2) Separates text from ending

l. FL 14

(1) Confirmation

(a) Not normally used

m. FL 15

(1) Corrections

(a) Not normally used

n. FL 16

(1) EOM functions

(a) 2 CR's, 8 LF's, NNNN

(b) Minimum of 12 letter functions

p. Remove tape

2. Check Typed Message

a. Run off a smooth copy from completed tape

b. Proofread smooth copy against OMD

c. Make corrections as needed

(1) Use reperforator method

d. Write precedence and DTG on tape leader

e. Butterfly tape

f. Give tape, OMD, smooth copy to Instructor

R 181824Z FEB 84
FM USS FORT FISHER
TQ USS JOHN F KENNEDY
USS BRADLEY
INFO USS KITTY HAWK
BT
UNCLAS //NO3245//
SUBJ: TELETYPE PARTS REQUISITION
A. USS KITTY HAWK 161423Z FEB 84
1. IAW REF A, TELETYPE PARTS SHIPPED 17 FEB 84 UNDER
DOCUMENT NUMBER NO34256
BT

NNNN

NOTE: DOUBLE SPACING BETWEEN LINES FOR ILLUSTRATIVE PURPOSES ONLY

ACP 126 MESSAGE FORMAT

FIGURE 4.6- 2

C. Tapecutting Procedures: JANAP 128

1. Preparation

a. Prepare tape leader

b. FL 2

(1) MUST BE LETTER/FUNCTION PERFECT

(2) Construct using following information from OMD

(a) Precedence

(b) Language Media Format (LMF)

1. Unless otherwise noted on OMD, will always be TT

(c) Classification designator

(d) Content Indicator Code/Communication Action Identifier (CIC/CAI)

1. Unless otherwise noted on OMD, will be ZYUW

(e) OSRI

(f) SSN

(g) TOF

(h) Security sentinel (-)

(i) Security redundancy code

(j) Start of routing signal (--)

(k) Addressee(s) RI

(l) End of routing signal (.)

(3) EXAMPLE: RTTUZYUW RUHPEDS0123 0231818-UUUU--RUHPADA.

c. FL 3

(1) Not used in JANAP 128 format

d. FL 4

(1) MUST BE LETTER/FUNCTION PERFECT

(2) OPSIG ZNR/ZNY as appropriate

(a) ZNR: Unclassified messages

(b) ZNY: Classified messages

(3) Classification designator repeated five times

(a) EXAMPLE: UUUUU

(4) Message instructions (Optional)

(a) Prosign T

(b) Addressee designator

e. FL 5

(1) Precedence

(2) DTG

(3) Message instructions (Optional)

f. FL 6

(1) Prosign FM

(2) Originator PLA

g. FL 7

(1) Prosign TO

(2) Addressee RI followed by a slant sign (/) OR OPSIG ZEN followed by a slant sign (/)

(a) EXAMPLES: RUHPEDS/
ZEN/

(3) Addressee(s) PLA

h. FL 8

(1) Prosign INFO

(2) Same as FL 7, except relates to information addressee(s)

i. FL 9 (If applicable)

(1) Prosign XMT

(2) Addressee(s) PLA

j. FL 10

(1) Group count and accounting symbol

(a) Not normally used

k. FL 11

(1) Prosign BT

(2) Separates heading from text

l. FL 12

(1) Text

(2) MAXIMUM of 69 characters per line, including spaces

(3) If paging is required, following information typed on paging line

(a) Word PAGE and two digit page number

(b) Originator identification (OSRI)

(c) Message SSN

(d) Classification

(e) EXAMPLE: PAGE03 RUHPEDS2345 C O N F I D E N T I A L

m. FL 13

(1) Prosign BT

(2) Separates text from ending

n. FL 14

(1) Confirmation

(a) Not used in JANAP 128 format

o. FL 15

(1) Corrections

(a) Not normally used

(2) EOM validation

(a) MUST BE LETTER/FUNCTION PERFECT

(b) Figure function

(c) Number sign (#)

(d) SSN

(e) Letter function

(f) EXAMPLE: #1234

p. FL 16

(1) MUST BE LETTER/FUNCTION PERFECT

(2) EOM functions

(a) 2 CR's, 8 LF's, NNNN

(b) Minimum of 12 letter functions

q. Remove tape

2. Check Typed Message

a. Run off a smooth copy from completed tape

b. Proofread smooth copy against OMD

c. Make corrections as needed

(1) Use reperforator method

d. Write precedence and DTG on tape leader

e. Butterfly tape

f. Give tape, OMD, Smooth copy to instructor

RTTUZYUW RUHPSFF0123 0251814-UUUU--RUHPJFK RUHPEDS RUHPHWK.
ZNR UUUUU
R 251814Z JAN 84
FM USS FORT FISHER
TO RUHPJFK/USS JOHN F KENNEDY
RUHPEDS/USS BRADLEY
INFO RUHPHWK/USS KITTY HAWK
BT
UNCLAS //N03245//
SUBJ: TELETYPE PARTS REQUISITION
A. USS KITTY HAWK 161423Z JAN 84
1. IAW REF A, TELETYPE PARTS SHIPPED 23 JAN 84 UNDER
DOCUMENT NUMBER N034256
BT
#0123

NNNN

NOTE: DOUBLE SPACING BETWEEN LINES FOR ILLUSTRATIVE PURPOSES ONLY

JANAP 128 MESSAGE FORMAT

FIGURE 4.6-3

D. Tapecutting Procedures: Modified ACP 126

1. Preparation

a. Prepare tape leader

b. FL 2

(1) MUST BE LETTER/FUNCTION PERFECT

(2) Construct using following information from OMD

(a) Precedence

(b) LMF

1. Unless otherwise noted on OMD, will always be TT

(c) Classification designator

(d) CIC/CAI

1. Unless otherwise noted on OMD, will be ZYUW

(e) OSRI

(f) SSN

(g) TOF

(h) Security sentinel (-)

(i) Security redundancy code

(j) Start of routing signal (--)

(k) Addressee RI

1. NAVCOMPARS RI

a. EXAMPLE: RUHPSUU

(l) End of routing signal (.)

(3) EXAMPLE: RTTCZYUW RUHPEDS0145 0251819-CCCC--RUHPSUU.

c. FL 3

(1) Not used in Modified ACP 126 format

d. FL 4

(1) MUST BE LETTER/FUNCTION PERFECT

(2) OPSIG ZNR/ZNY as appropriate

(a) ZNR: Unclassified messages

(b) ZNY: Classified messages

(3) Classification designator repeated five times

(a) EXAMPLE: SSSSS

(4) Message instructions (Optional)

(a) Prosign T

(b) Addressee designator

e. FL 5

(1) Precedence

(2) DTG

(3) Message instructions (Optional)

f. FL 6

(1) Prosign FM

(2) Originator PLA

g. FL 7

(1) Prosign TO

(2) OPSIG ZEN followed by a slant sign (/)

(a) If applicable

(3) Addressee(s) PLA

h. FL 8

(1) Prosign INFO

(2) Same as FL 7, except relates to information addressee(s)

i. FL 9 (If applicable)

(1) Prosign XMT

(2) Addressee(s) PLA

j. FL 10

(1) Group count and accounting symbol

(a) Not normally used

k. FL 11

(1) Prosign BT

(2) Separated heading from text

l. FL 12

(1) Text

(2) MAXIMUM of 69 characters per line, including spaces

m. FL 13

(1) Prosign BT

(2) Separates text from ending

n. FL 14

(1) Confirmation

(a) Not used in Modified ACP 126 format

o. FL 15

(1) Corrections

(a) Not normally used

(2) EOM validation

(a) MUST BE LETTER/FUNCTION PERFECT

(b) Figure function

(c) Number sign (#)

(d) SSN

(e) Letter function

(f) EXAMPLE: #2323

p. FL 16

(1) MUST BE LETTER/FUNCTION PERFECT

(2) EOM functions

(a) 2 CR's, 8 LF's, NNNN

(b) Minimum of 12 letter functions

q. Remove tape

2. Check Typed Message

a. Run off a smooth copy from completed tape

b. Proofread smooth copy against OMD

c. Make corrections as needed

(1) Use reperforator method

d. Write precedence and DTG on tape leader

e. Butterfly tape

f. Give tape, OMD, smooth copy to Instructor

E. Tapecutting Test Laboratory Procedures

1. Tapes cut for testing purposes will be graded through the Teletype Input Message Evaluation System (T.I.M.E.S.)

a. Access into T.I.M.E.S. through AN/UGC-6's located in Testing Laboratory Room 212

2. AN/UCG-6 preparation for grading purposes

a. Turn on the AN/UGC-6

b. Depress "SEND" key to unlock the teletypewriter keyboard

c. Type two carriage returns and one line feed

(1) Activates the system

(a) Printout similar to the following will appear

1. TIMES STARTED 8310200800

d. Following information will be requested by the system

(1) NAME

(a) Type in LAST NAME only

(2) Social Security Number (SSN)

(a) Type in SSN, separating each group with the dash sign (-)

RTTUZYUW RUHPSFF0123 0251814-UUUU--RUHPSUU.
ZNR UUUUU
R 251814Z JAN 84
FM USS FORT FISHER
TO USS JOHN F KENNEDY
USS BRADLEY
INFO USS KITTY HAWK
BT
UNCLAS //N03245//
SUBJ: TELETYPE PARTS REQUISITION
A. USS KITTY HAWK 161423Z JAN 84
1. IAW REF A, TELETYPE PARTS SHIPPED 23 JAN 84 UNDER
DOCUMENT NUMBER N034256
BT
#0123

NNNN

NOTE: DOUBLE SPACING BETWEEN LINES FOR ILLUSTRATIVE PURPOSES ONLY

MODIFIED ACP 126 FORMAT

FIGURE 4.6-4

1. EXAMPLE: 523-45-6478

(3) Course number

(a) Type in three digit course number: 042

(4) Item Number

(a) Six digit number located in trainee's learning guide

1. If only five digits appear, a ZERO (Ø) will precede the five digits

(5) Test Number

(a) Two digit number located in the trainee's learning guide

1. Preceded by the word TEST

e. Verification of information

(1) System will printout requested information after it has been typed

(2) Verify all information

(3) If any of the information is INCORRECT

(a) Type NO, two carriage returns, and one line feed TWICE

(b) System will ask for requested information again

(4) If all the information is CORRECT

(a) Type YES, two carriage returns and one line feed

(b) System will respond with "NOW READ IN THE MESSAGE TAPE"

f. Entering message tape(s)

(1) Place tape on TD

(2) Send tape

(3) After message transmission is completed, system will respond with "ANY MORE TAPES, YES OR NO"

(a) A YES response will allow student to enter more tapes

(b) A NO response will cause system to respond "TEST OVER PLEASE WAIT"

g. Upon completion of system grading, return all materials to Instructor

ASSIGNMENT SHEET 4.7

AN/UGC-6 Operator Maintenance

INTRODUCTION

It is also the responsibility of the teletype operator/tapecutter to carry out certain maintenance functions. This lesson explains how to change teletypewriter paper, ribbons, and paper tape associated with the teletypewriter.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.1 Given the AN/UGC-6 teletypewriter and three outgoing message drafts, prepare teletype tapes of the messages in ACP 126, Modified ACP 126, or JANAP 128 formats as noted on message drafts with no errors in format lines 2, 4, 15, and 16 and no uncorrected errors in format lines 5 through 13. The tapes will be completed within 45 minutes and will be prepared in accordance with appropriate publications: ACP 126, NTP 4, or JANAP 128.

6.1.6 Given the AN/UGC-6 teletypewriter, teletypewriter roll paper, teletypewriter paper tape, and teletypewriter ribbons, perform operator maintenance to include changing the teletypewriter paper, ribbon, and tape in accordance with the AN/UGC-6 Technical Manual.

STUDY ASSIGNMENT

Study and review personal notes and Student Guide section 4.7

NOTETAKING SHEET 4.7

AN/UGC-6 Operator Maintenance

REFERENCES:

1. AN/UGC-6 Technical Manual

NOTETAKING OUTLINE

A. Change roll paper

1. Turn off power
2. Lift cabinet dome by depressing release buttons on sides of cabinet dome. Ensure dome hinges lock.
3. Push back paper release lever
4. Push back on spindle retainers
5. Remove spindle and roll paper from machine by pulling spindle up
6. Remove spindle from paper core
   a. Check paper for message. Properly dispose of old paper core
7. Insert spindle into new roll paper
8. Orient roll paper before mounting spindle in spindle retainers
9. Route roll paper over paper pressure bail, between platen and pressure rollers, and under paper finger
10. Pull on paper release lever
11. Ensure ribbon still in ribbon holders
12. Route paper to the outside of cabinet dome
13. Close cabinet dome by unlocking dome hinges and shutting dome
14. Turn on power and test for proper operation

B. Change Printer Ribbon

1. Turn off power
2. Lift cabinet dome by depressing release buttons on sides of cabinet dome. Ensure dome hinges lock
3. If necessary, wind printer ribbon onto one spool

4. Lift ribbon locks on spools

5. Remove printer ribbon spools by lifting spools from shaft pins

6. Disengage printer ribbon from ribbon rollers, ribbon reverse levers, and ribbon guides (properly dispose of used ribbon)

7. Attach free end of new printer ribbon to empty ribbon spool. Wind approximately 12 inches of printer ribbon around empty ribbon spools.

8. Seat printer ribbon spools on shaft pins

9. Thread printer ribbon through ribbon rollers, ribbon reverse levers, and ribbon guides

10. Lock ribbon spools on shaft pins

11. Take up ribbon slack

12. Close cabinet dome by unlocking dome hinges and shutting dome

13. Turn on power and test for proper operation

C. Change Perforator Ribbon

1. Turn off power

2. Lift dome by depressing release buttons on sides of cabinet dome. Ensure dome hinges lock

3. Lift ribbon locks on spools

4. Remove forward perforator ribbon spool from shaft pin

5. Disengage forward perforator ribbon from forward roller, ribbon reversing arm, and ribbon guide

6. Remove after perforator ribbon spool from shaft pin

7. Disengage after perforator ribbon from after roller, ribbon reversing arm, and ribbon guide

   a. Properly dispose of used ribbon spool. Retain empty spool.

8. Attach free end of new perforator ribbon to empty ribbon spool. Wind approximately 12 inches of perforator ribbon around empty spool.

9. Seat full perforator ribbon spool on forward shaft pin

10. Thread perforator ribbon over forward roller, through ribbon reversing arm, under ribbon guides, through after ribbon reversing arm and roller. Ensure ribbon is free of twists

11. Seat other ribbon spool on after shaft pin

12. Lock ribbon spool on after shaft pin

13. Take up perforator ribbon slack

14. Close cabinet dome by unlocking dome hinges and shutting dome

15. Turn on power and test for proper operation

D. Change Perforator Tape

1. Turn off power

2. Lift cabinet dome by depressing release button on side of cabinet dome. Ensure dome hinges lock

3. Tear tape between spool and perforator, Remove excess tape from perforator

4. Remove tape spool with tape container spindle from tape container

   a. Properly dispose of used tape spool.

5. Insert tape container spindle into new perforator tape spool

6. Orient perforator tape spool and place into tape container so that tape feeds from the bottom and over the top front bracket

7. Ensure the low tape switch lever rides on outer edge of perforator tape roll

8. Evenly tear the leading end of the perforator tape and feed end from base tape guide rollers or loop into tape chute

9. Push down tape under die wheel, holding Tape Tension Release Arm down, until tape is engaged by feed wheel

10. Turn on power

11. Depress LTR key one function at a time until tape feeds through punch block

12. Depress RPT LTR key to check tape feed

13. Extend tape beyond edge of cabinet or cover tape aperture

14. Close cabinet dome by unlocking dome hinges and shutting dome

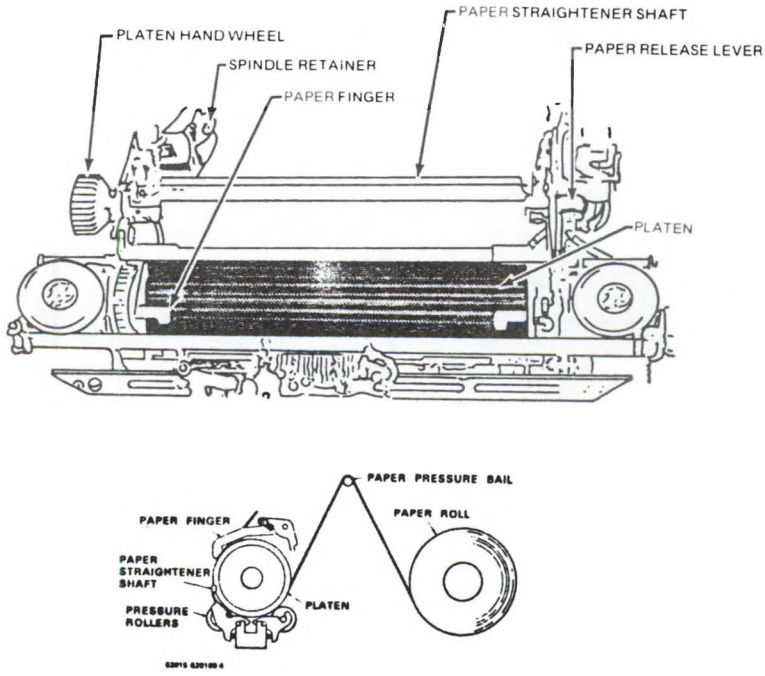


FIGURE 4.7-1
(CHANGE PRINTER PAPER)

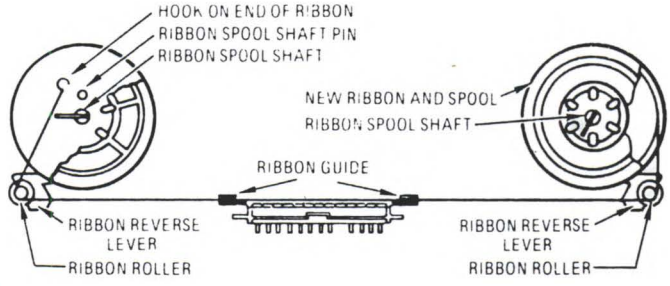


FIGURE 4.7-2
(CHANGE PRINTER RIBBON)

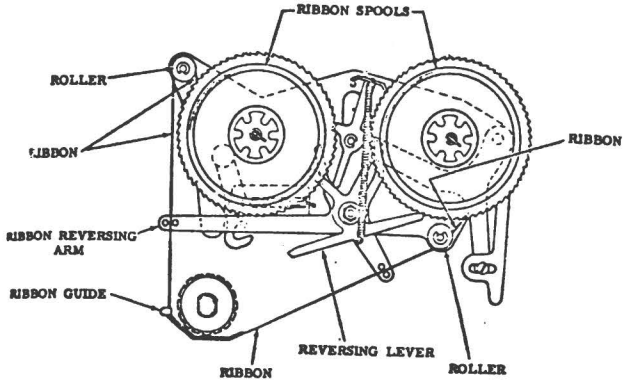


FIGURE 4.7-3

(CHANGE PERFORATOR RIBBON)

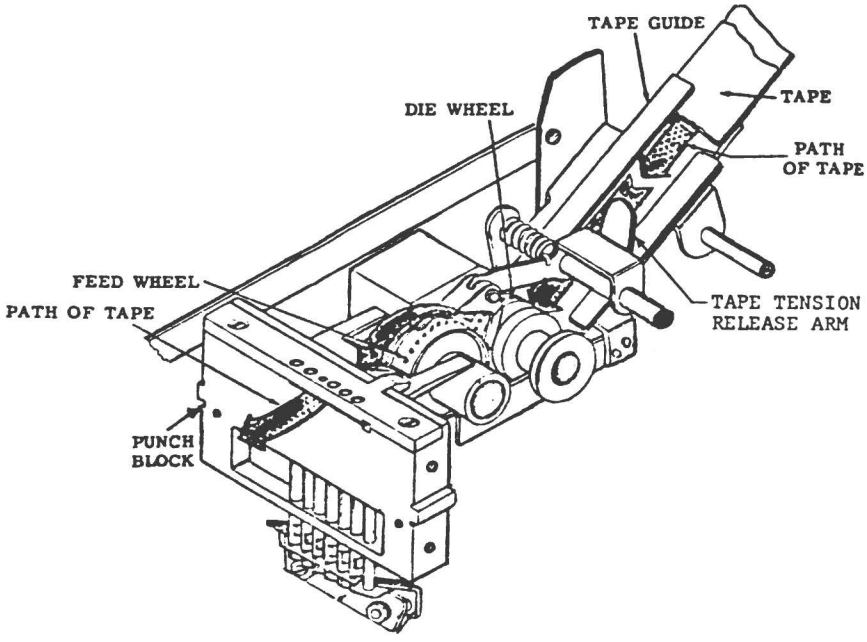


FIGURE 4.7-4

(CHANGE PERFORATOR TAPE)

ASSIGNMENT SHEET 4.8

DD-173 OCR Joint Messageform Preparation

INTRODUCTION

Preparing messages on a DD-173 OCR Joint Messageform is a duty of a Radioman. In order to perform this task properly you must become proficient at typing on an electric typewriter and know how to prepare a DD-173 OCR Joint Messageform.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageforms, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

6.8 Given a file of outgoing message drafts, an IBM Correcting Selectric III typewriter, blank DD-173 OCR Joint Messageforms, and a DD-173 template, type three messages on the DD-173 OCR Joint Messageforms within 45 minutes in accordance with NTP 3.

STUDY ASSIGNMENT

Study and review personal notes and Student Guide section 4.8

NOTETAKING SHEET 4.8

DD-173 OCR Joint Messageform Preparation

REFERENCES:

1. NTP 3, Telecommunications User Manual
2. OPD Form G544-0613-1, IBM Correcting Selectric III and Selectric III Typewriters Operating Instructions

NOTETAKING OUTLINE

A. Introduction

1. The basic tools used in preparing DD-173 OCR Joint Messageform in most ships or shore stations include:

a. An IBM electric typewriter

b. A series 88 10 pitch communications ball element for IBM model II typewriters

c. A series 96 OCR-A 10 pitch ball element for IBM model III typewriters

(1) IBM model III's are used in this class

d. DD-173 OCR Joint Messageform

2. Message Input

a. Message typed on the DD-173 OCR Joint Messageform are entered directly into computerized message processing systems through the use of an Optical Character Reader (OCR)

(1) OCR: A device used to convert typewritten information into language that can be processed by a computer system

B. Operating the IBM Selectric III Typewriter

1. Main Typewriter Components

a. Keyboard

b. Pitch identification panel and scale

(1) Lights up to show type element pitch setting

(2) Settings:

(a) 10-pitch: prints 10 characters per inch

1. ALWAYS USE 10-PITCH FOR DD-173 (OCR) MESSAGE PREPARATION

(b) 12-pitch: prints 12 characters per inch

c. Carrier

(1) Holds

(a) Type ball element

1. Series 96 used on IBM Selectric III

a. Will not work with older type 88 elements

(b) Ribbon

1. Special correctible ribbon required for "lift-off" correction tape

2. IBM Tech III ribbon can be used with "cover-up" correction tape.

(c) Correction tape

1. Lift-off type: Lifts off printing to correct

2. Cover-up type: Covers print with white material

(d) Card Holder

1. Holds paper, cards, and envelopes close to platen

2. Center red-line shows where next character will print

3. Other red lines use to realign paper after removal from typewriter or movement from normal position.

(2) Moves type element into position on sheet to print characters

(3) Rotates correct letter into position for printing

d. Paper centering guide

(1) Guide for positioning paper in typewriter

e. Platen

(1) Round, hard rubberized roller

(a) Carries paper through typewriter

(b) Provides striking surface for element

f. Platen knob

(1) Releases platen ratchet

(a) Permits permanent repositioning of paper in typewriter, vertically

g. Page-end indicator

(1) Shows how far you are from bottom of sheet

(a) Using 8½" paper longwise, the upper mark indicates about 1 inch left; second mark about 2"

(b) With 8½' paper sidewise, the bottom mark shows about 2" left on the sheet; the next mark, about 1".

2. Typewriter controls and their functions

a. On/Off Switch

(1) CAUTION: Keep fingers, hair, personal objects (bracelets, necklaces, ties, etc.) out of printing and carrier area.

(2) Depress top of switch to turn it on; press bottom to turn it off.

b. Correction Key

(1) Backspaces to letter(s) to be corrected

(2) Mistaken letter(s) lifted off paper when letter(s) are typed after pressing correction key

(3) Correct letter can then be typed

(4) When more than one letter in a word (or words) are to be corrected:

(a) Lift all letters to be removed first

1. Start one space to the right of the right hand letter to be removed

2. Press correction key once

3. Type letter to be removed

4. Press correction key again for next letter

5. Type next letter to be removed

6. Continue "2" & "3" procedures until all errors are lifted

7. Then retype correct copy

c. Exp (Express Backspace)

(1) Moves carrier back to left margin quickly without moving paper

(a) Main use: For underlining

(b) Underlining not used in DD-173 message preparation

d. Index Key

(1) Spaces down the page without moving carrier

e. Margin Stops

(1) Limits typing carrier movement to the right or left

(a) To move: Press-in and slide stop to desired setting

(b) You can go beyond stops by holding down margin release button on keyboard

(2) White pointer in front of pitch identification panel shows position of printed character in relation to paper

f. Margin Release

(1) Depress to start line to the left of left margin stop

(2) Hold down to go beyond right margin

g. Impression Control

(1) Adjusts striking force of type element against paper

(a) Normally set at 3

(b) Move to lower number to reduce strike force

1. Using minimum force that still prints will increase platen life.

h. Line finder

(1) Move forward to release platen ratchet

(2) Returned to rear position: resets platen in original position

(3) Permits movement of the paper without losing line alignments

i. Paper Release Lever

(1) Release platen to paper pressure to reposition paper after it is in the typewriter

(2) Pull forward to release: rearward to lock

(3) Recommended that it be used for removing sheets from typewriter after typing is completed

(a) Reduces wear on typewriter components

j. Line Space Lever

(1) Changes amount of spacing between lines

(a) Forward position: Single space

(b) Middle position: One and one-half spaces

(c) Rear position: Double spacing

k. Paper Centering Scale

(1) Scale on centering guide to position paper

(a) To center: Position paper so left and right sides touch the same number on the scale

1. Example: On 8½" wide paper, both edges touch the numbers 4 left & 4 right on the scale

l. Paper Edge Guide

(1) Push sideways to align left side of paper

m. Paper Bail Lever

(1) Holds paper against platen

(2) Lift while inserting paper

(a) To use:

1. Align paper with paper edge guide

2. Pull bail lever forward

3. Press Index Key to roll paper into typewriter

n. Pitch Selection Lever

(1) Changes pitch from 10 to 12 pitch; or 12 to 10

(2) Forward for 12 pitch; back for 10

(a) 10 pitch MUST be used for typing DD-173 forms

o. Half Backspace lever

(1) Hold forward while typing to squeeze in characters omitted while typing

(a) Not permissible on DD-173 form typing

p. Typing Element

(1) Removal

(a) Turn on typewriter

(b) Be sure shift lock is released

1. Tap either shift key

(c) Lift lever on top of type element all the way

(d) Lift element off using the lever

(e) Close lever after removing element

(2) Installation

(a) Check that shift lock is released

(b) Lift lever on top of element--all the way

(c) Rotate element to point the triangle (on top of element) toward the platen

(d) Set element over the element post

1. Push down all the way

(e) Close element lever, all the way

(f) Check for security

1. Try to lift off

2. Element should not rotate on post when touched by hand

q. Tab Set Control

(1) Used to set or release tab stops

(2) To set:

(a) Move type carrier to position where tab-stop is desired by using spacebar

(b) Press "set" side of tab set control

(c) Follow procedures (a) and (b) to set all tab stops

(3) To clear:

(a) Move carrier to tab position that is to be cleared

1. Press "Tab" key to move carrier

(b) Press "CLR" side of Tab Set Control

(c) Rapid way to clear all tab stops

1. Tab carrier to last tab stop on right

2. Hold "CLR" side of Tab Set Control

3. Tap Return Key while holding "CLR" side of tab-set control

r. Typamatic keys

(1) Certain keys will repeat their action continuously if held down; these include:

(a) Backspace key

(b) Spacebar

(c) Hyphen/Underline key

(d) Index key

(e) Correction key

(2) All of the above will operate as single action units during normal typing

C. DD-173 Joint Messageform Preparation

1. Purpose: Method of entering messages automatically through OCR

a. OCR: Optical Character Reader

2. Crucial factors in DD-173 Joint Messageform preparation

   a. Alignment, margin, or spacing errors

      (1) Any errors in the above will cause message rejections (failure to enter messages).

3. Form alignment

   a. Horizontal alignment

      (1) Insert form in typewriter

      (2) Align paper using double horizontal lines outside the borders of the form

         (a) Check by moving carrier left and right

            1. Letters must print between the double horizontal lines

            2. Loosen paper with paper release lever to move paper

            3. Remove any letter printed between double lines before typing DD-173 message

               a. Any typing outside message borders will cause message rejection by OCR unit

   b. Leftside margin alignment

      (1) Set paper guide so paper aligns with heavy, left lines on paper Centering Guide of typewriter

         (a) This aligns left edge of paper with the "0" mark on the Pitch Identification scale.

            1. On 10-pitch scale.

4. Set Margins

   a. Left margin: 6 on the 10 pitch scale

   b. Right Margin: 75 on the 10 pitch scale

   c. These margins allow 69 characters/space per line

      (1) No line may exceed 69 units

5. Set Tab Stops

   a. Various blocks and components must begin at certain specific tab-stop positions

b. Common tab-stop positions

LINE	DATA FIELD	TAB STOP	RQRMNT
1	Page Number	06	all pages
	Page count	10	last page
	Date-Time	14	first page only
	Month	23	first page only
	Year	28	first page only
	Act precedence	32	all pages
	Info precedence	36	optional
	Classification	40	all pages
	Specat	46	optional
	LMF	53	optional
	CIC	57	optional
	Orig/Msg Ident	63	all pages
2	Book	06	optional
	Msg Handling	11	OPSIGS optional
3	Orig PLA	20	
4 and below	Prosign info	15	
	Prosign XMT	16	
	Opsig ZEN	20	
	PLA's	20	
	PLA continuation line	25	
	Classification	06	
	Text	06	

6. Constructing and typing the Header lines

a. Page Block

(1) Page number

(a) Two digits

(b) Required on all pages of a multiple page message

(2) Total number of pages

(a) Two digits

(b) Required only on last page

1. If given on any other than the last page must be identical to the last page

(3) Example: 01 of 03, 02 of 03, 03 of 03

b. DTG/Releaser Time Block

(1) Message DTG

c. Precedence Block

(1) Two letter codes

(a) EMERGENCY: YY

(b) FLASH: ZZ

(c) IMMEDIATE: OO

(d) PRIORITY: PP

(e) ROUTINE: RR

(2) Required on all pages of a multiple page message

(3) INFO block left blank unless the message is dual precedence

(a) CANNOT be higher than that in ACT block

(4) When there are only INFO addressee(s) the precedence will be placed in the ACT block only

d. Class Block

(1) Four letter security redundancy code

(a) TOP SECRET: TTTT

(b) SECRET: SSSS

(c) CONFIDENTIAL: CCCC

(d) UNCLASSIFIED: UUUU

(e) UNCLAS EFTO: EEEE

(2) Required on all pages of a multiple page message

e. Specat Block

(1) Four letter Specat Release Code if required

(a) SPECAT SIOP-ESI: AAAA

(b) SPECAT EXCLUSIVE FOR: BBBB

(2) Required on all pages of a multiple page message

f. LMF Block

(1) Leave blank except where specifically required for certain reports

(a) Nuclear Weapons

(b) Milstrips

(c) DEIS

(2) Insert TC(tape to card)

g. CIC Block

(1) Leave blank except when specifically required for certain reports as outlined subparagraph f

h. Orig/Msg Ident Block

(1) Seven digit time of file

(2) Required on all pages of a multiple page message

i. Block message block

(1) Put YES in this block if message drafter indicates delivery to each addressee as a single address message

j. Message Handling Inst block

(1) Used if message drafter has indicated unique processing requirements

(a) "After Hours" delivery of Immediate messages to State Department Comm Centers

1. Word "IMMDELREQ" followed by PLA of affected activity

2. EXAMPLE: IMMDELREQ USDAO SANTIAGO CI

(b) Message contains perishable information

1. Use Opsig ZPW (This message cancelled at time indicated. Do not make further transmission) followed by expiration date, time, month and year

2. EXAMPLE: ZPW 300624Z JAN 84

7. Typing Address Component and Text

a. Type address component and text from original message draft

b. Ensure information typed at proper tab stops

c. If used, OPSIG ZEN will begin at tab stop 20, followed by one space and the addressee PLA

d. Text copy must not fall below number 0 printed outside border of DD-173 form (left side of form)

8. Other Information Required

a. Distribution codes if indicated by message drafter

b. Drafter information

c. Releaser information

d. Special instructions

(1) MINIMIZE CONSIDERED

e. Security classification block

(1) Stamp or type the message's classification at the top and bottom of each page of the message form

(a) If Unclassified, the word UNCLASSIFIED will be typed in both spaces

D. Using DD-173 Template

1. Used to check message alignment on sheet

a. Place over message

(1) Message information must appear within blocks on template

ASSIGNMENT SHEET 5.1

Broadcast Operator

INTRODUCTION

Fleet multichannel broadcast is the primary means of delivering message traffic to the fleet. It is critical during war when it is necessary that ships do not reveal their exact location. To perform broadcast operator task effectively, you will need to screen all messages, including checking for number continuity, garbled portions, incomplete messages, and CGL matches; and log all broadcast messages. You will learn how to accomplish these tasks during this lesson.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III Typewriter, outgoing message drafts, Julian calendar, DD-173 OCR Joint Messageform, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 Template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, NTP-3, NTP 3 SUPP-1, NTP 4, NWP 4, and JANAP 128.

6.3 Given receive teletypes, incoming fleet broadcast messages, a broadcast checkoff log, command guard list, and a broadcast file, process fleet broadcast messages in accordance with NTP 4.

6.3.1 Given received messages from the fleet broadcast and a command guard list (CGL), screen all messages including checking number continuity, garbled portions, incomplete messages, and CGL matches.

6.3.2 Given received messages from the fleet broadcast and a broadcast checkoff log, log all broadcast messages in accordance with NTP 4.

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 5.1 in preparation for a performance test after completing Lesson 6.2

NOTETAKING SHEET 5.1

Broadcast Operator

REFERENCE:

1. NTP 4, Fleet Communication

NOTETAKING OUTLINE

A. Purpose of Multichannel Broadcast System (MULCAST)

   1. Broadcast: One-way communication system to deliver shore-to-ship message traffic

   2. Primary means of delivering message traffic to forces afloat

B. General Characteristics of MULCAST

   1. Provides capacity to deliver large volume of teletype traffic to forces afloat

      a. Small number of transmitting facilities required

   2. Provides communication coverage to all ocean areas of the world

      a. Four (4) NAVCOMMAREA's (See Figure 5.1-1)

      b. NAVCAMS has communication coordination responsibilities

      c. NAVCOMMSTA is functionally subordinate to NAVCAMS

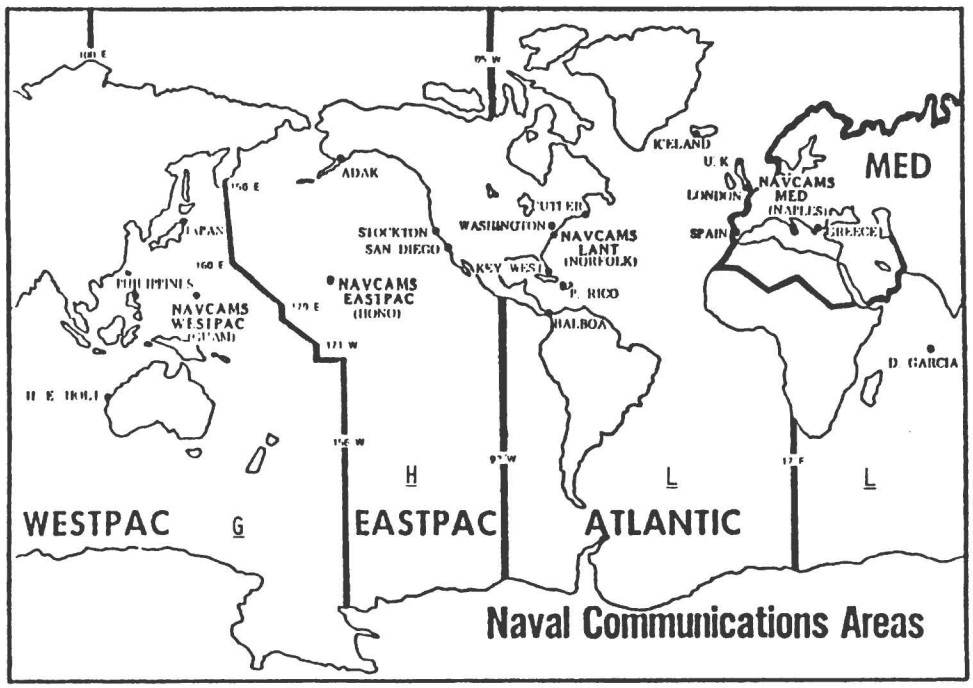


Figure 5.1-1 NAVCOMMAREAs

3. Broadcast alignment

a. One frequency contains 16 separate channels

(1) SAT: One timing; Fifteen traffic

(2) LF/MF/HF: Sixteen traffic

b. Ships assigned to broadcast channels by class

(1) According to similarities of mission, task, and equipment

(2) Example: Destroyers assigned to channel 1

c. Broadcast Message Identifier

(1) Assigned to each broadcast message to maintain message continuity

(a) Four-letter broadcast channel desginator

1. First letter: NAVCOMMAREA

a. L: LANT and MED

b. H: EASTPAC

c. G: WESTPAC and INDIAN OCEAN

2. Second letter: Type of broadcast

a. S: SUBMARINE

b. M: FLEET MULTICHANNEL

c. C: GENERAL CW

3. Third and fourth letters: Broadcast channel designator

a. AA: CHANNEL 1

b. CC: CHANNEL 3

(b) Five digit Channel Sequence Number (CSN)

1. Sequentially assigned by transmitting shore stations

2. Every number is accountable

3. Numbers start at 00001 each month

(2) Example: HMAA01054

4. Messages transmitted on Broadcast First-In, First-Out (FIFO) by precedence

a. If PRIORITY and IMMEDIATE received at the same time, IMMEDIATE transmitted first

b. Format starts with FL 5

(1) NAVCOMPARS removes FL2, FL4, and side routing from JANAP 128 formatted messages

5. Recap messages

a. Transmitted by NAVCOMPARS hourly

b. Summary of previous hours traffic

c. Lists CSN, DTG ORIGINATOR and ADDEES

6. Broadcast Screen Requests (BSR) (See Figure 5.1-2)

a. Submitted by ships for any missing broadcast numbers

b. Submitted using on-the-hour DTG to minimize same message rebroadcasts

c. In order to reduce broadcast loading, BSR's are submitted ONLY AFTER all efforts have been exhausted to obtain missing numbers by other means

(1) Ships in company

(2) Recaps

d. Broadcast Screen Reply will be covered in the following lesson

```
VZCZCEBX0121
PTTUZYVW RUHPEBX0121 0022245-UUUU--RUHPSUU.
P 022245Z JAN 84
FM USS STODDARD
TO NAVCAMS EASTPAC HONOLULU HI
BT
UNCLAS DRILL SVC //N00000//
BSR
1. A. USS STODDARD HMCC 00089, 00094, 00097, 00105, 00123.
BT

NNNN
```

Figure 5.1-2 Broadcast Screen Request

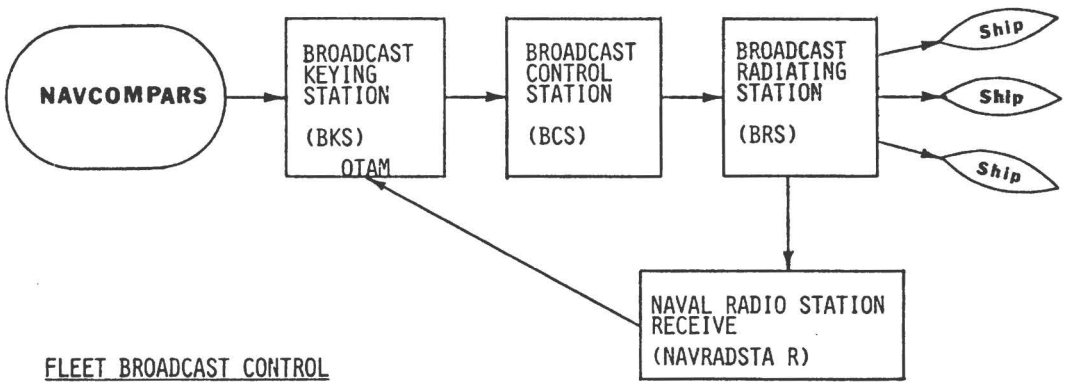


Figure 5.1-3 Fleet Broadcast Control

C. Fleet Broadcast Control

1. Broadcast Keying Station (BRS)

a. Introduces message traffic that is received from all sources into specific broadcast channels

b. Processes Broadcast Screen Requests (BSR) submitted by ships for missing broadcast numbers using the Broadcast Screen File (BSF) function of NAVCOMPARS

2. Broadcast Control Station (BCS)

a. Engineers the broadcast into its final configuration

b. Delivers keying (signal) to transmitting station

3. Broadcast Radiating Station (BRS)

a. Radiates (transmits) composite broadcast signal supplied from BCS

b. May or may not be a NAVCOMMSTA

4. Off-The-Air-Monitor (OTAM)

a. Ensures proper operation of live broadcast channels

(1) Normally located in the NAVCAMS/NAVCOMMSTA Fleet Center

(2) Ensures proper operating of all live broadcast channels

(3) Checks:

(a) Check for readibility (garbled messages)
(b) Check for message continuity by CSN
(c) Stragglers
(d) High precedence alerts

5. Transmission Paths

a. Primary (satellite)

(1) Highly reliable
(2) Covers large areas without using relay stations

b. Secondary (LF, MF, HF, UHF)

(1) Subject to fade, distortion
(2) Limited range (distance)

D. Broadcast Circuit Number Log and Record of Destruction (See Figure 5.1-4)

1. Form for keeping a record of broadcast numbers received

a. Reproduced locally from example in NTP 4

b. Four columns of numbers, 25 numbers per column

(1) 01-25; 26-50; 51-75; 76-00

c. Classification symbols follow each number

(1) U, E, C, S and T

d. Signature block for individual authorizing destruction of broadcast messages

e. Log closed out at end of each Radio Day (RADY: 0001-2359Z)

BROADCAST CIRCUIT NUMBER LOG and RECORD OF DESTRUCTION

Retain traffic for a period of 10 days in accordance with SECNAVINST P5212.5 Serier/SubPara 2100(3). Destruction in accordance with NTP 4 01.03.0325 and 02.01.1400.

BCST No.	CLASS	BCST No.	CLASS	BCST No.	CLASS	BCST No.	CLASS
01	UECST	26	UECST	51	UECST	76	UECST
02	UECST	27	UECST	52	UECST	77	UECST
03	UECST	28	UECST	53	UECST	78	UECST
04	UECST	29	UECST	54	UECST	79	UECST
05	UECST	30	UECST	55	UECST	80	UECST
06	UECST	31	UECST	56	UECST	81	UECST
07	UECST	32	UECST	57	UECST	82	UECST
08	UECST	33	UECST	58	UECST	83	UECST
09	UECST	34	UECST	59	UECST	84	UECST
10	UECST	35	UECST	60	UECST	85	UECST
11	UECST	36	UECST	61	UECST	86	UECST
12	UECST	37	UECST	62	UECST	87	UECST
13	UECST	38	UECST	63	UECST	88	UECST
14	UECST	39	UECST	84	UECST	89	UECST
15	UECST	40	UECST	65	UECST	90	UECST
16	UECST	41	UECST	66	UECST	91	UECST
17	UECST	42	UECST	67	UECST	92	UECST
18	UECST	43	UECST	68	UECST	93	UECST
19	UECST	44	UECST	69	UECST	94	UECST
20	UECST	45	UECST	70	UECST	95	UECST
21	UECST	46	UECST	71	UECST	96	UECST
22	UECST	47	UECST	72	UECST	97	UECST
23	UECST	48	UECST	73	UECST	98	UECST
24	UECST	49	UECST	74	UECST	99	UECST
25	UECST	50	UECST	75	UECST	00	UECST

Signature of individual authorizing destruction	Rank	File or Service No.

LEGEND:
U = Unclassified E = Unclassified/EFTO C = Confidential
S = Secret T = Top Secret

Figure 5.1-4 Broadcast Circuit Number Log

E. Broadcast File

1. Contains a copy or filler (or header of message not addressed to the command/unit) of each message received on each broadcast channel

   a. Filed by channel designator in sequential broadcast channel number order

      (1) File closed out at end of each RADAY (2359Z)

         (a) Stowed in accordance with highest classification of messages contained therein

         (b) TOP SECRET messages received by afloat command but not addressed to that command will NOT be placed in the broadcast file

            1. Filler will be placed in file

            2. The message will be destroyed immediately by the watch supervisor and a witness

               a. Both members will place their initials next to appropriate broadcast channel number on the broadcast circuit number log and indicate message was destroyed

      (2) File retained for 10 Days, then destroyed

F. Broadcast Circuit Operator Procedures

1. Open Broadcast Circuit Number Log (See Figure 5.1-5)

   a. Place current radio day date at bottom right hand corner of log

   b. Write broadcast channel designator at top left hand corner of log

      (1) Example: HMAA

   c. Draw a straight line ABOVE the first channel number to be copied for the new day

      (1) Draw a diagonal line through previous day's numbers

   d. Write the first three digits of the sequential number in front of the first two digit channel number on the broadcast log

      (1) Example: 10024

BROADCAST CIRCUIT NUMBER LOG and RECORD OF DESTRUCTION

HMAA

Retain traffic for a period of 10 days in accordance with SECNAVINST P5212.5 Serier/SubPara 2100(3). Destruction in accordance with NTP 4 01.03.0325 and 02.01.1400.

BCST No. CLASS	BCST No. CLASS	BCST No. CLASS	BCST No. CLASS
01 UECST	26 UECST	51 UECST	76 UECST
02 UECST	27 UECST	52 UECST	77 UECST
03 UECST	28 UECST	53 UECST 2ES2	78 UECST
04 UECST	29 UECST 2ES2	54 UECST	79 UECST
05 UECST	30 UECST	55 UECST	80 UECST
06 UECST	31 UECST	56 UECST	81 UECST
07 UECST	32 BUST	57 UECST	82 UECST
08 UECST	33 UECST	58 UECST	83 UECST
09 UECST	34 UECST	59 UECST	84 UECST
10 UECST	35 UECST	60 UECST	85 UECST
100 11 UECST	36 UECST	61 UECST	86 UECST
12 UECST	37 UECST	62 UECST	87 UECST
13 UECST	38 UECST	63 UECST	88 UECST
14 UECST	39 UECST	64 UECST	89 UECST
15 UECST	40 UECST	65 UECST	90 UECST
16 UECST	41 UECST	66 UECST	91 UECST
17 UECST	42 UECST	67 UECST	92 UECST
18 UECST	43 UECST	68 UECST	93 UECST
19 UECST	44 UECST	69 UECST	94 UECST
20 BUST	45 UECST	70 UECST	95 UECST
21 UECST 2ES1	46 UECST	71 UECST	96 UECST
22 UECST	47 UECST	72 UECST	97 UECST
23 UECST	48 UECST	73 UECST	98 UECST
24 UECST	49 UECST	74 UECST	99 UECST
25 UECST	50 UECST	75 UECST	11600 UECST

Signature of individual authorizing destruction	Rank	File or Service No.

LEGEND:
U = Unclassified E = Unclassified/EFTO C = Confidential
S = Secret T = Top Secret

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Figure 5.1-5 Broadcast Circuit Number Log

2. Screen messages for Command Guard List (CGL) matches

   a. Check all addressees against CGL (See Figure 5.1-6)

      (1) Command/unit name

      (2) AIG's

      (3) Task Organization

      (4) CAD's

      (5) General Messages

         (a) Listed alphabetically

COMMAND GUARD LIST - USS STODDARD

ALCOM	AIG 213
ALCOMPAC	AIG 274
ALCOMPAC P	AIG 363
ALMILACT	AIG 373
ALNAV	AIG 374
ALNAVSURFPAC	AIG 470
ALPACFLT	AIG 482
ALTHIRDFLT	AIG 489
DESRON TEN	AIG 4515
JAFPUB	AIG 6804
NAVOP	AIG 6808
NAVSURFPAC	AIG 6817
NAVSURFPAC AFLOAT	AIG 7011
NAVSURFPAC AFLOAT SAN DIEGO AREA	AIG 7644
NAVSURFPAC EASTPAC	AIG 7690
THIRDFLT	AIG 7702
USS STODDARD	AIG 7710
AIG 7	AIG 7714
AIG 67 (WHEN COMDESRON TEN EMBARKED)	AIG 9238
AIG 103	COMDESRON TEN (WHEN EMBARKED)
AIG 114 (WHEN COMDESRON TEN EMBARKED)	ALL SHIPS COPYING THIS CHANNEL
AIG 128	ALL SHIPS COPYING HMAA BROADCAST
AIG 140	ALL SHIPS COPYING HMCC BROADCAST
AIG 141	ALL SHIPS PRESENT SAN DIEGO AREA
AIG 149	CTU TEN PT ONE PT TWO
AIG 162	TF TEN
AIG 176	TG TEN PT ONE
AIG 203	TU TEN PT ONE PT TWO

COMPOSITION OF DESRON TEN

USS DAHLGREN
USS DAVIDSON
USS DECATUR
USS HANSON
USS MULLINNIX
***USS STODDARD

COMPOSITION OF TU 10.1.2

USS DECATUR
USS HANSON
USS MULLINNIX
***USS STODDARD

CTG 10.1 EMBARKED USS MIDWAY

CTU 10.1.2 IS COMDESRON TEN

THE COMMCEN GUARDS FOR THE FOLLOWING ROUTING INDICATORS:

RUWJNSB RUWPSAA RUWPSEE

THE COMMCEN GUARDS FOR THE FOLLOWING GUARD LIST (ZKP):

NAVADMINCOM SAN DIEGO	(ADCOM)
NAVCRUITRACOM SAN DIEGO CA	(RTC)
NAVRESCEN SAN DIEGO CA	(NRTC)
HUMRESMANCEN SAN DIEGO CA	(HRDC)
NTC SAN DIEGO CA	(NTC)
SERVSCOLCOM SAN DIEGO CA	(SSC)
NAVCOMMSTA SAN DIEGO CA	(NCS)

THE FOLLOWING GENERAL MESSAGES ARE INROUTED TO ALL COMMANDS:

ALCOM	ALNAV
ALCOMPAC	ALPACFLT
ALCOMPAC P	JAFPUB
ALELEVEN	NAVACT
ALMILACT	NAVOP

(IF ANY COMMANDS APPEAR AFTER THE ROUTING INDICATORS RUWJNSB, RUWPSAA OR RUWPSEE OTHER THAN THOSE LISTED IN THE GUARD LIST, THE MESSAGE IS MISROUTED)

Figure 5.1-6 Command Guard List

b. If message is not addressed to your command

(1) Draw a diagonal line through the broadcast number

(2) Place in broadcast file

(3) Watch for any Top Secret messages

(a) Notify Watch Supervisor immediately, even if not addressed to your command

c. If addressed to your command, continue with processing procedures described below

3. Screen messages for High Precedence

a. Emergency Command Precedence (Y)

(1) Used for Emergency Action Messages (EAM's)

(a) TIME SENSITIVE COMMAND AND CONTROL

(2) NOTIFY WATCH SUPERVISOR IMMEDIATELY EVEN IF ADDRESSEES ARE NOT ON COMMAND GUARD LIST

b. FLASH (Z)

(1) Used for initial contact message or operational combat messages of EXTREME URGENCY

(2) NOTIFY WATCH SUPERVISOR IMMEDIATELY EVEN IF ADDRESSEES ARE NOT ON COMMAND GUARD LIST

c. IMMEDIATE (O)

(1) Used for VERY URGENT messages relating to situations which gravely affect the security of national/allied forces or civilians

(a) BEARD IRON messages used to test unit/command response time

1. Example:
```
O 181818Z FEB 84
FM CINCPACFLT MAKAPAPA HI
TO USS BRADLEY
BT
UNCLAS
BEARD IRON RPT BEARD IRON
BT
```

(2) NOTIFY WATCH SUPERVISOR IMMEDIATELY

d. Sensitive Information

(1) American Red Cross (AMCROSS) (See Figure 5.1-7)

(a) Messages received from the American Red Cross used to notify service members of conditions of their immediate family

1. Examples: Births, Deaths, Serious Illness

(b) Identified by AMCROSS as originator in FL6

(c) NOTIFY WATCH SUPERVISOR IMMEDIATELY IF MESSAGE IS ADDRESSED TO YOUR COMMAND

(d) NEVER DISCUSS INFORMATION CONTAINED IN AN AMCROSS MESSAGE

HMAA00418
VZCZCHMAA00418
P 012255Z JAN 81
FM AMCROSS WASHINGTON DC
TO USS STODDARD
CTG TEN PT ONE
BT
UNCLAS DRILL MSG U752 00000 NAVY 9153 RPT NAVY 9153
FOR CO USS STODDARD
SUBJ: RMSN DAVID A WOOD, USN, 291-74-4636, USS STODDARD
A. AMCROSS WASHINGTON DC (R) 302111Z DEC 80
B. FONECON CAPT TARBUCK, USS STODDARD/MR DOOLEY, AMCROSS WASH DC
1. REPEATING REF A PER REQ REF B, QUOTE: AMCROSS CHPAT CARROLLTON GEORGIA REPORTS RETEL DAVID A WOOK 291-74-4636 USS STODDARD IN PORT SAN DIEGO CA. ATTN CAPT TARBUCK, CHAPT CONFIRMED VIA CARROLLTON HILLS FUNERAL HOME FATHER RMSN DAVID A WOOD PASSED AWAY PM 30 DEC 80. GRANDPARENTS REQUEST PRESENCE OF SVCMN AT FUNERAL TO BE HELD 5 JAN 81. UNQUOTE.
2. PLEASE ADVISE AMCROSS WASHINGTON DC SOONEST IF FURTHER INFO OR SERVICE REQUESTED.
/SAF070/
DRILL
BT
#00418

NNNN

Figure 5.1-7 AMCROSS Message

4. Screen messages for completeness/correctness

a. If message is correct/complete

(1) Circle broadcast number on broadcast log and the appropriate classification

(2) Prepare filler to be placed in Broadcast File

(a) Some command will use a copy of the message as a filler

1. COPIES OF TOP SECRET AND SPECAT MESSAGES WILL NOT BE USED AS FILLERS

(b) Fillers will be discussed in detail in the following lesson

(3) Pass the message to the inrouter

b. Cancelled transmission (CANTRAN) (See Figure 5.1-8)

(1) Commonly referred to as a BUST

(2) Indicated by PROSIGN E E E E E E E E AR at point in message where transmission cancelled

(3) Draw a diagonal line through broadcast channel number

(4) Write BUST across classification symbols

HMCC00298
VZCZCHMCC00298
R 011154Z JAN 81
FM NAVREGMEDCEN SAN DIEGO CA
TO USS HANSON
BT
UNCLAS DRILL //N06320//
SUBJ: HT3 GREGORY E FULCE USN 307-65-3757
A. BUPERSMA
E E E E E E E E AR RUWP HMCC00298

Figure 5.1-8 Cancelled Transmission (CANTRAN)

c. Incomplete message/number mismatch

(1) Complete message (through FL 15) not received

(2) Channel number in FL2 does not match the one in FL15

(3) If addressed to your command, leave broadcast channel number open and pass message to watch supervisor

(4) Write OPSIG ZES1 (incomplete transmission) to right of classification symbol

(5) If not addressed to your command draw diagonal line through broadcast channel number

d. Garbled Message

(1) Portion of or entire message is unreadable

(2) If heading is complete, and message is not addressed to your command, draw diagonal line through broadcast channel number

(3) If heading is incomplete or message is addressed to your command

(a) Leave broadcast channel number open

(b) Write ZES2 (garbled transmission) to the right of the classifications symbol

(c) Pass message to the Watch Supervisor

e. Open or missed numbers

(1) Leave broadcast channel number open on log

(2) Screen hourly recap to determine if message addressed to your command

(a) If addressed to your command, notify watch supervisor

(b) If not addressed to your command, draw diagonal line through broadcast channel number

f. Recap messages

(1) Circle the broadcast number

(2) Circle the appropriate classification

(3) Write "RECAP" to the right of the classification symbols.

5. Closing out log

   a. Draw straight line UNDER last number received for that day

   b. Draw diagonal line through remaining numbers

6. Maintaining Broadcast Files

   a. Place one copy of each message, header, or filler in broadcast file in sequential order

ASSIGNMENT SHEET 6.1

Incoming Message Processing (Inrouting)

INTRODUCTION

When messages are received in the radio room, the inrouter must get those messages to their destinations quickly and accurately; and must be able to account for all messages addressed to their commands. This lesson will help you learn how to accomplish those goals.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III Typewriter, outgoing message drafts, Julian calendar, DD-173 OCR Joint Messageform, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 Template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4, and JANAP 128.

6.4 Given a file of incoming messages from circuit operators, a central message log, command guard list, internal distribution guide, and rubber stamps and stamp pad, prepare messages for reproduction and distribution in accordance with NTP 4 and NWP 4.

6.4.1 Given a file of incoming messages from circuit operators, screen the messages including checking for incomplete, misrouted, garbled messages, or CGL matches.

6.4.2 Given a file of incoming messages from circuit operators and an internal routing guide, advance route designated messages.

6.4.3 Given a file of incoming messages from circuit operators and a central message log, log each incoming message.

6.4.4 Given a file of incoming messages from circuit operators and appropriate stamps, mark each message with proper classification, precedence, page, routing, and service stamps as appropriate.

6.4.5 Given a file of incoming messages from circuit operators and an internal distribution guide, route messages for action of, or information to, appropriate departments based on message subject.

STUDY ASSIGNMENT

Study and review class notes and Student Guide section 6.1

NOTETAKING SHEET 6.1

Incoming Message Processing (Inrouting)

REFERENCES:

1. NTP 4, Fleet Communications

NOTETAKING OUTLINE

A. Inrouter Orientation

1. Message flow (See Figure 6.1-1)

a. Outgoing messages received from outrouter after transmission and outrouter logging completed

b. Incoming messages received in communications center by circuit operators

(1) Broadcast (afloat)

(2) Full period termination (ashore/afloat)

(3) TGO circuit (afloat)

(4) AUTODIN (ashore)

c. Circuit Operator

(1) Screens messages

(a) Addressed to command

(b) Error free (no garbles)

(c) High precedence (FLASH/IMMEDIATE)

(2) Logs message

(3) Passes to inrouter

d. Inrouter

(1) Screens messages in precedence order

(a) Addressed to command

(b) Error free (no garbles)

(c) High precedence (FLASH/IMMEDIATE)

(2) Advance routes high precedence messages

(3) Logs messages in central message log (CML)

(4) Assigns internal routing

(5) Affixes appropriate stamps

(a) Classification

(b) Internal routing

(6) Passes acceptable messages to reproduction-distribution clerk

(a) Messages requiring service action are passed to service clerk

e. Reproduction/Distribution

(1) Prepares messages for reproduction

(2) Reproduces in desired quantities

(3) Collates and staples multipage messages

(4) Slots message copies

(5) Passes original copy of message to file clerk for filing

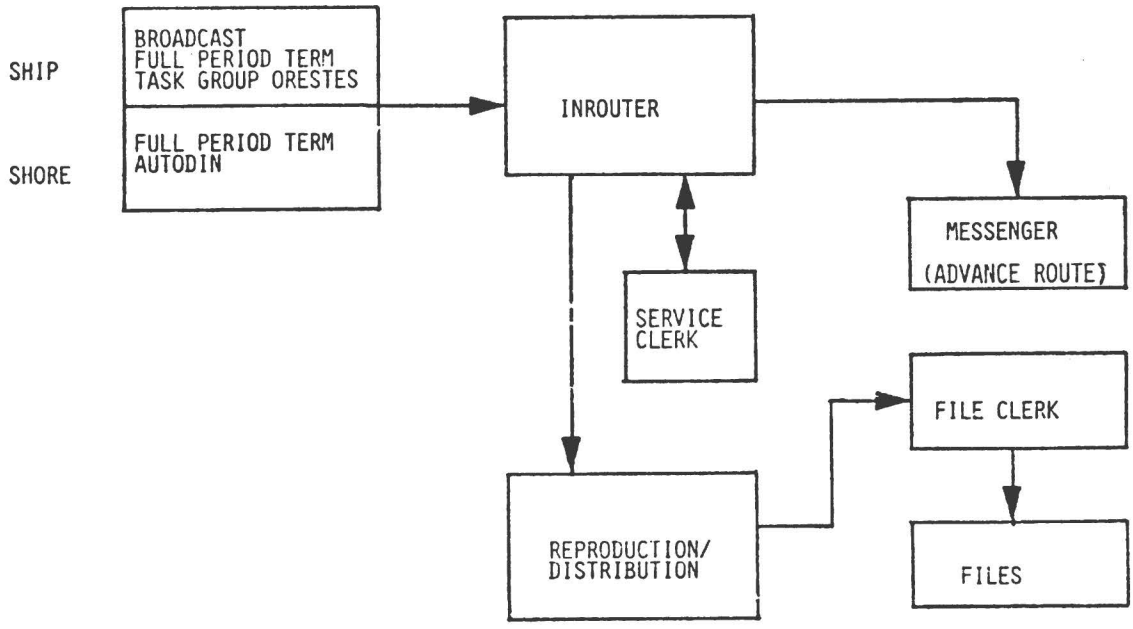


Figure 6.1-1 Inrouter Message Flow

B. Logging Incoming Messages

1. Central Message Log (CML) (See Figure 6.1-2)

a. Used to maintain accountability of all messages

b. Separate log will be maintained by the inrouter and outrouter

c. Dual purpose (outgoing/incoming) log in this course

2. CML (Incoming) Entries

a. Station serial number (SSN)

(1) Enter either last two characters of Broadcast Channel and Channel Sequence number or SSN message

(a) Example: (BCST) AA4235

b. Precedence (Prec)

(1) Enter precedence

(a) If dual precedence assigned, enter each, separated by a slant sign

1. Example: P/R

c. Date-Time-Group (DTG)

(1) Enter DTG

(2) If readdressed message, enter original DTG

(3) If no DTG, convert TOF to DTG and enter

(4) Example: 0331015 is 021015Z FEB

d. Originator

(1) Enter message originator

(2) If readdressed message, enter originator of original message

e. Subject

(1) Enter subject from message subject line

(2) If readdressed message, enter readdressal heading DTG/originator

(3) For general messages, log title and serial number

(a) Example: ALCOM 05/84

(4) If service message, enter "SVC" and DTG of message being corrected or serviced

(5) If Corrected Copy (VOL CCN), enter "CORCY" and DTG of corrected message

(a) Also relog corrected message under original DTG and indicate that the message is a CORCY

(b) Example: Subject/CORCY

f. Classification (Class)

(1) Enter classification symbol

g. TOF/TOD/CKT

(1) Leave blank

3. Log entries will be made after message screening completed

4. Top Secret/Specat

a. Inrouter will not normally receive a copy of these messages

(1) Log in message using filler prepared by the Watch Supervisor

(2) Pass filler to File Clerk for filing

DATE_____

CENTRAL MESSAGE LOG
OUTGOING/INCOMING

SSN	PREC	DTG	ORIG	SUBJECT	CLASS	TOF	TOD	CKT

Figure 6.1-2, Central Message Log

C. Incoming Message Screening/Processing

1. Verify addressees against Command Guard List (CGL)

a. CGL: A list of addressees for whom your command or unit is responsible to process and distribute messages (See Figure 6.1-3)

(1) Afloat unit CGL components

(a) Unit ID

1. USS _____

(b) Address Indicator Group's (AIG's)

1. Example: AIG 7

(c) Embarked Commanders (if applicable)

1. Squadron Commander

a. Example: COMDESRON SEVEN

2. Group Commander

a. Example: COMCRUDESGRU FIVE

3. Task Force/Group/Unit/Element Commander

a. Example: CTF 75
CTG 75.4

(d) Collective Address Designators (CAD's)

1. All Ships _____

a. Example: ALL SHIPS PRESENT SAN DIEGO

2. Squadron or Group

a. Examples: (Squadron): DESRON SEVEN
(Group): CRUDESGRU FIVE

3. Task Force/Group/Unit/Element

a. Examples: TF 75
TG 75.4

4. Miscellaneous

a. Examples: NAVSURFPAC
THIRDFLT

(e) General Messages

1. Examples: ALCOM
NAVOP

(f) CGL entries may be arranged in two ways

1. In general grouping
   a. Unit ID, AIG's, CAD's, etc.
2. Alphanumerically

COMMAND GUARD LIST - USS STODDARD

ALCOM	AIG 213
ALCOMPAC	AIG 274
ALCOMPAC P	AIG 363
ALMILACT	AIG 373
ALNAV	AIG 374
ALNAVSURFPAC	AIG 470
ALPACFLT	AIG 482
ALTHIRDFLT	AIG 489
DESRON TEN	AIG 4515
JAFPUB	AIG 6804
NAVOP	AIG 6808
NAVSURFPAC	AIG 6817
NAVSURFPAC AFLOAT	AIG 7011
NAVSURFPAC AFLOAT SAN DIEGO AREA	AIG 7644
NAVSURFPAC EASTPAC	AIG 7690
THIRDFLT	AIG 7702
USS STODDARD	AIG 7710
AIG 7	AIG 7714
AIG 67 (WHEN COMDESRON TEN EMBARKED)	AIG 9238
AIG 103	COMDESRON TEN (WHEN EMBARKED)
AIG 114 (WHEN COMDESRON TEN EMBARKED)	ALL SHIPS COPYING THIS CHANNEL
AIG 128	ALL SHIPS COPYING HMAA BROADCAST
AIG 140	ALL SHIPS COPYING HMCC BROADCAST
AIG 141	ALL SHIPS PRESENT SAN DIEGO AREA
AIG 149	CTU TEN PT ONE PT TWO
AIG 162	TF TEN
AIG 176	TG TEN PT ONE
AIG 203	TU TEN PT ONE PT TWO

COMPOSITION OF DESRON TEN

USS DAHLGREN
USS DAVIDSON
USS DECATUR
USS HANSON
USS MULLINNIX
***USS STODDARD

COMPOSITION OF TU 10.1.2

USS DECATUR
USS HANSON
USS MULLINNIX
***USS STODDARD

CTG 10.1 EMBARKED USS MIDWAY

CTU 10.1.2 IS COMDESRON TEN

THE COMMCEN GUARDS FOR THE FOLLOWING ROUTING INDICATORS:

RUWJNSB RUWPSAA RUWPSEE

THE COMMCEN GUARDS FOR THE FOLLOWING GUARD LIST (ZKP):

NAVADMINCOM SAN DIEGO	(ADCOM)
NAVCRUITRACOM SAN DIEGO CA	(RTC)
NAVRESCEN SAN DIEGO CA	(NRTC)
HUMRESMANCEN SAN DIEGO CA	(HRDC)
NTC SAN DIEGO CA	(NTC)
SERVSCOLCOM SAN DIEGO CA	(SSC)
NAVCOMMSTA SAN DIEGO CA	(NCS)

THE FOLLOWING GENERAL MESSAGES ARE INROUTED TO ALL COMMANDS:

ALCOM	ALNAV
ALCOMPAC	ALPACFLT
ALCOMPAC P	JAFPUB
ALELEVEN	NAVACT
ALMILACT	NAVOP

(IF ANY COMMANDS APPEAR AFTER THE ROUTING INDICATORS RUWJNSB, RUWPSAA OR RUWPSEE OTHER THAN THOSE LISTED IN THE GUARD LIST, THE MESSAGE IS MISROUTED)

AFLOAT

ASHORE

Figure 6.1-3, Command Guard List

(2) Shore Unit CGL components

(a) Local command

1. Chain of command at your unit

a. Each department within the command has an office code

(b) Subscriber Commands

1. Not part of your chain of command
2. Provided message delivery or over-the-counter message distribution by your command
3. Listed by Short Title

(c) Local command codes and subscriber command short titles are normally listed in alphanumeric order

1. May be retained in computer data base in automated systems
2. AIG, CAD, and General Message titles also listed for both local and subscriber command

2. Advance Routing

a. All high precedence messages MUST be advance routed

(1) Advance routing: Immediate delivery to action department by most expeditious means

(a) Messenger (afloat)

(b) Pneumatic tube (afloat)

(c) Phone notification (ashore)

(2) High precedence

(a) Flash/Immediate (Z/O)

1. Action or information

(b) Priority (P)

1. Action

(3) Advance route delivery may be made to other than action department depending on local operating procedures

(a) Officer of the Day (OOD)

(b) Command Duty Officer (CDO)

(c) Communication Watch Officer (CWO)

(4) Messages being advance routed should not be unduly delayed by logging procedures

(a) Assign advance route delivery instructions

(b) Immediately make enough copies to advance route

1. Original copy of message should be retained in the Communications Center

(c) Dispatch messenger

(d) Log message

3. Unacceptable Messages

a. Misroute

(1) Messages delivered to your station in error

(2) Generally identified by

(a) None of routing indicators assigned to your command appear in FL 2

(b) Addressees on FL 7/8 are not on guard list

(3) Write SVC/Z0V in subject column of CML (incoming) and in margin of message

(4) Pass message to service clerk

b. Garble

(1) Some portion of the message is unreadable

(a) If the garble does not affect message clarity

1. Underline the garbled portion and place a notation similar to the following on the message: "Underlined" Portions Received Garbled. Will Service Upon Request"

(b) If the garble affects message clarity

1. Write SVC/ZES2 in subject column of CML (incoming) and in margin of message

(2) Pass message to service clerk

(3) Messages containing perishable information will not be serviced

(a) Example: Weather messages

c. Incomplete

(1) Message missing essential elements

(a) FLs 2 through 16

(2) Write SVC/ZES1 in subject column of CML (incoming) and in margin of message

(3) Pass to service clerk

4. Duplicates (DUPES)

a. Identical copies of previously processed message

b. Check DTG/originator/Subject to see if message previously entered in log

(1) If entered, message may be duplicate

(a) Have file clerk check against file copy to verify it is a duplicate

1. Ensure it is not a retransmission

a. CAI ZDKW or OPSIG ZDK

c. Write Duplicate/File on message

d. Do not log in again

e. Pass to file clerk for filing

5. Suspected Duplicates

a. Identified by CAI ZFDY in FL2 or Opsig ZFD in FL5

b. Check logs to see if message has previously been received

(1) If already logged, handle as a duplicate message

(2) If not already logged, handle as a normal incoming message

6. Service Messages

   a. Normally received in abbreviated plaindress format

      (1) No FL 5, 6, 7, 8

   b. Identified by

      (1) Abbreviation "SVC" following classification

      (2) CAI of ZYVW in FL2

   c. Log message and pass to service clerk

   d. Service clerk will pass service and corrected messages to inrouter after correction has been made

7. Corrected Copies (CORCY)

   a. Normally received in abbreviated plaindress format (See Figure 6.1-4)

      (1) No FL 5, 6, 7, 8

   b. Identified by:

      (1) Word SVC following classification

      (2) Word VOL CCN (Voluntary Correction) or prosign C in text

      (3) Corrected copy of original message following VOL CCN or prosign C

   c. Log <u>both</u> the service message heading <u>and</u> the corrected message

      (1) Write CORCY in subject column of CML (incoming)

   d. Draw line on message directly above original message DTG

   e. Stamp or write "<u>Corrected copy per (DTG/ORIG of SVC MESSAGE)</u>" on corrected message

   f. Pass to reproduction/distribution clerk

```
RTTUZYVW RUHPPNN4323 1052135-UUUU--RUWJNSB.
ZNR UUUUU
BT
UNCLAS DRILL SVC VOL CCN RUHPPNN4317 1051953
R 152130Z APR 83
 FM COMSUBPAC PEARL HARBOR HI
TO RUWJNSB/NAVRESCEN SAN DIEGO CA
INFO RUENBUA/COMNAVMILPERSCOM WASHINGTON DC
RUWDESN/FLEASWTRACENPAC SAN DIEGO CA
RUWJNSB/SERVSCOLCOM SAN DIEGO CA
RUWDDSA/COMNAVSURFPAC SAN DIEGO CA
BT
UNCLAS DRILL //NO1326//
SUBJ: ENLISTED SUBMARINE DETAILER VISIT (NMPC 403)
A. COMSUBPAC PEARL HARBOR HI 150437Z MAR 83 NOTAL
1. AS ANNOUNCED BY REF A, THE ENLISTED SUBMARINE DETAILERS WILL
VISIT SUBPAC UNITS LOCATED IN THE SAN DIEGO AREA BETWEEN 4 MAY 83
AND 10 MAY 83. ALL SUBMARINE RATINGS EXCEPT HM RM AND NON-NUCLEAR
EM WILL BE REPRESENTED.
2. THERE WILL BE A GENERAL BRIEF FOR CO'S/XO'S/COB'S/COMMAND CAREER
COUNSELOR'S/AND LEADING YN/PN'S AT 1300, 4 MAY 83 IN THE
SUBTRAPAC AUDITORIUM.
BT
#4323


NNNN
```

Figure 6.1-4
ABBREVIATED PLAINDRESS
FORMAT

8. Sectional Messages

   a. Identified by words "Section_____of_____" following SSIC on classification line

      (1) Log sections as they are received

         (a) Write section number following the subject in subject column of CML (incoming)

   b. Retain message until all sections have been received

9. Broadcast Screen Reply

   a. Response from NAVCAMS/NAVCOMMSTA to a unit making a Broadcast Screen Request (BSR)

   b. Identified by subject line "Broadcast Screen Reply"

   c. Three responses received

      (1) Initial response contains the following (See Figure 6.1-5)

         (a) Which numbers were cancelled (CANTRAN)

         (b) Which numbers were of no concern to the unit (ZFK1/2)

         (c) Which numbers have been previously retransmitted (ZDK) DTG of BSR

         (d) Which numbers are to be retransmitted

      (2) Follow-on response contains the following (See Figure 6.1-6)

         (a) ZDK prefix in text of reply

         (b) Copies of messages addressed to requesting unit

            1. Retransmissions are transmitted under the original broadcast numbers

      (3) Final response states "Action completed per your request"

         (See Figure 6.1-7)

   d. Logging Broadcast Screen Reply

```
HMCC00198
VZCZCHMCC00198
P 022330Z JAN 84
FM NAVCAMS EASTPAC HONOLULU HI
TO USS STODDARD
BT
C O N F I D E N T I A L DRILL SVC //N00000//
BROADCAST SCREEN (U)
A. YOUR BCST SCREEN REQUEST 022245Z JAN 84
1. FOL NRS CANTRAN: HMCC00123
2. FOL NURS ZFK 1/2: HMCC00089, HMCC00097, HMCC00105.
3. FOL NRS RERUN AS ZDK AT TIMES INDICATED: NONE.
4. FOL NRS ZDK: HMCC00094.
BT
#00198

NNNN
```

Figure 6.1-5
BROADCAST SCREEN REPLY
INITIAL RESPONSE


```
HMCC00200
VZCZCHMCC00200
P 022356Z JAN 84
FM NAVCAMS EASTPAC HONOLULU HI
TO USS STODDARD
BT
C O N F I D E N T I A L DRILL SVC //N00000//
BROADCAST SCREEN (U)
A. YOUR BCST SCREEN REQUEST 022245Z JAN 84
1. FOL NRS ZDK ASAP: HMCC00094
HMCC00094
P 020659Z JAN 84
FM COMELEVEN SAN DIEGO CA
TO PERSUPPACT SAN DIEGO CA
USS STODDARD
BT
UNCLAS DRILL //N01650//
SUBJ: ARRIVAL NOTICE OF MEMBER AND DEPENDENTS
1. CSC HOWARD D. VAUGHN 349-36-6458, USN, SCHEDULED TO ARRIVE
SAN DIEGO AIRPORT 1350 LOCAL 3 FEB, UNITED AIRLINES FLT NR 995.
DRILL
BT
#00094

NNNN
```

Figure 6.1-6
BROADCAST SCREEN REPLY
FOLLOW-ON RESPONSE

(1) Log each response as received

(a) Initial response, log "SVC/BSR initial response" in subject column

(b) Follow-on response, log "SVC/BSR ZDK" in subject column

1. Each message received in this response must also be logged

(c) Final response, log "SVC/BSR Action completed" in subject column

e. Screen ZDK's for high precedence

(1) Make copies and advance route as needed

f. Retain each section until all have been received

g. Ensure Broadcast Operator has accounted for all messages

h. Pass to Reproduction/Distribution Clerk

HMCC00203
VZCZCHMCC00203
P 030002Z JAN 84
FM NAVCAMS EASTPAC HONOLULU HI
TO USS STODDARD
BT
C O N F I D E N T I A L DRILL SVC //N00000//
BROADCAST SCREEN (U)
A. YOUR BCST SCREEN REQUEST 022245Z JAN 84
1. ACTION COMPLETED PER YOUR REQUEST.
BT
#00203

NNNN

CLASSIFIED FOR TRAINING PURPOSES ONLY

Figure 6.1-7
BROADCAST SCREEN REPLY
FINAL RESPONSE

10. General Message (See Figure 6.1-8)

a. Identified by General Message Address in FL7, and title and serial number located between the classification line and the subject line of the text

b. Most common General Messages and their contents:

(1)

Short Title	Originated By	Contents
ALCOM	CNO	Policy matters on naval communications
ALCOM	COMNAVTELCOM	COMMPUB correction and administrative communication matters
ALCOM	COMNAVSECGRU	Cryptographic matters (CMS, etc)
ALCOMPAC	CNO, COMNAVTELCOM, COMNAVSECGRU	A subdivision of the ALCOM series for the Pacific Area
ALNAV	SECNAV	Matters concerning the functions of the naval establishment, including the Marine Corps (normally unclassified)
ALPACFLT	CINCPACFLT	Equivalent of NAVOP or ALNAV within commands under CINCPACFLT
ALSVACT	JCS	Assigned to the JCS for the dissemination of other instructions on a classified basis which have world-wide application
JAFPUB	USMCEB	Corrections to communication pubs
NAVPLAD	COMNAVTELCOM	Promulgate message changes to the NTP3 and the NTP3, Supp-1
NAVOP	CNO	Promulgate information to all subordinate commands and activities of the naval establishment

(2) The above list is not all inclusive

4081

RTTUZYUW RUEKJCS0142 1050030-UUUU--RUWJNSB RUWPSAA RUWPSEE.
ZNR UUUUU
R 150736Z APR 83
FM JCS WASHINGTON DC
TO ALMILACT
INFO RUENAAA/SECSTATE WASHINGTON DC
BT
UNCLAS DRILL
ALMILACT 001/83
SUBJ: MINIMIZE
A. SECSTATE WASHINGTON DC 122005Z APR 83 NOTAL
1. AS REQUESTED BY REF A, JCS CANCELS MINIMIZE IMPOSED BY ALMILACT 038/82 ON RECORD TRAFFIC DESTINED TO NAIROBI.
BT
#0142

NNNN

Figure 6.1-8
GENERAL MESSAGE

RTTUZOVW RUWDSAA0120 1052011-UUUU--RUWJNSB.
ZNR UUUUU ZOB ROWDSSA6949 REROUTE OF RUENGSA1020 1051947
RUWJNSB T HUMRESMANCEN SAN DIEGO CA
T NAVRESCEN SAN DIEGO CA
R 151935Z APR 83
FM NAVACCTGFINCEN WASHINGTON DC
TO RUWDSSA/HUMRESMANCEN SAN DIEGO CA
RUWDSBA/COMNAVBASE SAN DIEGO CA
INFO RUWDSSA/NAVRESCEN SAN DIEGO CA
BT
UNCLAS DRILL //N07220//
SUBJ: INCREASE IN BASIC PAY FOR PAY GRADES O-8 THROUGH O-10 (MILITARY PAY ADVISORY 110/83)
A. NAVACCTGFINCEN WASHINGTON DC 281545Z MAR 83 (MPA 73/83)
1. PURPOSE. TO ADVISE OF AN INCREASE IN BASIC PAY FOR OFFICERS IN PAY GRADES O-8 THRU O-10 EFFECTIVE 18 APR 1983.
2. BACKGROUND. REF A PROMULGATED THE FY83 MILITARY PAY TABLES EFFECTIVE 1 APR 83. CURRENTLY, MONTHLY BASIC PAY IS LIMITED TO 4791.60 DOLS BY 5 U.S.C. 5308. THE PRESIDENT HAS SIGNED LEGISLATION (P.L. 97-377) WHICH RAISES THE LIMITATION ON BASIC PAY TO 5316.60 DOLS EFFECTIVE 18 APR 1983. THE FOLLOWING IS A MODIFICATION TO REF A REFLECTING THE INCREASED AMOUNTS PAYABLE UNDER THE NEW PAY CAP. OTHER PAY RATES IN REF A REMAIN UNCHANGED.
BT
#0120

NNNN

Figure 6.1-9
REROUTE WITH
TRANSMISSION INSTRUCTIONS

11. Reroutes and Transmission Instructions

    a. Identified by CAI ZOVW in FL2 and transmission instructions in FL4

    b. Check routing indicator at end of FL2 against CGL to ensure you are responsible for that routing indicator

    c. Check transmission instructions on FL4 to ensure you guard for the Plain Language Addressees indicated

        (1) If all addressees are protectd, process as a normal incoming message

        (2) If addressees are not protected by your command, log message with subject line "SVC/ZOV" and pass to service clerk

12. Message Stamps

    a. Any or all of the following stamps may be used by the inrouter

        (1) Individual Precedence

        (2) Individual Classification

            (a) Classification stamp placed at Top and Bottom center of each page

        (3) Page_____of_____pages

        (4) Internal Routing matrix

        (5) "CORCY"

        (6) "Underlined Portions Received Garbled. Will Service On Request"

        (7) ADVANCE ROUTING

        (8) ACTION or INFORMATION

    b. Stamps are in print larger than message print

    c. Never place stamp over message identification or text

D. Internal Distribution

1. Internal routing/distribution (R/D) guide maintained at inrouter position

    a. May be

        (1) File cards

        (2) Cards on rotary file

        (3) Page size

        (4) Computer print out used as a quick reference for automated systems

            (a) CWO or watch supervisor normally responsible for updating guide

2. Internal routing methods

    a. Vary from command to command

    b. Automated and manual systems may be keyed to any or all of the following

        (1) Standard Subject Identification Code (SSIC)
            (a) Listed numerically
        (2) Subjects

            (a) Listed alphabetically

        (3) References

            (a) Refer to referenced message for routing assignment

    c. Cognizant department (action/information) and selected departments receiving a copy of the message for information purposes are listed under each SSIC/Subject

        (1) Cognizant Department: Primarily responsible for the subject area covered in the message

            (a) Example: Supply Department is cognizant department on Supply messages

    d. Distribution may be accomplished by

        (1) Providing copy to cognizant/selected departments and all other command departments and/or office codes

            (a) Referred to as SHOTGUN method

1. Top Secret/Secret and Specat messages excluded from SHOTGUN routing

2. Most common method for afloat units

(2) Providing copy only to cognizant department and selected department receiving copy for information purposes

(a) Referred to as Selective routing

(b) Most common method for shore units

(3) Distribution may be denoted by

(a) Placing an A (Action) or I (Information) under cognizant department code

(b) Placing an X under departments receiving copy for information purposes

(c) Example:

CO	XO	OPS	COMM	SUPP	NAV	ENG	DECK
X	X		X	A		X	

(d) Refer to local operating procedures

e. Procedure for Internal Routing Using Selective Subject Line Method (used in this course)

(1) Screen message for subject line

(2) Locate subject line on alphabetical listing

(3) Write routing on message copy

(4) Pass message to Reproduction Clerk

ASSIGNMENT SHEET 6.2

Message Reproduction/Distribution and Filing

INTRODUCTION

When messages have been inrouted, the Reproduction/Distribution Clerk must get those messages to their recipients quickly. The File Clerk must place them in the proper files for quick reference when necessary. This lesson will help you learn how to accomplish these tasks.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III Typewriter, outgoing message drafts, Julian calendar, DD-173 OCR Joint Message Form, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 Template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, NTP-3, NTP 3 SUPP-1, NTP 4, NWP 4, and JANAP 128.

6.5 Given a file of outgoing and incoming messages, and an internal routing guide, compute the number of copies that need to be run-off for distributing each message.

6.6 Given incoming and outgoing messages, a communication center message file, blank fillers, general message file, and Columbia file binders, file each message in the appropriate file in accordance with NTP 4 and NWP 4.

6.6.1 Given blank fillers, general messages, TOP SECRET, and SPECAT messages (classified for training purposes only), and readdressed messages, prepare fillers for each message.

6.6.2 Given processed messages, completed fillers, general message file, and a communication center file, file all messages and fillers in appropriate files in accordance with NTP 4.

STUDY ASSIGNMENT

Study and review class notes and Student Guide sections 6.1, 6.2, and 5.1 in preparation for performance tests 101, 102, and 110.

NOTETAKING SHEET 6.2

Message Reproduction/Distribution and Filing

REFERENCES:

1. NTP 4, Fleet Communications
2. NWP 4, Basic Communications Doctrine

NOTETAKING OUTLINE

A. Reproduction/Distribution and File Clerk Orientation

1. Message Flow (See Figure 6.2-1)

a. Incoming/Outgoing messages received from inrouter after inrouter processing completed

b. Reproduction/Distribution clerk

(1) Reproduce sufficient copies to complete delivery

(2) Distributes reproduced copies

(3) Passes original message to file clerk

c. File Clerk

(1) Prepares message fillers if applicable

(2) Files messages in appropriate file to ensure that they are readily available for reference

B. Reproduction/Distribution (R/D) Clerk Procedures

1. Incoming and outgoing messages must be reproduced in sufficient quantities to complete delivery

a. The R/D Clerk will have a copy number guide available to determine the total number of copies to be reproduced

(1) Format may vary from command to command

(2) Normally contains following information

(a) Department or office code

(b) Number of copies required based on

1. Action or information

2. Copy to

(c) Example:

Department/Code TO	ACT	INFO	COPY
CO	1	1	1
XO	1	1	1
OPS	3	2	1
COMM	1	1	1
NAV	3	2	1
ENG	2	2	1
SUPP	4	3	1

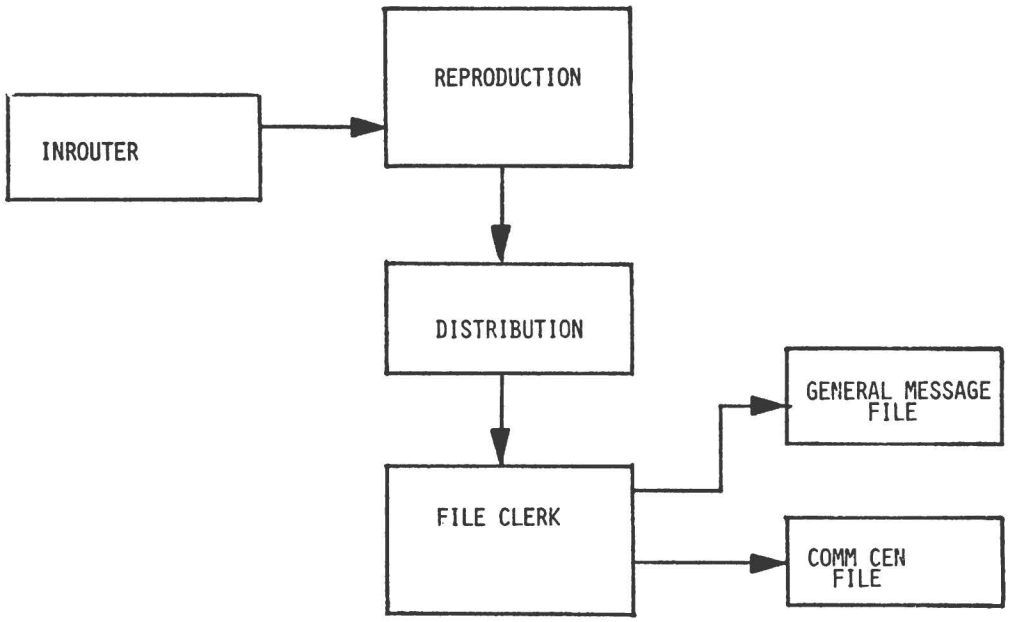


Figure 6.2-1 Message Flow

(3) R/D Clerk will compute number of copies to be reproduced by

(a) Checking internal distribution assigned by Inrouter

(b) Checking whether ACTION, INFO, or copy to departments/codes indicated

(c) Adding number of copies required for each department/code

(4) Based on local command requirements, one extra copy may be reproduced to use for filing purpose in place of a message filler (tickler)

(a) For each readdressal DTG

(b) General message

(c) Broadcast file

(5) One extra copy will be made of service messages and corrected copies made from service message action

(a) For cross filing purposes

(6) An additional copy will be reproduced to staple to the original message copy

(a) Makes filing short messages, (that is teletype page copies that are shorter than 11 inches) easier

(b) Verifier for file clerk that the message has been reproduced

2. Preparing messages for reproduction

a. Teletype page copy of messages must be split (torn in parts) so they are not longer than 9 inches (See Figure 6.2-2)

(1) Copy paper is 8½ by 11 inches

(2) Normally split at separation between teletype pages

b. Messages with service headings will be prepared as follows

(1) Voluntary corrections

(a) Make two copies of entire message, including service heading

1. Copies will be used for cross filing purposes

(b) Split message immediately above DTG of corrected message

1. Copies reproduced for distribution will not contain service heading

(2) BSR replies containing message retransmission(s)

(a) Make one copy of entire message

1. Copy will be used for cross filing purposes

(b) Split message(s) immediately above DTG of each message retransmitted

1. Each message will be reproduced/distributed

c. Reproduce messages in desired quantities

(1) All messages EXCEPT TOP SECRET are reproduced on white paper

(a) TOP SECRET must be reproduced on pink paper or white paper with a DISTINCTIVE red border

P 021909Z JAN 81
FM CINCPACFLT PEARL HARBOR HI
TO COMDESRON ONE
BT
C O N F I D E N T I A L DRILL //N02302//
SUBJ: COMMUNICATIONS OPERATIONS (U)
1. (U) EFFECTIVE UPON RECEIPT AND IN CONSONANCE WITH NTP-4 ALL EXISTING PRIMARY CW SHIP TO SHORE CIRCUITS ARE REDESIGNATED FLEET SECONDARY SHIP TO SHORE CIRCUITS. SECONDARY SHIP TO SHORE CIRCUITS ARE REDESIGNATED FLEET AUXILIARY SHIP TO SHORE. ALL EXISTING HARBOR COMMON CIRCUITS ARE RESEGNATED HARBOR OPERATIONS-ADMINISTRATIVE.
2. (C) PMET KEYED BY NAVCOMMSTA PHIL HAS BEEN DENETTED FROM NAVCOMMSTA JAPAN. ACCORDINGLY, CHANNEL 8 (PMET) IS ESTABLISHED ORIGINATED BY FLEWEAFAC YOKOSUKA AND KEYED BY NAVCOMMSTA JAPAN.
3. (C) DISREGARD THAT PORTION OF CIB 01/81 CONCERNING THE CHANGE FROM 10780 KHZ TO 10370 KHZ FOR VLAB. 10780 KHZ REMAINS THE VALID OPERATING FREQUECY.

PG 02 RUWPCDR0003 C O N F I D E N T I A L DRILL
4. (U) NTP-4 AND JANAP 195H WILL BE UPDATED BY SEPARATE ACTION
DECL: 02JAN 87
DRILL
BT
#0003

NNNN

Figure 6.2-2 Multipage Message

3. Preparing messages for distribution/filing

   a. Collate and staple multipage messages

      (1) Collate: Arrange in proper page order

   b. Place original teletype copy and reproduced file copy to one side

   c. Distribute (slot) department/code copies

   d. Prepare teletype copy and reproduced copy for filing

      (1) Staple original teletype copy and reproduced copy of message

         (a) Corrected copy with service header

            1. Staple teletype copy of service header portion to one copy of entire reproduced message

            2. Staple teletype copy of corrected copy portion to one copy of entire reproduced message

         (b) BSR reply containing message retransmission(s)

            1. Staple teletype copy of BSR reply header portion to one copy of entire reproduced message

         (c) Short service messages and corrected copies made from service action

            1. Staple teletype copy of service messages to one reproduced corrected copy of message that was serviced

               a. Indicates service action has been completed

            2. Staple one reproduced copy of service message to corrected copy of message that was serviced.

               a. Quick reference for reason message was corrected

      (2) Paper clip reproduced copy(ies) of messages used in place of filler to original message

         (a) File clerk will separate and file in appropriate files

C. File Clerk Procedures

1. Incoming and outgoing messages must be filed in correct file to ensure they are readily available for reference

2. Types of Files

a. Communications Center (COMCEN) File

(1) Contains copy or filler of all messages addressed to or originated by your command

(a) Filler: Locally reproduced form used to locate a message that is either under another DTG or located in another file (See Figure 6.2-3)

(b) Some commands may use a reproduced copy of the message as the filler

(2) Messages and fillers are filed in DTG order

(a) Most recent on top

(b) Separated by dates

(c) Example:

231418Z JAN 84	222314Z JAN 84
231226Z JAN 84	221653Z JAN 84
230615Z JAN 84	221210Z JAN 84

(3) Messages retained in the COMCEN File for 60 days

(a) Old messages destroyed on a daily basis

(b) Example: On 19 SEP 84 destroy messages received on 19 JUL 84

b. General Message File

(1) Contains original copy of all General Messages required by your command and a General Message Continuity Log

(2) Different file, or section of a file, and log used for each General Message title

(a) Example: ALCOM, NAVOP

(3) Messages logged and filed by continuity number

(a) Located between Classification and subject lines

(b) Example: UNCLAS //N01234//
ALCOM 34/84
SUBJ: EMERGENCY SUPERSESSION

(c) Lowest number on bottom

NAVAL MESSAGE FILLER
NTC SD 2110/5 (3-81)

NAVAL MESSAGE FILLER

READDRESSAL MESSAGE	GENERAL MESSAGE
READDRESSAL DATE TIME GROUP _____ FROM: _____ ORIGINAL DATE TIME GROUP _____ FROM: _____ CLASS: U C S T NOTE: MAKE FILLER FOR EACH READDRESSAL DATE TIME GROUP	ORIGINAL DATE TIME GROUP _____ FROM: _____ TYPE: _____ NUMBER: _____ CLASS: U C S T
TOP SECRET	**SPECAT**
ORIGINAL DATE TIME GROUP _____ FROM: _____	ORIGINAL DATE TIME GROUP _____ FROM: _____ CLASS: C S T

DIRECTIONS: FILL IN APPROPRIATE BLANKS FOR THE TYPE OF MESSAGE FILED

TO LOCATE ORIGINAL COPY SEE:
DATE TIME GROUP

9" 6128 10-2-2

Figure 6.2-3 Message Filler

(4) General Message Log information

(a) Continuity number

(b) DTG

(c) Originator

(d) Classification

(e) Subject

(5) Inform Watch Supervisor if there is a missing General Message

(a) Example: ALCOMS 1, 2, 3, 5 received; 4 not received

(6) Retain messages until cancelled or superceded

(7) Filler required for all General Messages in the COMCEN File

GENERAL MESSAGE LOG

GENERAL MESSAGE TITLE ALCOM

MESSAGE NO.	DTG	ORIG	CLASS	SUBJ	ACT
ØØ1/84	Ø21Ø14ZJan84	CNO	U	LANT COMM MINIMIZE	
ØØ2/84	1Ø2114ZJan84	ComNavSecGru	C	AKAA-283	
ØØ3/84	221949ZJan84	JCS WASH	U	MINIMIZE EXTENTION	
ØØ5/84	2306152Jan84	ComNavSecGru	C	USKAK-8094	

Figure 6.2-4 General Message Log

c. Top Secret File

(1) Contains original of all Top Secret and Specat messages

(2) Accompanied by a Top Secret Control Log

(3) Maintained by the Top Secret Control Officer

(4) Filler required for all Top Secret and Specat messages in COMCEN File

d. File message/fillers in DTG order

(1) Punch holes in top of message/filler

(2) Earliest (oldest) DTG on bottom

(3) Use file for proper day/month

(a) Radio day: 0001Z thru 2359Z

(4) Retain for sixty days

3. Filing Procedures

a. Incoming Message, Secret or below

(1) File under original DTG in COMCEN File

b. Incoming Top Secret

(1) Original message retained by Top Secret Control Officer

(2) Filler filed in COMCEN File under original DTG (See Figure 6.2-5)

(a) Filler will contain the following

1. DTG

2. Originator

(b) REPRODUCED COPY WILL NOT BE USED AS A FILLER FOR TOP SECRET MESSAGES

c. Incoming Specat Message

(1) Original message retained by Top Secret Control Officer

(2) Filler filed in COMCEN File under original DTG (See Figure 6.2-6)

NAVAL MESSAGE FILLER

NAVAL MESSAGE FILLER

READDRESSAL MESSAGE	GENERAL MESSAGE
READDRESSAL DATE TIME GROUP _____ FROM _____ ORIGINAL DATE TIME GROUP _____ FROM _____ CLASS U C S T NOTE MAKE FILLER FOR EACH READDRESSAL DATE TIME GROUP	ORIGINAL DATE TIME GROUP _____ FROM _____ TYPE _____ NUMBER _____ CLASS U C S T
TOP SECRET	**SPECAT**
ORIGINAL DATE TIME GROUP Ø114267 JAN84 FROM CINCPACFLT	ORIGINAL DATE TIME GROUP _____ FROM _____ CLASS C S T

DIRECTIONS: FILL IN APPROPRIATE BLANKS FOR THE TYPE OF MESSAGE FILED

TO LOCATE ORIGINAL COPY SEE:
TOP SECRET FILE
DATE TIME GROUP
Ø114267 JAN 84

Figure 6.2-5
Top Secret Filler

NAVAL MESSAGE FILLER

NAVAL MESSAGE FILLER

READDRESSAL MESSAGE	GENERAL MESSAGE
READDRESSAL DATE TIME GROUP _____ FROM _____ ORIGINAL DATE TIME GROUP _____ FROM _____ CLASS U C S T NOTE MAKE FILLER FOR EACH READDRESSAL DATE TIME GROUP	ORIGINAL DATE TIME GROUP _____ FROM _____ TYPE _____ NUMBER _____ CLASS U C S T
TOP SECRET	**SPECAT**
ORIGINAL DATE TIME GROUP _____ FROM _____	ORIGINAL DATE TIME GROUP 28Ø3147 FEB84 FROM COMTHIRDFLT CLASS C(S)T

DIRECTIONS: FILL IN APPROPRIATE BLANKS FOR THE TYPE OF MESSAGE FILED

TO LOCATE ORIGINAL COPY SEE:
TOP SECRET FILE
DATE TIME GROUP
28Ø3147 FEB 84

Figure 6.2-6 Specat Filler

(a) Filler will contain the following

1. DTG

2. Originator

3. Classification

(b) REPRODUCED COPY WILL NOT BE USED AS A FILLER FOR SPECAT MESSAGES

d. Readdressals, Secret and below

(1) File original under original DTG in COMCEN File

(2) Prepare and file a filler for EACH readdressal DTG (See Figure 6.2-7)

(a) Filler will contain the following

1. Original DTG

2. Originator

3. Classification

4. Readdressal DTG

5. Readdressor

e. Readdressal Top Secret/Specat

(1) Original retained by Top Secret Control Officer

(2) Prepare 1 filler for the original DTG to be filled in the COMCEN File

(3) Prepare 2 fillers for EACH readdressal DTG

(a) 1 copy for COMCEN File

(b) 1 copy for Top Secret File

f. General Messages

(1) Original filed in General Message File (See Figure 6.2-8)

(2) Prepare filler to be filed in the COMCEN File under original DTG

NAVAL MESSAGE FILLER

READDRESSAL MESSAGE	GENERAL MESSAGE
READDRESSAL DATE TIME GROUP 210610Z MAR84 FROM USS STEIN ORIGINAL DATE TIME GROUP 201112Z MAR84 FROM USS NEW ORLEANS CLASS U (N) S T NOTE MAKE FILLER FOR EACH READDRESSAL DATE TIME GROUP	ORIGINAL DATE TIME GROUP FROM TYPE NUMBER CLASS U C S T
TOP SECRET	**SPECAT**
ORIGINAL DATE TIME GROUP FROM	ORIGINAL DATE TIME GROUP FROM CLASS C S T

DIRECTIONS: FILL IN APPROPRIATE BLANKS FOR THE TYPE OF MESSAGE FILED

TO LOCATE ORIGINAL COPY SEE:
COMCEN FILE
DATE TIME GROUP
210610Z MAR 84

Figure 6.2-7
Readdressal Filler

NAVAL MESSAGE FILLER

READDRESSAL MESSAGE	GENERAL MESSAGE
READDRESSAL DATE TIME GROUP FROM ORIGINAL DATE TIME GROUP FROM CLASS U C S T NOTE MAKE FILLER FOR EACH READDRESSAL DATE TIME GROUP	ORIGINAL DATE TIME GROUP 031527Z JAN84 FROM CNO TYPE NAVOP NUMBER 001/84 CLASS (T) C S T
TOP SECRET	**SPECAT**
ORIGINAL DATE TIME GROUP FROM	ORIGINAL DATE TIME GROUP FROM CLASS C S T

DIRECTIONS: FILL IN APPROPRIATE BLANKS FOR THE TYPE OF MESSAGE FILED

TO LOCATE ORIGINAL COPY SEE:
General Msg File
DATE TIME GROUP
031527Z JAN 84

Figure 6.2-8 General Message Filler

ASSIGNMENT SHEET 7.1

Verification of Outgoing Message Draft (OMD)

INTRODUCTION

Outrouting messages is an essential duty of a Radioman. You must be capable of performing all outrouter functions, whether stationed ashore or on an afloat unit. During this lesson, you will learn how to fulfill the job of an outrouter.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.2 Given a file of outgoing message drafts, NTP 3 SUPP-1, Julian calendar, and an outgoing message log, prepare outgoing drafts for submission to the tapecutter in accordance with ACP 126 and NTP 4.

6.2.1 Given a file of outgoing message drafts, verify the completeness of the message drafts.

6.2.2 Given a file of outgoing message drafts and NTP-3 SUPP-1, verify the correctness of the addressee(s).

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 7.1 in preparation for a performance test after completing Lesson 7.3

NOTETAKING SHEET 7.1

Verification of Outgoing Message Draft (OMD)

REFERENCES:

1. NTP 4, Fleet Communications
2. NTP-3, SUPP-1, Plain Language Address Directory

NOTETAKING OUTLINE

A. Outrouter Orientation

1. Message Flow

a. Outgoing Message Draft (OMD) received in communication center

(1) Shipboard departments

(2) Shore station departments or subscriber commands

b. Outrouter

(1) Screens message for completeness

(a) Verifies the presence of certain elements and that the released message is complete and accurate in all respects

(2) Determines message transmission format

(a) ACP 126:
1. Ship to ship

(b) Modified ACP 126:
1. Ship to shore
2. Direct shore input into NAVCOMPARS

(c) JANAP 128:
1. AUTODIN

(3) Logs message

(4) Assigns message processing information

(a) Station Serial Number (SSN)

(b) Time of File (TOF)

(c) Date-Time-Group (if not assigned by message drafter)

(d) Originating Station Routing Indicator (OSRI)
1. JANAP 128 and Modified ACP 126

(e) Addressee(s) Routing Indicator (RI)
1. JANAP 128 and Modified ACP 126
a. NAVCOMPARS RI assigned to Modified ACP 126

(5) Transmission Instructions

(a) If applicable

(6) Content Indicator Code/Communication Action Identifier (CIC/CAI)

(a) Only if other than ZYUW
1. ZYUW: THIS IS A NARRATIVE MESSAGE

c. Tapecutter

(1) Obtains OMD

(2) Prepares message tapes in required format

(3) Proofreads and corrects message as necessary

(4) Passes to Outrouter for final proofreading prior to transmission

d. Outrouter

(1) Proofreads and returns message to tapecutter for final corrections if necessary

(2) Passes OMD smooth typed copy and message tape to circuit operator for transmissions

(a) After transmission, message returned to outrouter
1. Completes log
a. Time of Delivery (TOD)
b. Circuit number
2. Passes to Inrouter for internal processing

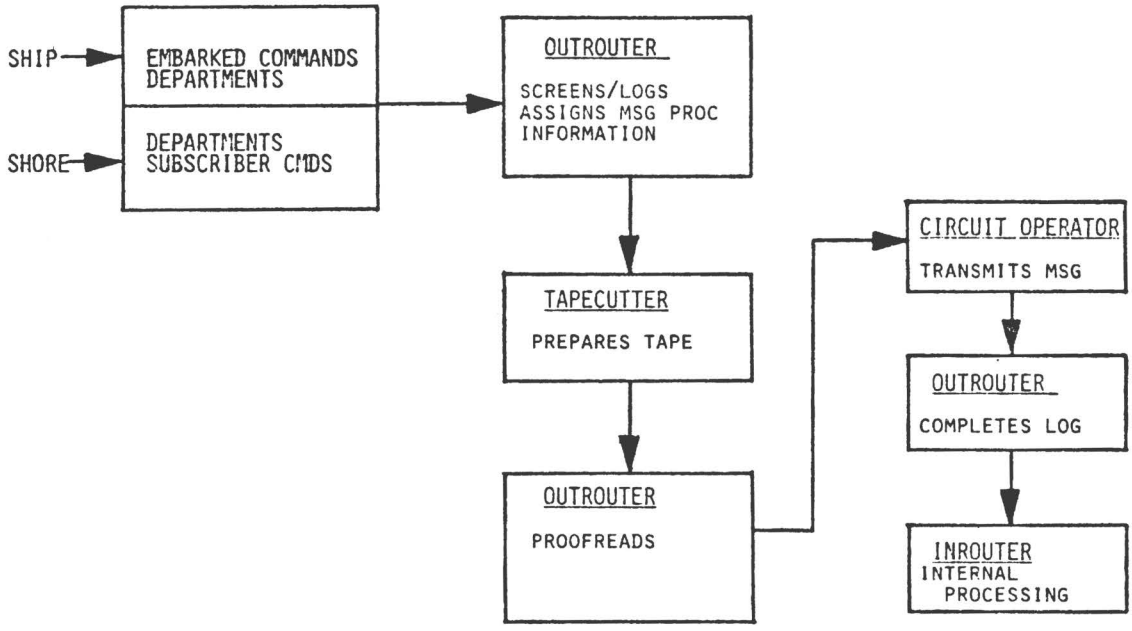
B. Verification of Message Essentials

1. Prior to processing an outgoing message, communications personnel must

a. Verify the presence of certain elements

b. Verify that the released message is complete and accurate

2. Certain parts of the message may not be substantially changed without permission from the drafter



OUTGOING MESSAGE FLOW

FIGURE 7.1-1

a. FL 5: Preamble

(1) Precedence

(2) Date-time-group

(a) If assigned by message drafter

b. FL's 6; 7; 8

(1) Originator and addressee(s)

(a) Procedural changes that may be made to PLA only

1. Addition of a geographical location to a Plain Language Address (PLA)
2. Corrections to PLA's when they are misspelled, improperly abbreviated or not in accordance with NTP-3 SUPP-1, Plain Language Address Directory
   a. Use of NTP-3 SUPP-1 will be covered in following lesson
3. Conversion of numbers to words
   a. Example: COMDESRON 4 to COMDESRON FOUR

c. Messages requiring changes other than procedural will be referred to the drafter

(1) Addition of downgrading instructions

(2) Determination of correct message classification

(3) Missing subject line

3. Verifying Outgoing Message Draft (OMD)

a. Releasing signature

b. Identification of message drafter

c. Security classification in security classification block

d. Page of Pages filled in

e. Precedence

(1) Both Action and Information blocks should be filled in if message has both Action and Information addressees

f. Addressee(s) in accordance with NTP-3 SUPP-1

(1) Incorrect PLA's may be corrected by Communication Center personnel

g. Classification line

(1) Always first line of text

(2) Must agree with classification in Security Classification block

(a) If they do not agree, refer message to message drafter

h. Standard Subject Identification Code (SSIC)

(1) Last element of classification line

(2) Required on most Navy messages

(3) One means of determining internal routing

(4) Consists of two slant signs (//), letter N, 5 numbers, and two more slant signs (//)

a. Example: //N03245//

i. Passing instructions

(1) Indicates delivery to a specific department or code

(2) First line following the classification line

(3) Example: NMPC for Code 613

(4) Not normally used

j. Subject line

(1) First line following classification line, if passing instructions not used

(2) Key to the reader as to basic contents of the message

(a) Used to determine internal routing

(3) Begins with the abbreviation SUBJ: followed by the subject

(a) Example: SUBJ: PARTS REQUISITION

(4) On classified messages, must be marked with the appropriate classification symbol if the subject line contains classified information

(a) If the subject line is unclassified, it must be so marked
1. Example: SUBJ: PARTS REQUISITION (U)

k. Reference line(s)

(1) First line(s) following the Subject Line

(2) Any identifiable document, all messages, and telephone conversations may be referenced

(3) Each reference is lettered consecutively, one beneath the other

(a) Example: (Letter): A. CNO LTR 376/941 OF 3 JAN 83
(MESSAGE):B. USS BRADLEY 181823Z FEB 83

l. Thought or idea drafter desires to communicate

(1) Each paragraph or subparagraph of classified messages will be marked

(a) To show the level of classification -or-

(b) Show that the paragraph or subparagraph is unclassified
1. Example: 1. (C)....TEXT....
A. (U)....TEXT....

(2) Downgrading and declassification markings

(a) Must be applied to all classified messages EXCEPT those addressed only to foreign addressees

(b) Last line of text
1. Example: DECL 6 JUN 84
a. Message is declassified on 6 JUN 84
2. Example: REVW 6 JUN 84
a. Message will be reviewed for declassification on 6 JUN 84
3. Example: DG/C/6 JUN 84
a. Message will be downgraded from higher classification to CONFIDENTIAL on 6 JUN 84

NAVAL MESSAGE BLANK

Released By	Drafted By	Security Classification	Page	Pages
CDR D. CZECH, X.O.	ENS C. SULLIVAN, COMM	CONFIDENTIAL	1 of	1
Date: 23 JAN 84	TOF:			

SSN	Date/Time Group	PRECEDENCE	Flash	Immediate	Priority	Routine
		ACTION		XXXX		
		INFO			XXXX	

FM USS DUNCAN
TO USS RANGER
INFO USS SENECA
C O N F I D E N T I A L //N04452//
SUBJ: UNREP DELAY (U)
A. YOUR 231010Z JAN 84
1. (C) DUNCAN ARRIVAL POINT XRAY DELAYED UNTIL 240500Z JAN 84
2. (U) REGRET DELAY
DECL 28 FEB 84

CLASSIFIED FOR TRAINING PURPOSES ONLY

DATE/TIME GROUP

SAMPLE MESSAGE

FIGURE 7.1-2

ASSIGNMENT SHEET 7.2

Outgoing Message Draft (OMD) Processing

INTRODUCTION

When you complete this lesson topic, you will be expected to verify correctness of message addressee(s); log OMD's; select proper circuit for transmission; assign routing indicators (if applicable); and proofread outgoing messages prepared by the tapecutter.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.2 Given a file of outgoing message drafts, NTP 3 SUPP-1, Julian calendar, and an outgoing message log, prepare outgoing drafts for submission to the tapecutter in accordance with ACP 126, NTP 4, and JANAP 128.

6.2.2 Given a file of outgoing message drafts and NTP-3 SUPP-1, verify the correctness of the addressee(s).

6.2.3 Given a file of outgoing message drafts and an outgoing message log, log the messages by completing applicable information including station serial number, originator, time of file, date-time-group, precedence, and classification.

6.2.4 Given a file of outgoing message drafts, determine circuit selection by checking addressee(s) in format lines 7, 8, and 9.

6.2.5 Given a file of outgoing message drafts, assign routing indicators including originating station and distant station(s).

6.2.6 Given a smooth typed copy of an outgoing message draft with prepared tapes, proofread the smooth copy.

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 7.2 in preparation for a performance test after completing Lesson 7.3

NOTETAKING SHEET 7.2

Outgoing Message Draft (OMD) Processing

REFERENCES:

1. NTP 4, Fleet Communications
2. NTP 3 SUPP-1, Plain Language Address Directory

NOTETAKING OUTLINE

A. Using NTP-3 SUPP-1 PLAD

1. PLAD: Plain Language Address Directory

a. Use:

(1) Standard source for the correct plain language addresses used for Naval, Coast Guard, Marine Corps, and Joint DOD messages

(2) Used to verify unit and command titles and geographic locations

(3) Provides short and long titles for addressees

(a) Short titles simplify communications

1. Example:

a. Long title: Commander, Naval Surface Force, Pacific Fleet, San Diego, CA

b. Short title: COMNAVSURFPAC SAN DIEGO CA

(4) Provides exact titles for ships

2. PLAD Sections

a. Plain Language Addressees (PLA's)

b. Collective Address Designators (CAD's)

c. Address Indicator Groups (AIG's)

3. Section 01 (PLA)

a. Plain Language Address (PLA)

b. List of correct addresses for units, commands and ships used in communications

c. Chapter 2: U.S. Navy Long Title Headings

(1) In alphabetical order by unit or command long titles

(2) Lists short titles of units or commands with geographic locations under long title

(3) Example: NAVAL AIR FACILITY

NAF ATSUGI JA
NAF CHINA LAKE CA
NAF DETROIT MI

d. Chapter 3: U. S. Navy Short Title Headings

(1) Lists unit or command with location by short title

(2) Provides long title of unit/command under related short titles

(3) Example: NAF ATSUGI JA
NAF CHINA LAKE CA
NAF DETROIT MI
NAVAL AIR FACILITY

e. Message addressees MUST BE CORRECT

(1) In spelling

(2) In spacing

(3) In format

f. Chapters 4 through 9: Long and short titles for Coast Guard, Marine Corps and Joint DOD

g. List of ships' designations and names in alphabetical order

(1) Chapter 10: U.S. NAVY

(2) Chapter 11: Coast Guard

4. Section 02 (CAD's)

a. CAD: Single address group which represents a predetermined set of four or more activities linked by an operational or administrative chain of command

b. This section contains an alphabetically sorted list of authorized CAD's and their cognizant authority

(1) Cognizant authority: Commander of the set of activities which comprise the CAD

5. Section 03 (AIG's)

a. AIG: An Address Indicating Group representing a predetermined list of specific and frequently recurring combination of action and/or information addressees

b. This section contains a listing of the AIG's, the cognizant authority, and the purpose of the AIG.

B. Logging Outgoing Messages

1. Central Message Log (CML)

a. Used to maintain accountability of all messages

b. Separate log will be maintained by the inrouter and outrouter

c. Dual purpose (outgoing/incoming) log used in this course

2. CML (Outgoing) Entries

a. Station Serial Number (SSN)

(1) Four digit number

(a) Assigned sequentially from 0001 through 9999

(2) In conjunction with the OSRI, provides positive identification for each message transmitted

(3) Assign next sequential number from CML (Outgoing)

(4) Note SSN in SSN block on OMD

b. Precedence

(1) Enter precedence from OMD in precedence block on CML (Outgoing)

(a) If dual precedence assigned, enter each, separated by a slant sign

1. Example: P/R

c. Date-time-group (DTG)

(1) If DTG was assigned by originator, log in CML (Outgoing) DTG block as assigned

(2) If assigned by Communication Center, derive from Time of File (TOF)

(a) If several messages have the same TOF, assign DTG's consecutively

(b) Enter DTG in DTG block on CML (Outgoing) and in DTG block on OMD

d. Originator (ORIG)

(1) Enter originator's PLA ONLY IF OTHER THAN YOUR PARENT COMMAND

(a) Embarked staff

(b) Shore subscriber command

e. Subject

(1) Enter subject from message subject line

f. Classification (CLASS)

(1) Enter classification symbol which corresponds to message classification; or U for Unclassified

g. Time of File (TOF)

(1) Date/time message received from originator by communication center for transmission

(2) Seven digit number

(a) Three digit Julian date

(b) Two digit hour (GMT)

(c) Two digit minute

(3) May be assigned manually or by using a time stamping device

(4) Enter in TOF block on CML (Outgoing) and on OMD

h. Time of Delivery (TOD)

(1) Time message is receipted for

(2) Enter after message transmitted by circuit operator and acknowledgement of receipt obtained

i. Circuit (CKT)

(1) Circuit designation and channel number message transmitted under

(2) Enter after message transmitted by circuit operator and acknowledgement of receipt obtained

C. Determining Circuit Selection

1. The means and circuit by which the message is to be transmitted requires that certain information be available

a. Current information on circuits that are available

b. A listing of stations on each circuit (Guard List)

c. Status (in/out) of circuits and stations

2. Delivery to addresses by the most direct route will receive foremost consideration in circuit selection

a. Any method or circuit will be used to expedite delivery of FLASH and IMMEDIATE messages to all addressees

3. Shore Units

a. Normally messages are entered directly into NAVCOMPARS

(1) NAVCOMPARS will determine circuit selection

(a) Fleet Broadcast

(b) Ship/shore full period termination

(c) Other shore station with delivery responsibility

(2) Modified ACP 126 Format

b. If direct NAVCOMPARS input is not available

(1) Prepare for entry into DCS AUTODIN via available circuits

(2) JANAP 128 Format

4. Afloat Units

a. Ship/ship circuits

(1) Used if addressee(s) are guarding intra-task force/group circuits

(a) Check guard list for circuits

(2) Most common circuit used is TASK GROUP ORESTES (TGO)

(3) ACP 126 Format

DATE _____

CENTRAL MESSAGE LOG

OUTGOING/INCOMING

SSN	PREC	DTG	ORIG	SUBJ	CLASS	TOF	TOD	CKT

CENTRAL MESSAGE LOG

FIGURE 7.2-1

b. Ship/shore circuits

(1) Used if addressee(s) are not guarding ship/ship circuits

(a) Primary ship/shore (HF/SAT)

1. Permits random, unscheduled access by fleet units for traffic delivery

2. Normally referred to as an "on-call" circuit

3. MODIFIED ACP 126 Format

(b) Full-period termination (F/P Term) (HF/SAT)

1. Dedicated circuit between afloat and ashore unit when traffic volume exceeds speed and capability of Primary Ship/Shore circuits and broadcast

a. Normally used by large combatants or Flag ships

2. ACP 126 Format

c. Ship-ship/Ship-shore

(1) If delivery to addressees required by both methods

(2) To preclude preparing two tapes, one tape will be prepared in Modified ACP 126 format

(a) OPSIG ZEN will be used for those addressees for whom delivery is made by ship/ship circuit

5. Write circuit transmission information on OMD

a. Examples: TGO
PRI S/S

D. Assignment of Routing Indicator(s) (RI)

1. ACP 126 format

a. RI's not required

2. Modified ACP 126 format

a. Originating Station Routing Indicator (OSRI)

(1) Shore units

(a) As assigned in ACP 117 publication series

(2) Afloat units

(a) Seven (7) letter designator

(b) Derived by using four letter RI suffix of the NAVCAMS/ NAVCOMMSTA to which transmission is anticipated, followed by the last three letters of the unit's International Call Sign

(c) Example: NAVCOMMSTA STOCKTON CA RI PREFIX: RUWN
UNIT'S INTERNATIONAL CALL SIGN: NEDS
OSRI:: RUWNEDS

(d) If delivery is made to a different NAVCAMS/NAVCOMMSTA, the OSRI need not be changed

b. Addressee(s) routing indicator

(1) NAVCOMPARS Routing Indicator

(a) Seven (7) letter designator

(b) Derived by using four letter RI prefix of the NAVCAMS/ NAVCOMMSTA to which transmission is anticipated, followed by the unique NAVCOMPARS three letter suffix SUU

1. Example: NAVCOMMSTA STOCKTON CA:: RUWNSUU

(c) The unique Service Center suffix SGG will be used for service messages and short form readdressals

1. Example: NAVCOMMSTA STOCKTON CA:: RUWNSGG

3. JANAP 128 Format

a. OSRI

(1) As assigned in ACP 117 publication series or derived from NAVCAMS/NAVCOMMSTA RI

b. Addressee RI

(1) As assigned in ACP 117 publication series -or-
World Wide Mobile Communications Routing Information (WWMCRI)

(2) Write RI next to each addressee in FL 7 and/or 8

E. Proofreading a prepared outgoing message

1. Obtain typed copy, OMD, and tape from tapecutter

a. Check typed copy against OMD

(1) Ensure FL's 2, 4, 15 and 16 have been properly constructed

(a) Precedence in FL's 2 and 5 match

(b) Classification in FL's 2, 4 and 12 match

(c) SSN in FL's 2 and 15 match

(2) Check for typographical errors

(3) Check tape for extra functions in FL's 2, 4, 15 and 16

b. If errors are found, note errors on typed copy, and return to tapecutter for corrections

c. If no errors are found, initial message to indicate it has been proofread

(1) In proofread block if outgoing stamp used

(2) Write PR, followed by initials if stamp not used

d. Pass message to circuit operator for transmission

NAVAL MESSAGE BLANK

Released By	Drafted By	Security Classification	Page	Pages
CDR. D. CZECH, X.O.	ENS. C. SULLIVAN, COMM	CONFIDENTIAL	1 of	1
Date: 23 JAN 84	TOF: 023 1215			

SSN	Date/Time Group	PRECEDENCE	Flash	Immediate	Priority	Routine
0436	231215Z JAN 84	ACTION		XXXX		
		INFO			XXXX	

FM USS DUNCAN
TO USS RANGER
INFO USS SENECA ZEN
C O N F I D E N T I A L //N04452//
SUBJ: UNREP DELAY (U)
A. YOUR 231010Z JAN 84
1. (C) DUNCAN ARRIVAL POINT XRAY DELAYED UNTIL 240500Z JAN 84
2. (U) REGRET DELAY
DECL 28 FEB 84

CLASSIFIED FOR TRAINING PURPOSES ONLY

OSRI: RUHPCAN
RI: RUHPS4U
PRI S/S - RANGER
TGO - SENECA

DATE/TIME GROUP
231215Z JAN 84

SAMPLE MESSAGE FORM
(OUTROUTER INFORMATION)

FIGURE 7.2-2

Progress Check 7.2

DO NOT WRITE ON THIS PROGRESS CHECK-USE SEPARATE PIECE OF PAPER TO WRITE ANSWER

Locate the plain language addresses in the PLAD and verify their correctness. If any address(es) are incorrct, write the complete correct address on your answer sheet. If the address is correct, note it as correct. Only ONE address in each question is incorrect.

1. a. COMCAEWWING TWELVE NORFOLK VA

   b. VAEW LANT

   c. COMNAVSURFLANT NORFOLK VA

2. a. USS DA MATO

   b. USS GREENLING

   c. USS BLANDY

3. a. CARAEWRON 88

   b. CINCPACFLT PEARL HARBOR HI

4. a. COMNAVTELCOM WASHINGTON DC

   b. AIG FOUR SEVENTY FIVE

   c. NAVCOMMSTA SAN DIEGO CA

5. a. CHARLES F ADAMS

   b. USS BERGALL

6. a. NAVREGMEDCEN NAPLES IT

   b. NAVREGMEDCEN BRCLIN GAETA IT

7. a. COMNAVSURFLANT NORFOLK VA

   b. ALL NAVSURFLANT CHARLESTON AREA

8. a. NAVCRUITAREA SEVEN DALLAS TX

   b. NAVCRUITASTA DES MOINES, IA

9. a. NAVWPNCEN CHINA LAKE CA

   b. AIG ZERO ONE TWO EIGHT

10. a. NAVENVIRHLTHCEN NORFOLK VA

    b. NAVENPRERESCHFAC MONTEREY CA

ASSIGNMENT SHEET 7.3

Verification of Outgoing Message Draft; DD-173 Joint Messageform

INTRODUCTION

When you complete this lesson topic, you will be expected to verify that the DD-173 Joint Messageform has been prepared in accordance with NTP-3.

LESSON TOPIC LEARNING OBJECTIVES

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast file, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 and JANAP 128.

(JTI Nos. A6-1, A6-3, A6-11, A7-1, A7-2, A9-6, A10-8, A10-17, B8-1, B39-1, C27-4, C27-5, D1-3 through D1-9, D1-17, D1-22, D1-23, D1-25 through D1-29, D2-2, D2-3, D2-4, D2-7, D2-8, D2-9, E2-1, E2-3, E2-5, E3-1, E2-3, E3-4, E5-1)

6.2 Given a file of outgoing message drafts, NTP 3 SUPP-1, Julian calendar, and an outgoing message log, prepare outgoing drafts for submission to the tapecutter in accordance with ACP 126 and NTP 4.

6.2.7 Given a file of outgoing message drafts prepared on the DD-173 Joint Messageform, verify the form has been prepared in accordance with NTP-3

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 7.1 through 7.3 in preparation for a performance test after completing this lesson.

NOTETAKING SHEET 7.3

Verification of Outgoing Message Draft; DD-173 Joint Messageform

REFERENCES:

1. NTP-3 Telecommunications Users Manual

NOTETAKING OUTLINE

A. DD-173 OCR Joint Messageform

1. Messages typed on the DD-173 OCR Joint Messageform are entered directly into computerized message processing systems through the use of an Optical Character Reader (OCR).

a. OCR: Device used to convert typewritten information into language that can be processed by a computer system

2. Message Flow

a. DD-173 messages are received ashore:

(1) From local shore commands

(2) From local subscriber commands

(3) From afloat units in local area whose guard has been shifted ashore

b. Message processing

(1) DD-173 messages are entered through the OCR after they have been verified to be correct

3. Outrouter's Main Task

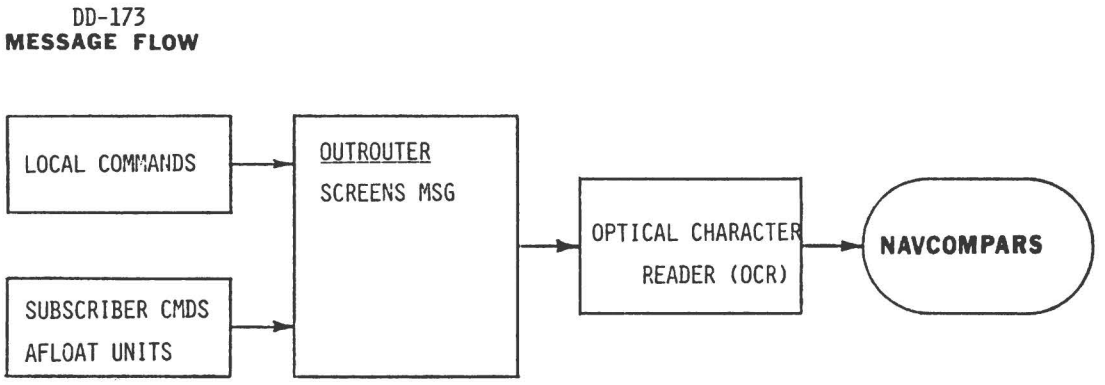
a. To look for certain information at predetermined typewriter tab stops on the DD-173 form

b. Checks to be made

(1) That required information appears at the predetermined tab stops

(2) The presence of certain message processing elements

(3) That the message is complete and accurate



DD-173 Message Flow

Figure 7.3-1

B. Checking DD-173 OCR Joint Messageform

1. Security Classification Blocks

a. Top right and bottom middle of form

b. If UNCLASSIFIED: may be typed or stamped UNCLASSIFIED

c. If CLASSIFIED: Classification must be stamped or handwritten

(1) MUST be larger than typewritten characters

2. Headerline Blocks

a. Page block

(1) Page number and number of pages must appear on single page messages

(2) Page number must appear on all pages of multiple page messages

(3) The total number of pages must appear on last page of multiple page messages

(a) If total number of pages is given on any page other than the last page, it must be listed on <u>all</u> pages

b. DTG/Releaser Time Block

(1) May be assigned by originator or serving communication center

(2) Typed only on page one of multiple page messages

c. Precedence Block

(1) If single precedence, appears in ACT block

(a) Precedence character is typed TWICE

(2) If dual precedence: Both ACT/INFO blocks filled in

(a) If all addressees are info, info precedence will appear in ACTION block

(3) Must appear on all pages of multiple page messages

JOINT MESSAGEFORM

CONFIDENTIAL DRILL

PAGE	DTG: RELEASER TIME			PRECEDENCE		CLASS	SPECAT	LMF	CIC	ORIG MSG IDENT
	DATE-TIME	MONTH	YR	ACT	INFO					
01 OF 01	160758Z	FEB	83	PP	RR	CCCC				0470758

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: USS TRUXTUN

TO: COMNAVSURFPAC SAN DIEGO CA

NAVORDSYSUPPO MARE ISLAND CA

INFO CINCPACFLT PEARL HARBOR HI

COMDESRON SEVEN

AIG NINE SIX NINE EIGHT

XMT COMDESRON THREE ONE

C O N F I D E N T I A L DRILL //N08390//

CINCPACFLT FOR CODE N-5

SUBJ: DEFENSE GUIDED MISSILE INSTALLATION (U)

A. USS TRUXTUN 160010Z FEB 83

1. (C) DURING INSTALLATION OF MARK II AD-3 NUC WARHEAD WAS DAMAGED DUE TO 20 FT FALL.

2. (C) SUSPEND RAILWAY RAMP FOR MISSILE LOADING INADEQUATE TO MAINTAIN WEIGHT OF MISSILE IN HEAVY WEATHER.

3. (U) NO QUALIFIED REPAIR TECHNICIAN ON BOARD.

4. (C) MISSILE LODGED BETWEEN FIRE MOUNT AND LOAD BIN SHAFT. ROUGH SEAS HAVE PREVENTED RESTORATION OF SYSTEM.

DECL 170CT 83

6 5 4 3 2 1 0

DISTR

CLASSIFIED FOR TRAINING PURPOSES ONLY

DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL, PHONE

W. J. SANDERS, LCDR, WEPS 224

SPECIAL INSTRUCTIONS

RELEASER

TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE

M. BIGHORSE, CAPT, C.O. 220

SIGNATURE

M. Bighorse

SECURITY CLASSIFICATION

CONFIDENTIAL

DATE TIME GROUP

160758Z FEB 83

DD FORM 1 MAR 78 173/2 (OCR) PREVIOUS EDITION IS OBSOLETE * U.S. GPO 1980—319-731 E 2192 321

SAMPLE MESSAGE

DD-173

Figure 7.3-2

d. Class Block

(1) Four character security redundancy code

(2) Must match message classification

(3) Must appear on all pages of multiple page messages

e. Orig Msg Ident Block

(1) Filled in by message drafter

(2) Julian date and time

(3) Appears on all pages of multiple page messages

3. Address Components

a. Plain Language Address (PLA)

(1) Must correspond exactly to the way it appears in NTP-3 SUPP-1

(2) Punctuation cannot be used

(a) If decimal point is part of address, must appear as PT

(3) Numbers must be spelled out

(4) There must be double spacing between each address

b. If there are no action addressees: INFO prosign is typed over printed prosign TO

c. Exempt addressees

(1) Prosign XMT must appear on next line after last information addressee

4. Text

a. Classification line

(1) Must agree with other classification markings

(2) Classification designators must be typed with one space between each character

(a) Example: C O N F I D E N T I A L

(3) Usually followed by SSIC

b. Passing instructions

(1) Indicate delivery to a specific department or code

(a) Example: NMPC FOR CODE 406D

(2) Not normally used

c. Subject line

(1) Subject preceded by abbreviation SUBJ:

(2) On classified messages, appropriate classification symbol, or symbol U for Unclassified, must appear at the end of the subject

(a) Example: SUBJ: PARTS REQUISITION (U)

d. Reference line

(1) References are lettered consecutively

(a) One beneath the other

(2) Appear after subject line

e. Thought or idea drafter desires to communicate

(1) Each paragraph or subparagraph of classified messages will be marked

(a) To show the level of classification -or-

(b) That the paragraph or subparagraph is Unclassified

1. Example: 1. (C)....TEXT....
A. (U)....TEXT....

f. Downgrading and declassification markings

(1) Must be applied to all classified messages EXCEPT those addressed only to foreign addressees

(2) Last line of text

(a) Example: DECL 6 JUN 84

1. Message is declassified on 6 JUN 84

(b) Example: REVW 6 JUN 84

1. Message will be reviewed for declassification on 6 JUN 84

(c) Example: DG/C/6 JUN 84

1. Message will be downgraded from higher classification to CONFIDENTIAL on 6 JUN 84

g. Continuation pages on multiple page messages

(1) First line of text on continuation pages must be typed over printed FROM

5. Baseline Blocks

a. Distr Block

(1) Drafter may use for indicating internal routing of message to desired departments

b. Drafter Block

(1) Identifies drafter

c. Releaser Block

(1) Identifies releasing officer

(2) Signature of releasing officer MUST be included

d. Special Instruction Block

(1) Usually used to indicate message transmission authorized during periods of minimize

(a) Contains statement "MINIMIZE CONSIDERED"

e. Security Classification Block

(1) Must match security classification of message

f. DTG Block

(1) Must match DTG entered in headerline DTG/Releaser Time block

6. Check message alignment, using alignment template

C. Shortform Readdressals

1. Similar to Modified ACP 126 abbreviated readdressal format

2. Headerline blocks filled out as for original message

3. Classification

a. The readdressal FORM is unclassified

(1) UNCLASSIFIED will be typed in security classification blocks at top and bottom middle of form

(2) Class block will contain security redundancy code of classification for message being readdressed

(3) Classification is NOT typed as first line of text

4. Addressee(s)

a. As indicated by message drafter

5. Text

a. First line

(1) Abbreviation RADDR

(2) Example: RADDR

b. Second line

(1) PLA of original message originator

(2) Two slant signs (//)

(3) Date-time-group of original message

(4) Example: COMNAVTELCOM WASHINGTON DC//072130Z FEB 84

(5) Double space between first and second lines

6. Readdressing Sectional Messages

a. Only one section can be readdressed per message form

b. Section number will appear after DTG in second line of text

(1) Example: COMNAVTELCOM WASHINGTON DC/072130Z FEB 84 SEC 01 OF 02

JOINT MESSAGEFORM

SECURITY CLASSIFICATION: UNCLASSIFIED

PAGE	DTG RELEASER TIME			PRECEDENCE		CLASS	SPECAT	LMF	CIC	ORIG MSG IDENT
	DATE TIME	MONTH	YR	ACT	INFO					
01 01	161800Z	FEB	83	PP	RR	CCCC				0471800

BOOK | MESSAGE HANDLING INSTRUCTIONS

FROM: COMNAVSURFPAC SAN DIEGO CA

TO: NAVMAG SUBIC BAY RP

INFO AIG FIVE THREE TWO FOUR

RADDR 244463

USS TRUXTON//160758Z FEB 83

SAMPLE MESSAGE
SHORTFORM READDRESSAL
Figure 7.3-3

ASSIGNMENT SHEET 8.1

CALL SIGNS

INTRODUCTION

If you expect messages to get to their right destinations, in-house or out in the world, you must be sure you can locate and use Call Signs that designate commands or units. To do this you must know which pubs to use, and how to use them. That is the main purpose of this lesson.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

7.1 Given a practial application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding teletype tapes, circuit logs, send and receive teletypes, and cryptographic equipments, operate teletype circuits including transmitting and receiving messages on Primary Ship/Shore, Task Group Orestes, and Full Period Termination configured circuits in accordance with NTP-4.

7.1.2 Given a list of Plain Language task organizations, ships, and shore stations, select the corresponding call signs from ACP 100, ACP 112, or ACP 113 as required.

7.1.3 Given a list of task organizations, ships, and shore station call signs, select the corresponding plain language addresses from the appropriate publication: ACP 100, ACP 112, or ACP 113.

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 8.1 in preparation for a written test after completing Leson 8.3

NOTETAKING SHEET 8.1

Call Signs

REFERENCES:

1. ACP 100, Allied Call Sign and Address Group System-Instructions and Assignments
2. ACP 112, Task Organization Call Sign Book
3. ACP 113, Call Signs For Ships

NOTETAKING OUTLINE

A. Call Signs

1. Any combination of characters or pronounceable word(s) which identifies a

a. Communication facility

b. Command

c. Activity

d. Unit

2. Used primarily for establishing and maintaining communications

3. International Call Sign

a. Assigned in accordance with provisions of the International Telecommunications Union (ITU) to identify a radio station

(1) U.S. Fixed and Land Radio Stations call signs listed in ACP 100 US SUPP-1, US Call Sign & Address Group System

(2) Ship call signs listed in ACP 113, Call Sign Book for Ships

4. Task Organization Call Signs

a. Task organization: Organization of forces for operational purposes

(1) Provides flexibility to meet changing operational requirements

(a) Task Force: A mobile command of ships, and aircraft, for acomplishing specific major tasks which may be of a continuing nature

1. Example: Surface Warfare Operations

(b) Task Group: A component of the TASK FORCE organized by the commander of the TASK FORCE to accomplish a specific task

1. Example: Carrier operations within the surface warfare operations force

(c) Task Unit: A component of the TASK GROUP organized by the commander of the TASK GROUP to accomplish a specific task

1. Example: To provide for protection of carriers within the carrier operations group

(d) Task Element: A component of the TASK UNIT organized by the commander of the TASK UNIT to accomplish a specified task

1. Example: To provide early warning radar screen for the unit protecting the carrier operations group

b. U.S. Task Organization Call Signs listed in ACP 112 US SUPP-(A)1, Task Organization Call Sign Book

B. ACP 100 US SUPP-1

1. U.S. Call Sign and Address Group System

a. Lists appropriate address groups, address indicating groups (AIG's) and U.S. Fixed and Land Radio Station call signs for world-wide U.S. Military concerns

(1) Address group call signs

(a) Four letter call signs

(b) Assigned to commands other than fixed radio stations

(c) The list of call signs with their assigned meanings is classified CONFIDENTIAL

(2) AIG Call Signs

(a) Word AIG followed by numbers 1 through 12999

(b) Composition of AIG may be Unclassified or Confidential depending on purpose/use of AIG

(3) Fixed and land radio station call signs

(a) International call signs

(b) Three letters, -or- two letters followed by up to 3 numbers, -or- three letters followed by up to 3 numbers

(c) The list of call signs with their assigned meanings is Unclassified

2. Use of ACP 100 US SUPP-1

a. Decode: Section 1

(1) Address groups

(a) Listed in alphabetical order: AMDB through YZUY

(b) Look up call sign

(c) Assigned command will be listed to right of call sign

b. Decode: Section 2

(1) International call sign

(a) Listed in alphanumeric order: AA710 through ZLK4

(b) Look up call sign

(c) Assigned command will be listed to right of call sign

(d) Examples:

AOK	ROTA, SP (NAVCOMMSTA) (US-N)	
WWV	WASH, DC (National Bureau of Standards)	

c. Encode: Section 3

(1) Fixed and land radio stations

(a) Listed in alphabetical order by Geographic Location

(b) Look up geographical location

(c) Assigned INTERNATIONAL call sign will be to right of type of activity under geographic location

(d) Example: ADAK AK:

ADMIN FIXED RADIO (AF)	AKD
ALASKA RADIO (A)	ALH 2D
NAVCOMMSTA ADAK (N)	NUD

d. Encode: Section 4, 5, 6

(1) U.S. Coast Guard, Marine Corps, Navy address groups

(a) Listed in alphabetical order by Type of Activity

(b) Look up type of activity

(c) Geographic location and call sign will be listed under activity

(d) Example: SHIPYARD

CHARLESTON N SY	XXXX
LONG BEACH N SY	XXXX
MARE ISLAND N SY	XXXX

e. Instructions for use of AIG's: Section 7

(1) Lists AIG Number block assignments

(a) Example:

1-499	USN
500-799	USAF
800-899	US ARMY

(2) Provides instructions for the use of AIGs

C. ACP 112 U.S. SUPP(A)-1

1. Task Organization Call Sign Book

a. Established to assign call signs to assist in the transmission of messages to and from U.S. Task Organizations employing radio and visual systems

b. LETTER, NUMBER, LETTER, LETTER call signs

c. Contains assignments for 300 TASK FORCES and subordinate components

(1) Task Forces 0 to 299 inclusive

(2) Subordinate components identified by adding up to three numbers after Task Force designation

(a) Each added number separated by a decimal point

(b) Example:

TASK FORCE:	TF 77 (Surface Warfare Ops)
TASK GROUP:	TG 77.4 (Carrier Battle Group)
TASK UNIT:	TU 77.4.1 (Carrier Screening Group)
TASK ELEMENT:	TE 77.4.1.1 (Early Warning Radar Screen)

d. The list of call signs with their assigned meanings is classified CONFIDENTIAL

2. Use of ACP 112 US SUPP(A)-1

a. Decode: Section 1

(1) Listed in alphanumeric order: AØAA through Z9ZZ

(2) Look up call sign

(3) Assigned Task Organization component to the TU level, will be listed in column to right of call sign

(a) Task Element call signs are derived by adding the Task Element number to the call sign of the Task Unit of which the Element is a component

1. Example: (For illustration only-UNCLASSIFIED)

Z1ZZ = TU 11.1.1
Z1ZZ1 = TE 11.1.1.1

b. Encode: Section 2

(1) TASK FORCES listed in numeric order

(2) Look up Task Force designation

(3) COLLECTIVE call sign for the Task Force listed in column to LEFT of a Task Force number

(a) Example: TF 77

(4) Call sign for the COMMANDER of the Task Force listed in column to RIGHT of the Task Force number

(a) Example: CTF 77

c. Encode: Section 3

(1) TASK GROUPS listed in numeric order

(2) Look up Task Group designation

(3) COLLECTIVE call sign for the Task Group listed to the LEFT of Task Group number

(a) Example: TG 34.1

(4) Call sign for the COMMANDER of the Task Group listed to the RIGHT of the Task Group number

(a) Example: CTG 34.1

d. Encode: Section 4

(1) TASK UNITS listed in numeric order

(2) Look up Task Unit designation

(3) COLLECTIVE call sign for the Task Unit listed to the LEFT of the Task Unit number

(a) Example: TU 37.1.1

(4) Call sign for the COMMANDER of the Task Unit listed to the RIGHT of the Task Unit number

(a) Example: CTU 37.1.1

e. Encode: Section 5

(1) Task Element block assigned

(a) Used to conceal the existence of Task Elements

(b) Temporary assignments for use during specific operations

f. Encode: Section 6

(1) Miscellaneous Task Organization Call Signs

(a) Examples: All TF this net
All TG under my command

D. ACP 113

1. Call Sign Book for Ships

a. Established to assign call signs to ships under military control of Allied and U.S. Forces

(1) International Call Signs

(a) 4 letter call signs

(b) Used for non-military commands and military commands using unencrypted call signs

(c) The list of call signs with their assigned meanings is Unclassified

(2) Military Call Signs

(a) Letter, number, letter, number call signs

(b) Used solely for derivation of encrypted call signs through call sign encryption systems

(c) Call signs are CONFIDENTIAL

(d) Not normally used in present day communications

(3) Tactical Air Navigation (TACAN) identifiers assigned to military ships having TACAN equipment installed

(a) Two letter call signs

(b) Used to identify surface units to air units

(c) Call sign is CONFIDENTIAL

2. Use of ACP 113 - International Call Signs

a. Section 1: Decode

(1) Allied and U.S. ships

(a) Listed in alphabetical order: AOAQ through ZMCW

1. U.S. NAVY ships assigned NAAA through NZZX

(b) Look up call sign

(c) Assigned ship will be listed to right of call sign

b. Section 20G: Encode

(1) U.S. Navy ships (by name)

(a) Listed in alphabetical order

(b) Look up ship's name

(c) International call sign will be in Column 1 to right of ship's name

1. Column 2 lists military call sign

c. Section 20H: Encode

(1) U.S. Navy ships (by class)

(a) Listed in alphabetical order by type, with ship's hull number appended

1. Example: AD 14 DIXIE
AD 15 PRAIRIE

(b) Look up ship type and hull number

(c) Ships name will appear to right of hull number

(d) International call sign will be in Column 1 to RIGHT of ships name

1. Column 2 lists military call sign

Progress Check 8.1

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER QUESTIONS ON SEPARATE SHEET OF PAPER

1. ENCODE the following:

   a. TG 76.4

   b. CTU 36.4.2

   c. TU 16.2.6

   d. TF 76

   e. TE 36.4.2.1

   f. TF 77

   g. TG 24.1

   h. CTG 76.4

2. DECODE the following:

   a. M2RC

   b. N7QX

   c. D9GR

   d. B4CZ

   e. G4QS

   f. R2ES

   g. P9XS

3. ENCODE the following:

   a. NAS CORPUS CHRISTI, TX

   b. COMPHIBGRUEASTPAC

   c. COMDESRON TWO

   d. COMCARGRU ONE

   e. COMNAVBASE SEATTLE, WA

4. DECODE the following:

   a. NPN

   b. NPO

   c. NPL

   d. NPG

   e. NPM

   f. AFK

   g. AJG76

   h. WUE471

5. ENCODE the following:

   a. USS CONSTELLATION

   b. USS MIDWAY

   c. USS STERETT

   d. USS LEWIS

   e. USS DUBUQUE

   f. USS BRADLEY

   g. USS HEPBURN

   h. USS ENTERPRISE

6. DECODE the following:

   a. NCGF

   b. NIMH

   c. NDCP

   d. NZDJ

   e. NTNM

   f. NEBX

   g. NAON

   h. NIJA

ASSIGNMENT SHEET 8.2

PROSIGNS

INTRODUCTION

The huge amount of message traffic handled in Naval Communications makes it necessary to use certain abbreviations and symbols to speed up the process. The prosigns covered in this lesson must be memorized so you can understand what is going on -- and so others understand you.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

7.1 Given a practial application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding teletype tapes, circuit logs, send and receive teletypes, and cryptographic equipments, operate teletype circuits including transmitting and receiving messages on Primary Ship/Shore, Task Group Orestes, and Full Period Termination configured circuits in accordance with NTP-4.

7.4.1 Given a list of commonly used prosigns, match the prosigns to their meanings.

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 8.2 in preparation for a written test after completing Lesson 8.3

NOTETAKING SHEET 8.2

PROSIGNS

REFERENCES:

1. ACP 126, Communications Instructions-Teletypewriter (Teleprinter)

NOTETAKING OUTLINE

A. Procedural Signs (PROSIGNS)

1. Purpose: Letters used in place of frequently used orders, instructions, requests, or information to speed up communications

a. One or more characters

b. Defined in ACP 126

2. Prosign meanings

a. The following prosigns are authorized for use on teleptypewriter circuits

PROSIGN	MEANING
AA	All After
AB	All before
AR	End of transmission - no response is required or expected
AS	Wait - (1) Made during transmission without an ending sign indicates a pause of a few seconds (2) Followed by AR indicates a pause of more than a few seconds
B	More to follow
BT	Long break - indicates separation of the text from other portions of a message
C	(1) Alone means - "You are correct" (2) Followed by data means - "This is a correct version of the message or portions indicated" (3) Always used when replying to prosign J

CFN	Confirmation - "The following confirms a portion of the text"
DE	FROM - "This transmission is from the station whose designation follows"
EEEEEEEE	Error - A succession of 8 E's indicates that an error has been made
F	Do not answer - "Stations called are not to answer this call or receipt for this transmission or otherwise transmit in connection with this transmission
FM	Originator's sign
G	Repeat back - "Repeat this entire transmission back to me exactly as received"
GR	Groups - GR followed by number(s) means - "This message contains the number of groups indicated"
GRNC	"The groups in this message have not been counted"
HM	(Made 3 times) - Emergency silence sign
IMI	Repeat
INFO	Information addressee sign
INT	Interrogatory - Preceding operating signals and prosigns, indicates that the matter to follow is in the form of a question. -- Preceding a portion of a message means "Is my reception of this correct"
J	Verify and repeat
K	End of transmission-Response Required/Requested
NR	Number
O	Immediate precedence
P	Priority precedence
R	Received - "I have received your last transmission (or messages indicated)"

R	Routine precedence
T	Transmit to
TO	Action addressee sign
WA	Word after
WB	Word before
XMT	Exempt
Z	Flash precedence

3. Description and use of prosigns commonly used for circuit operation

a. AA: All After

(1) Used after IMI, C, J and certain operating signals to identify a portion of a message

(2) Example: 0203Z NEDS DE NJFK IMI AA PROCEED K

b. AB: All Before

(1) Used in same manner as AA

(2) Example: 0205Z NEDS DE NJFK IMI AB PROCEED K

c. AR: End of transmission

(1) Indicates end of transmission and NO response is required or expected

(2) Example: 0207Z NEDS DE NJFK R AR

d. AS: Wait

(1) Made during transmission without an ending sign indicates a short pause

(a) Example: 0209Z NEDS DE NJFK 002/18
R 181614Z FEB 84
FM USS JOHN F KENNEDY
TO USS BRADLEY
AS

(2) Followed by AR indicates you are to wait

(a) Example: 0211Z NEDS DE NJFK AS AR

e. B: More to follow

(1) In the final instructions, means station has more traffic to send

(a) Example:
```
0213Z NJFK DE NEDS 002/14
R 141618Z FEB 84
FM USS BRADLEY
TO USS JOHN F KENNEDY
BT
...TEXT....
BT
B
K
```

1. Precedence prosign may follow B to indicate precedence of message to be sent

(2) In the final instructions, B followed by call sign indicates more to follow to station indicated

(a) Example:
```
0215Z NJFK NKHW DE NEDS 002/16
R 161415Z FEB 84
FM USS BRADLEY
TO USS JOHN F KENNEDY
INFO USS KITTY HAWK
BT
...TEXT...
BT
B NJFK
K
```

f. BT: Long break

(1) Separates text from other parts of the message

g. C: Correct

(1) Used alone means: "You are correct"

(a) Example: 0217Z NEDS TRANSMITS A MESSAGE TO NJFK WHO QUESTIONS THE ACCURACY OF WA PROCEED:

"NEDS DE NJFK INT WA PROCEED FIVE K"

IF THE QUESTIONED WORD IS CORRECT NEDS TRANSMITS:

"0219Z NJFK DE NEDS C K"

(2) Followed by data means: "This is a correct version of the message or portion indicated"

(a) Example: 0221Z NJFK DE NEDS C WA PROCEED FOUR K

h. DE: From

(1) Used only in the call and means: "This transmission is from the station whose identification follows:

(a) Example: 0223Z NJFK DE NEDS K

i. EEEEEEEE: Error

(1) To correct errors made during transmission, 8 E's are transmitted

(a) In correcting errors in the heading, the error sign will be followed by the last prosign correctly sent

1. Example: 0225Z NJFK DE NEDS 003/18
R 181615Z FEB 84
FM USS BRADLEY
TO USS JOHN F KENNEDY
USS KATTY EEEEEEEE
TO USS JOHN F KENNEDY
USS KITTY HAWK
...REST OF MESSAGE...

(b) In correcting errors in the text, the error sign will be followed by the last word or group correctly sent

1. Example: BT
1. PROCEED TO PINTEEEEEEE TO POINT

(2) To cancel a transmission in progress, 8 E's followed by the prosign AR is used

(a) Each E must be separated by one space

1. Example: 0227Z NJFK DE NEDS 003/18
R 181614Z FEB 84
FM USS BRADLEY
TO USS JOHN F KENNEDY
INFO E E E E E E E E AR

j. FM: Originator's sign

k. IMI: Repeat

(1) Without identification data means: "Repeat all of your last transmission"

(a) Example: 0015Z NJFK DE NEDS IMI K

(2) Followed by identification data means: "Repeat the indicated portion of your transmission"

(a) Example: ØØ17Z NJFK DE NEDS IMI WB PROCEED K

(3) In the text of a message means: "I am going to repeat the difficult portion just transmitted"

(a) Example: BT
1. TRANSFER FRANCIS ZCHCHZISKI IMI ZCHCHZISKI...

l. INFO: Information addressee

m. INT: Interrogatory

(1) Preceding an operating signal or prosign indicates the transmission is in the form of a question

(a) Example: NJFK WANTS TO KNOW IF NEDS HAS TRAFFIC

"ØØ18 NEDS DE NJFK INT QRU K"

(2) Preceding a portion of a message indicates: "Is reception of this correct?"

(a) Example: ØØ2ØZ NJFK DE NEDS INT 310126Z K
(Is the DTG as indicated)

n. K: Go ahead

(1) Indicates end of transmission and a response IS necessary

(a) Example: ØØ22Z NEDS DE NJFK INT QRU K

o. O: Immediate precedence

p. P: Priority precedence

q. R: Routine precedence

r. R: Received

(1) After a call indicates receipt of last transmission or message

(a) Example: ØØ25Z NEDS DE NJFK R AR

ØØ27Z NEDS DE NJFK R 141816Z FEB 84 AR

s. T: Transmit to

(1) Alone means: "Station called relay (transmit) this message to all addressees in the address component"

(a) Example:

```
ØØ29Z NJFK DE NEDS 003/16
T
R 161816Z FEB 84
FM USS BRADLEY
TO USS JOHN F KENNEDY
INFO USS KITTY HAWK
BT
...TEXT...
BT
K
```

(2) Followed by an address designation means: "Station called transmit this message to addressee(s) whose designation follows"

(a) Example:

```
ØØ29Z NKHW DE NEDS 003/16
T USS JOHN F KENNEDY
R 161816Z FEB 84
FM USS BRADLEY
TO USS JOHN F KENNEDY
INFO USS KITTY HAWK
BT
...TEXT...
BT
K
```

(3) Preceded by a call sign and followed by an address designation means: "Station whose call sign precedes "T" transmit this message to addressee(s) whose designation follows"

(a) Example:

```
ØØ31Z NJFK NKHW DE NEDS 003/18
NJFK T COMCARGRU FIVE
R 181615Z FEB 84
FM USS BRADLEY
TO COMCARGRU FIVE
   USS JOHN F KENNEDY
INFO USS KITTY HAWK
BT
...TEXT...
BT
K
```

t. TO: Action addressee

u. WA: Word after

(1) Used in the same manner as AA

v. WB: Word before

(1) Used in same manner as AB

w. XMT: Exempt addressee

x. Z: Flash precedence

Progress Check 8.2

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER QUESTIONS ON SEPARATE SHEET OF PAPER

MATCH THE PROSIGN ON THE LEFT WITH ITS DEFINITION ON THE RIGHT

PROSIGN	DEFINITION
1. AS	A. FLASH PRECEDENCE
2. CFN	B. WORD BEFORE
3. B	C. EXEMPT
4. WB	D. WORD AFTER
5. R	E. ACTION ADDRESSEE
6. NR	F. TRANSMIT TO
7. K	G. ROUTINE PRECEDENCE OR RECEIVED (ROGER)
8. EEEEEEEE	H. PRIORITY PRECEDENCE
9. AB	I. IMMEDIATE PRECEDENCE
10. XMT	J. NUMBER
11. T.	K. END OF TRANSMISSION-RESPONSE REQUIRED/REQUESTED
12. F	L. VERIFY AND REPEAT
13. GRNC	M. INTERROGATORY
14. C	N. INFORMATION ADDRESSEE
15. HM HM HM	O. REPEAT
16. Z	P. EMERGENCY SILENCE
17. EEEEEEEE AR	Q. GROUPS NOT COUNTED
18. G	R. GROUP COUNT
19. TO	S. REPEAT BACK
20. P	T. ORIGINATOR'S SIGN
21. AR	U. DO NOT ANSWER
22. O	V. ERROR
23. GR	W. THIS IS
24. WA	X. CONFIRMATION
25. INFO	Y. CORRECT
26. AA	Z. BREAK
27. J	AA. MORE TO FOLLOW
28. BT	AB. WAIT
29. DE	AC. END OF TRANSMISSION--NO RESPONSE REQUIRED/REQUESTED
30. FM	AD. ALL BEFORE
31. IMI	AE. ALL AFTER
32. INT	

ASSIGNMENT SHEET 8.3

Operating Signals

INTRODUCTION

Another means used to speed up communications is to use certain three-letter abbreviations to communicate information, orders, reports and so on. To identify the proper operating signals (OPSIGS) to use, you will need to learn how to use the communications publication, ACP 131.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

7.1 Given a practial application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding teletype tapes, circuit logs, send and receive teletypes, and cryptographic equipments, operate teletype circuits including transmitting and receiving messages on Primary Ship/Shore, Task Group Orestes, and Full Period Termination configured circuits in accordance with NTP-4.

7.1.5 Given a list of commonly used operating signals, match the operating signals to their meanings.

STUDY ASSIGNMENT

Review personal notes and Student Guide Lessons 8.1 through 8.3 in preparation for a written test after completing this lesson.

NOTETAKING SHEET 8.3

Operating Signals

REFERENCES:

1. ACP 131, Communications Instructions - Operating Signals

NOTETAKING OUTLINE

A. Operating Signals (OPSIGS)

1. Purpose: A three letter group used as necessary with communications to convey orders, instructions, requests, reports, and information to speed communications.

a. Defined in ACP 131

b. International civil Q code

(1) Series QAA to QNZ inclusive

(a) Meanings assigned by the International Civil Aviation Organization (ICAO)

1. Authorized for use between allied military stations; and allied military stations and civil commercial stations

(2) Series QRA to QZZ inclusive

(a) Meanings assigned by the International Telecommunications Union (ITU)

1. Authorized for use between allied military stations; and allied military stations and civil commercial stations

c. Allied military Z code

(1) Series ZAA to ZXZ inclusive

(a) Meanings assigned by Allied Communications/Electronics Board

1. Authorized for use ONLY between allied military stations

d. Operating signals possess no security and must be regarded as the equivalent of plain language

2. Use of ACP 131

a. Communications Instructions - Operating Signals

b. Operating signals may be used to

(1) Ask questions

(a) Prosign INT precedes OPSIG

(2) Give answer, advice, or order

c. Decode: Chapter 2

(1) Q and Z signals listed alphabetically

(2) Look up Q or Z signal

(a) If INT precedes Q or Z signal, meaning found in QUESTION column to right of signal

1. Example: INT QRU: Have you anything for me?

(b) If Q or Z signal used alone, meaning found in ANSWER, ADVICE, OR ORDER column to right of QUESTION column

1. Example: QRU: I have nothing for you

(c) Blank spaces in the meaning of Q and Z signals will be completed in the order they appear

1. Example: QBM means "Here is message sent by... at.....hours"

As transmitted, would appear as: QBM NEDS 1010Z

(d) Q and Z signals with numbered alternates will be followed, without spacing, by the appropriate number to indicate the meaning intended

1. Example: ZFH has the following numbered alternate meanings - "This message is being passed to you for..... (1. Action; 2. Information; 3. Comment)"

Would appear as: ZFH1, ZFH2, ZFH3

d. Encode: Chapter 3

(1) Comprised of 11 sections dealing with specific subjects

(a) Example: Section 3G deals with "Circuit Discipline and Net Control"

(2) Arranged in four columns

(a) Key (Specific item under subject)

(b) Question

(c) Answer, advice or order

(d) Signal

(3) Look up specific item in appropriate subject section

(a) Assigned meaning(s) and Q or Z signal will be indicated

(b) Example: "Control Station" is listed in "Circuit Discipline and Net Control": Section 3G

Progress Check 8.3

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER QUESTIONS ON SEPARATE SHEET OF PAPER

1. DECODE the following operating signals

a. QSL	k. ZBM2
b. INT QSA	l. ZKJ1
c. QRT	m. ZNB
d. QSZ3	o. QBF
e. INT QRV	p. QSO
f. ZAA	q. INT QIC
g. ZDK 141813Z MAR 84	r. ZFK1
h. ZFD	s. ZEL
i. INT QRU	t. QRO
j. ZWH	u. QRT

2. ENCODE the following

SEARCH AND RESCUE

A. Have you a doctor on board?

COMMUNICATION EQUIPMENT AND CIRCUITS

B. Will you check your keyboard?

C. Your exact frequency is 6245KHZ.

CIRCUIT DISCIPLINE

D. Make preliminary call before transmitting traffic

E. The strength of your signal is very good

MESSAGE HANDLING

G. This message has been delivered by a separate transmission or by other means

H. Transmit only messages of and above PRIORITY (Precedence)

ASSIGNMENT SHEET 8.4

Basic Radioteletype Circuit Operator Procedures

INTRODUCTION

In this lesson, you will begin to learn how traffic must be managed to get the job done. To do the job successfully, without cutting off messages in mid-message, requires pretty careful control of traffic.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

7.1 Given a practial application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding teletype tapes, circuit logs, send and receive teletypes, and cryptographic equipments, operate teletype circuits including transmitting and receiving messages on Primary Ship/Shore, Task Group Orestes, and Full Period Termination configured circuits in accordance with NTP-4.

7.1.1 Given an operational teletype circuit, transmit and receive logs, and transmitted and received messages, maintain message continuity by logging each message in appropriate log.

7.1.6 Given an operational teletype circuit and appropriate call signs, enter the circuit without loss of circuit continuity or interference with circuit operation.

7.1.7 Given an operational teletype circuit and messages with their corresponding teletype tapes, transmit the messages including obtaining acknowledgement of receipt.

7.1.8 Given an operational teletype circuit, receive message traffic including acknowledging receipt of the message.

7.1.9 Given an operational teletype circuit, respond to requests for repetitions of transmitted messages from the distant station.

7.1.10 Given an operational teletype circuit, request repetitions for messages that were incomplete or garbled when received.

STUDY ASSIGNMENT

Study class notes and review Student Guide Section 8.4

NOTETAKING SHEET 8.4

Basic Radioteletype Circuit Operator Procedures

REFERENCES:

1. ACP 126, Communications Instructions Teletypewriter (Teleprinter)

2. NTP 4, Fleet Communications Section 03 Chapter 1

NOTETAKING OUTLINE

A. Radio Teletype Circuits

1. Radioteletype circuits are used extensively for transmitting messages between ships and between ships and shore communications stations

a. On-line cryptographically protected

(1) On-Line: A method of transmission by which signals from teletypewriters are passed directly to cryptographic equipment for automatic encryption and transmission; or reception decryption

(a) Encryption: Convert a plain text message into unintelligible language

(b) Decryption: Convert unintelligible language into plain text

(2) Generally, these circuits are referred to as ORESTES circuits

(a) ORESTES: Mythological designator used for circuits that use the KW-7 Crypto system

B. Radioteletype Circuit Net

1. NET: An organization of stations capable of direct communications on a common channel(s) or frequency(ies)

a. Directed Net

(1) Stations must obtain permission from the Net Control Station (NECOS) before communicating with other net stations

(a) NECOS: Senior net member or activity designated by higher authority

(b) NECOS responsibilities

1. Expediting traffic flow on the net

a. Assign transmission turn to units based on message precedence

(1) Turn: Sequence or order of transmission

2. Maintaining circuit discipline

3. Limiting transmissions to the essential minimum

4. Resolving disputes incident to message handling

5. Determining and initiating corrective action for procedural errors

(c) FLASH messages may be transmitted without NECOS permission

b. Free Net

(1) Stations authorized to transmit traffic to other stations in the net without obtaining NECOS permission

c. Most communication done in Directed Nets

(1) To effectively control transmission of large volumes of traffic

C. Radioteletype Circuit Modes of Operation

1. Two methods of operating ORESTES circuits

a. Particular mode primarily dependent upon the equipment available

(1) Simplex: Provides a single channel or frequency on which information can be exchanged (See Figure 8.4-1)

(a) Stations are capable of transmitting and receiving information, but NOT at the same time

1. One station must complete its transmission and clear the frequency before another station can transmit

(b) Normally used for circuits operating in the UHF band or for those units which do not have enough equipment for duplex modes

(2) Duplex: Provides two channels or frequencies on which information can be exchanged (See Figure 8.4-2)

(a) Two stations are capable of transmitting and receiving information at the same time

1. Each station transmits on a different frequency

(b) Normally used on termination circuits, Primary Ship/Shore, and Task Group Orestes (TGO)

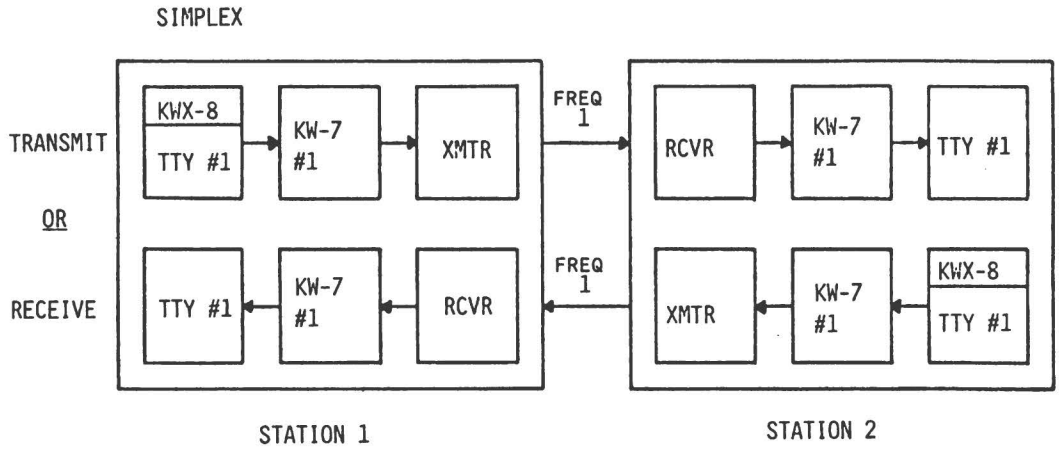


FIGURE 8.4-1

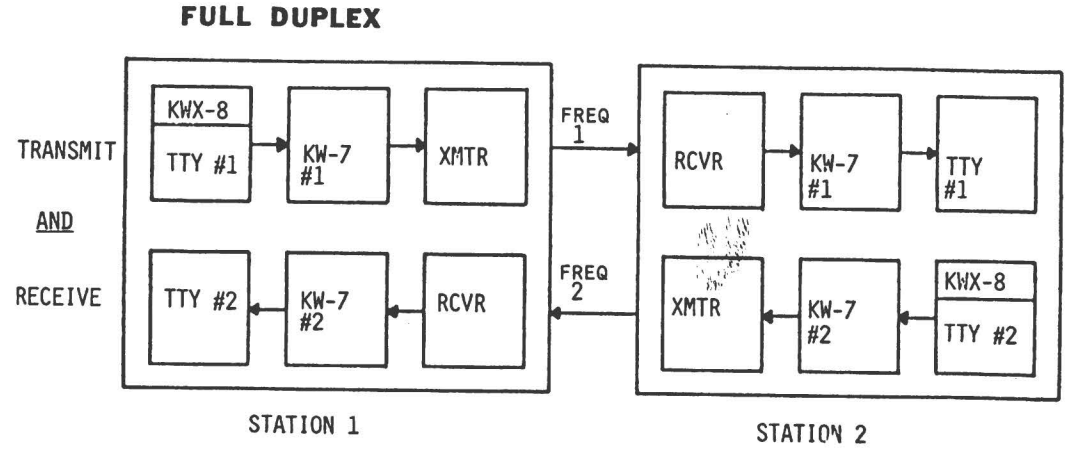


FIGURE 8.4-2

D. Basic Circuit Operation

1. Circuit requires synchronization prior to transmission

a. Synchronization acquired by a phasing signal

(1) Phasing: A signal between transmitting and receiving KW-7 cryptographic equipments

(a) KW-7 will be discussed in detail in communication equipment lessons

(2) Sending and receiving KW-7 equipments must be synchronized

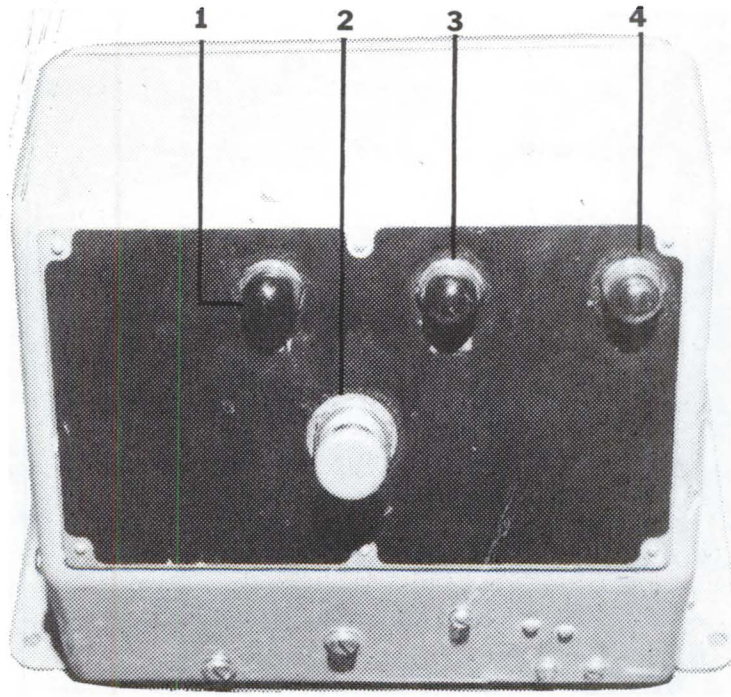
(3) KWX-8 is used as a remote phasing unit for KW-7 (See Figure 8.4-3)

(a) Ready light (green): ON when connected to energized KW-7

(b) Alarm light (red): If comes on, cease transmitting and notify Watch Supervisor

(c) Phase Indicator (P&I) light (yellow): ON when phasing signal is being sent

(d) Send button: Used to start or drop phase



KWX-8

1. READY INDICATOR
2. SEND PUSH-BUTTON
3. P&I (PHASE INDICATOR)
4. ALARM INDICATOR

b. Depress KWX-8 send button once to start phase

(1) P&I light will come on

c. Depress KWX-8 send button once to drop phase

(1) P&I light will go out in approximately six seconds

d. Hold LETTER and REPEAT key down on keyboard at same time phase is dropped.

(1) Hold 3-5 seconds after P&I light goes out

(2) Prevents circuit from losing synchronization

e. Start each transmission with five spaces, two carriage returns and one line feed

f. End each transmission with two carriage returns and one line feed

2. Simplex Circuits

a. All stations transmit and receive on the same frequency

(1) Multiple stations must NOT transmit at the same time or transmissions will be disrupted.

(a) LISTEN BEFORE TRANSMITTING

1. If circuit is busy, wait until the circuit is clear

(b) Turn transmitter carrier on when circuit is clear

(c) Transmit a ten (10) second phasing signal

(d) Make transmission

(e) Turn transmitter carrier off

3. Duplex Circuits

a. Each of TWO stations transmits on a different frequency and both stations may transmit at the same time

b. When used for full-period termination

(1) Each station keeps its transmitter on the air at all times

(a) Phasing signal is transmitted continuously during periods when no transmissions are being made

c. When used for Primary Ship/Shore or Task Group Orestes (TGO)

(1) NECOS keeps transmitter on air at all times on NECOS send frequency

(a) Phasing signal is transmitted continuously during periods when no transmissions are being made

(2) Ships send frequency is shared by all units

(a) Follow Simplex procedure for making transmissions

E. Message Transmission Procedures

1. The Call

a. Serves to identify the stations to which that particular message or transmission is being directed

b. Full Call

(1) Identifies both the called and the calling station

(a) Example: 0514Z NEDS DE NJFK K

(2) Using Full Call

(a) When establishing a net

(b) To report into a previously established net

(c) In initial call ups

(d) When acknowledging receipt of a message

c. Abbreviated Call

(1) Call sign of the called station may be omitted

(a) If call is part of an exchange of transmission between stations

(b) If there is no question who is being called

1. Example: 0516Z DE NJFK K

(c) Will NOT be used when acknowledging receipt of a message or transmission

d. Contents of Call

(1) Individual call signs identifying a specific station

(a) Example: NJFK: USS JOHN F KENNEDY
NEDS: USS BRADLEY

(2) Collective call sign identifying a pre-determined group of stations

(a) Example: Units of a task force, task group

(3) A combination of both individual and collective call signs

(4) Net call sign identifying all stations on a given net

(a) Example: YAPD: ALL STATIONS THIS CIRCUIT (NET)

(5) Indefinite call signs identifying a particular group of activities

(a) Example: NERK: ANY OR ALL U.S. NAVAL SHIPS

e. Types of Calls

(1) Single Call

(a) Only ONE call sign comes before the prosign DE

1. May be an individual, collective, or net call sign

a. Example: 0523Z NEDS DE NJFK K
0523Z ZIZZ DE NJFK K
0523Z YAPD DE NJFK K

(2) Multiple Call

(a) Two or more call signs precede the prosign DE

1. May be individual or collective call signs, or a combination of these call signs

a. Example: 0520Z ZIZZ NEDS DE NJFK K

2. Establishing a Directed Net

a. Example for establishing a directed net (Task Group Orestes)

(1) At a prearranged time, and on a prearranged frequency, NECOS announces establishment of the net

(a) ALL transmissions must be preceded by a time entry

(b) For purposes of this example, net call sign YAPD will be used

(c) Members are NAAP, NBTE, NEDS, NFHU

(d) Net control is E6VP

0100Z YAPD DE E6VP ZKA ZKB K

(2) Each net member checks into the net in alphabetical call sign order, and advises NECOS if they have traffic for any station

0102Z E6VP DE NAAP ZKE K

0103Z E6VP DE NBTE ZKE 2P NEDS K

0104Z E6VP DE NEDS ZKE 1 O NFHU K

0105Z E6VP DE NFHU ZKE K

(3) NECOS then informs stations that their transmissions have been received, and establishes a turn list for transmitting messages in order of precedence

0107Z YAPD DE E6VP R NEDS QRY 1 NBTE QRY 2 K

(4) NFHU, seeing the authorization for NEDS to send the immediate message, tells NEDS to go ahead

0109Z NEDS DE NFHU K

(a) Failure of NFHU to indicate readiness to receive message would require NEDS to make a preliminary call to NFHU

0109Z NFHU DE NEDS O K

(5) NEDS then transmits his message indicating message channel sequence number (CSN) in call up

0110Z NFHU DE NEDS 001/24
0 100050Z FEB 84
-MSG-
K

(6) NFHU then receipts for the message by CSN

0114Z NEDS DE NFHU R 001/24 AR

(7) NECOS will then inform NBTE to send his traffic

0117Z NBTE DE E6VP QRY 1 K

(8) NBTE will clear traffic in the same manner NEDS used

(9) After initial traffic list is cleared, stations having messages to transmit will call NECOS and request permission to transmit

0540Z E6VP DE NFHU INT QIC NEDS ZBO 2 0 1 P K

(10) NECOS will then give NFHU permission to call NEDS

0541Z NFHU DE E6VP QIC NEDS AR

(11) NFHU may then send traffic to NEDS

b. Example for securing a directed net (Task Group Orestes)

(1) At a prearranged time, or as operations permit, NECOS will secure the net

(a) OPSIG's ZKJ1 - YOU MAY SECURE YOUR EQUIPMENT AND
ZKJ2 - I AM SECURING MY EQUIPMENT will be used

1. EXAMPLE: 0700Z YAPD DE E6VP ZKJ1 ZKJ2 AR

c. With the exception that afloat units are not required to guard Primary Ship/Shore continuously, NECOS functions and circuit operating procedures are identical to those described for Task Group Orestes (TGO)

3. Requesting Repetitions

a. When words or portions of the message are missed or doubtful, repetitions may be requested before receipting for the message

(1) Authorized Prosigns must be used

(a) IMI used alone or with the following

1. AA

2. AB

3. _____TO_____

4. WA

5. WB

a. Example: 0543Z NEDS DE NFHU IMI TO TO BT K

0543Z NFHU DE NEDS TO TO BT
TO USS MARVIN SHIELDS INFO
USS HEPBURN BT K

b. 0543Z NEDS DE NFHU IMI WA PROCEED K

0545Z NFHU DE NEDS WA PROCEED AT K

4. Corrections during transmission

a. An error may be corrected during transmission by using the prosign EEEEEEEE, followed by

(1) Last correctly sent prosign and remainder of heading if occurs in heading

(2) Last correctly sent word if occurs in text

(3) Example:
```
0540Z NFHU DE NEDS 003/24
0 240342Z FEB 84
FM USS BRADLEY
TO USS MARVIN SHIELDS
INFO USS LEPEEEEEEEE
INFO USS HEPBURN
   .....REST OF MESSAGE....
```

5. Cancelling a transmission

a. A transmission may be cancelled at any time, prior to completing the transmission, by use of the prosign E E E E E E E E AR

(1) Example:
```
0542Z E6VP DE NEDS 003/24
P 261418Z FEB 84
FM USS BRADLEY
TO E E E E E E E E AR
```

6. Recording Time of Delivery (TOD)/ Time of Receipt (TOR)

a. Time of Delivery (TOD)

(1) The date and time at which a message is receipted for by the receiving station

(2) Make a service cross on the transmission copy of the message

(3) Record the following information in the service cross

(a) Call sign of station message sent to

(b) Circuit identification

(c) Date and time (GMT) message receipted for

(d) Operators personal sign (initials/chops)

b. Time of Reciept (TOR)

(1) The date and time at which the message was receipted for by the receiving station

(2) Same informaton required as for TOD

(3) Information recorded on one line rather than in a service cross

7. Maintaining the Circuit Log (See Figure 8.4-4)

a. The circuit log will contain the following information

(1) Circuit Designation

(2) Date

(a) Log will cover one Radio Day (RADAY); 0001Z through 2359Z

(3) Channel Sequence Number (CSN)

(4) Message DTG

(5) Message SSN

(6) TOD/TOR

(7) Operator sign (Initials/chops)

b. Closing the circuit log

(1) Stations verify the number of messages transmitted/received by the use of OPSIGS ZIC/ZID at the end of the RADAY

(a) ZIC: CSN of last message transmitted to you was _____

(b) ZID: CSN of last message received from you was _____

8. Circuit Status Sheet (See Figure 8.4-5)

a. Each circuit operator will maintain a circuit status sheet at their individual operating position

b. Status sheets will contain the following

(1) Circuit designator as listed in the communications plan

(2) Frequency(ies) in use

(3) Station(s) name and address designators

(a) Call signs or RI's

(4) Identification of NECOS and ALT NECOS

(5) Status of stations on the circuit

(a) IN

(b) OUT

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SEND / RECEIVE CIRCUIT LOG

CIRCUIT _____ DATE _____

CSN	DTG	SSN	TOR TOD	CSN	DTG	SSN	TOR TOD
51				76			
52				77			
53				78			
54				79			
55				80			
56				81			
57				82			
58				83			
59				84			
60				85			
61				86			
62				87			
63				88			
64				89			
65				90			
66				91			
67				92			
68				93			
69				94			
70				95			
71				96			
72				97			
73				98			
74				99			
75				100			

OPNAV 2110/15 (Rev. 1-82)

FIGURE 8.4-4

CIRCUIT STATUS

CKT DESIG: TA203

FREQ: SEND 6218 KHZ

RECV 4217 KHZ

STATIONS:

NAME	CALL	STATUS	NECOS	ALT
COMDESRON 7	XXXX	IN	✓	
STERETT	XXXX	IN		
BRADLEY	XXXX	IN		✓
WADELL	XXXX	OUT		
DUNCAN	XXXX	IN		
DESRON 7	XXXX	IN		

FIGURE 8.4-5

9. Operating Precautions

a. The attainment of reliability, speed, and security depends, to a large extent, on the operator

(1) Adherence to prescribed procedure is mandatory

(2) Unauthorized departure or variations in prescribed procedure invariably create confusion, reduce reliability and speed, and tend to nullify security precautions

(3) The following basic rules are essential to transmission security and shall be strictly enforced on all military circuits

(a) No transmission shall be made which has not been authorized by proper authority

(b) The following practices are specifically forbidden

1. Violation of radio silence

2. Unofficial conversation between operators

3. Transmitting in a directd net without permission

4. Excessive tuning and testing

5. Unauthorized use of plain language

6. Use of other than authorized prosigns

7. Profane, indecent or obscene language

(c) The following practices are to be avoided

1. Use of excessive transmitting power

2. Excessive time consumed in changing frequency or adjusting equipment

Progress Check 8.4

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER QUESTIONS ON SEPARATE SHEET OF PAPER

Answer the following questions:

1. What does on-line mean?

2. What is ORESTES?

3. Who is NECOS?

4. Name two of NECOS's responsibilities.

5. What is the major difference between a FREE net and a DIRECTED net?

6. What is the difference between SIMPLEX and DUPLEX mode of operation?

7. What is the purpose of the KWX-8?

8. What is the most important thing to do prior to transmitting?

9. What is the purpose of the CALL?

10. What is the difference between a SINGLE and a MULTIPLE call?

11. How are directed nets secured?

12. How would you make a correction during transmission?

13. What is the TOD?

14. What is the TOR?

15. What are the opsigs ZIC/ZID used for?

ASSIGNMENT SHEET 8.5

Primary Ship/Shore ORESTES Circuit Procedures

INTRODUCTION

When it comes time to communicate between ship and shore stations, you will probably be using the Primary Ship/Shore (PRI S/S) ORESTES circuit--if the ship is not on Full Period Termination. In this lesson, you will learn how to operate PRI S/S circuits.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

7.1 Given a practial application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding teletype tapes, circuit logs, send and receive teletypes, and cryptographic equipments, operate teletype circuits including transmitting and receiving messages on Primary Ship/Shore, Task Group Orestes, and Full Period Termination configured circuits in accordance with NTP-4.

7.1.7 Given an operational teletype circuit and messages with their corresponding teletype tapes, transmit the messages including obtaining acknowledgement of receipt.

7.1.8 Given an operational teletype circuit, receive message traffic including acknowledging receipt of the messages.

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 8.5

NOTETAKING SHEET 8.5

Primary Ship/Shore ORESTES Circuit Procedures

REFERENCES:

1. ACP 126, Communications Instructions-Radioteletypewriter (Teleprinter)
2. NTP 4, Fleet Communications

NOTETAKING OUTLINE

A. Primary Ship/Shore ORESTES (Pri S/S)

1. Primary circuit for passing Ship/Shore traffic if ship does NOT maintain a full period termination

a. Normally operated in duplex mode

b. Directed net configuration

(1) NAVCAMS/NAVCOMMSTA is NECOS

(2) Ships access to pass traffic on a random, unscheduled basis

(a) Based on volume of outgoing traffic

(3) Commonly referred to as an "on-call" circuit

(4) Shore station does NOT pass traffic to ship

(a) Broadcast used for this purpose

1. As discussed in lesson 5.1

c. May be operated in the HF band or via satellite access

(1) NAVCAMS/NAVCOMMSTA assigned numerous HF transmit and receive frequencies

(a) Ships select best frequency for use based on geographic location and time of day

2. Message Flow (Ship)

a. Circuit operator receives message from outrouter

b. Circuit operator

(1) Screens message format lines 2, 4, 15 and 16

(2) Logs in circuit log

(3) Relays to shore station for further relay to addressee(s)

(4) Receives acknowledgement of receipt

(5) Completes circuit log entries and writes TOD on message

(6) Passes to outrouter

3. Message flow (ashore)

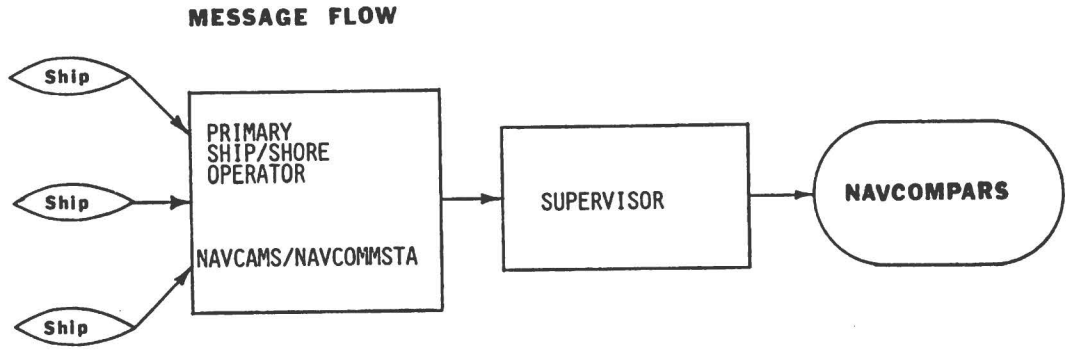
a. Circuit operator

(1) Screens received message

(2) Logs in circuit log

(3) Affixes TOR

(4) Passes to supervisor for entry into NAVCOMPARS



Primary Ship/Shore
Message Flow
Figure 8.5-1

B. Operating Procedures

1. Transmitting a message (ship)

a. Screen message tape to ensure format lines 2, 4, 15 and 16 are letter/function perfect

b. Log message in PRI S/S outgoing circuit log

c. Call NECOS and indicate number and precedence of messages awaiting transmission, AND the shore send frequency the ship is copying

(1) LISTEN BEFORE TRANSMITTING

(2) Example: 0810Z NPM DE NEDS ZBO 2 0 3 P ZRE 6210 K

d. Shore station may:

(1) Assign turn

(2) Give go ahead for transmitting

(3) Give go ahead to transmit certain precedence(s)

(4) Example: (TURN): 0812Z NEDS DE NPM QRY3 AR

(GO AHEAD): 0812Z NEDS DE NPM K

(CERTAIN PRECEDENCE): 0812Z NEDS DE NPM ZAN O K

e. When shore station gives go ahead, transmit message

(1) Place message tape on the UGC-6 TD at the start of the 30-40 letter functions

(a) TD in STOP position

(2) LISTEN BEFORE TRANSMITTING

(3) Turn transmitter carrier on and send 10 second phasing signal

(a) As phase is dropping, hold down RPT and LTR function keys to maintain synchronization

(4) When phase dropped, type call and FL 1 information on circuit

(a) Example: 0815Z NPM DE NEDS 005/24
VZCZCEDS0005

(5) Place UGC-6 TD in RUN position

(a) Message will be transmitted

(6) When transmission completed, type K

(7) Respond to any requests for repetitions

f. Place TOD on transmission copy of message when shore station has receipted for message

g. Enter TOD in circuit log and initial circuit log

h. Pass message to outrouter

2. Receiving a message (shore)

a. Respond to call up

(1) Assign turn (QRY) -or-

(2) Give go ahead (K) -or-

(3) Give go ahead to transmit certain precedence (ZAN)

(4) Example: (TURN): 0812Z NEDS DE NPM QRY3 AR

(GO AHEAD): 0812Z NEDS DE NPM K

(CERTAIN PRECEDENCE): 0812Z NEDS DE NPM ZAN O K

b. When message transmitted, log in receive circuit log as it is being received

(1) Alert Watch Supervisor if message is IMMEDIATE or FLASH precedence

c. Screen message for completeness

(1) Request repetition if required

d. Acknowledge receipt

e. Place TOR on transmission copy of message

f. Enter TOR in circuit log and initial circuit log

g. Pass transmission copy and message tape to supervisor for entry into NAVCOMPARS

3. Close out circuit log and monitor at end of RADAY (2359Z)

a. ZIC/ZID NOT used on PRI S/S

Progress Check 8.5

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER QUESTIONS ON SEPARATE SHEET OF PAPER

Answer the following questions:

1. What is the purpose of a Primary Ship/Shore circuit?

2. Is the PRI S/S circuit a free or directed net?

3. Who is NECOS on the PRI S/S?

4. Does the shore station pass traffic on the PRI S/S?

5. Write down the steps the circuit operator takes to transmit a message on PRI S/S.

6. Write down the steps the circuit operator takes when receiving a message on PRI S/S.

7. What are the three different ways NECOS can give permission to a ship to transmit?

8. When do you close out PRI S/S circuit logs?

9. Are ZIC/ZID procedures used on PRI S/S?

10. Who is responsible for guarding the PRI S/S on a continuous basis?

11. What is being said in the following transmission:

    1410Z NPL DE NEBX ZBO 1P 3R ZRE 6210 K

12. What is being said in the following transmission:

    1420Z NNUL DE NPO ZAN P K

13. Write the format line one (FL1) information that NEBX would type for his message with CSN 006/10.

ASSIGNMENT SHEET 8.6

Task Group Orestes (TGO) Circuit Procedures

INTRODUCTION

Most message traffic exchanged between ships is handled on TGO circuits. The procedures you need to follow to operate TGO circuits is explained in this lesson.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

7.1 Given a practial application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding teletype tapes, circuit logs, send and receive teletypes, and cryptographic equipments, operate teletype circuits including transmitting and receiving messages on Primary Ship/Shore, Task Group Orestes, and Full Period Termination configured circuits in accordance with NTP-4.

7.1.7 Given an operational teletype circuit and messages with their corresponding teletype tapes, transmit the messages including obtaining acknowledgement of receipt.

7.1.8 Given an operational teletype circuit, receive message traffic including acknowledging receipt of the messages.

STUDY ASSIGNMENT

Study and review class notes and Student Guide section 8.6

NOTETAKING SHEET 8.6

Task Group Orestes (TGO) Circuit Procedures

REFERENCES:

1. ACP 126, Communications Instructions Teletypewriter (Teleprinter)
2. NTP 4, Fleet Communications, Section 03, Chapter 1

NOTETAKING OUTLINE

A. Task Group Orestes (TGO)

1. Primary circuit used for passing ship/ship traffic

a. Operated in simplex or duplex mode

b. Directed net configuration

(1) Unit with Task Group or Squadron Commander onboard normally assigned as NECOS

(2) Units guard circuit continuously

c. Frequencies normally assigned in the high frequency (HF) band

(1) 3 - 30 MHZ

2. Message flow

a. Circuit operator receives message from outrouter

(1) Screens message tape format lines 2, 4, 15 and 16

(a) If message cut for transmission on BOTH TGO and Ship/Shore

(2) Logs in the outgoing circuit log

(3) Relays to addressees via TGO

(4) Receives acknowledgement of receipt

(5) Completes outgoing log entries and writes TOD on message

(6) Passes to outrouter

B. Operating Procedures

1. Transmitting a message

a. Screen message tape to ensure format lines 2, 4, 15 and 16 are letter/function perfect

(1) If message is cut for transmission on BOTH TGO and Ship/Shore

b. Log message in TGO outgoing circuit log

c. Request permission from NECOS to transmit message

(1) LISTEN BEFORE TRANSMITTING

d. When NECOS gives permission make preliminary call to receiving station

(1) LISTEN BEFORE TRANSMITTING

e. When receiving station indicates ready to copy, transmit message

(1) Place message tape on the AN/UGC-6 TD at the start of the 30 to 50 letter functions

(2) LISTEN BEFORE TRANSMITTING

(3) Turn transmitter carrier on and send 10 second phase signal

(a) As phase is dropping, hold down RPT and LTR function keys to maintain synchronization

(4) When phase drops, type call on circuit including channel sequence number (CSN)

(a) Example: 0500Z NEDS DE NJFK 005/24

(5) Place AN/UGC-6 TD in RUN position

(a) Message will be transmitted

(6) When message transmission complete, type K

(7) Respond to any requests for repetition

f. When receiving station has receipted for message, write TOD on transmission copy of message

g. Enter TOD in circuit log and intitial circuit log

h. Pass message to outrouter

2. Receiving a message

a. Respond to call up

(1) LISTEN BEFORE TRANSMITTING

b. Log message in receive circuit log as it is being received

(1) Alert Watch Supervisor if message is IMMEDIATE or FLASH precedence

c. Screen message for completeness

(1) Request repetitions if required

(a) LISTEN BEFORE TRANSMITTING

d. Acknowledge receipt of message

e. Write TOR on message

f. Enter TOR in circuit log and initial circuit log

g. Pass message to inrouter for internal processing and distribution

3. Close out circuit log and circuit monitor at end of RADAY (2359Z)

a. Circuit monitor: Carbon copy of all transmissions made on circuit during RADAY (0001Z - 2359Z)

b. Circuit monitor and log retained for 30 days

Progress Check 8.6

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER QUESTIONS ON SEPARATE SHEET OF PAPER

Answer the following questions:

1. What is the purpose of a TGO circuit?
2. What mode of operation does the TGO circuit use?
3. Is the TGO circuit a free or directed net?
4. What must you always do before transmitting on the TGO circuit?
5. Once a message has been given to the circuit operator for transmission, what steps are taken by the circuit operator?
6. Write down the steps taken by the circuit operator for a message received on the TGO circuit.
7. When do you close out the circuit log and circuit monitor?
8. What is a circuit monitor?
9. How long are circuit logs and circuit monitors retained?
10. If you receive a message OF FLASH or IMMEDIATE precedence, what must you do?

ASSIGNMENT SHEET 8.7

Full Period Termination Circuit Procedures

INTRODUCTION

When there is a high volume of message traffic between ship and shore stations, a circuit may be dedicated to this traffic--and maintained for continuous traffic. This circuit arrangement is called Full Period Termination (F/P Term). In this lesson you will learn how to operate F/P Term from both ship and shore commands.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

7.1 Given a practial application laboratory configured as a secure afloat or ashore communication center, messages with their corresponding teletype tapes, circuit logs, send and receive teletypes, and cryptographic equipments, operate teletype circuits including transmitting and receiving messages on Primary Ship/Shore, Task Group Orestes, and Full Period Termination configured circuits in accordance with NTP-4.

7.1.7 Given an operational teletype circuit and messages with their corresponding teletype tapes, transmit the messages including obtaining acknowledgement of receipt.

7.1.8 Given an operational teletype circuit, receive message traffic including acknowledging receipt of the messages

STUDY ASSIGNMENT

Review personal notes and Student Guide Lesson 8.7

NOTETAKING SHEET 8.7

Full Period Termination Circuit Operator

REFERENCES:

1. ACP 126, Communications Instructions-Teletypewriter (Teleprinter)
2. NTP 4, Fleet Communications

NOTETAKING OUTLINE

A. Full Period Termination (F/P Term)

1. Dedicated circuit maintained continuously between a shore command and an afloat command to pass high volume of traffic

a. Usually maintained by senior operational commanders afloat

b. Other afloat commanders and individual units may require full period terminations when Primary S/S will not suffice

(1) Special Operations

(2) Deployments

(3) Intensive training periods

(4) Exercises

c. Requests for full period terminations are initiated only

(1) When traffic volume exceeds speed and capability of PRI S/S circuits and broadcast

(2) When operational sensitivity requires circuit discreetness

(3) When effective command control necessitates dedicated circuits

d. Operated in duplex mode

e. NAVCAMS/NAVCOMMSTA functions as NECOS

2. Message Flow

a. Ship send

(1) Circuit operator receives message from outrouter

(2) Circuit Operator

(a) Screens message format lines 2, 4, 15 and 16

(b) Logs in circuit log

(c) Relays to shore station for further relay to addressees

(d) Receives acknowledgement of receipt

(e) Completes circuit log entries and affixes TOD

(f) Passes to outrouter

b. Ship Receive

(1) Circuit Operator

(a) Screens received message

(b) Logs in circuit log

(c) Affixes TOR

(d) Passes to inrouter for internal processing and distribution

c. Shore Send (NAVCAMS/NAVCOMMSTA)

(1) Station receives message from distant station

(2) Circuit operator

(a) Receives message from supervisor

(b) Screens message format

(c) Logs in circuit log

(d) Transmits to ship

(e) Receives acknowledgement of receipt

(f) Completes circuit log entries and affixes TOD

(g) Passes to traffic checker

d. Shore receive (NAVCAMS/NAVCOMMSTA)

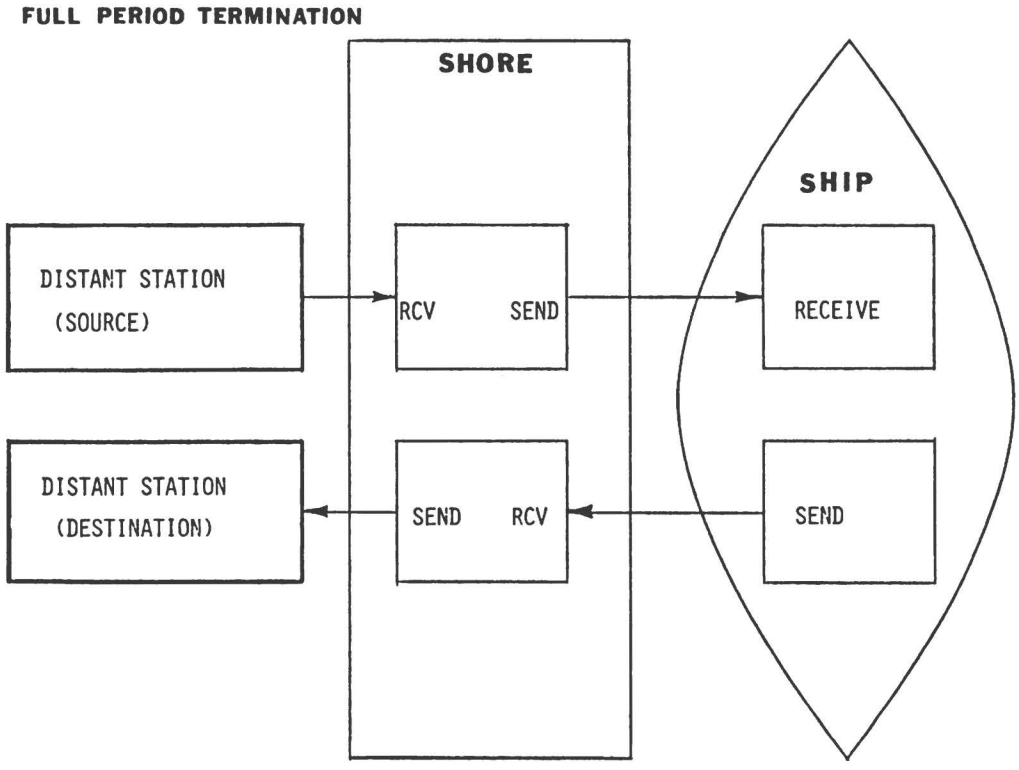
(1) Circuit Operator

(a) Screens received message

(b) Logs in circuit log

(c) Affixes TOR

(d) Passes to supervisor for verification or direct input into NAVCOMPARS



MESSAGE FLOW

Figure 8.7-1

B. Termination Types

1. There are five basic types of full period terminations

a. Single channel radioteletype using radio path transmission media

(1) High Frequency (HF)

b. Single channel Low Data Rate satellite access using satellite transmission media

(1) Low Data Rate: Approximately 100 WPM

c. CUDIXS primary or special High Data Rate satellite access for NAVMACS equipped ships using satellite transmission

(1) High Data Rate: Approximately 3000 WPM

(2) CUDIXS: Common User Digital Information Exchange Communication System

(3) NAVMACS: Naval Modular Automated Communication System

(4) These systems will be discussed in detail in later lessons

d. Multichannel radioteletype using radio path transmission media

(1) HF

e. Multichannel radioteletype using satellite transmission media

C. Operating Procedures

1. Once a full period termination is established, single channel or multichannel, the procedures for sending and receiving traffic are similar to those on Primary Ship/Shore

a. However, the problems of random access and interrupted transmission are largely negated

(1) Permits continuous transmission and receipt of messages

2. Transmission Procedures

a. No preliminary call is required prior to transmitting each message

(1) Transmitter carrier will be left on at all times

(a) A continuous phasing signal will be transmitted during periods when no transmissions are being made

(2) Screen format lines 2, 4, 15, and 16 of message tape

(3) Log message

(4) Place tape on TD

(a) TD in STOP position

(5) Drop phase

(a) As phase is dropping, hold down RPT and LTR function keys to maintain synchronization

(6) When phase dropped type call and FL 1 information on circuit

(a) Example: 0815Z NPM DE NEDS 008/24
VZCZCEDS0008

(b) If automatic number mod used, FL 1 will be generated automatically

(7) Place TD in RUN position

(a) Message will be transmitted

3. Sending messages in a string

a. Messages are normally sent in a "STRING" or "BATCH"

(1) Acknowledgement of receipt is NOT required after each message is sent or received

(a) Allows the operator to catch up on logging, filing, and other duties

(2) The number of messages constituting a string is not clearly defined

(3) Under normal operating conditions (circuit quality good) acknowledgements will be obtained/made immediately for FLASH and Immediate, -or- for priority and routine every 30 minutes

(a) Long messages that consume considerable transmission time may require acknowledgement on an individual basis

(4) During abnormal operating conditions (circuit quality poor) the transmitting station may direct that acknowledgements be given more frequently

(5) At no time will either station transmit for longer than 30 minutes without obtaining an acknowledgement

4. Sending messages in the blind

   a. When the receive side of a circuit is lost, but the send side is apparently good, traffic should continue to be sent in the "blind"

      (1) Tapes should be retained until receipt is acknowledged

      (2) The number of messages transmitted under these conditions must not exceed 20 before obtaining acknowledgement of receipt

         (a) In all cases, FLASH and IMMEDIATE will always be sent regardless of the number of other messages sent in the blind

5. Screening/Logging

   a. Messages are screened/logged in the same manner as for Pri S/S

      (1) Alert Watch Supervisor if Z or O (FLASH or IMMEDIATE) message is received

   b. ZIC/ZID procedures are used to close out the circuit logs at the end of each RADAY (2359Z)

Progress Check 8.7

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER QUESTIONS ON SEPARATE SHEET OF PAPER

Answer the following questions:

1. What is the purpose of a Full Period Termination (F/P Term)?

2. What is the mode of operation on a F/P Term circuit?

3. Who serves as NECOS on a F/P Term?

4. How does an afloat unit get permission to use a F/P Term?

5. Does a unit on a F/P Term leave his transmitter carrier on the air at all times or turn it off when he has completed a transmission?

6. Write the format line one (FL1) information that NNUL would type for a message with CSN 008/12 transmitted at 0510Z.

7. What is meant by sending messages in a string/batch?

8. How often should you obtain acknowledgement of receipt for messages sent in a string?

9. Define the phrase "Sending messages in the blind".

10. What is the maximum number of messages that will be sent in the blind before trying to obtain acknowledgement of receipt?

11. When sending traffic in the blind, what are the procedures for handling FLASH and IMMEDIATE messages?

12. What is being said in the following transmission:

    2358Z NPL DE NIQV ZIC 015/12 ZID 027/12 K

13. What time are closeouts held on a F/P Term?

ASSIGNMENT SHEET 9.1

Basic Radiotelephone (R/T) Procedures

INTRODUCTION

This lesson will introduce you to basic procedures prescribed for radiotelephone operators. Within this lesson you, as a Radioman, will be able to practice and perform normal activities associated with the operation of radiotelephone circuits.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, and NAVTELSYSIC 2D7.1D.

7.2 Given an operational, non-secure radiotelephone circuit, messages and circuit log, communicate with other radiotelephone operators by transmitting and receiving voice messages in accordance with NTP 5 or ACP 125.

7.2.1 Given a list of commonly used prowords, match each proword to its meaning.

7.2.5 Given an operational, non-secure radiotelephone circuit, state how to authenticate transmissions in accordance with NTP 5 with at least 80 percent accuracy.

7.2.6 Given an operational, non-secure radiotelephone circuit, state how to manage radiotelephone interference problems including circuit interference or intrusion with at least 80 percent accuracy.

STUDY ASSIGNMENT

Study and review class notes and Student Guide section 9.1

NOTETAKING SHEET 9.1

Basic Radiotelephone (R/T) Procedures

REFERENCES:

1. NTP 5, Naval Telecommunication Procedures, Voice Communication, Chapters 1 and 2
2. ACP 121 US SUPP-1, Communication Instructions General, Chapter 4
3. ACP 125, Communication Instructions, Radiotelephone Procedure, Chapter 1
4. The Pacific Fleet Radiotelephone Users Manual (RUM), Unit 3

NOTETAKING OUTLINE

A. Radiotelephone Circuit Discipline and Security

1. Introduction

a. Radiotelephone (R/T)

(1) The least secure system of communication

(2) All RF signals subject to interception by anyone with a receiver tuned to your frequency

(3) Interception may result in compromised security through operator negligence, or lax circuit operating procedures

(4) Clear voice requires special care and certain operating prodecures

2. Types of Security Violation Disclosures

a. Disclosure of the following information violates security regulations:

(1) Patrol area boundaries

(2) Combat readiness of ships

(3) Special communication capabilities

(a) Secure voice capabilities

(4) Identification of unit locations

(5) Identification of individuals assigned to an organization

(6) Linkage of call sign with unit

3. Responses to Recognized Security Violations

a. Immediate response required when a radiotelephone violation is recognized

(1) Respondent: Any station or Net Control Station monitoring the circuit

(2) Procedure:
(a) State Code word: BEADWINDOW
(b) Followed by number designation for the type of security violation

b. Numeric designations for security violations

(1) Essential Elements of Friendly Information (EEFI)
(2) Generally listed in NTP 4
(3) May be modified by Operational Commanders
(4) Examples of violation designations
(a) 1: Disclosure of patrol area violations
(b) 2: Identification of unit locations
(c) 3: Linkage of call sign to unit

c. Response examples

(1) "Kilo Eight Foxtrot this is Mike One India BEADWINDOW THREE, Over."
(a) Indicates: Kilo Eight Foxtrot has linked a call sign to a unit

(2) The ONLY response to a BEADWINDOW (for Mike One India or any violator) is ROGER OUT.

4. Rules of Radiotelephone Circuit Discipline

a. Demand avoidance of

(1) Unnecessary transmissions

(2) Transmission without proper authorization

(3) Violation of radio silence

(4) Excessive tuning and testing
(a) 10 seconds maximum for testing

(5) Excessive transmitter power

(6) Transmission of the operator's personal sign or name

(7) Unauthorized use of plain language in place of correct prowords
(a) Prowords will be discussed later in this lesson

(8) Profane or indecent language

5. Jamming

a. The deliberate introduction of unwanted signals impairing the use of circuits

(1) Common forms of jamming
(a) Simulated traffic, random noise, or a continuous carrier wave

b. To minimize the effect of jamming

(1) Shift frequency
(a) Continue passing live traffic on jammed circuit to hide shift

(2) Request sending station to increase power
(a) Use an alternate radio net to request increase

(3) If contact is lost on primary frequency, try to re-establish communication on the secondary frequency
(a) Try every five minutes

6. Interference

a. Normally the accidental (non-deliberate) intrusion upon a circuit

(1) May preclude effective use of a frequency or be an annoyance

b. Common types of interference

(1) Background noises caused by electrical devices

(2) Mutual interference between transmitters and receivers

(3) Natural interference caused by solar disturbances, electrical storms, or other natural causes

c. Measures to minimize interference effects

(1) Supervision of circuits to prevent unauthorized use.

(2) Restriction of power to minimum level needed for distances involved (when equipment permits)

(3) Maintenance of high standards of circuit discipline and operating procedures

(4) Reduction of electrical noise levels

(5) Judicious use of alternate frequencies

7. Intrusion

a. Attempts by the enemy to enter the U.S. or ALLIED communication systems and simulate our traffic

(1) In order to confuse and deceive U.S. or friendly forces

(2) Also referred to as Imitative Communication Deception (ICD)

b. Measures to minimize the effects of intrusion

(1) Authentication: Verifying the caller's identity
(a) The best means of combating intrusion
(b) Requested when any station suspects intrusion
(c) Procedures discussed later in this lesson

(2) Utilize correct operating procedures

(3) Observe strict circuit discipline

(4) Minimize use of plain language

(5) Use the code word, GINGERBREAD, to alert net stations of suspected intrusion
(a) Means: "Voice imitative deception is suspected on this net"
(b) GINGERBREAD procedures

1. Any station failing to authenticate correctly two times in succession shall be treated as an unauthorized subscriber on the net
2. The station reporting GINGERBREAD shall establish its own authenticity through use of transmission authentication
3. The station being imitated should use transmission authentication to validate its transmissions
4. Unauthenticated transmissions from the station being imitated are to be challenged until the imitating station has apparently abandoned its efforts

8. Authentication

a. Validating the identity of transmitting station, quickly

b. Two types of authentication

(1) Challenge and reply

(2) Transmission authentication

c. Challenge and Reply procedures

(1) Receiving (called) unit requests authentication of another unit (the challenge)

(2) Challenged unit, by responding correctly, establishes authenticity (the reply)
(a) The called station must initiate the first challenge
1. To prevent an intruder from using a second circuit to obtain the proper reply to a challenge he has received on another circuit

d. Transmission Authentication
   (1) The system used by a unit to establish the authenticity of its own transmission
      (a) Examples:
         1. Emission control (EMCON) restrictions prohibit the called station(s) from answering
         2. When poor circuit conditions require transmission in the blind
         3. When directing any unit to break an imposed radio silence

e. Authentication is mandatory under the following circumstances

   (1) When any unit suspects imitative deception on any circuit

   (2) When any unit is properly challenged to authenticate

   (3) When directing any unit to break an imposed radio silence

   (4) When authorized by competent authority to transmit a classified message in the clear over a nonsecure circuit

B. Voice Communication Procedures

1. Microphone Techniques

   a. Speak clearly and distinctly

   b. Speak slowly enough to

      (1) Permit written recording

      (2) Avoid repetitions

   c. Be natural

      (1) Maintain a normal speaking rhythm

      (2) Send your message phrase by phrase instead of word by word

   d. Keep microphone about 2 inches from mouth

   e. Pause momentarily after each normal phrase

      (1) To allow another station with higher precedence traffic to break in

   f. Do not transmit while surrounded by other persons discussing current maneuvers or events

      (1) It confuses receiving stations

      (2) Security violation can result

2. The Phonetic Alphabet

a. Standard phonetic words replace letters of the alphabet for R/T use

(1) Prevent misunderstanding caused by similar sounds of some letters

(2) Letter transmission procedures

LETTER	PHONETIC WORDS	PRONOUNCED
A	ALFA	AL-FAH
B	BRAVO	BRAH-VOH
C	CHARLIE	CHAR-LEE
D	DELTA	DELL-TAH
E	ECHO	ECK-OH
F	FOXTROT	FOKS-TROT
G	GOLF	GOLF
H	HOTEL	HOH-TELL
I	INDIA	IN-DEE-AH
J	JULIETT	JEW-LEE-ETT
K	KILO	KEY-LOH
L	LIMA	LEE-MAH
M	MIKE	MIKE
N	NOVEMBER	NO-VEM-BER
O	OSCAR	OSS-CAH
P	PAPA	PAH-PAH
Q	QUEBEC	KAY-BECK
R	ROMEO	ROW-ME-OH
S	SIERRA	SEE-AIR-RAH
T	TANGO	TANG-GO
U	UNIFORM	YOU-NEE-FORM

V	VICTOR	VIK-TAH
W	WHISKEY	WISS-KEY
X	XRAY	ECKS-RAY
Y	YANKEE	YANG-KEY
Z	ZULU	ZOO-LOO

3. Pronouncing Numbers

a. When numbers are to be transmitted by voice, the following pronounciations are required:

NUMBER	SPOKEN AS
Ø	ZE-RO
1	WUN
2	TOO
3	TREE
4	FO-WER
5	FIFE
6	SIX
7	SEV-EN
8	AIT
9	NI-NER

b. Numbers are transmitted digit by digit except for multiples of thousands

NUMBER	SPOKEN AS
15	WUN FIFE
9Ø	NI-NER ZE-RO
136	WUN TREE SIX
5ØØ	FIFE ZE-RO ZE-RO
1835	WUN AIT TREE FIFE
9ØØØ	NI-NER TOO-ZAND
17ØØØ	WUN SEV-EN TOO-ZAND

c. The decimal point is spoken DAY-SEE-MAL

(1) Example: 143.6 WUN FO-WER TREE DAY-SEE-MAL SIX

d. Dates are also spoken digit by digit; months are stated in full

(1) Example: 20 FEB 83 TOO ZE-RO FEBRUARY AIT TREE

e. When used in the text to separate paragraphs, numbers are preceded by the proword FIGURES. A period is indicated by the spoken word PERIOD

(1) Examples: FIGURE WUN PERIOD: PROVIDE ASSISTANCE AS REQUIRED
FIGURE TOO PERIOD: REPORT WHEN JOB IS COMPLETED

f. Precede time, or date-time-group, with the proword TIME

(1) Example: SHIPMENT RECEIVED - TIME - WUN FIFE FO-WER ZE-RO ZULU

4. Abbreviations in the TEXT

a. Initials used alone or in conjuction with short titles are spoken phonetically

(1) Examples: PARA A... PARA ALFA
ACP.....ALFA CHARLIE PAPA

b. Personal initials will be transmitted phonetically, preceded by the word INITIALS

(1) Example: G M SMITH INITIALS GOLF MIKE SMITH

c. Abbreviations frequently used in normal speech are spoken the same on R/T

(1) Examples: NATO....NATO
USS BROWN...USS BROWN

5. Use of Prowords

a. Prowords (Procedure Words) are brief pronounceable words or phrases assigned specific meanings to speed up R/T communications

b. Use only as designated -- no deviations permitted

c. Do not alter message by translating text into prowords

PROWORD	MEANING
ALL AFTER	The portion of the message to which I am referring is all that follows . . .
ALL BEFORE	The portion of the message to which I am referring is that which precedes. . . .
AUTHENTICATE	The station called is to reply to the challenge which follows
AUTHENTICATION IS	The transmission authentication of this message is . . . .
BREAK	I hereby indicate separation of portions of a message or a change in context
CORRECTION	An error has been made in this transmission; transmission will continue with the last word or group correctly transmitted; OR that which follows is a corrected version.
DISREGARD THIS TRANSMISSION	This transmission is in error. Disregard it (to be used if error is discovered during transmission and before receipt).
FIGURES	Numbers to follow
I AUTHENTICATE	The group that follows is the reply to your challenge to authenticate
I SAY AGAIN	I am repeating the transmission indicated
I SPELL	I shall spell the next word phonetically
OUT	This is the end of my transmission; no answer is expected or required
OVER	This is the end of my transmission to you. A response is necessary; go ahead and transmit
ROGER	I have received your last transmission satisfactorily
SAY AGAIN	Repeat your last transmission. When used in conjunction with ALL BEFORE, ALL AFTER, WORD BEFORE,WORD AFTER, indicates the portion on which a repeat is desired.
SPEAK SLOWER	Reduce speed of transmission

THIS IS	This transmission is from the unit whose call sign follows. . .
TIME	Date-time-group or time will follow
UNKNOWN STATION	The identity of the station with whom I am attempting to establish communication is unknown
WAIT	I must pause for a few seconds (maximum five seconds)
WAIT OUT	I must pause for more than five seconds
WORD AFTER	The portion of the transmission to which I am referring is the word that follows. . .
WORD BEFORE	The portion of the transmission to which I am referring is the word that precedes . . .
WORDS TWICE	Due to poor circuit condition, each word will be transmitted twice

6. Call Signs

a. Stations may be identified by the use of various types of call signs

(1) Call signs are never linked on the same circuit

b. Unit identity: Name of ship or station

(1) Example: USS FANNING, SAN DIEGO TUG CONTROL

(a) Used on harbor circuits such as harbor common, tug control;

(b) Used on bridge-to-bridge circuits

1. The unit's international call sign, spoken phonetically, may be added to the call when using bridge-to-bridge circuits

a. Example: THIS IS USS BRADLEY NOVEMBER ECHO DELTA SIERRA

c. JANAP 119 Call Signs (Joint Army-Navy-Air Force)

(1) Assigns a one or two-word call sign to a unit

(a) Example: LEMONADE; RED RAIDER

1. Air control circuits

(2) Units may retain JANAP 119 call signs indefinitely, or they may be changed frequently based on operational requirements

d. Daily changing call signs

(1) Changed daily to provide security of unit identification

(2) Will be discussed in a separate lesson

ASSIGNMENT SHEET 9.3

Communicating on the Radiotelephone Circuit

INTRODUCTION

This lesson will introduce you to certain procedures a radiotelephone operator must know to be able to communicate effectively with other radiotelephone operators. You will also learn how communication nets are organized, how to make a call and monitor voice traffic, and finally how to maintain voice logs.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with corresponding tapes in ACP 126, Modified ACP 126, or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, and NAVTELSYSIC 2D7.1D.

7.2 Given an operational, non-secure radiotelephone circuit, messages and circuit log, communicate with other radiotelephone operators by transmitting and receiving voice messages in accordance with NTP 5 or ACP 125.

7.2.4 Given an operational, non-secure radiotelephone circuit, maintain the circuit log in accordance with ACP 125 and NTP 5.

STUDY ASSIGNMENT

Study and review class notes and Student Guide section 9.3

NOTETAKING SHEET 9.3

Communicating on the Radiotelephone Circuit

REFERENCES:

1. NTP 5, Naval Telecommunication Procedures, Voice Communication, Chapters 1 and 2
2. ACP 125, Communication Instructions, Radiotelephone Procedure, Chapter 1 and 3
3. The Pacific Fleet Radiotelephone Users Manual (RUM), Chapter 3
4. NTP 4, Naval Telecommunications Procedures, Fleet Communications, Section 03, Chapter 7

NOTETAKING OUTLINE

A. Voice Nets

1. Net: A group of stations that can (or must) communicate with each other

2. Types of Voice Nets

a. HF/VHF/UHF radiotelephone systems
b. Fleet satellite systems

3. Net designations

a. Directed net

(1) Stations assigned to communicate with each other to fulfill specific operational requirements

(2) Stations in directed net must obtain permission from the Net Control Station (NECOS) before communicating with other Net Stations

(a) NECOS: Senior Net member or activity designated by higher authority

1. Responsible for implementing operational procedures, discipline, and security in the net

(3) Directed net used only in cases where traffic control is necessary

(4) FLASH messages may be sent without prior approval of NECOS

b. Free Net

(1) Most radiotelephone communication done in Free Nets

(2) Free Net: Members authorized to transmit traffic to other stations in net without obtaining NECOS permission.

B. Establishing Communication

1. The Call

a. Serves to identify the stations to which the particular message is being transmitted

b. Full Call

(1) Identifies both the called and the calling station

(a) Example: Delta Seven Quebec this is Kilo Eight Foxtrot

(2) Using Full Call

(a) When establishing a net

(b) To report into a previously established net

(c) In the transmission instructions and address components, when a message is to be relayed to a station on a different net

c. Abbreviated Call

(1) Call sign of the called station may be omitted

(a) If call is part of an exchange of transmissions between stations

(b) If there is no question who is being called

1. Example: THIS IS KILO EIGHT FOXTROT - OVER

d. Contents of call

(1) Individual call signs identify a specific station

(2) Collective call signs identify a pre-determined group of stations

(a) Example: Units of a task group, task force

(3) A combination of both individual and collective call signs

(4) Net call sign identifying all stations on a given net

(a) Example: Units on an air control net

e. Types of call

(1) Single call

(a) Only one call sign precedes (comes before) the proword, THIS IS

1. May be an individual, collective, or net call sign

2. Example: Delta Seven Quebec this is Kilo Eight Foxtrot - Over

(2) Multiple call

(a) Two or more call signs precede the proword, THIS IS

1. May be individual, collective, or net call sign(s); or a combination of any of those call signs

(b) Example: Delta Seven Quebec - India Eight Zulu this is Kilo Eight Foxtrot - Over

2. Establishing a Free Net

a. Example of procedures for establishing a free net

(1) At a designated time, or when ready to establish a net, NECOS (KILO EIGHT FOXTROT) transmits the collective call sign:

WHISKEY TWO ECHO this is KILO EIGHT FOXTROT

(2) Each net member responds in alphanumeric order:

KILO EIGHT FOXTROT this is BRAVO ONE PAPA - OVER

KILO EIGHT FOXTROT this is CHARLIE TWO DELTA - OVER

KILO EIGHT FOXTROT this is LIMA FIVE JULIETT - OVER

(3) NECOS then calls all net stations informing them their transmissions have been heard and that he has no traffic for them:

WHISKEY TWO ECHO this is KILO EIGHT FOXTROT - OUT

b. If a net member, such as CHARLIE TWO DELTA, is unable to answer the collective call, the following exchange occurs:

WHISKEY TWO ECHO this is KILO EIGHT FOXTROT - OVER

(1) The first alphanumeric station answers:

KILO EIGHT FOXTROT this is BRAVO ONE PAPA - OVER

(2) LIMA FIVE JULIETT, hearing no answer from CHARLIE TWO DELTA, waits five seconds and then transmits:

KILO EIGHT FOXTROT this is LIMA FIVE JULIETT - OVER

(3) After receiving calls from all net stations except CHARLIE TWO DELTA, KILO EIGHT FOXTROT transmits:

WHISKEY TWO ECHO this is KILO EIGHT FOXTROT - ROGER -CHARLIE TWO DELTA - nothing heard - OUT

(4) CHARLIE TWO DELTA, when able to transmit, calls the NECOS to report into the net:

KILO EIGHT FOXTROT this is CHARLIE TWO DELTA - OVER

(5) Kilo Eight Foxtrot, having no traffic for CHARLIE TWO DELTA, transmits:

CHARLIE TWO DELTA this is KILO EIGHT FOXTROT - ROGER - OUT

c. When required to change from a Free Net to a Directed Net (or vice versa) one of the following phrases will be transmitted by NECOS:

(1) WHISKEY TWO ECHO this is KILO EIGHT FOXTROT - this is a Directed Net - OUT

(2) WHISKEY TWO ECHO this is KILO EIGHT FOXTROT - this is a Free Net - OUT

3. Establishing a Directed Net

a. Example for establishing a directed net

(1) NECOS announces establishment of directed net, and requests the amount and precedence of traffic to be transmitted:

WHISKEY TWO ECHO this is KILO EIGHT FOXTROT - this is a directed net - of what precedence and for whom are your messages - OVER

(2) Each net member responds in alphanumeric order:

KILO EIGHT FOXTROT this is BRAVO ONE PAPA - one Immediate and one Routine for LIMA FIVE JULIETT - OVER

KILO EIGHT FOXTROT this is CHARLIE TWO DELTA - no traffic - OVER

KILO EIGHT FOXTROT this is LIMA FIVE JULIETT - Priority for BRAVO ONE PAPA - OVER

(3) NECOS then informs stations that their transmissions have been heard, and commences to clear traffic in order of precedence:

WHISKEY TWO ECHO this is KILO EIGHT FOXTROT - ROGER - BRAVO ONE PAPA - Send your Immediate - OVER

(4) LIMA FIVE JULIETT, hearing this authorization, tells BRAVO ONE PAPA to go ahead:

BRAVO ONE PAPA this is LIMA FIVE JULIETT - OVER

(a) Failure of LIMA FIVE JULIETT to answer immediately would necessitate BRAVO ONE PAPA making a preliminary call to LIMA FIVE JULIETT:

(5) Bravo One Papa then transmits his message:

LIMA FIVE JULIETT this is BRAVO ONE PAPA - Immediate - TIME 090900 Zulu November 1983 - FROM...rest of message...OVER

(6) LIMA FIVE JULIETT then receipts for the message:

BRAVO ONE PAPA this is LIMA FIVE JULIETT - ROGER - OUT

b. After LIMA FIVE JULIETT receipts for the message and transmits OUT, NECOS continues to authorize stations to transmit their traffic in order of precedence until the traffic list is cleared

c. When the traffic list is cleared, stations having messages to transmit will call the NECOS and request permission to transmit

C. Transmission Procedures

1. Use of Proword, I SPELL

a. Difficult words or groups within the message may be spelled using the phonetic alphabet preceded by the proword, "I SPELL"

(1) If the word can be pronounced, say it, followed with the proword, I SPELL, spell the word, and say it again

(a) Example:

CATENARY - I SPELL - CHARLIE ALFA TANGO ECHO NOVEBMER ALFA ROMEO YANKEE - CATENARY

2. Requesting Repetitions

a. When words are missed or doubtful, repetitions may be requested before receipting for the message

(1) Authorized prowords must be used

(a) SAY AGAIN used alone or with the following:

1. ALL BEFORE _____

2. ALL AFTER _____

3. _____ TO _____

4. WORD BEFORE _____

5. WORD AFTER _____

6. EXAMPLES: This is BRAVO ONE PAPA - SAY AGAIN - WORD BEFORE THREE - OVER

This is LIMA FIVE JULIETT - WORD BEFORE THREE - FIVE - OVER

3. Corrections during transmission

a. An error may be corrected during transmission by inserting the proword CORRECTION, followed by the last word or phrase spoken correctly and the remainder of the message

(1) Example: CONVOY ROMEO THREE - CORRECTION - ROMEO FOUR

4. Cancelling a message

a. A message may be cancelled any time before completing the transmission, by using the prowords, DISREGARD THIS TRANSMISSION

(1) Example: BRAVO ONE PAPA THIS IS LIMA FIVE JULIETT - ROUTINE - TIME ONE ZERO ZERO SIX ZERO TWO ZULU - BEGIN UNLOADING AT TIME ONE ONE ZERO TWO EIGHT ZULU - PROCEED - DISREGARD THIS TRANSMISSION - OUT

b. A message that has been transmitted and receipted for can only be cancelled by sending another message

D. Radio Checks

1. A station is assumed to have good signal strength and readability unless otherwise notified

a. Strength of signals and readability will not be exchanged unless one station cannot clearly hear another station

b. The following prowords are for use when initiating and answering queries concerning signal strength and readability:

(1) General

RADIO CHECK	What is my signal strength and readability
ROGER	I have received your last transmission satisfactorily

(2) Report of signal strength

LOUD	Your signal strength is very strong
GOOD	Your signal strength is good

WEAK	Your signal strength is weak
VERY WEAK	Your signal strength is very weak
FADING	At times your signal strength fades to such an extent that continuous reception cannot be relied upon

(3) Report of readability

CLEAR	Excellent quality
READABLE	Quality is satisfactory
UNREADABLE	The quality of your transmission is so bad that I cannot understand you
DISTORTED	Having trouble understanding you because your signal is distorted
WITH INTERFERENCE	Having trouble understanding you due to interference
INTERMITTENT	Having trouble understanding you because your signal is intermittent

c. Report may include signal strength or readability (or both), whichever best describes the conditions

(1) Examples: BRAVO ONE PAPA THIS IS LIMA FIVE JULIETT - RADIO CHECK - WEAK BUT READABLE - OVER

E. The Voice Log

1. Requirements for maintaining a voice log

a. Complete voice log is kept while maintaining a guard watch on a voice circuit

(1) Guard watch: Monitoring an active circuit with receiver and transmitter ready for use.

b. Voice log is optional when a listening watch is maintained on a voice circuit

(1) Listening watch: Monitoring traffic addressed to, or of interest to your unit, with transmitter in a stand-by condition

2. Required entires

a. Watch changes

(1) Operator leaving watch, or closing voice log, signs out indicating time watch relieved or log closed

(a) Example: 1100Z RM2 PETTY OFFICER PROPERLY RELIEVED BY RM3 PETTY OFFICER

(2) Oncoming operator signs on the voice log, indicating watch has been assumed

(a) Example: 1101Z RM3 PETTY OFFICER ASSUMES THE WATCH

b. All messages transmitted, received, and/or heard on the operator's assigned frequency during the course of the watch

(1) Enter call signs of transmitting and receiving stations preceded by the prosigns TO and FM

(2) Enter text of message

c. Frequency adjustments and changes

d. Unusual occurrences, such as security violations

e. All entries must be preceded by a time entry

(1) Use ZULU time

3. Use of Voice Log (OPNAV FORM 2810-1)

a. Use new log sheet for each Radio Day (RADAY)

(1) 0001Z through 2359Z

b. Entries at top of form:

(1) Activity Block - Unit name

(2) Operator Block - Enter VARIOUS

(a) Specific operator(s) will be indicated within the log

(3) Crew Block - leave blank

(4) Circuit Block - title of circuit

(a) Example: HICOM, FLT TAC

(5) Frequency Block - Specific operating frequency

(a) Example: 277.8 MHZ

c. Entries in log

(1) Use of prosigns as proword equivalents

(a) Many of the prosigns learned for teletype communication have proword equivalents that may be applied to R/T logging

1. Much briefer, so recording is faster

a. Examples

PROWORD	PROSIGN
ALL AFTER	AA
ALL BEFORE	AB
BREAK	BT
CORRECTION	EEEEEEEE
DISREGARD THIS TRANSMISSIONE	E E E E E E E E AR
I SAY AGAIN	IMI
OUT	AR
OVER	K
ROGER	R
SAY AGAIN	IMI
THIS IS	DE
UNKNOWN STATION	AA
WAIT	AS
WAIT OUT	AS AR
WORD AFTER	WA
WORD BEFORE	WB

(2) Outgoing messages

(a) The OPSIG "ZUI" (Your attention is invited to...) followed by the message date-time-group may be used by the transmitting station to indicate message transmission

1. Example: 1102Z B2P DE L5J ZUI P 111101Z FEB 83 K

(b) Relieves operator from having to log entire message

(3) Making corrections on the log

(a) Erasures not permitted

1. Indicate changes by drawing a single line through the corrected word or statement

a. Enter correct word or statement and initial lined out entry

(4) Closing the log

(a) Enter END RADAY and operators signature

1. Example 2359Z END RADAY...RM3 Petty Officer

RADIO LOG
OPNAV FORM 2019-1 (Rev. 11-80) Recorder from FPSO Cog "I" Stock

ACTIVITY	OPERATOR	CREW	CIRCUIT	FREQUENCY
USS BRADLEY	VARIOUS		TF ADMIN	2740KHZ

TIME	TRANSMISSION
0001Z	RM2 D. TURNER ASSUMES THE WATCH...
0010Z	W2E DE K8F THIS IS A DIRECTED NET - OF WHAT PRECEDENCE AND FOR WHOM ARE YOUR MESSAGES K
0011Z	K8F DE B1P 1 O 1 R FOR L5P K
0012Z	K8F DE C2D NO TRAFFIC K
0013Z	K8F DE L5J P FOR B1P K
0014Z	W2E DE K8F R - B1P - SEND YOUR O K
0015Z	B1P DE L5J K
0016Z	L5J DE B1P ZUI O 240005Z JAN 84 K
0020Z	B1P DE L5J IMI WA PROCEED K
0022Z	L5J DE B1P WA PROCEED ~~FOW~~ TWO K
0024Z	B1P DE L5J R 240005Z JAN 84 AR
0026Z	L5J DE K8F SEND YOUR P K
0027Z	L5J DE B1P K
0028Z	B1P DE L5J P 232355Z JAN 84 FM L5J TO B1P - BREAK - UNCLAS YOUR 232214Z JAN 84 ACKNOWLEDGED BREAK K
0032Z	L5J DE B1P R 232355Z JAN 84 AR
----Z	XXXX
0345Z	PROPERLY RELIEVED BY RM3 D. KAPUT D Turner
0345Z	RM3 D. KAPUT ASSUMES THE WATCH
0350Z	K8F DE C2D P B1P K
0351Z	C2D DE K8F SEND YOUR P K
0352Z	C2D DE B1P K
0353Z	B1P DE C2D R TIME 240310Z JAN 84 FM C2D TO B1P BREAK UNCLAS BEGIN UNLOADING AT TIME ONE ONE ZERO TWO EIGHT FIVE ZULU PROCEED E E E E E E E E AR
----Z	XXXX
2359Z	END RADAY.....RM2 R. FRAZIER R. Frazier

S/N 0107-LF-708-1000

DATE	PAGE NO
24 JAN 84	1 OF 1

(over)

SAMPLE RADIO LOG

FIGURE 9.3-1

ASSIGNMENT SHEET 10.1

Basic Radio Communications

INTRODUCTION

During this lesson the components of a basic radio communication system, signal flow, and the Radio Frequency Spectrum will be described. The instructor will provide some rules for conversion of Hertz (Hz) to Kilohertz (KHz) to Megahertz (MHz) to Gigahertz (GHz).

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the NOVEMBER, CHARLIE, GOLF, ROMEO and SIERRA systems, in accordance with COMNAVTEL-COMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.1 Given an authorized frequency pool, ship's location, and the location of the distant station, select the optimum transmission frequency in accordance with NTP-6 with at least 80 percent accuracy.

4.1.1 Given a block diagram showing transmission and reception of voice or teletype messages, select the 3 main transmission and 4 main receiving elements that are represented by the blocks.

4.1.2 Given the eight frequency bands that comprise the Radio Frequency Spectrum, select the primary use for each band.

STUDY ASSIGNMENT

Study Notetaking Sheets and personal notes. Practice drawing a basic radio communication system. Answer the following study questions.

STUDY QUESTIONS (Answer the following questions on a separate piece of paper)

1. What are the basic components of a radio communications system? What is the purpose of each component?

2. How many Hertz are there in one Kilohertz?

3. How many Kilohertz are there in one Megahertz?

4. When are ultra-high frequencies used?

5. When are high frequencies used?

4089

6. Convert the following frequencies:

   a. 1,121,242 Hz = _____ KHz = _____ MHz

   b. 1,621Hz = _____ KHz

   c. 163,121 KHz = _____ MHz

   d. 126,310 Hz = _____ MHz

   e. 1,234,621 Hz = _____ KHz = _____ MHz

   f. 1,021 Hz = _____ KHz

   g. 1,27 MHz = _____ KHz = _____ Hz

7. Complete the following:

   a. VLF
      Frequency range: _____
      Typical use: _____

   b. LF
      Frequency range: _____
      Typical use: _____

   c. MF
      Frequency range: _____
      Typical use: _____

   d. HF
      Frequency range: _____
      Typical use: _____

   e. VHF
      Frequency range: _____
      Typical use: _____

   f. UHF
      Frequency range: _____
      Typical use: _____

   g. SHF
      Frequency range: _____
      Typical use: _____

   h. EHF
      Frequency range: _____
      Typical use: _____

8. Which two of the above frequency bands are most frequently used by the Navy?

NOTETAKING SHEET 10.1

Basic Radio Communications

REFERENCE:

1. NAVSHIPS 0967-301-7050, Afloat Systems Criteria Handbook, Volume V Chapter One

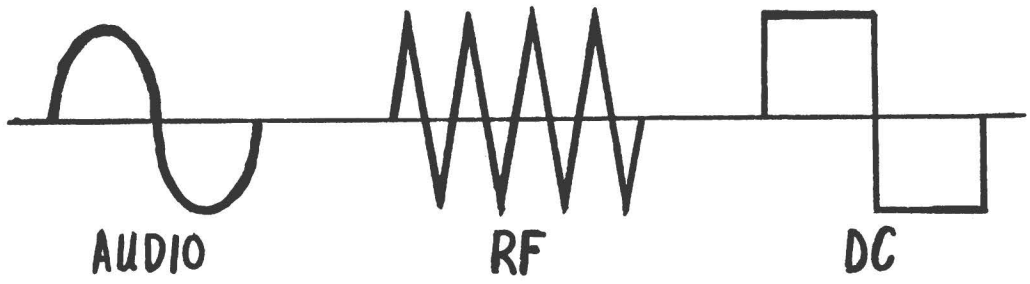
NOTETAKING OUTLINE

A. Basic Components

1. Transmission

a. The process of radiating information/messages from the sender.
b. Input device
(1) Means for entering information (messages) into communication system.
(a) Teletypewriter: Generates a DC signal (marks/spaces).
(b) Microphone: Generates electrical audio frequency.

c. Radiowave production
(1) Transmitter produces the signal that carries information/messages initiated by the input device.
(a) Signal is called Radio Frequency (RF) Wave, or RF Carrier
(b) Composed of an electromagnetic field.
1. Has qualities of electric and magnetic fields.



WAVE FORMS
Figure 10.1-1

d. Radio Frequency
   (1) Frequency: the number of times something occurs in a given period of time.
   (2) Electrical energy travels in waves.
      (a) Wave Frequency: the number of times a pattern or cycle is repeated in one second.

      EXAMPLE: This cycle ends at one second, so the wave frequency is one cycle per second. (Figure 10.1-2)

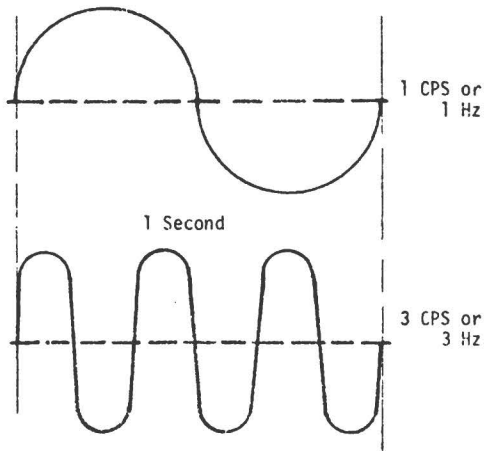


Figure 10.1-2 AC Cycles

   (3) In communications, frequencies normally stated in Hertz.
      (a) 1 Hertz = 1 cycle per second
      (b) Hertz is abbreviated Hz

   (4) Radio communications frequencies range from 3,000 to 300,000,000,000Hz. To handle these large numbers it is easier to use larger units of measurement such as Kilohertz (KHz), Megahertz (MHz) or Gigahertz (GHz).
      (a) Kilohertz means a thousand Hertz. (1,000Hz = 1KHz)
      (b) Megahertz means a million Hertz. (1,000,000Hz = 1MHz)
      (c) Gigahertz means a billion Hertz. (1,000,000,000 = 1GHz)

e. Radiofrequency (RF) modulation

   (1) Message/information is added to the RF carrier.

f. Radiating signal

(1) Carrier wave is projected from the transmitting antenna.

(2) Carrier Mediums
  (a) Earth's atmosphere
  (b) Outer space
  (c) Water

2. Reception

a. Receiving antenna
  (1) Intercepts the RF carrier signal.

  (2) Many RF signals are intercepted.
    (a) Not all are desired/needed.

b. Receiver
  (1) Selects the desired signal when tuned to the frequency of that signal.

  (2) Demodulates the RF carrier wave
    (a) Separates RF carrier from information signal.
    (b) Converts electrical information signal into an audio signal.
    (c) Sends information signal to an output device.

c. Converter--converts audio signal from receiver to DC pulses for TTY input.

d. Output device--converts electrical information signal back to desired form.

  (1) In a voice system, conversion is done by earphones or a loudspeaker.

  (2) In a radio teletype system, conversion is done by teletype equipment.

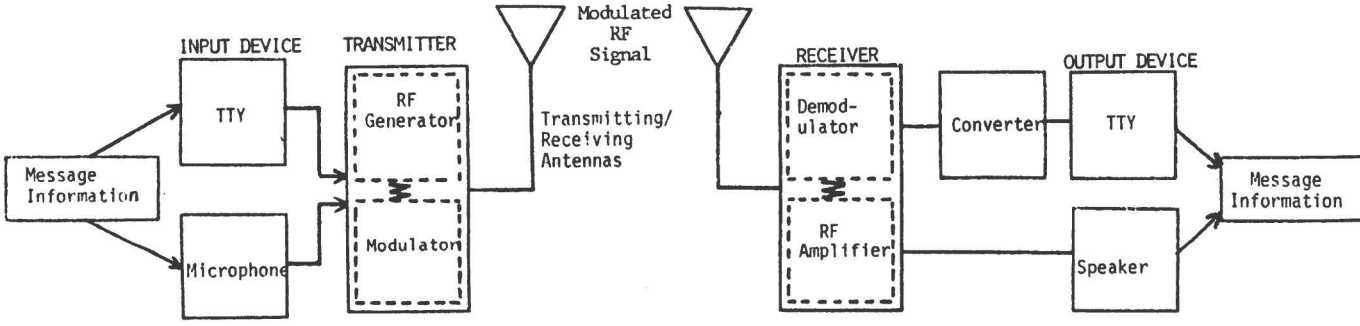


Figure 10.1-3

B. Radio Frequency Bands (Figure 10.1-4)

1. Frequencies used in radio communications are divided into eight groups or bands:

a. Called Radiofrequency Spectrum

b. Range from VLF to EHF
(1) Range: 3KHz to 300GHz
(2) VLF: Very Low Frequency
(3) EHF: Extremely High Frequency

c. Descriptions

(1) Very Low Frequency (VLF)
(a) 3KHz - 30KHz
(b) Typical use: Submarine broadcasts

(2) Low Frequency (LF)
(a) 30KHz - 300KHz
(b) Typical use: Fleet broadcasts

(3) Medium Frequency (MF)
(a) 300KHZ - 3MHz
(b) Typical use: International Distress (500KHz)

(4) High Frequency (HF)
(a) 3MHz - 30MHz
(b) Typical use: Long range communications of all types.
1. One of two most used frequency ranges by Navy.

(5) Very High Frequency (VHF)
(a) 30MHz - 300MHz
(b) Typical uses: Short range communications; ship-to-air ship-to-shore, ship-to-ship, International Air Distress (121.5MHz)

(6) Ultra High Frequency (UHF)
(a) 300MHz - 3000MHz (3GHz)
(b) Typical use: short range line-of-sight
1. Second of two most used frequency ranges by Navy.

(7) Super High frequency (SHF)
(a) 3GHz - 30GHz
(b) Typical use: Satellite communications

(8) Extremely High Frequency (EHF)
(a) 30GHz - 300GHz
(b) No Navy communications uses at present. Radar works in this frequency range.

FREQUENCY	DESCRIPTION	ABBREVIATION
30GHz-300GHz	extremely high frequency	EHF
3GHz-30GHz	super high frequency	SHF
300MHz-3GHz	ultra high frequency	UHF
30MHz-300MHz	very high frequency	VHF
3MHz-30MHz	high frequency	HF
300kHz-3MHz	medium frequency	MF
30kHz-300kHz	low frequency	LF
3kHz-30kHz	very low frequency	VLF

Figure 10.1-4 Radio Frequency Bands

ASSIGNMENT SHEET 10.2

Basic Antenna Theory

INTRODUCTION

This lesson describes the functions and characteristics of communication antennas. This information is necessary in being able to select the best antenna system for specific kinds of RF transmission and/or reception.

LESSON TOPIC LEARNING OBJECTIVES:

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, converters, antenna patch panels, HF transmitters, HF receivers, UHF transceivers, and patch-cords; SET UP FIVE COMMUNICATION SYSTEMS including the November, Golf, Charlie, Romeo, and Sierra Systems in accordance with COMNAV-TELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

(JTI Nos. A2-23, B9-1, C1-1, C1-2, C2-1, C2-2, C3-1, C3-2, C5-1, C5-2, C6-1, C6-2, C6-3, C7-1, C8-1, C9-1, C11-1, C12-1, C14-1, C16-1, C16-2, C17-1, C17-2, C20-1, C21-1, C24-1, C24-2, C25-1, C25-2, C26-1, C29-11, C31-1, C32-1, C33-1, C33-2)

4.1 Given an authorized frequency pool, ship's location, and the location of the distant station, select the optimum transmission frequency in accordance with NTP-6 with at least 80 percent accuracy.

4.1.3 Given antenna applications or characteristics, select the best antenna system for RF transmission or reception.

STUDY ASSIGNMENT

Study Notetaking Sheets and personal notes. Answer the following study questions.

STUDY QUESTIONS (Answer the following questions on a separate piece of paper)

1. What is the most commonly used antenna for fleet broadcasts?
2. Which type of antenna is used for the frequency range of 30MHz to 3GHz?
3. Which type of antenna is composed of coaxial cable or copper tubing and used in the 300KHz to 30MHz frequency range?
4. As a general rule, regarding polarity, when does best reception occur?
5. What is used to determine the amount of directivity in an antenna?
6. Which type of antenna radiates and receives equally well in all directions?
7. Which antenna is commonly used in the LF to HF frequency range?

NOTETAKING SHEET 10.2

Basic Antenna Theory

REFERENCES:

1. NAVSHIPS 0967-301-7050, Afloat Systems Criteria Handbook, Volume V

2. NAVSEA 0967-LP-177-3050, Shipboard Antenna System, Volume V

NOTETAKING OUTLINE

A. Antenna Characteristics

1. There is a best antenna length for each radio frequency being transmitted or received.

   a. Best transmission/reception occurs when the transmitter and receiver antennas are matched.
      (1) In RF tuning
      (2) In wavelength
      (3) In directivity

2. Antenna Tuning (Refer to Figure 10-2.1)

   a. Ideal, but impractical: Separate antenna for each frequency
   b. Practical alternative: Tune each antenna to the RF used
      (1) Tune: Electrically shorten or lengthen operational portion of an antenna to RF.
         (a) Some power lost in the process
         (b) Power loss outweighed by increased quality or radiated radiowaves.
      (2) Tuning accomplished with antenna COUPLER or TUNING UNIT.

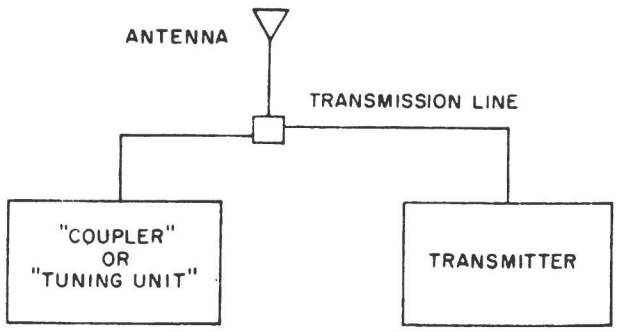


Figure 10-2.1

3. Antenna Coupler

a. Used to adjust length of the antenna by electrical means.
   (1) Does not change physical length by electrical means
   (2) Electrically adapts antenna to output frequency of transmitter.
   (3) Properly tuned antenna called RESONANT--when antenna is matched to the operating frequency
   (4) General rule: The lower the frequency, the longer (larger) the antenna.

b. Length of antenna being utilized is described in terms of WAVELENGTH.
   (1) Wavelength: The distance traveled by the radiowave in the time required for one cycle (1Hz)

      (a) Wavelength varies inversely to frequency
         1. As frequency increases, wavelength decreases
            a. Frequency of radiowaves equal frequency of RF current.
         2. Term for wavelength: LAMBDA
         3. Wavelength symbol: λ

      (b) Antenna length actually being used for transmission described in terms of waves
         1. Quarter-wave: about one-fourth electrical length
            a. Used for frequencies above 4MHz.
         2. Half-wave: about one-half electrical length
            a. Used for frquencies below 4MHz
         3. Full-wave: total antenna electrical length used

      (c) Wavelength can be computed

         1. In meters: $\frac{300{,}000{,}000}{\text{Freq in Hz}}$ or $\frac{300}{\text{Freq in MHZ}}$

         2. In feet: $\frac{984{,}000{,}000}{\text{Freq in Hz}}$ or $\frac{984}{\text{Freq in MHZ}}$

c. Tuning made in terms of the STANDING WAVE RATIO (SWR) of the transmitted power.
   (1) SWR: Relationship between forward radiated radiowaves and the reflected power waves.
      (a) Forward waves: The waves effectively radiated beyond a transmitting antenna.
      (b) Reflected power waves: The waves reflected back into the antenna.
         1. Reflected waves reduce strength of forward waves.
   (2) Antenna must be tuned to minimize reflected power waves- to lowest SWR.
   (3) Tuning practice later in lab work with communication systems.

4. Directivity

a. Directivity: Characteristics of an antenna to concentrate radiowave radiations in a particular pattern.
   (1) Directionality: Concentrating radiations in terms of compass directions.
   (2) Polarity: Concentrating radiations in vertical or horizontal directions.
   (3) All antennas are somewhat directive
   (4) Some antennas specifically designed for directionality--to radiate narrow radiowave beams.

b. Directionality
   (1) Determined by RADIATION PATTERN radiated from the antenna
      (a) Knowledge of pattern important in proper antenna selection.
   (2) Radiation Pattern components
      (a) LOBES: The rounded projections on the radiation pattern
         1. Lobes effectively carry the information being transmitted
      (b) NULLS: All space outside of the lobes
         1. Essentially, areas of minimum energy with no effective communications capabilities.
      (c) Width of directional waves called BEAMWIDTH
   (3) Radiation pattern effects (See Figure 10.2-2)
      (a) The more rounded pattern, the less it is directional.
      (b) The lower the frequency of transmission, the less directional the radiations.

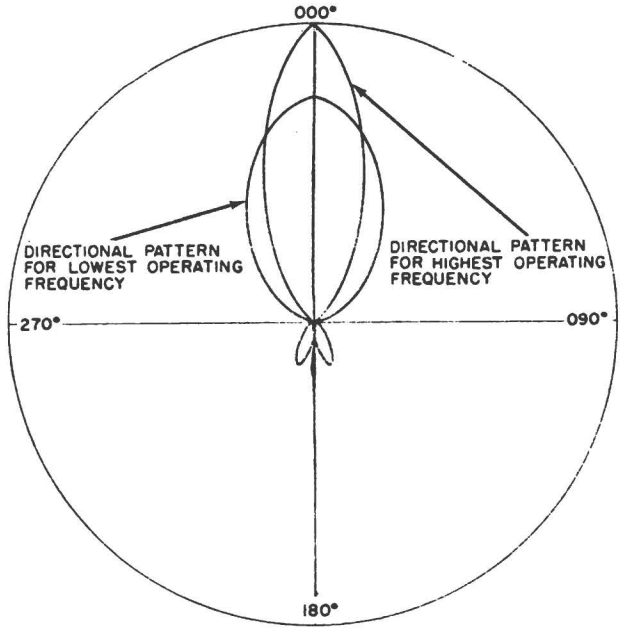


Figure 10.2-2

(4) Types of directional antennas
   (a) OMNIDIRECTIONAL: Radiates and receives in all directions, except off the ends.
   (b) BIDIRECTIONAL: Radiates and receives effectively in two directions (usually opposite directions) such as North/South. East/West.
   (c) UNIDIRECTIONAL: Radiates and receives effectively in only one direction.
   (d) Most antennas used in Navy are OMNIDIRECTIONAL or UNIDIRECTIONAL.
   (e) OMNI's generally used to transmit fleet broadcasts, most medium to high frequency ship antennas.

c. Polarity (Fig 10.2-3)
   (1) The position of the radiowave radiations with respect to earth--vertical or horizontal to earth.
      (a) Position of the antenna in space determines polarization of the radiowave.
      (b) Vertical wave: Commonly used for <u>direct</u> ship/ship or ship/shore transmissions.
      (c) Horizontal wave: Commonly used for ship/aircraft, shore/aircraft or any transmissions via satellite.

   (2) Transmission and receiving antennas must have matched polarity for the best performance.
      (a) Both vertically polarized, or both horizontally polarized.

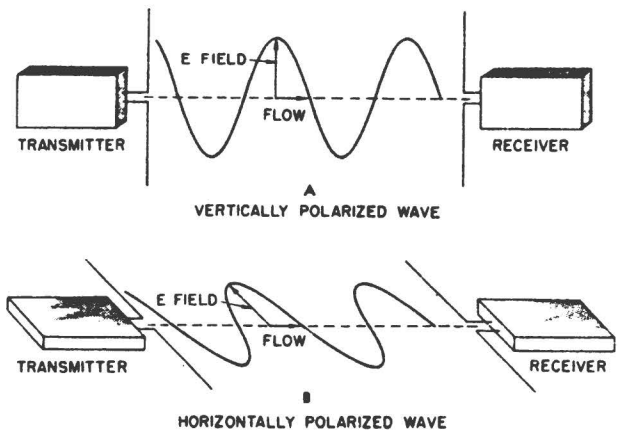


Figure 10.2-3

d. Antenna types

(1) Wire antenna (Fig. 10.2-4)

(a) Medium and high frequency coverage (30KHz-30MHz)
(b) Usually installed forward on the ship
(c) May be composed of coaxial cable or copper tubing
(d) Hardware and accessories painted red for transmitting and blue for receiving

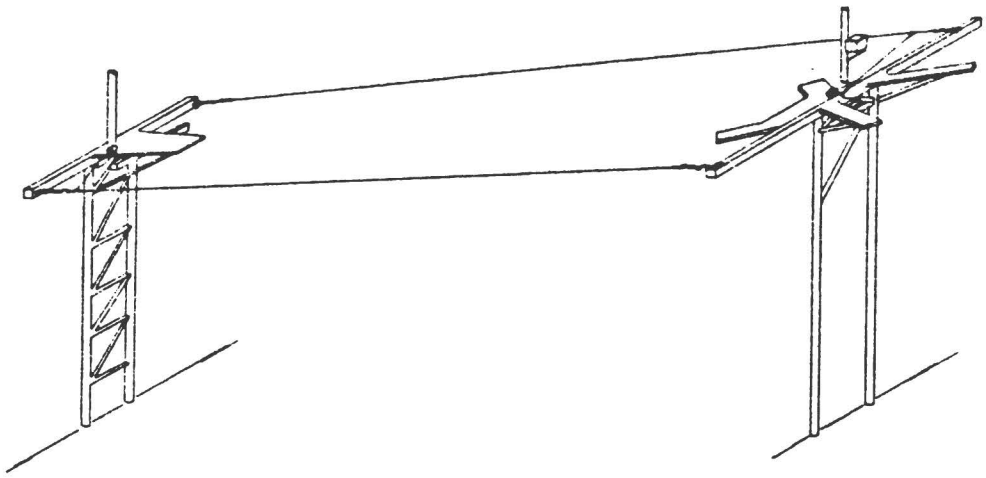


Figure 10.2-4

(2) Whip antennas (Fig 10.2-5)

(a) Frequency range: 1.8-30MHz (MF-HF)
(b) Mounted on deck, stack brackets, or superstructure brackets
(c) 25, 28, or 35 foot lengths
    1. In several sections
    2. Aluminum or fiberglass
(d) On aircraft carriers, can be titled for safety and convenience.

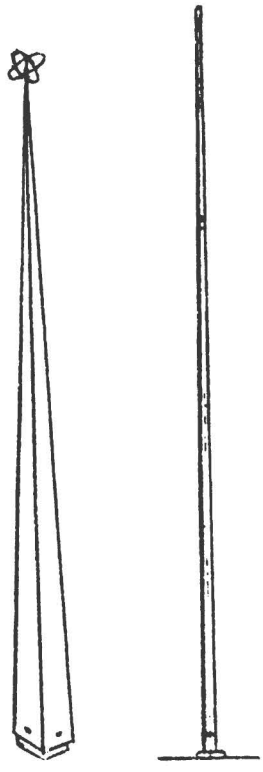


Figure 10.2-5

(3) Fan antenna (Fig. 10.2-6)

(a) Broadband--capable of radiating over a wide range of frequencies (3-30MHz)

(b) Normally mounted as high as possible on the ship's structure

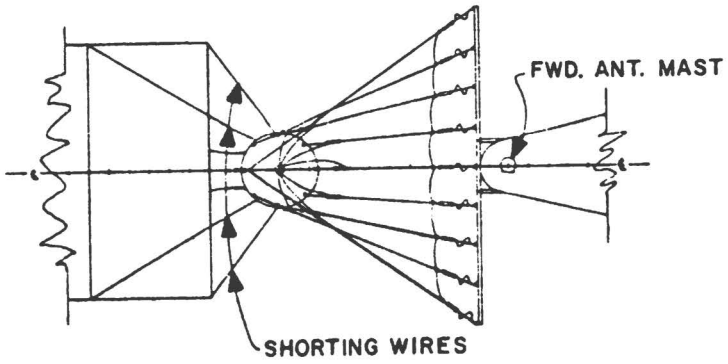


Figure 10.2-6

(4) VHF-UHF antenna (Fig. 10.2-7)

(a) 30MHz-3GHz

(b) Physical size: relatively small

(c) Aboard ship: Installed as high as possible and in clear areas.

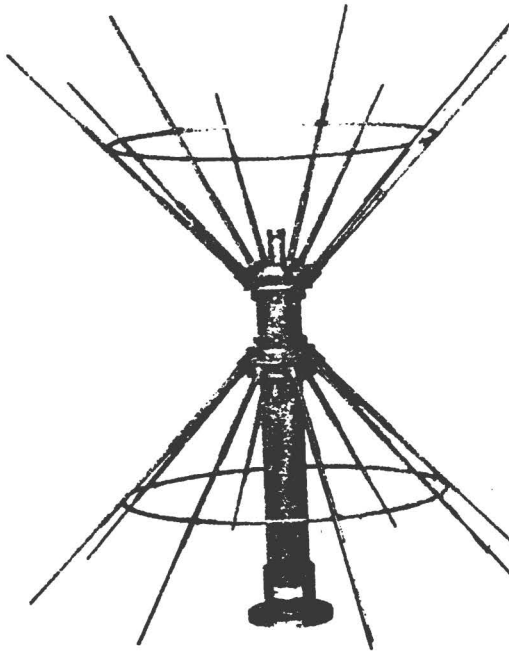


Figure 10.2-7

ASSIGNMENT SHEET 10.3

Radiowave Propagation

INTRODUCTION

This lesson discusses the conditions affecting telecommunications and procedures for selecting the best frequency for the transmission time and telecommunication location.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, converters, antenna patch panels, HF transmitters, HF receivers, UHF transceivers, and patch-cords; SET UP FIVE COMMUNICATION SYSTEMS including the November, Golf, Charlie, Romeo, and Sierra Systems in accordance with COMNAV-TELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

(JTI Nos. A2-23, B9-1, C1-1, C1-2, C2-1, C2-2, C3-1, C3-2, C5-1, C5-2, C6-1, C6-2, C6-3, C7-1, C8-1, C9-1, C11-1, C12-1, C14-1, C16-1, C16-2, C17-1, C17-2, C20-1, C21-1, C24-1, C24-2, C25-1, C25-2, C26-1, C29-11, C31-1, C32-1, C33-1, C33-2)

4.1.4 Given the four ionospheric layers, match each to its description.

4.1.5 Given the terms REFLECTION, REFRACTION, DIFFRACTION, SKIP DISTANCE, and SKIP ZONE, match each term with its definition.

4.1.6 Given the terms GROUND WAVE, SKY WAVE, SURFACE WAVE and SPACE WAVE PROPOGATION, match each with its definition.

STUDY ASSIGNMENT

Study Notetaking Sheets and personal notes. Answer the following study questions on a separate sheet of paper.

STUDY QUESTIONS

1. What characteristic describes radiowaves that bend around the edges of a physical object?

2. List 3 characteristics of the Troposphere.

3. What wave characteristic of propagation is the process of radiowaves bounding off substances?

4. The bending of radiowaves as they move from one medium into another of different density is called _____.

5. List 2 characteristics of the Stratosphere.

6. List 3 characteristics of the Ionosphere.

7. What are the two basic types of Radiowave Propagation?

8. How many distinct layers makes up the ionosphere
   a. During the day?
   b. During the night?

9. Which ionospheric layers are available during the night hours?

10. What publication is used for predicting frequency use?

11. Which section of the publication stated in question 10 is used for afloat units?

12. When selecting frequencies, which range is used for best traffic reception, MUF or FOT?

NOTETAKING SHEET 5.3

Radiowave Propagation

REFERENCES:

1. NAVSHIPS 0967-301-7050, Afloat Communications System Criteria Handbook, Volume V, Chapter 1

2. NTP 6, Spectrum Management Manual

3. NTP 6, SUPP-1 Recommended Frequency Bands and Frequency Guide

NOTETAKING OUTLINE

A. Introduction

1. Radiowave Propagation
   a. Transmission of RF emissions from transmission site to receiving site.
2. Factors Affecting Effective Radiowave Propagation
   a. Transmitter power
   b. Radiofrequency (RF) used
   c. Receiver sensitivity
   d. Distance between transmitter and receiver
   e. Kind of terrain between transmitter and receiver
   f. Atmospheric conditions

B. General Characteristics of Propagated Radiowaves

1. All propagated waves are constantly being diffracted, reflected and refracted.
2. Diffraction: Bending of radiowaves around the edges of physical objects.
   a. Waves blocked out immediately behind the object.
   b. Waves bent around object edges tend to rejoin at some distance behind the object.
      (1) Figure 10.3-1: The diffraction zone is an active signal reception area.

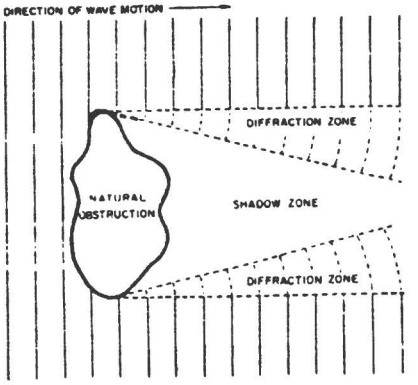


Figure 10.3-1

c. The lower the radiowaves frequency, the more the wave will bend.
(1) Using high transmission power and low-frequency, a signal can be diffracted around the earth.

3. Reflection: Sharply bouncing radiowaves off substances. (See Figure 10.3-2)
a. Reflective surfaces such as earth, water or atmospheric layers
b. Relfective surfaces must have
(1) Surface longer than the wavelength
(2) Surface smooth for appreciable portion of the wavelength
c. Radiowave not reflected may be scattered or absorbed
(1) Effects of scattering discussed later in lesson

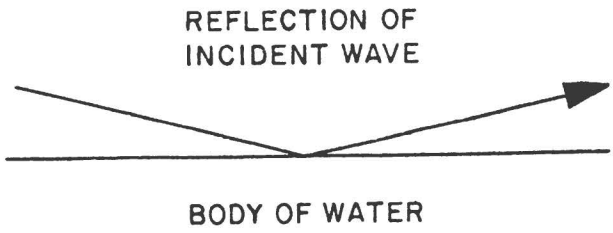


Figure 10.3-2

4. Refraction: The bending of radiowaves as they move from one medium into another of different density (See Figure 10.3-3)
a. REFRACTED wave is BENT back to earth vice that of a REFLECTED wave which is sharply bounced back
b. Dense mediums bend and slow radiowaves.
c. Take-off angle of radio signals affect amount of refraction back to earth
(1) Higher the angle, less refraction back to earth.

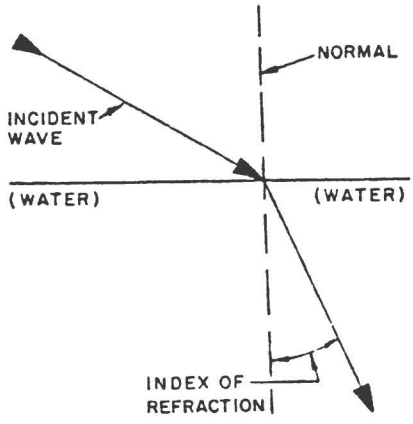


Figure 10.3-3

C. Composition of Earth's Atmosphere (See Figure 10.3-4)

1. Troposphere
   a. Ranges from 6 to 10 miles above earth's surface
   b. Highest density layer of the earth's atmosphere
      (1) Gets thinner as altitude increases
      (2) Density level varies with temperature
   c. Contains almost all of the weather phenomena
      (1) Least predictable atmospheric layer
      (2) High moisture levels may absorb radiowaves
   d. Greatly influences low and extremely high frequency transmissions.

2. Stratosphere
   a. Ranges from 10 to 50 miles above the earth
   b. Has very little direct affect on radiowave propagation

3. Ionosphere
   a. Ranges from 50 to 250 miles above earth
   b. Highly ionized (electrically charged) layers
      (1) Actually several layers
      (2) Height (altitude) and density of layers varies by day and night
   c. Ionized layers refract radiowaves
      (1) Extremely important for long distance HF propagation

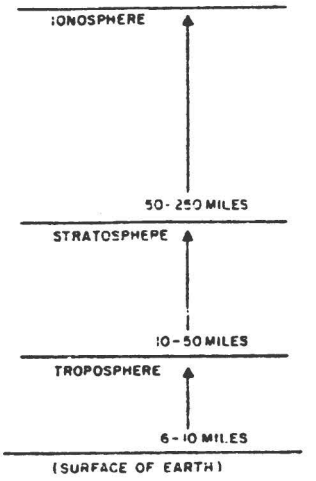


Figure 10.3-4

D. Types of Radiowave Propagation

1. Two Basic Types
   a. Ground Waves
   b. Sky Waves

2. All radiowaves contain ground and sky waves

3. Ground Waves
   a. Types
      (1) Surface waves
      (2) Space waves

b. Surface waves
   (1) Generally vertically polarized
   (2) Follows earth's contour
      (a) Influenced by earth or water conductivity (See Figure 10.3-5)
      (b) Conductivity lower over dry terrain and jungle

Type of surface	Relative conductivity
Sea Water	Good
Large bodies of fresh water	Fair
Wet soil	Fair
Flat, loamy soil	Fair
Dry, rocky terrain	Poor
Desert	Poor
Jungle	Unusable

Figure 10.3-5

   (3) Some surface waves extend to upper stratosphere
   (4) At very low frequencies, can circle the world given enough transmitter power.

c. Space waves (See Figure 10.3-6)
   (1) Composed of DIRECT, REFLECTED, and SCATTERED waves
   (2) Direct waves
      (a) Transmission directly from transmit to receive antennas
      (b) Short range
      (c) Line of sight
      (d) Generally UHF/VHF
   (3) Reflected waves
      (a) Bounce off ground, water or tropospheric layer
      (b) 180 degress out-of-phase with direct wave
         1. Results in signal cancellation

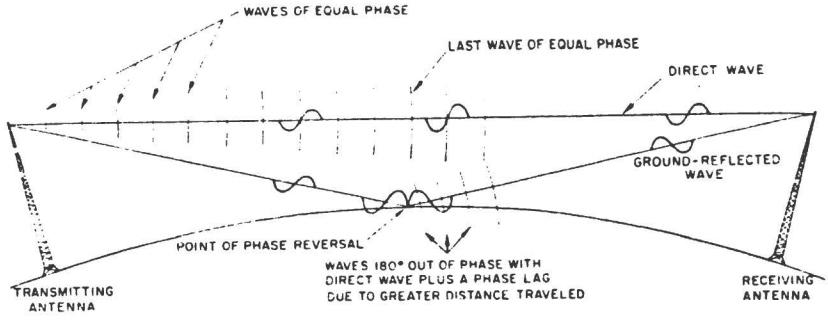


Figure 10.3-6

   (4) Scatter waves
      (a) Refracted ground waves in upper troposphere
         1. Scattering commonly caused by temperature inversions and atomospheric turbulence

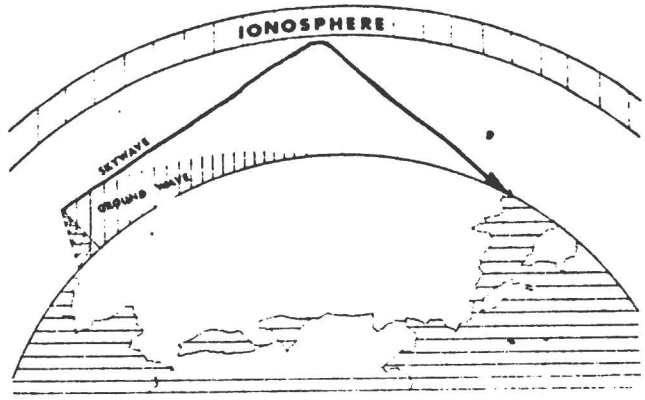


Figure 10.3-7

4. Sky Waves (See Figure 10.3-7)
   a. Portion of the radiowave that moves upward and outward from the transmitter.
      (1) Not in contact with earth unless or until refracted back
   b. Some energy reflected, refracted and scattered
   c. Some energy lost (dissipated) in atmospheric layers
   d. Primary means of long distance HF transmissions

E. Ionospheric Propagation (See Figure 10.3-8)

1. Ionospheric Layers
   a. Begins at altitude of 40-50 miles above the earth
   b. Sky wave communications depend primarily upon the ionospheric condition existing at the time of transmission
   c. Ionization densities vary day and night
      (1) Ionization occurs in layers
      (2) Though there may not be a sharp dividing line between the various layers, density differences do exist
         (a) Layers are separated here for explanation and clarity

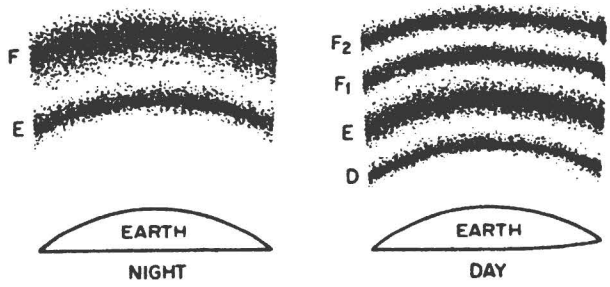


Figure 10.3-8

d. Ionization of D Layer
   (1) Altitude between 40 and 50 miles
   (2) Present only during the day
   (3) Ionization is low
      (a) Has little effect on the propagation of radio waves
      (b) Absorbs some energy from the waves as they pass through

e. Ionization of E Layer
   (1) Altitude between 50 and 90 miles
   (2) Well defined layer with greatest density at an altitude of about 70 miles
   (3) Strongest during daylight hours; present but much weaker at night
   (4) Maximum density appears at about mid-day
      (a) At mid-day, ionization is sometimes sufficient to refract frequencies in the upper HF band back to earth
         1. This action important to daylight transmissions for distances up to 1,500 miles

f. Ionization of F Layer
   (1) Extends from about 90 miles to the upper limits of the ionosphere
   (2) During daylight hours there are two F layers (F1 and F2)
   (3) Shortly after sunset, F1 and F2 layers combine into the single F layer
   (4) Layer at highest ion density

2. Effect of Ionosphere on the Sky Wave (See Figure 10.3-9)

a. Ionosphere characteristics
   (1) Some waves penetrate and pass entirely through it into space never to return
   (2) Others penetrate, but bend
   (3) Acts as a conductor and absorbs energy in varying amount from the radio wave
   (4) Bends (refracts) the sky wave back to earth

b. Ability of the ionosphere to return a radiowave to earth depends on:
   (1) Angle at which the sky wave strikes the ionosphere
   (2) Frequency of the radiowave
   (3) Ion density

c. Distance from the transmitting antenna to the nearest point at which the refracted waves return to earth is known as the "SKIP DISTANCE".
   (1) Depends upon the density of the ionosphere

d. The zone between the end of the ground wave and point where the sky wave first returns to earth is the "SKIP ZONE"
   (1) Depends upon propagation characteristics of the ground wave in relation to the sky wave
   (2) No reception possible in this zone.

e. Sky wave intensity varies minute to minute, month to month, and year to year because of electrical (ionic) variations in the ionosphere

(1) Some variations are periodic
  (a) Periodic effects on radio frequencies can be anticipated
  (b) Daily variations caused by the rotation of the earth about its axis.
  (c) Seasonal variations
    1. Changes the intensity of the ultra-violet light reaching a given spot in the earth's atmosphere
    2. Varies with the position of the earth's orbit around the sun
    3. Higher ion bombardment in summer months
  (d) Sunspot activity variations
    1. Conforms to an 11 year cycle
    2. During period of high sun-spot activity, higher frequencies can be used.

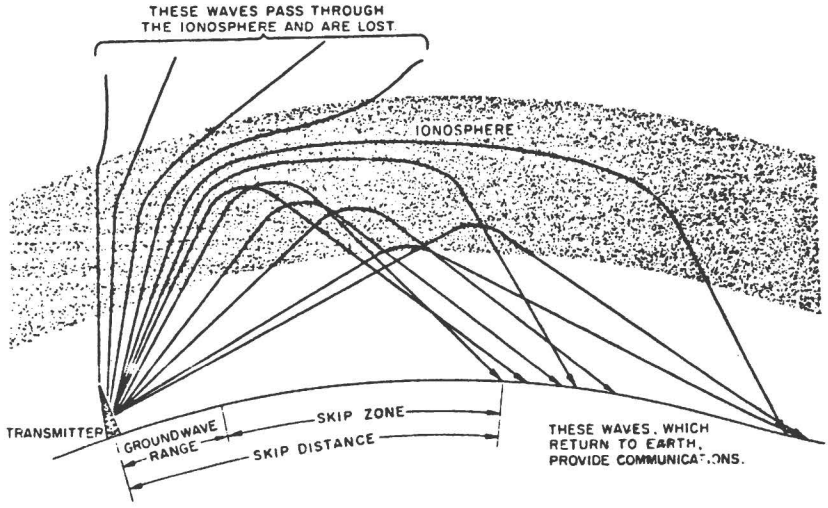


Figure 10.3-9

F. Selecting Optimum Frequencies
  1. Factors Radiomen CAN Control
    a. Transmitter power output
      (1) Discussed more fully in other lessons
    b. Circuit and frequency selection
    c. To some extent, time of transmissions
  2. Frequency Selection Aid
    a. Frequency prediction tables in NTP-6 SUPP-1
    b. Based on
      (1) Geographical locations of transmitter and receiver
      (2) Time of transmissions

G. Frequency Prediction (HF)
  1. High Frequency Band
    a. HF (3-30MHZ) depends on ionospheric propagation for long-range, sky wave communications
      (1) HF: principal frequency range for Navy ship-shore communication circuits
  2. NTP-6 SUPP-1 used to Select the Best HF Transmission Frequency
    a. For specific time of day
    b. For specific geographical location

3. NTP-6 SUPP-1 Sections
   a. Section 01: For afloat units
   b. Section 02: For NAVCOMMSTAs and UNITS, and ship-shore communications
   c. Updated periodically
   d. Provides two (2) kinds of frequency transmission information
      (1) MUF: Maximum usable frequency
         (a) Highest frequency that can be used to communicate satisfactorily
      (2) FOT: Frequency of optimum traffic
         (a) Frequency for the BEST quality of transmission
4. Using NTP-6 SUPP-1 Section 01 Tables (for afloat units)
   a. Section 01 divides the world into 36 reference areas (See Figure 10.3-10)
      (1) Three bands circling the earth, horizontally
      (2) Each area is 30 degrees wide by 40 degrees high

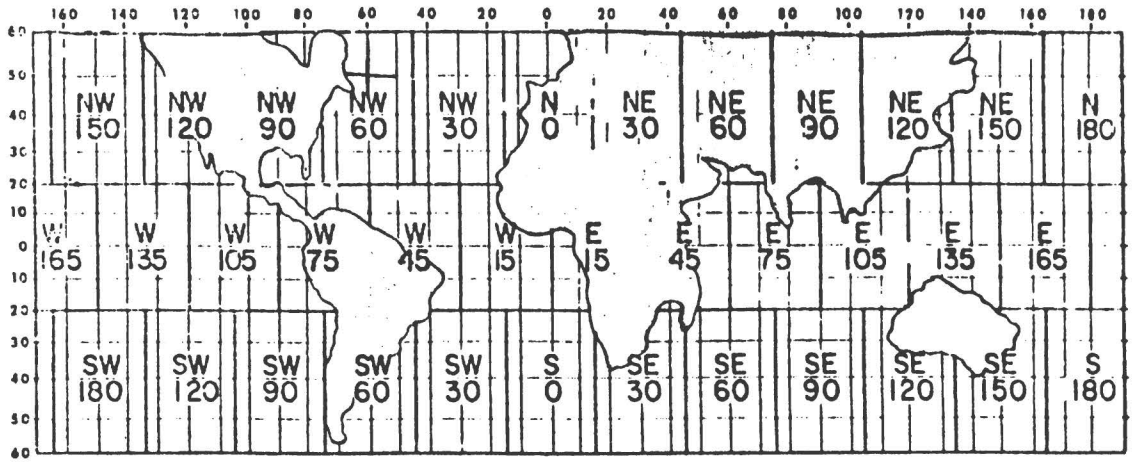


Figure 10.3-10

   b. Section 01 communication paths are limited to 1,800 nautical miles.
      (1) Frequency predictions are not given for distances beyond 1,800 nautical miles
5. Determining MUF/FOT Frequencies Using NTP-6 SUPP-1, Section 01
   a. Steps in frequency selection
      (1) Locate proper Reference Area
      (2) Identify proper Reference Area Letter Designator for frequency table.
      (3) Select proper MUF/FOT for the time of transmission
   b. Locating communications Reference Area
      (1) Identify geographical locations of transmitter and receiver in their respective Reference Areas
      (2) Identify communications Reference Area (RA): The RA at the halfway point between the transmitter and receiver
         (a) In Figure 10.3.11, the general communications Reference Area is NW30.

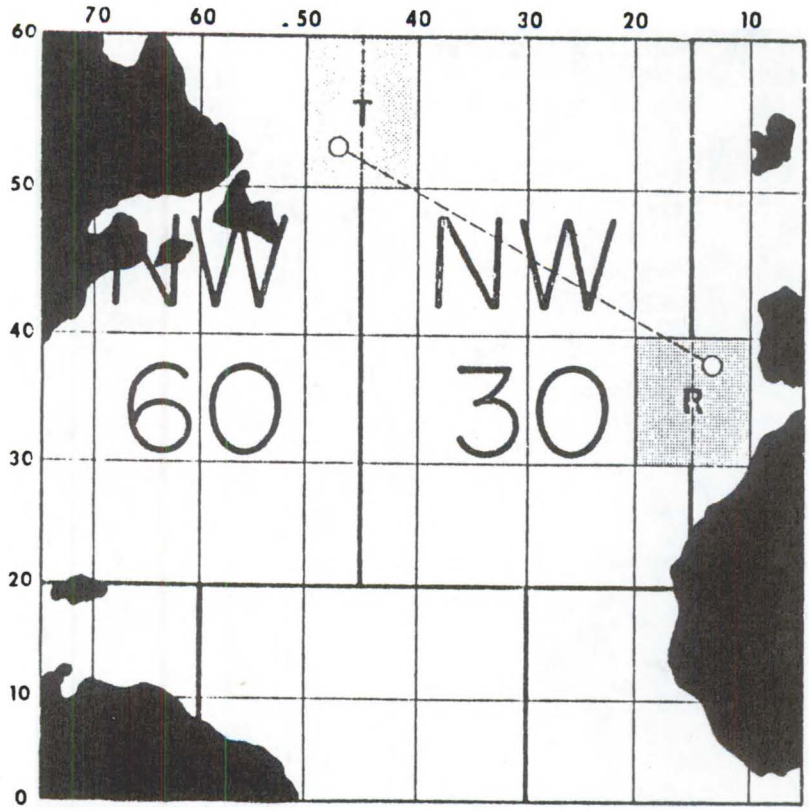


Figure 10.3-11

c. Identify RA Letter Designator for frequency table
   (1) Use frequency prediction table Letter Designator chart in front of NTP-6 SUPP-1. (See Figure 10.3-12)

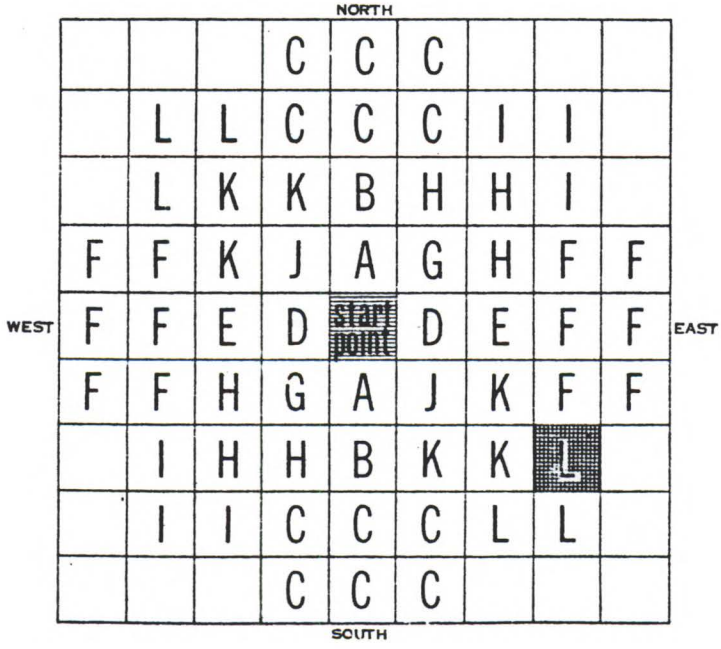


Figure 10.3-12

(2) Start point on chart is the transmitter location
(3) Locate the receiver position by counting number of blocks on Reference Area diagram between the transmitter and receiver (both horizontally and vertically)
(4) Count the same number of blocks on the Letter Designator chart, and in same directions, as you found on the Reference Area Diagram
(5) Add letter designator of receiver location to RA to determine which frequency table to use.
(a) In this example look for table NW30L

d. Locate frequency to be used (See Figure 10.3-13)
(1) Find proper table
(a) Example: NW30L

NW 30-L 3rd QTR 1970 SSN 80

GMT	MUF	FOT
1	12.0	9.0
2	11.3	8.5
3	11.0	8.3
4	10.8	8.4
5	10.5	8.2
6	9.0	7.6
7	10.1	7.9
8	13.1	10.8
9	16.6	13.6
10	17.8	14.6
11	17.8	14.6
12	18.0	14.0
13	18.1	14.1
14	18.0	14.0
15	17.9	13.9
16	17.8	13.5
17	18.0	13.7
18	18.6	14.1
19	19.3	14.6
20	19.6	14.9
21	18.7	14.2
22	16.8	12.8
23	15.0	11.4
24	13.3	10.0

Figure 10.3-13

(2) Locate time for transmission
(a) For example 6 GMT
1. GMT same as ZULU or UNIVERSAL TIME already learned in Message Format
(3) Locate MUF
(a) Example: 9.8MHZ
(4) Locate FOT
(a) Example: 7.6MHz

e. Optimum frequency, HF, ship-shore
(1) Best and most reliable circuit: FOT plus/minus 10%
(2) Otherwise: Keep in MUF-FOT range

6. Determining MUF/FOT Frequencies Using NTP-6 SUPP-1, Section 02 (for ship-shore and NAVCOMMSTA's/Units)

a. Steps in frequency selection

(1) Select proper communication station/unit chart (See Figure 10.3-14)

(2) Locate communication sector

(3) Select proper frequency for communication sector table

b. Select proper communication station/unit chart

(1) A Sector Chart available for each NAVCOMMSTA and NAVCOMMUNIT

(2) Communication areas surrounding each NAVCOMMSTA/UNIT divided into sector patterns

(a) Each sector has a letter and number designation

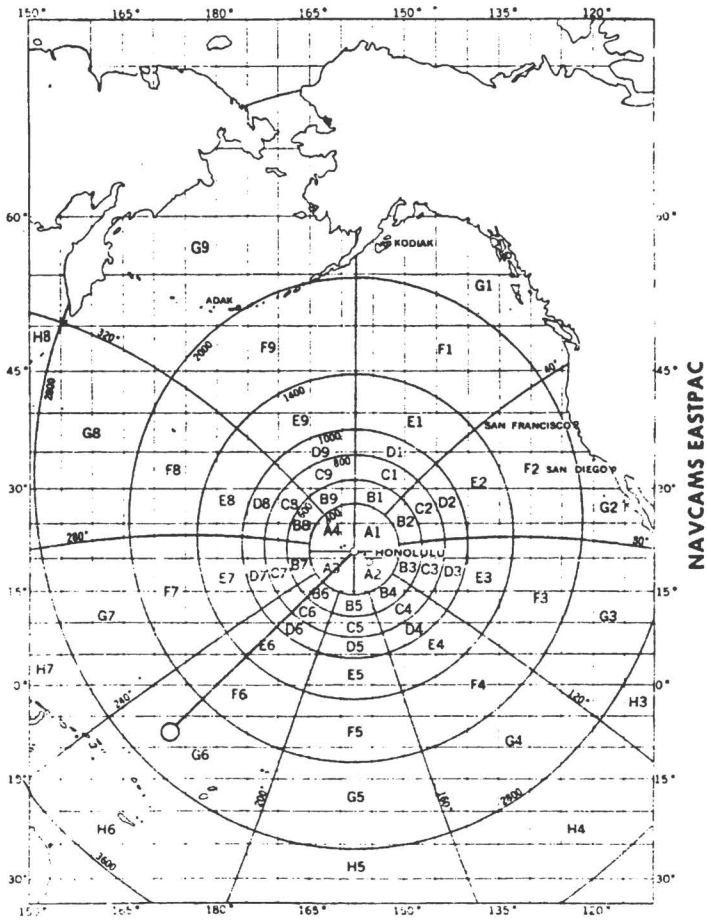


Figure 10.3-14

c. Locate communication sector on chart for communications being undertaken

(1) Identify location of transmitter (or receiver) communicating with NAVCOMMSTA/UNIT

(a) Example: G6 (about 1800 nautical miles SW of NAVCAMS EASTPAC - - NAVCOMMSTA HONOLULU)

d. Select proper frequency from communication sector table. (See Figure 10.3-15)

TO/FROM HONOLULU — JUL 1970 — SSN 84

SECTOR	GMT	MUF	FOT	GMT	MUF	FOT	GMT	MUF	FOT	GMT	MUF	FOT
	2	20.6	16.7	8	20.4	15.7	14	16.3	10.3	20	19.7	16.6
G6	4	22.7	18.4	10	19.4	15.3	16	12.5	7.8	22	19.4	16.5
	6	23.1	17.8	12	18.5	14.6	18	16.4	13.8	24	19.9	16.9

Figure 10.3-15

(1) Locate correct table
    (a) Example: G6
(2) Select MUF/FOT frequencies for time of transmission
    (a) Example for 1000Z (GMT)
        1. MUF: 19.4MHZ
        2. FOT: 15.3MHZ
(3) NOTE: To determine frequencies for ODD-NUMBER hours use following procedures
    (a) Process: Add adjacent frequencies (above and below desired hour) and divide by 2.
        1. Example: Wanted MUF/FOT for 1100Z (GMT) using G6 sector

MUF: 1000Z = 19.4MHZ
1200Z = 18.5MHZ
(1100Z) = 37.9MHZ (divided by 2) = 18.95MHZ

MUF: 1000Z = 15.3MHZ
1200Z = 14.6MHZ
(1100Z) = 29.9MHZ (divided by 2) = 14.95MHZ

INFORMATION SHEET 10.3

Radiowave Propagation

INTRODUCTION

In our discussion of radio wave propagation, a number of terms are used that could tend to confuse you if the terms are not understood. Therefore, the following list of defined terms is provided.

REFERENCES

1. NAVEDTRA 10228-G, Radioman 3 & 2 RTM & NRCC
2. NAVSHIPS 0967-301-7070, Afloat Communications Systems Criteria Handbook, Volume VII.
3. ACP-167 (F), Glossary of Communications - Electronics Terms.

INFORMATION

A. Terms and Definitions

1. ATMOSPHERE - The mass of space surrounding the earth, including the troposphere, stratosphere, and ionosphere. Also called "free space".

2. ATTENUATION - The decrease in signal strength of a radio wave.

3. CONDUCTIVITY - A measure of the ability of a material to act as a path for electron flow.

4. DIFFRACTION - The bending of an electromagnetic wave around the edge(s) of a solid object.

5. DIRECT WAVE - A radio wave that is propagated in a straight line through space from the transmitting to the receiving antenna.

6. FADING - The variation of radio signal strength, usally gradual, during the time of reception.

7. GROUND WAVE - A radio wave that travels (propagates) close to the earth's surface and reaches the receiving antenna without being influenced by the ionosphere. The ground wave includes all components of a radio wave travelling over the earth except the sky wave.

8. IONOSPHERE - That part of the earth's outer atmosphere where ionization is present in sufficient quantity to affect the propagation of radio waves. Also known as the portion of the atmosphere above the stratosphere. 50-250 miles above the earth's suface.

9. MAXIMUM USABLE FREQUENCY (MUF) - The highest frequency or frequencies that may be used at a specific time of day for radio communications between two points.

10. NOISE - Any extraneous electrical disturbance tending to interfere with the normal reception of a transmitted signal.

11. FREQUENCY OF OPTIMUM TRANSMISSION (FOT) - The most reliable frequency for propagation at a specific time.

12. LOWEST USABLE FREQUENCY (LUF) - The lowest frequency that may be used during a specific time, depending upon power and bandwidth requirements.

13. PROPAGATION - the transmission of electromagnetic (radio) waves from one point to another.

14. REFLECTION - The phenomenon occurring when a radio wave strikes the surface of the earth at some distance from the antenna and is returned upward toward the ionized layer of air.

15. REFRACTION - The phenomenon occurring when a radio wave obliquely passes from one medium to another of different density, causing the wave to change direction.

16. SPACE WAVE - A radio wave that travels entirely through the earth's troposphere.

17. SKY WAVE - A radio wave that is propagated or acted upon by the ionosphere.

18. SURFACE WAVE - that part of the ground wave that is affected chiefly by the conductivity of the earth.

19. STRATOSPHERE - That part of the earth's atmosphere lying between the troposphere and the ionosphere; 10-50 miles above the earth's surface.

20. TROPOSPHERE - The lower part of the earth's atmosphere, lying between the surface of the earth and the stratosphere; 6-10 miles above the earth's surface.

ASSIGNMENT SHEET 10.4

Emission Control

INTRODUCTION

This lesson describes Emission Control: What it is, reasons for its imposition, radiation hazards, and your responsibilities as a Radioman during Emission Control.

LESSON TOPIC LEARNING OBJECTIVES:

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the NOVEMBER, CHARLIE, GOLF, ROMEO and SIERRA systems, in accordance with COMNAVTEL-COMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.1.7 Given the standard letter abbreviations used to identify procedures or regulations used for fleet electromagnetic emission control match each to its description of RF radiation control situations.

4.1.8 Given EMCON conditions, select statements describing specific functions or responsibilities to be carried out by Radiomen in afloat or ashore installations.

STUDY ASSIGNMENT

Study notetaking sheets and personal notes.
Answer the following study questions on a separate piece of paper.

STUDY QUESTIONS

1. The establishment of strict limits on the operation of equipments that radiate RF energy, best described by the abbreviation _____.

2. List 2 reasons for instituting EMCON.

3. Radio frequency radiations (emissions) that may cause injury or damage by harming the human body, igniting volatile combustibles or actuating electro explosive devices, defined by the abbreviation _____.

4. List 4 possible immediate affects of RF radiation.

5. Radiated frequencies produce a high intensity field that can prematurely actuate sensitive electro-explosive devices, defined by the abbreviation _____.

6. Who establishes policies for EMCON?

4095

7. Which publication states how to implement EMCON and the rules for adjusting emission?

8. What are two NAVCOMMSTA responsibilities upon notification from NAVCAMS, that fleet units are operating under EMCON.

9. What are two typical Radioman responsibilities during EMCON.

NOTETAKING SHEET 10.4

Emission Control

REFERENCES:

1. NAVSHIPS 0967-301-7050, Afloat Communications System Criteria Handbook, Volvume V

2. NAVSHIPS 0900-005-800, Technical Manual for Radio-Frequency Hazards

3. NAVORD OP3565 (NAVAIR 16-1-529), Technical Manual - Radio Frequency Hazards to Ordnance, Personnel, and Fuel (U)

NOTETAKING OUTLINE

A. Introduction

1. Definition of EMCON (Emission Control): The establishment of strict limits of the operation of equipments that radiate RF energy
   a. Regulates the operation of all equipments that produce electromagnetic radiations in specific situations, for specific time periods.
      (1) Controls on electronic communications, radar, etc.
      (2) Required equipment shutdown, or strictly controlled equipment management
         (a) Controlling frequencies utilizied during EMCON conditions
         (b) Controlling power applied to emitting equipment

2. Reasons for Instituting EMCON
   a. To maintain security of force mission or tactical situations
      (1) To limit or prevent enemy receipt or use of intelligence
   b. To prevent personal or physical damage resulting from emission-caused mishaps.
      (1) Provide personal safety from radiations
      (2) Provide personal safety, and prevent damage to material or objects from fire or explosion initiated by RF emissions

B. Radiation hazards (RADHAZ)

1. Definition: Radio frequency radiations (emissions) that may cause injury or damage
   a. Harm human body
   b. Ignite volatile combustibles
   c. Actuate electro-explosive devices

2. Radiation effects on humans
   a. Only absorbed RF energy constitutes a hazard
      (1) Danger exists though RF burns may not be visible on the body
   b. Depth of penetration and coincident heating depend on emission frequency
      (1) Depth of penetration
         (a) Below 1GHZ: Deep body tissue penetration
         (b) Above 3GHZ: Surface or near surface tissue damage
            1. Comparable to infrared radiation or direct sunlight

(2) RF radiation heat-damage occurs when the body cannot dissipate the heat effectively.

c. Possible immediate effects of RF radiation
(1) High fever
(2) Blistering of the skin
(3) Rapid breathing
(4) Fainting
(5) Convulsions or coma
(6) Death

d. Possible long term effects of RF radiation
(1) Eye cataracts
(2) Temporary sterility
(3) Leukemia
(4) Senility
(5) Disoriented thought patterns

3. Warning Signs

a. Warning signs are posted at eye level at the foot of ladders or other access to all towers, masts, and superstructure areas which have hazardous levels of radiation

(1) Warning signs not to proceed further
(2) Warning of hazard to eyesight
(3) Warning of minimum safe distance

b. WATCH FOR WARNING SIGNS AND TAKE THE PROPER PRECAUTIONS

C. Hazards of Electromagnetic Radiation to Ordnance (HERO)

1. Definition: Radiated frequencies produce a high intensity field that can prematurely actuate sensitive electro-explosive devices
a. RF energy may enter ordnance through a hole or crack in device
b. RF energy may be conducted into it by firing leads, wires, screwdrivers, etc.
c. Ordnance systems most susceptible during
(1) Assembly and disassembly
(2) Loading and unloading
(3) Handling in RF electromagnetic fields
d. Possible effects of premature actuation
(1) Propellant ignition
(2) Reduction of ordnance reliability (create duds)
(3) Warhead detonation

2. Implementation of HERO Requirements
a. Technical Manual, Radio Frequency Hazards to Ordnance, Personnel, and Fuel (U) NAVORD OP 3565/NAVAIR 16-1529
b. Coordinated responsibility of ordnance handlers and radiomen.

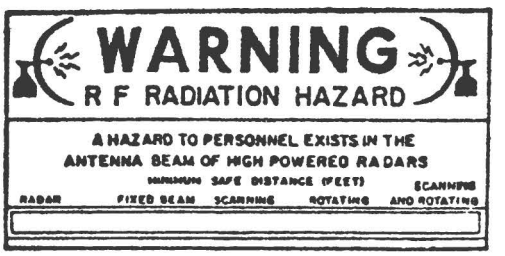
3. Warning Signs

a. Warning signs are posted at eye level at the foot of ladders or other access to all towers, masts, superstructure areas, and deck areas which have hazardous levels of radiation

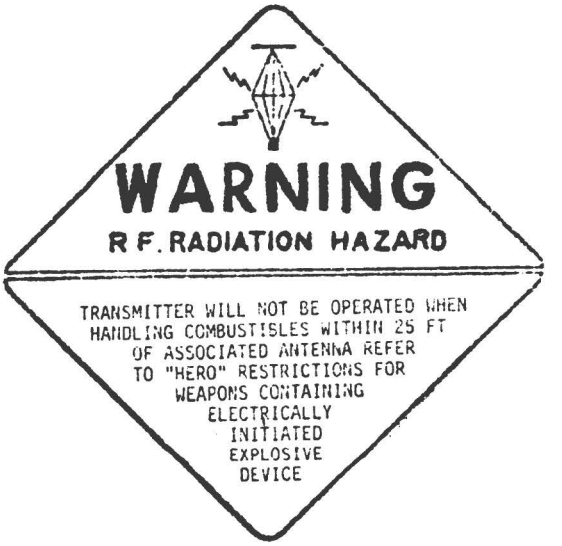
(1) Warning sign of hazard to ordnance

DO NOT PROCEED FURTHER

HAZARD TO EYESIGHT



MINIMUM SAFE DISTANCE



HAZARD TO ORDNANCE

WARNING SIGNS
Figure 10.4-1

D. Hazards of Electromagnetic Radiation to Fuel (HERF)

1. Definition: Radiated RF energy from communications and radar equipment that can ignite volatile fuel-air mixtures.
2. Ignition of fuel vapors and air.
   a. Probability of ignition of fuel vapors by RF induced arcing is small but can happen
      (1) At distances as great as one-half wavelength from the transmitting antenna, ignition has occured
         (a) Example: Operating frequency of 7MHZ, one-half wavelength computes to a distance of approximately 140.5 feet.
         (b) Transmit power of 100 watts or less can cause ignition.

E. Instituting EMCON

1. Policies Established by Fleet CINC's
   a. Based on enemies capabilities for interception vice fleet's need to use electronic emissions for fleet mission.

2. Restrictions on Emissions Imposed by Fleet CINC's
   a. Based on operational intelligence or technical factors
      (1) Technical factors: Factors relating to personal and physical safety.
3. Pertinent Publications
   a. NWP-33
      (1) How to implement EMCON
      (2) Rules for adjusting emissions
   b. NAVSHIPS Technical Manuals
      (1) Guidance for emission controls for RADHAZ and HERO conditions.
   c. Electronic Information Maintenance Books (EIMB's)
      (1) Describes personal hazards from emissions in various situations, such as man aloft, ships in port, etc.
   d. NWP-4
      (1) Identifies ways of communicating without violating EMCON.

4. NAVCOMMSTA Responsiblities
   a. Upon notification by NAVCAMS that fleet units are operating under EMCON, the NAVCOMMSTA
      (1) Screens broadcast traffic for FLASH and IMMEDIATE messages pertaining to the operation
         (a) Transmit these messages at least one additional time to ensure receipt by addressees.
      (2) Provides additional broadcast frequencies and/or directional antennas as required to serve the EMCON area.

5. Typical Radioman Responsibilities During EMCON
   a. Carry out task specified in radioroom EMCON instructions
      (1) Shut down or monitor control over transmission equipment
         (a) Of action taken
         (b) Of frequency or power settings during EMCON
   b. Participate in EMCON training activities
      (1) Fleet communications
         (a) Typically operating at RF below 30MHZ
         (b) NWP-4 identifies ways of communicating without violating EMCON.

ASSIGNMENT SHEET 10.5

Modes of Operation Emission Designators, and Equipment Nomenclature

INTRODUCTION

This lesson discusses equipment designations and capabilities necessary in selecting the correct equipment to set up operational telecommunications systems. It also describes designations used for brevity in categorizing the various emissions used in telecommunications systems.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.2 Given a list of available equipment, select the appropriate system components needed to set up five communication systems including the November, Golf, Charlie, Romeo, and Sierra systems in accordance with COMNAVTELCOMINST C2796.1 with at least 80 percent accuracy.

4.2.1 Given a list of equipments, match each equipment to its equipment nomenclature.

4.2.2 Given specific equipment transmission modes, match each mode to its most common application.

4.2.3 Given emission designators, match each to the specific type of emission.

STUDY ASSIGNMENT

Study Notetaking Sheet 10.5 and personal notes. Answer the following study questions on a separate sheet of paper.

STUDY QUESTIONS

1. The transmission of short or long pulses of RF energy to form dots and dashes of the Morse Code characters is a description of which type of mode?

2. What type of transmission is the mode AM most commonly used for?

3. Teletype transmissions are which type of mode of operation?

4. Which mode of operation is described by "The band of frequencies in an amplitude modulated RF wave which extend from the RF carrier frequency to 3KHz above the RF carrier?"

5. Which mode of operation is rarely used in Naval communications?

6. Which publication lists a breakdown of emission designators?

7. What are emission designators used for?

8. What is the minimum number of parts needed in an emission designator?

9. Part one of an emission designator is the _____.

10. What do parts 2 through 6 of an emission designator identify?

11. How would a bandwidth of 2.8KHz be expressed in an emission designator?

12. What details are revealed by equipment nomenclature about a particular item?

13. In the example "AN/WRC-1C, what does the designation "1C" signify?

14. In the same example stated in the question above, define the letters "WRC."

NOTETAKING SHEET 10.5

Modes of Operation, Emission Designators, and Equipment Nomenclature

REFERENCE:

NTP-4, Naval Telecommunication Procedures, Fleet Communications

NOTETAKING OUTLINE

A. Modes of Operation

1. CW (CONTINUOUS WAVE)

a. Transmission of short or long pulses of RF energy to form dots and dashes (Dits and dahs) of the Morse Code characters

b. Used principally for radiotelegraphy

c. Most reliable alternate mode--particularly in last resort situations

d. EXAMPLE: International Distress Frequency 500KHz, HAM operators

2. AM (AMPLITUDE MODULATION)

a. The process by which the amplitude of the RF carrier wave is varied in proportion to the frequency of the modulating signal.

b. Frequency of the RF carrier wave remains constant

c. Used for voice transmissions

d. EXAMPLES: Harbor communications, HAM operators, commercial radio stations, CB (Citizens Band)

3. FSK RATT (Frequency Shift Keying Radio-teletype)

a. Shifting an unmodulated radio frequency carrier back and forth between two distinct frequencies of a teletype channel, one frequency being the MARK signal, and the other the SPACE signal. At any given time, one, and only one, of these frequencies is being emitted by the transmitter.

b. EXAMPLES: Western Union TTY circuit, HAM operators, NAVY single channel TTY circuits.

4. USB (UPPER SIDE BAND)

a. The band of frequencies in an amplitude modulated RF wave which extends from the RF carrier frequency to 3KHz above the RF carrier.

b. Used extensively in Naval communications.

c. EXAMPLE: CB or HAM; HICOM

5. LSB (LOWER SIDE BAND)

a. The band of frequencies in an amplitude modulated RF wave which extends from the RF carrier frequency to 3KHz below the RF carrier.

b. Rarely used in Naval communications.

c. EXAMPLES: CB, HAM, Coast Guard communications

6. ISB (INDEPENDENT SIDE BAND)

a. Radiation of a reduced RF carrier on which one intelligence is used to modulate the upperside and another intelligence is used to modulate the lowerside

B. Emission Designators

1. All radio transmissions are designated according to their necessary bandwidths and their classification symbols

a. Breakdown found in NTP-4, Naval Telecommunications Procedures, Fleet Communications, Section 7, Chapter 2

b. Prescribed by the International Telecommunications Union

2. Used for brevity

3. Composed of six parts with a minimum of four parts (necessary Bandwidth and Classification Symbols)

4. Necessary Bandwidth (Part 1)

a. Width of frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specific conditions.

b. Added before the Classification Symbols

c. Unit of bandwidth (Necessary Bandwidth)

(1) .001 to 999Hz expressed in Hertz (Letter "H")
(2) 1.00 to 999KHZ expressed in KHz (Letter "K")
(3) 1.00 to 999MHz expressed in MHz (Letter "M")
(4) 1.00 to 999GHz expressed in GHz (Letter "G")

d. Letter (H, K, M or G) occupies position of decimal point and represents unit of bandwidth.

5. Classification Symbols (Parts 2 through 6)

a. Classified and symbolized according to basic characteristics

b. Basic characteristics

(1) First Symbol--Type of modulation of the main carrier

(a) Part 2 of emission designator

(2) Second Symbol--Nature of Signal(s) modulating the main carrier

(a) Part 3 of emission designator

(3) Third Symbol--Type of information to be transmitted

(a) Part 4 of emission designator

Table 10.5-1
TABLE OF CLASSIFICATION SYMBOLS
(Symbols 1-3, Required)

First Symbol - Designates Type of Modulation of the Main Carrier:

UNMODULATED
N - Emission of unmodulated carrier

AMPLITUDE MODULATED
A - Double-sideband
H - Single-sideband, full carrier
R - Single-sideband, reduced or variable level carrier
J - Single-sideband, suppressed carrier
B - Independent sidebands
C - Vestigial sideband

ANGLE-MODULATED
F - Frequency modulation
G - Phase modulation

AMPLITUDE and ANGLE-MODULATED
D - Main carrier is amplitude-modulated and angle-modulated simultaneously or in a preestablished sequence

PULSE
P - Sequence of unmodulated pulses
K - Modulated in amplitude
L - Modulated in width/duration
M - Modulated in position phase
Q - Carrier is angle-modulated during the period of the pulse
V - Combination of the foregoing or is produced by other means

Second Symbol - Designates the Nature of Signal(s) Modulating the Main Carrier:

0 - No modulating signal

1 - A single channel containing quantized or digital information without the use of a modulating sub-carrier. Excludes time-division multiplex

2 - A single channel containing quantized or digital information with the use of a modulating sub-carrier

3 - A single channel containing analogue information

7 - Two or more channels containing quantized or digital information

8 - Two or more channels containing analogue information

9 - Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analogue information

X - Cases not otherwise covered

Third Symbol - Designates Type of Information to be Transmitted[1]:

N - No information transmitted

A - Telegraphy - for aural reception

B - Telegraphy - for automatic reception

C - Facsimile

D - Data transmission, telemetry, telecommand

E - Telephony (including sound broadcasting)

F - Television (video)

W - Combination of the above

X - Cases not otherwise covered

[1] In this context the word "information" does not include information of a constant, unvarying nature such as provided by standard frequency emissions continuous wave and pulse radars, etc.

COMBINATION
W - Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination of two or more of the following modes; amplitude, angle, pulse.

OTHER
X - Cases not otherwise covered

c. Optional Characteristics--Not normally required

(1) Fourth Symbol--Details of signal(s)

(a) Part 5 of emission designator

(2) Fifth Symbol--Nature of multiplexing (compiling channels)

(a) Part 6 of emission designator

Table 10.5-2
TABLE OF CLASSIFICATION SYMBOLS
SYMBOLS 4 & 5 - OPTIONAL)

Fourth Symbol - Designates the Details of Signal(s)

A - Two-condition code with elements of differing numbers and/or durations

B - Two-condition code with elements of the same number and duration without error-correction

C - Two-condition code with elements of the same number and duration with error-correction

D - Four-condition code in which each condition represents a signal element (of one or more bits)

E - Multi-condition code in which each condition represents a signal element (of one or more bits)

F - Multi-condition code in which each condition or combination of conditions represents a character

G - Sound of broadcasting quality (monophonic)

H - Sound of broadcasting quality (stereophonic or quadraphonic)

J - Sound of commercial quality (excluding categories defined for symbol K and L below)

K - Sound of commercial quality with the use of frequency inversion or band-splitting

L - Sound of commercial quality with separate frequency modulated signals to control the level of demodulated signal

M - Monocrome

N - Colour

W - Combination of the above

X - Cases not otherwise covered

Fifth Symbol - Designates the Nature of Multiplexing

N - None

C - Code-division multiplex (includes bandwidth expansion techniques)

F - Frequency-division multiplex

T - Time-division multiplex

W - Combination of frequency-division multiplex and time-division multiplex

X - Other types of multiplexing

6. Common emission designators

a. 1K24F1B (Golf System) (HF TTY)

b. 300HF1B (Charlie System) (UHF TTY)

c. 3K00J7B (November System) (HF multi-channel fleet broadcast)

d. 6K00A3E (AM voice)

e. 37K5P2D (Romeo System) (UHF covered voice)

f. 3K00J3E (Sierra System) (USB voice)

C. Equipment Nomenclature

1. Equipments identified by abbreviations and numbers
   a. Simplifies identification and selection when setting up communication systems

2. Major Unit Designation

   a. Common designation: AN/WRC-1

   b. AN identifies equipment as a unit developed through DOD regulations for Army, Navy and Air Force Use.

   c. WRC identifies the basic type and use for the equipment.

   d. Kinds of information provided by the equipment, basic unit identificatio letters (reference: Table 10.5-2)
      (1) First letter: Identifies type of installation equipment is used in

         (a) A - airborne
         (b) G - Ground/general ground use
         (c) S - Water surface craft
         (d) W - Water (surface or underwater)
         (e) U - General utility (more than one type installation)

      (2) Second letter: Identifies the type of equipment

         (a) G - telegraph/teletype
         (b) P - radar
         (c) R - radio
         (d) S - special types or combination of types

      (3) Third letter: Identifies purpose for which equipment is used

         (a) A - auxiliary assemblies (not complete operating units)
         (b) C - communications (receiving and transmitting)
         (c) Q - special or combination purposes
         (d) R - receiving
         (e) T - transmitting

   e. The third letter is not always used.

   f. Numbers and letters following basic equipment designation identify model modifications

      (1) AN/WRC-2C:
         (a) C: Third modification to model 2 of AN/WRC

(b) Full description of AN/WRC-2C:
1. Third modification (C) of model 2
2. Of the Communications (C) Radio (R) Water installation (W) equipment
3. Used by combined military forces

3. Additional equipment identifiers

a. To identify specific type or variation of a basic unit.

(1) CV-2460/SGC: Has slightly different frequency characteristics from the combined military services AN/SGC-1

(2) CV-2460
- Model
- Converter

(3) Equipment description: CV-2460/SGC
(a) Model 2460 converter (CV)
(b) For teletype (G) communications (C) installed on water surface craft (S)

b. To identify a component of a basic unit

(1) SB-863/SRT
Unit

Model 863 switchboard (patch panel)

(2) Equipment description: SB-863/SRT
(a) Model 863 switchboard (SB)
(b) Used in Radio (R) Transmitting (T) equipment used on water surface craft (S)

c. Commonly used identifier prefixes

(1) CV -- converter
(2) AM -- amplifier
(3) PP -- power supply
(4) SB -- switchboard
(5) T -- transmitter
(6) R -- receiver
(7) TT -- teletype

Table 10.5-3 - Table of equipment indicator letters

First Letter (Installation)	Second Letter (Type of Equipment)	Third Letter (Purpose)
A–Airborne (installed and operated in aircraft).	A–Invisible light, heat radiation.	A–Auxiliary assemblies (not complete operating sets used with or part of two or more sets series).
B–Underwater mobile, submarine.	B–Pigeon.	B–Bombing.
C–Air transportable (inactivated, do not use).	C–Carrier.	C–Communications (receiving and transmitting).
D–Pilotless carrier.	D–Radiac.	D–Direction finder, reconnaissance, and/or surveillance.
F–Fixed.	E–Nupac.	E–Ejection and/or release.
G–Ground, general ground use (include two or more ground-type installations).	F–Photographic.[1]	G–Fire-control or searchlight directing.
K–Amphibious.	G–Telegraph or teletype.	H–Recording and/or reproducing (graphic meteoroligical and sound).
M–Ground, mobile (installed as operating unit in a vehicle which has no function other than transporting the equipment).	I–Interphone and public address	K–Computing.
P–Pack or portable (animal or man).	J–Electromechanical or Inertial wire covered.	L–Searchlight control (inactivated, use G).
S–Water surface craft.	K–Telemetering.	M–Maintenance and test assemblies (including tools).
T–Ground, transportable.	L–Countermeasures.	N–Navigational aids (including altimeters, beacons, compasses, racons, depth sounding, approach, and landing).
U–General utility (includes two or more general installation classes, airborne, shipboard, and ground).	M–Meteorological.	P–Reproducing (inactivated, do not use).
V–Ground, vehicular (installed in vehicle designed for functions other than carrying electronic equipment, etc., such as tanks).	N–Sound in air.	Q–Special, or combination of purposes.
W–Water surface and underwater.	P–Radar.	R–Receiving, passive detecting.
	Q–Sonar and underwater sound.	S–Detecting and/or range and bearing, search.
	R–Radio.	T–Transmitting.
	S–Special types, magnetic, etc., or combinations of types.	W–Automatic flight or remote control.
	T–Telephone (wire).	X–Identification and recognition.
	V–Visual and visible light.	
	W–Armament (peculiar to armament, not otherwise covered).	
	X–Facsimile or television.	
	Y–Data processing.	

[1]Not for US use except for assigning suffix letters to previously nomenclatured items.

Reference: NAVEDTRA 10478, Shipboard Electronics Material Officer

PROGRESS CHECK 10.5

Modes of Operation, Emission Designators, and Equipment Nomenclature

Answer the following questions on a separate sheet of paper

1. Which mode is defined as the transmission of short or long pulses of RF energy to form dots and dasher of the Morse Code characters?

2. What is the AM mode most commonly used for?

3. Which mode of operation is used for teletype keying?

4. Which mode of operation is defined as the band of frequencies in an amplitude modulated RF wave which extends from the RF carrier frequency to 3 KHz above the RF carrier?

5. Which mode of operation is rarely used in naval communications?

6. Which mode of operation would be used to modulate two separate intelligences on both the upper and lower sidebands?

7. Where would a breakdown of emission designators be found?

8. How many parts are necessary for an emission designator?

9. What is part 1 of an emission designator?

10. Describe the applications for the following emission designators

    a. 1K24F1B
    b. 300HF1B
    c. 3K00J7B
    d. 6K00A3E
    e. 37K5P2D
    f. 3K00J3E

11. How would the third modification to an AN/WRC-1 be designated?

ASSIGNMENT SHEET 10.6

HF Transmitters/Receivers

INTRODUCTION

This is the second of five lessons designed to prepare you for the task of setting up entire communications systems. The equipments to be presented here are components of high frequency systems used for traffic transmitted and/or received over long distances. The basic communications information acquired in the preceding lesson will now be applied to the tuning of HF transmitters and receivers.

LESSON TOPIC LEARNING OBJECTIVES:

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the NOVEMBER, CHARLIE, GOLF, ROMEO and SIERRA systems, in accordance with COMNAVTELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.2 Given a list of available equipments, select the appropriate system components needed to set up five communication systems including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1 with at least 80 percent accuracy.

4.2.4 Given specific types of HF transmitters and receivers, UHF transceivers, convertors, audio patch panels, and DC patch panels, select the operational characteristics of those equipments in their alternative modes of operation with at least 80 percent accuracy.

4.3 Given receive teletype equipment, DC patch panels, audio patch panels, crypto devices, terminal equipments, receive antenna patch panels, and an HF receiver, set up the system components of the November system for HF multichannel broadcast operation in accordance with COMNAVTELCOMINST C2796.1.

4.3.2 Given system components for an HF November system, adjust system components for optimum performance.

4.5 Given send and receive teletypes, DC patch panels, audio patch panels, HF transmitter, HF receivers, crypto devices, converters, remote transmitter control, and receive antenna patch panels, set up the system components of the Golf system for HF full-duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.5.2 Given system components for the Golf system, adjust system components for optimum performance.

4.7 Given audio patch panels, HF transmitters, HF receivers, crypto devices, remote keying position and handset, set up the system components of the Sierra system for narrowband secure voice operations in accordance with COMNAVTELCOMINST C2796.1.

4.7.2 Given system components for the Sierra system, adjust system components for optimum performance.

STUDY ASSIGNMENT

Study Notetaking Sheet 10.6 and personal notes. Notetaking sheets may not be used during the performance test. The information presented in this lesson is also included in the progress check 10.6.

NOTETAKING SHEET 10.6
HF Transmitters/Receivers

REFERENCES:

1. NAVSHIPS 0967-191-7010, Technical Manual for AN/URT-23 (V) Transmitter, Sections 1 and 3

2. NAVSHIPS 0967-878-4020, Operator's Handbook for T-827D/URT Radio Transmitter, Volume II

3. NAVSHIPS 0967-971-0010, Technical Manual for AN/WRC-1 HF Transmitter-Receiver Group, Volume 1, Section 1, and Volume 2, Section 3.

4. NAVSHIPS 0967-970-9090, Technical Manual for R-1051B/URR Receiver, Section 1

5. NAVSHIPS 94841(A), Operator's Handbook for R-1051B/URR Receiver, Section 3

NOTETAKING OUTLINE

A. Common Characteristics of HF Equipment

   1. For HF communications, U.S. Navy uses R-1051/URR receivers, AN/URT-23(V) transmitter, and AN/WRC-1 transmitter receiver group.

   2. All used for long-distance communication.

   3. Your ship may have any one or all three.

   4. Navy HF range 2MHz to 30MHz.

   5. HF transmitter power output

      a. URT-23-1500 watts

      b. WRC-1--100 watts

   6. Modes of operation

      a. AM
      b. CW
      c. LSB
      d. ISB
      e. FSK/RATT
      f. USB

         (1) Subtract 2kHz from assigned frequency when using FSK or USB.

         (2) Window frequency

B. Major Components of HF Equipment

1. URT-23 transmitter

a. PP-3916/UR power supply

b. AM-3924(P)/URT RF amplifier

c. T-827D/URT radio transmitter

(1) Commonly called "exciter"

d. AN/URA-38 antenna coupler control

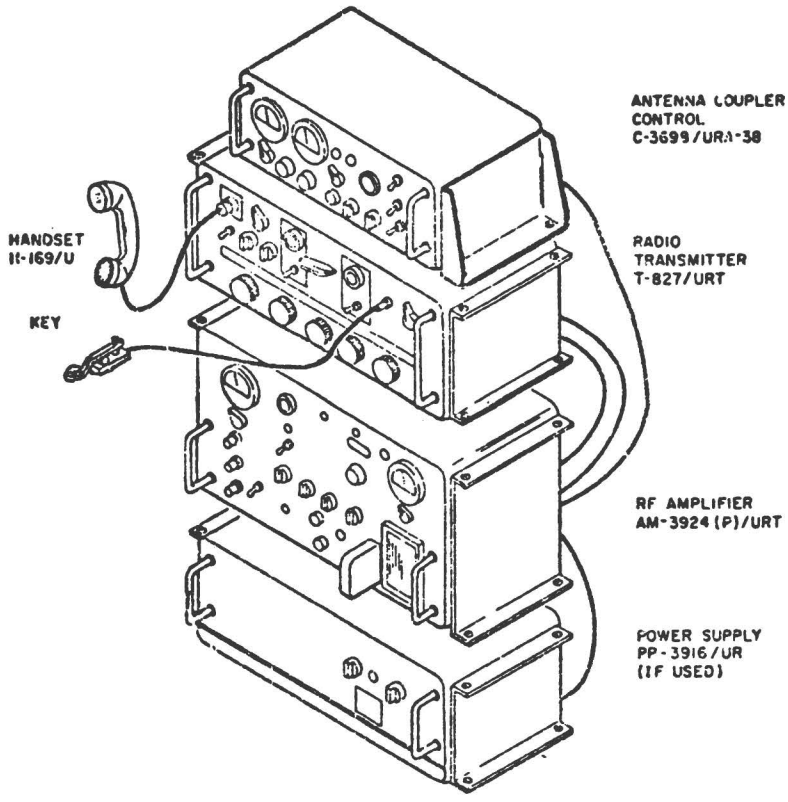
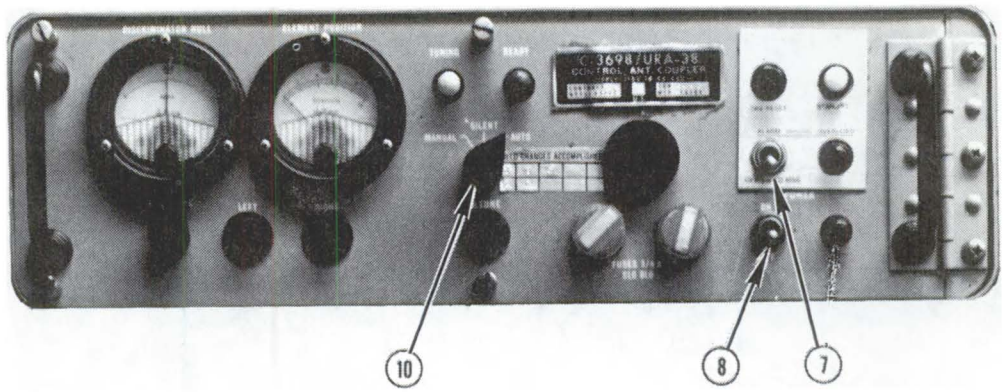
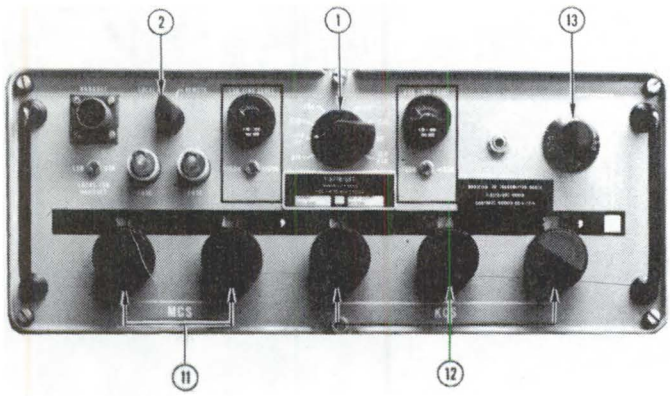


Figure 10.6-1 AN/URT-23 Transmitter





1. T-827 MODE selector switch
2. T-827 LOCAL-REMOTE switch
3. AM-3924 PRIMARY POWER switch
4. AM-3924 OVERLOAD switch
5. AM-3924 KEY switch
6. AM-3924 FREQ MC switch
7. AN/URA-38 OVERLOAD SWITCH
8. AN/URA-38 POWER switch
9. AM-3924 PWR control
10. AN/URA-38 MODE selector
11. T-827 MCS controls
12. T-827 KCS controls
13. T-827 CPS controls
14. AM-3924 OPERATE light
15. AM-3924 meter switch
16. AM-3924 power meter

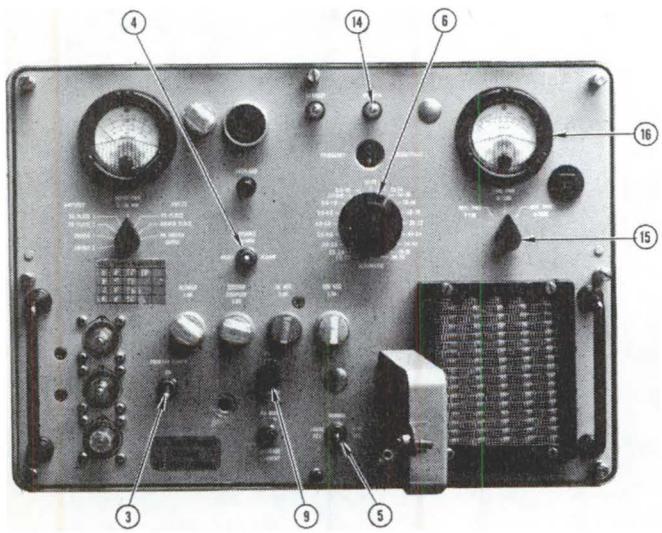
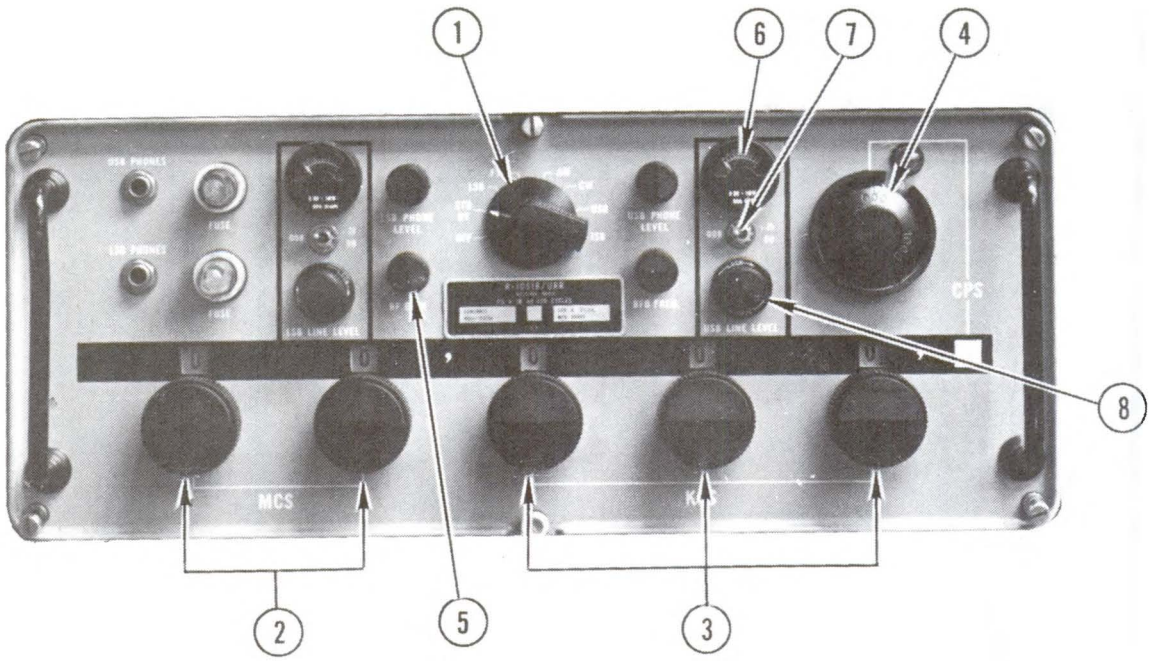


Figure 10.6-2 AN/URT-23 Components

2. R-1051 receiver--single unit



1. MODE selector switch
2. MCS controls
3. KCS controls
4. CPS switch
5. RF GAIN control
6. USB PHONE LEVEL control
7. USB LINE LEVEL switch
8. USB LINE LEVEL control

Figure 10.6-3 R-1051/URR Receiver

3. WRC-1 transmitter-receiver group

a. R-1051 receiver

(1) Same as previously shown single unit

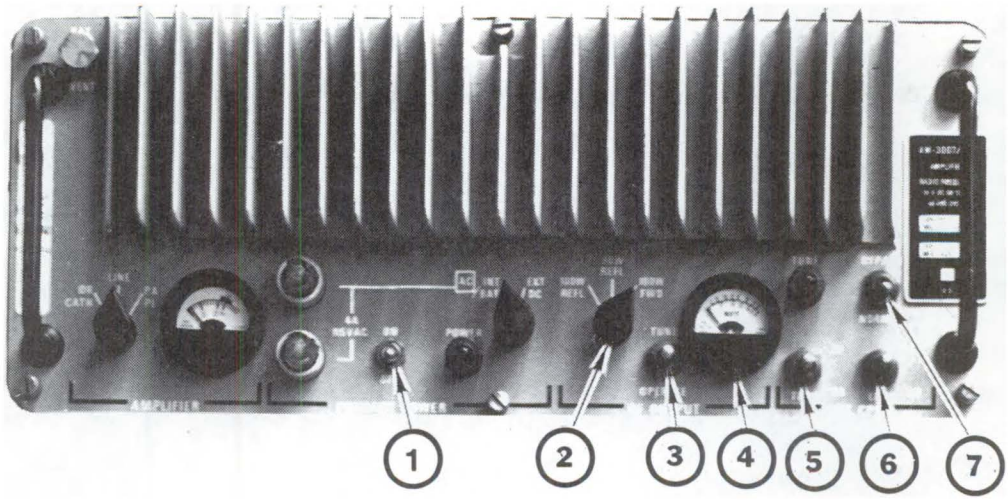
b. T-827/URT radio transmitter

(1) Same as in URT-23 group

c. AM-3007 RF amplifier

(1) Amplifies radiofrequency signal as in AM-3924 and contains CU-937 antenna coupler controls.

(2) Match output of amplifier to antenna.



1. AM-3007 PRIMARY POWER switch
2. AM-3007 RF OUTPUT power switch
3. AM-3007 RF OUTPUT TUNE/OPERATE switch
4. AM-3007 RF OUTPUT meter
5. AM-3007 ANT CPLR TUNE switch
6. AM-3007 ANT CPLR LOAD switch
7. AM-3007 ANT CPLR BYPASS/NORMAL switch

Figure 10.6-4. AM-3007/URT RF amplifier and CU-937/UR antenna coupler

C. URT-23 Preliminary Settings, Tuning, and Securing Procedures

1. Preliminary settings

a. T-827 radio transmitter

(1) Mode selector switch to STDBY

(2) LOCAL/REMOTE switch to local

(a) Prevents remote keying of transmitter

b. AM-3924 RF amplifier

(1) PRIMARY POWER switch at OFF

(2) OVERLOAD switch at ALARM

(a) Provides audible alarm if overload occurs

(3) KEY switch at NORMAL

(a) Ensures that transmitter is not keyed

(4) FREQUENCY MC switch at AUTOMATIC

(a) Allows frequency to be controlled by manually tuning T-827.

c. URA-38 antenna coupler control

(1) OVERLOAD switch at ALARM

(2) POWER switch at OFF

2. Tuning the URT-23

a. AM-3924 RF amplifier

(1) PRIMARY POWER switch to ON

(a) ON indicator will activate

(b) Blower will energize and STDBY light will glow

(2) POWER control to fully clockwise

(a) Enables RF power to be varied

b. T-827 radio transmitter

(1) MODE selector switch to AM

(a) AM-3924 indicator lights will shift from STDBY to OPERATE following warmup period.

c. URA-38 antenna coupler control

(1) MODE selector switch to AUTO

(2) POWER switch to ON

(a) Tuning indicator light may come on if tuning elements are not already at home position.

d. T-827 radio transmitter

(1) MCS controls

(a) Dial in 1st and 2nd digits of assigned frequency.

(b) If assigned frequency is in 2-9 MHz range, 1st digit will be 0

(2) KCS controls

(a) Dial in 3rd, 4th and 5th digits of assigned frequency

(3) CPS switch to 000

(a) Locks in frequency

(b) 100Hz incremental tuning when in 100 thru 900 positions

e. AM-3924 RF amplifier

(1) Ensure OPERATE light is on

(a) If not, wait until it comes on

(2) Hold KEY switch to TUNE KEY position until URA-38 is tuned

(a) Begins automatic tuning cycle to produce low power carrier

(b) On URA-38, observe that TUNING light activates for approximately 5 seconds

(c) READY light (URA-38) will then come on to indicate antenna coupler control is tuned

(3) Turn KEY switch to LOCAL KEY position

(a) Check forward power on meter (top scale)

(4) Turn and hold meter switch in REFL PWR 0-1500 position; note indication on top scale of meter

(5) Turn and hold meter switch in REFL PWR 0-150 position; note indication on bottom scale of meter

(6) Set meter switch to FWD PWR 0-1500

(a) FWD PWR should be at least 25 times greater than REFL PWR

(b) If not, unkey transmitter by turning key switch to NORMAL; then push RETUNE button on URA-38 and repeat from AM-3924 procedures (from II.D.2.e)

(7) Return KEY switch to NORMAL

(a) Transmitter power now adjusted

f. T-827 radio transmitter

(1) MODE selector switch to desired mode of operation

(2) LOCAL-REMOTE switch to REMOTE

3. Securing the URT-23

a. URA-38 antenna coupler control

(1) POWER switch to OFF

(2) OVERLOAD switch to OFF

b. T-827 radio transmitter

(1) MCS/KCS frequency controls to 10,000

(2) MODE selector switch to STDBY

c. AM-3924 RF amplifier

(1) PWR control down (counterclockwise)

(2) PRIMARY PWR switch to OFF

D. R-1051 Tuning and Securing Procedures

1. Tuning the R-1051

a. MODE selector switch to desired mode of operation

b. MCS and KCS controls to desired frequency

c. CPS switch to 000

(1) Lock in frequency

(2) May be set in Vernier (V) position to continually adjust frequency, though less stable

d. RF GAIN control to fully clockwise

e. USB PHONE LEVEL control to comfortable volume level

f. USB LINE LEVEL switch to OdB

(1) dB - decibel; unit of sound measurement

(2) OdB is Navy reference point

g. USB LINE LEVEL control

(1) Adjust incoming signal level for OdB reading on USB LINE LEVEL meter

h. When operating in CW mode, turn Beat Frequency Oscillator (BFO) control clockwise to increase audio level

2. Securing the R-1051

a. MCS and KCS frequency controls to 0

b. MODE selector switch to STDBY

E. WRC-1 Tuning and Securing Procedures

1. Tuning the WRC-1

a. R-1051 receiver -- Tuned as previously demonstrated

b. AM-3007 RF amplifier

(1) PRIMARY PWR switch to ON

c. T-827 radio transmitter

(1) MODE selector switch to STDBY

(2) LOCAL - REMOTE switch to AM

(3) MODE selector switch to AM

(a) T-827 always tuned in AM, as in URT-23

(4) MCS and KCS controls to desired frequency

(5) CPS control to 000

d. AM-3007 RF amplifier and CU-937 antenna coupler

(1) RF OUTPUT power switch to 100 REFL

(a) Start in this position to protect meter circuitry during tuning

(2) ANT CPLR BYPASS/NORMAL switch to NORMAL

(a) Used when transmitter and receiver are operating on the same frequency

(3) RF OUTPUT TUNE/OPERATE switch to TUNE

(a) Keys the transmitter to read reflected and forward power

(4) ANT CPLR TUNE switch to 0 watts reflected power (REFL)

(a) Alternate between HI and LO as required

(b) If 0 watts unattainable, get as close as possible to tune out reflected power

(5) ANT CPLR LOAD switch to 0 watts reflected power

(a) Same as TUNE switch

(6) RF OUTPUT power switch to 30 watts reflected power

(a) Procedure same as ANT CPLR TUNE and LOAD switches

(7) RF OUTPUT power switch to 100 watts FWD

(a) Check forward power using top scale of meter

(b) Leave switch in this position to ensure forward power is higher than reflected power

(8) RF OUTPUT TUNE/OPERATE switch to OPERATE

(a) Unkeys transmitter to permit normal operation

e. T-827 RF transmitter

(1) MODE selector switch to desired mode of operation

(2) LOCAL/REMOTE switch to REMOTE

2. Securing the WRC-1

a. R-1051 -- same as previously demonstrated

b. AM-3007

(1) PRIMARY POWER switch to OFF

c. T-827

(1) MCS/KCS frequency controls to 10,000

(2) MODE selector switch to STDBY

d. R-1051

(1) MCS/KCS frequency controls to 0

(2) MODE selector switch to STDBY

F. HF Equipment Applications

1. R-1051 receiver and URT-23 transmitter and WRC-1 transmitter-receiver group are compatible for simplex and full-duplex HF systems aboard surface ships, submarines, shore activities, and aircraft.

   a. SIMPLEX: Provides a SINGLE channel or frequency on which information can be exchanged

      (1) Stations are capable of transmitting and receiving information, but NOT at the same time

         (a) One station must complete its transmission and clear the frequency before another station can transmit

   b. FULL-DUPLEX: Provides TWO channels or frequencies on which information can be exchanged

      (1) Two stations are capable of transmitting and receiving information at the same time

         (a) Each station transmits on a different frequency

2. In this course, the WRC-1 will be used as a transmitter only

G. Frequency Standards

1. Internal and external sources to achieve frequency stability

2. Example URQ-9 and URQ-10

PROGRESS CHECK 10.6
HF Transmitters/Receivers

Do not write on this test. Answer all questions on a separate sheet of paper.

1. What is the operating frequency range for all Navy HF equipments?

   a. 3 to 30MHz
   b. 2 to 30MHz
   c. 225 to 399.9MHz
   d. 30 to 300MHz

2. How many modes of operation are the URT-23, WRC-1 and R-1051 equipments capable of operating on?

   a. 2
   b. 4
   c 6
   d. 8

3. Which mode of operation is used for HF teletype systems?

   a. AM
   b. LSB
   c. CW
   d. FSK

4. Which piece of equipment is common to both the URT-23 and the WRC-1?

   a. R-1051
   b. T-827
   c. PP-3916
   d. AM-3924

5. What is the power output for the URT-23?

   a. 16 to 24 watts
   b. 1500 watts
   c. 100 watts
   d. 100 to 130 watts

6. Which mode is the T-827 tuned in?

   a. Desired mode of operation
   b. AM
   c. CW
   d. Any mode can be used for tuning

7. Which control on the R-1051 receiver allows for continuous tuning?

   a. Vernier
   b. KCS
   c. MCS
   d. Mode switch

8. Which mode is the R-1051 tuned in?

   a. AM
   b. CW
   c. FSK
   d. Always tuned in the desired mode of operation

9. What indicates that the URT-23 is tuned?

   a. Tune light
   b. Key light
   c. Ready light
   d. Power meter is peaked

10. On the R-1051 receiver, how is the RF gain control tuned?

   a. Off
   b. Fully clockwise
   c. Fully counter-clockwise
   d. Mid-range

ASSIGNMENT SHEET 10.7

UHF Transceivers

INTRODUCTION

Unlike the long-range WRC-1 HF transmitter-receiver group in the previous lesson, the short-range transceiver cannot be used for simultaneous send and receive operations. UHF full-duplex communications will be demonstrated later in the Charlie system in which two transceivers are applied to the configuration. In this lesson, you will learn to tune various transceivers for automatic selection of 19 preset channels, for manual selection of any of 1,750 frequencies, and for remote channel preset.

LESSON TOPIC LEARNING OBJECTIVES:

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo and Sierra systems, in accordance with COMNAVTELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.2 Given a list of available equipments, select the appropriate system components needed to set up five communication systems including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1 with at least 80 percent accuracy.

4.2.4 Given specific types of HF transmitters and receivers, UHF transceivers, convertors, audio patch panels, and DC patch panels, select the operational characteristics of those equipments in their alternative modes of operation with at least 80 percent accuracy.

4.4 Given send and receive teletypes, DC patch panels, audio patch panels, crypto devices, converters, and UHF transceivers, set up system components of the Charlie system for UHF full-duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.4.2 Given system components for the Charlie system, adjust system components for optimum performance.

4.6 Given audio patch panels, UHF transceivers, crypto devices, remote keying position and handset, set up the system components of the Romeo system for wideband secure voice operations in accordance with COMNAVTELCOMINST C2796.1.

4.6.2 Given system components for the Romeo system, adjust system components for optimum performance.

STUDY ASSIGNMENT

Study Notetaking Sheets and personal notes. Notetaking sheets may not be used during the performance test. Progress Check 5.7 also will cover the material presented in this lesson.

NOTETAKING SHEET 10.7
UHF Transceivers

REFERENCES

1. NAVELEX 0967-439-0010, Technical Manual for AN/URC-9 Transceiver, Sections 1 and 2

2. NAVSHIPS 0967-032-5010, Technical Manual for AN/SRC-20, AN/SRC-21 Transceivers, Section 2

3. NAVSHIPS 0967-125-6010, Technical Manual for AN/SRC-20 and AN/SRC-21 Transceivers, Sections 1 and 3

NOTETAKING OUTLINE

A. Common Characteristics of URC-9, SRC-21, and SRC-20 UHF Transceivers

   1. Basically short-range/line-of-sight communications

   2. Navy's UHF range 225MHz to 399.9MHz

      a. Range covered in 0.1MHz steps by 1750 crystal-controlled frequencies

      b. 19 channels may be preset for automatic selection

   3. Power output

      a. URC-9: 16 to 24 watts

      b. SRC-21: 16 to 24 watts

      c. SRC-20: 100 to 130 watts

         (1) Extra power provided by added amplifier component

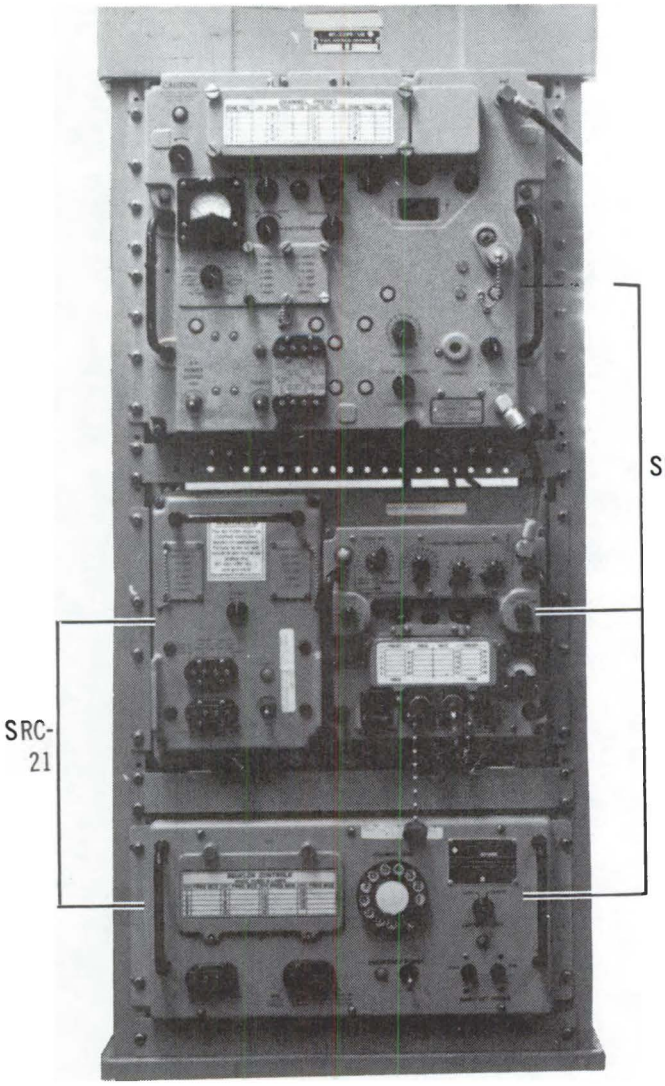
   4. Modes of operation

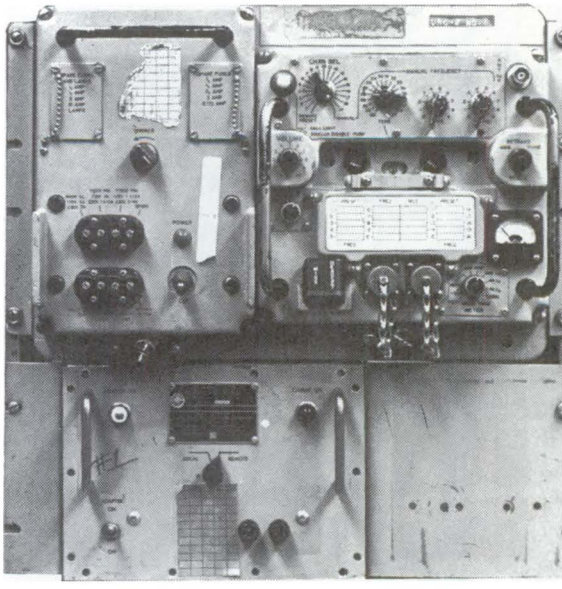
      a. AM--amplitude modulation (voice)

      b. MCW--modulated continuous wave (radio telegraphy)

      c. TONE MOD RATT--tone-modulated teletype

The photos below show the overall configurations of the UHF transceivers. Note the identical components included in the three sets.





URC-9

COMPONENT	URC-9	SRC-21	SRC-20
PP-2702/URC-9 power supply	X	X	X
RT-581/URC-9 transceiver	X	X	X
C-3866/SRC radio set control		X	X
MX-8430/URC-9 adapter control	X		
AM-1565/URC RF amplifier			X

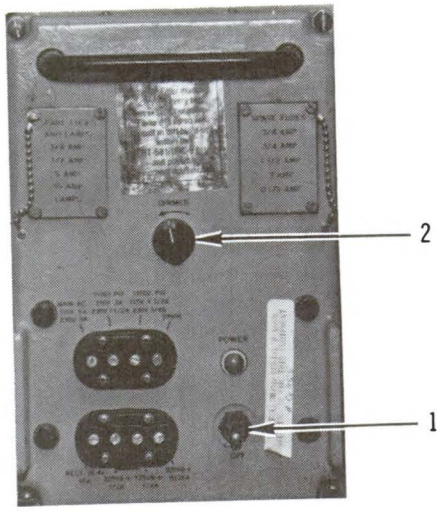
Figure 10.7-1 Major components of UHF transceivers

B. Major Components of UHF Transceivers

1. PP-2702 Power Supply and RT-581 tranceiver common to all--URC-9, SRC-21, and SRC-20

a. PP-2702/URC-9 power supply

(1) Provides all required operating voltages



1. PP-2702 POWER switch
2. PP-2702 DIMMER

Figure 10.7-2

b. RT-581/URC-9 transceiver

(1) Operates on any of 1750 available frequencies

(2) Frequency selection determined by position of CHAN SEL switch which includes options for automatic selection of 19 preset channels, for MANUAL selection, or for REMOTE PRESET

(a) For automatic selection of 19 preset channels, enter desired frequencies in memory drum accessible under door on front panel

(b) When set in MANUAL, any of 1750 frequencies may be selected by using TENS, UNITS, and TENTHS controls visible on front panel

(c) In REMOTE PRESET, channel selection originates from a remote station (i.e. Bridge, Radio Central)

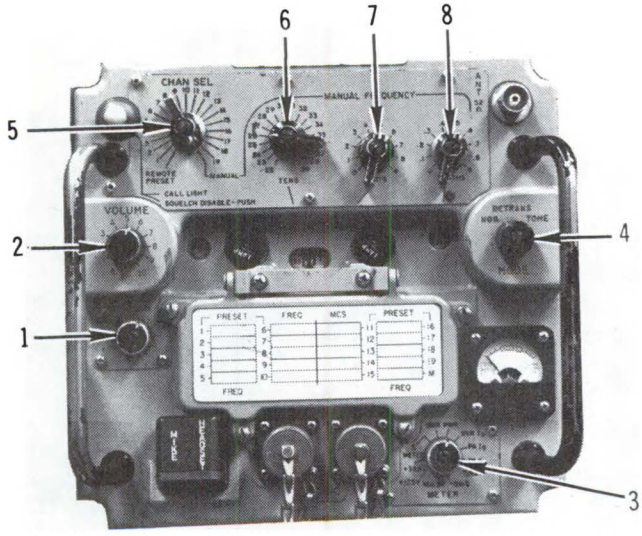


Figure 10.7-3

1. RT-581 SQUELCH control
2. RT-581 VOLUME control
3. RT-581 METER switch
4. RT-581 MODE switch
5. RT-581 CHAN SEL switch
6. RT-581 MANUAL FREQ "TENS" selector
7. RT-581 MANUAL FREQ "UNITS" selector
8. RT-581 MANUAL FREQ "TENTHS" selecto

2. C-3866/SRC radio set control

   a. Included in SRC-21 and SRC-20 only

   b. Enables remote operation, including selection of preset channels using telephone-type dial on front panel

      (1) To select channels 1-10, dial the exact channel number

      (2) To select channels 11-19, first dial the letter "A", then the last digit of the channel number

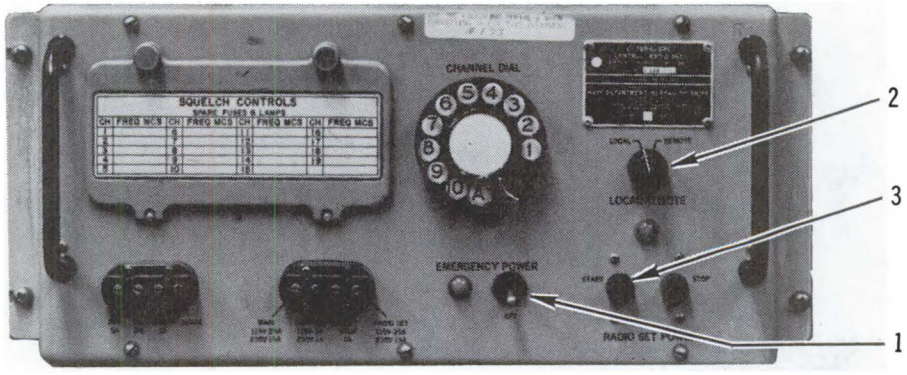


Figure 10.7-4

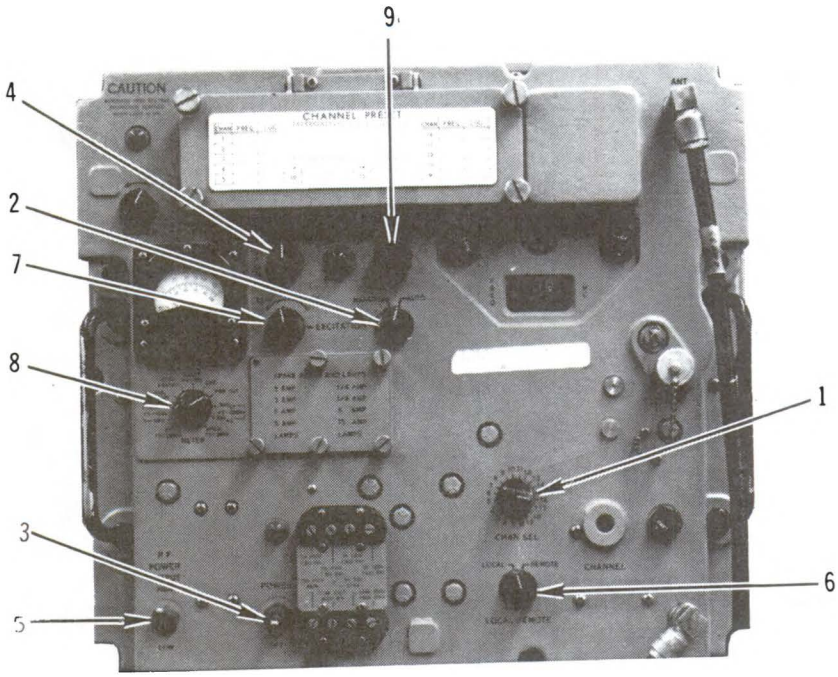
1. C-3866 EMERGENCY POWER switch
2. C-3866 LOCAL-REMOTE switch
3. C-3866 RADIO SET POWER controls

3. AM-1565/URC RF amplifier

   a. Included in SRC-20 only

   b. Adds up to 106 more watts of radiated power

Figure 10.7-5



1. AM-1565 CHAN SEL switch
2. AM-1565 EXCITATION MANUAL-AUTO control
3. AM-1565 POWER switch
4. AM-1565 TEST KEY switch
5. AM-1565 RF POWER OUTPUT switch
6. AM-1565 LOCAL-REMOTE switch
7. AM-1565 EXCITATION LOW-HIGH control
8. AM-1565 METER switch
9. AM-1565 MANUAL TUNING control

Figure 10.7-5

4. MX-8430/URC-9 adapter control

   a. Used only on URC-9

   b. Allows operation of transceiver from remote station

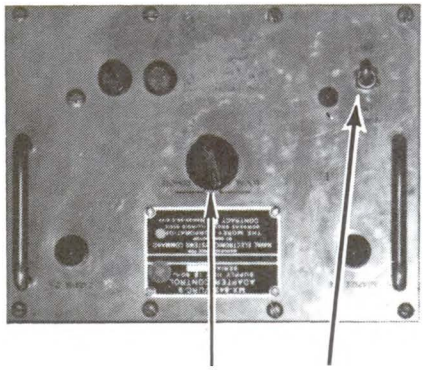


Figure 10.7-6

1. MX-8430 POWER switch
2. MX-8430 LOCAL-REMOTE switch

C. Tuning Procedures Using Manual Frequency Selection (URC-9, SRC-21, SRC-20)

1. URC-9

a. PP-2702 power supply

(1) POWER switch to ON

(2) DIMMER switch to mid-range

b. RT-581 transceiver

(1) SQUELCH control to OFF

(2) VOLUME control to comfort level

(3) METER switch to PWR

(a) Indicates forward power output when keyed

(4) MODE switch to NOR

(a) Selects normal mode of operation

(b) Almost always used in this mode

(5) CHAN SEL switch to MANUAL

(a) Enables manual selection of frequency by TENS, UNITS, and TENTHS controls

(6) MANUAL FREQ "TENS" selector dialed to first and second digits of desired frequency

(a) Readout visible in windows below each selector

(7) MANUAL FREQ "UNITS" selector dialed to third digit of desired frequency

(8) MANUAL FREQ "TENTHS" selector dialed to fourth digit of desired frequency

(9) SQUELCH control turned clockwise until CALL LIGHT just goes out

c. MX-8430 adapter control

(1) POWER switch to ON

(2) LOCAL-REMOTE switch to REMOTE

(a) Allows operation from a remote station

2. SRC-21

a. PP-2702 power supply

(1) POWER switch to ON

b. C-3866 radio set control

(1) EMERGENCY POWER switch to ON

(2) LOCAL-REMOTE switch to LOCAL

(a) LOCAL position necessary during tuning

(3) RADIO SET POWER controls--push START button

c. PP-2702 power supply

(1) DIMMER switch to mid-range/illumination

d. RT-581 transceiver (same as URC-9)

e. C-3866 radio set control

(1) LOCAL-REMOTE switch to REMOTE

(a) Allows for remote operation

3. SRC-20

a. PP-2702 power supply

(1) POWER switch to ON

b. C-3866 radio set control (same as for SRC-21)

c. PP-2702 power supply

(1) DIMMER switch to mid-range illumination

d. RT-581 transceiver (same as URC-9 and SRC-21)

e. AM-1565 RF amplifier

(1) CHAN SEL switch to M (MANUAL)

(2) EXCITATION MANUAL-AUTO control to MANUAL

(3) POWER switch to ON

(4) TEST KEY switch to OFF

(a) Unkeys exciter

(5) RF POWER OUTPUT switch to HIGH

(a) Passes outgoing RF signal thru AM-1565 for amplification

(6) LOCAL-REMOTE switch to LOCAL

(7) EXCITATION LOW-HIGH control to mid-range

(a) Provides power adjustment

(8) METER switch to PWR OUT

(a) Indicates forward power output

(9) TEST KEY switch to LOCK ON

(a) Locks RF amplifier in transmit condition for test/tune purposes

(10) MANUAL TUNING control--adjust for maximum power out

(a) If meter reads above 100 watts, reduce to 100 using EXCITATION LOW-HIGH control

(b) Read top meter scale

(c) Purpose: Manually tunes AM-1565 to frequency selected on RT-581

(11) TEST KEY switch to OFF

(a) Unkeys exciter

f. C-3866 radio set control

(1) LOCAL-REMOTE switch to REMOTE (same as SRC-21)

D. Tuning Procedures Using Automatic Frequency Selection (URC-9 and SRC-21)

1. URC-9

a. PP-2702

(1) POWER switch to ON

(2) DIMMER switch to mid-range

b. RT-581

(1) SQUELCH control to OFF

(2) VOLUME control to comfort level

(3) METER switch to PWR

(4) MODE switch to NOR

(5) Memory Drum Door (Inside Cover)

(a) Find number on "SET CHAN" line of scale that represents channel desired

(b) Find number of "SEL PRESET" line of scale directly below channel number being changed

(6) CHAN SEL switch to number found on "SEL PRESET" line on scale

(a) Aligns memory drum to center position and brings desired channel number to center

(7) Memory Drum Left Pin

(a) Place pin over "2" or "3" to set first number of desired frequency

(b) Silver marks on memory drum indicate EVEN numbers throughout

(8) Memory Drum Left Center Pin over second number of desired frequency

(9) Memory Drum Right Center Pin over third number of desired frequency

(10) Memory Drum Right Pin over fourth number of desired frequency

(a) Repeat steps at memory drum for each channel to be set

(b) NEVER SET FREQUENCY BELOW 225.0

(11) SQUELCH control clockwise until call light just goes out

c. MX-8430

(1) POWER switch to ON

(2) LOCAL-REMOTE switch to REMOTE

2. SRC-21

a. PP-2702

(1) POWER switch to ON

b. C-3866 Radio Set Control

(1) EMERGENCY POWER switch to ON

(2) LOCAL-REMOTE switch to LOCAL

(3) RADIO SET POWER controls--push START button

c. PP-2702

(1) DIMMER switch to mid-range

d. RT-581 (same as URC-9 with the following addition:)

(1) CHAN SEL switch to REMOTE PRESET

(a) Allows automatic frequency selection of preset channel(s)

e. C-3866

(1) CHANNEL dial to desired remote preset channel

(a) To select channels 1-10, dial the exact channel number

(b) To select channels 11-19, dial the letter "A", then the last digit of the channel number

(c) Dialed selection may be checked in windows on RT-581

(2) LOCAL-REMOTE switch to REMOTE

3. SRC-20 also may be tuned using automatic frequency selection procedures

E. Securing Procedures (URC-9 and SRC-21)

1. URC-9

a. On MX-8430, POWER switch to OFF

b. On PP-2702, POWER switch to OFF

2. SRC-21

a. On C-3866, EMERGENCY POWER switch to OFF

b. On PP-2702, POWER switch to OFF

F. Tuning the SRC-20 for Automatic Remote Operation

1. Follow steps of procedure for automatic tuning of SRC-21 through final "CHAN SEL" switch adjustment; then proceed below with AM-1565 and C-3866

2. AM-1565

a. EXCITATION MANUAL-AUTO switch to MANUAL

b. POWER switch to ON

c. TEST KEY to OFF

(1) Unkeys exciter (URC-9 component part)

d. LOCAL-REMOTE switch to LOCAL

(1) Local adjustment necessary during tuning

e. RF POWER OUTPUT switch to HIGH

(1) Passes outgoing RF signal through AM-1565 for amplification

f. Preset Channel Potentiometer Door--open and loosen nut on Channel "1"

(1) Frees potentiometer shaft

g. CHAN SEL switch to "1"

h. Preset channel Potentiometer "1"

(1) Turn until FREQ dial on AM-1565 reads approximately the same frequency as the RT-581

i. EXCITATION LOW-HIGH switch to mid-range

j. METER switch to PWR OUT

(1) Ensures RF amplifier in transmit condition for testing/tuning

k. TEST KEY to ON

(1) Keys exciter

l. Preset Channel Potentiometer "1"

(1) Adjust for maximum power output on meter top scale

(a) If above 100 watts, adjust by turning EXCITATION LOW-HIGH control

(2) When adjusted, turn lock nut clockwise by hand until slight resistance is felt

(a) Prevents potentiometer shaft from turning

m. TEST KEY switch to OFF

(1) Unkeys exciter

n. Preset Channel Potentiometer Door--close and secure

o. TEST KEY switch to ON

(1) Keys exciter

p. EXCITATION MANUAL-AUTO switch to AUTO

(1) Allows automatic excitation control of preselected frequencies

q. TEST KEY switch to OFF

r. LOCAL-REMOTE switch to REMOTE

3. C-3866

a. LOCAL-REMOTE switch to REMOTE

G. Securing Procedures (SRC-20)

1. On AM-1565, POWER switch to OFF

2. On C-3866, POWER switch to OFF

3. On PP-2702, POWER switch to OFF

4095

PROGRESS CHECK 10.7
UHF Transceivers

Do not write on this test. Answer all questions on a separate sheet of paper.

1. What is the operating frequency range for all Navy UHF transceivers?

   a. 3 to 30MHz
   b. 225 to 399.9MHz
   c. 225 to 399.9KHz
   d. 30 to 300MHz

2. What is the power output of a URC-9 transceiver?

   a. 100 to 130 watts
   b. 1000 watts
   c. 100 watts
   d. 16 to 24 watts

3. Which component allows the SRC-20 a power output of 100 to 130 watts?

   a. AM-1565
   b. PP-2702
   c. AM-3729
   d. AM-3924

4. How many crystal controlled frequencies are UHF transceivers capable of tuning to?

   a. 19
   b. 1750
   c. 1
   d. 399

5. How many modes of operation are UHF transceivers capable of?

   a. 1
   b. 2
   c. 3
   d. 4

6. Which equipments include the C-3866?

   a. URC-9 only
   b. SRC-20 only
   c. URC-9 and SRC-21
   d. SRC-21 and SRC-20

7. How many frequencies can be preset for automatic selection at any one time?

   a. 19
   b. 1
   c. 1750
   d. 399

8. What is the function of the C-3866?

   a. Provides additional power output
   b. Basic part of all UHF transceivers
   c. Provides for selection of any 19 preset channels in local or remote
   d. Converts audio signals to RF

9. Which equipment(s) use the MX-8430?

   a. All UHF transceivers
   b. URC-9 only
   c. SRC-21 and SRC-20
   d. SRC-20 only

10 How is the squelch on the RT-581 adjusted?

   a. Until the squelch light just goes out
   b. Fully clockwise
   c. Fully counter-clockwise
   d. Mid-range

ASSIGNMENT SHEET 10.8

AN/URA-17 Convertor/Comparator Group

INTRODUCTION

The AN/URA-17 is used in the receive side of FSK radio teletype communication systems to convert FSK audio output to DC pulses. In this lesson, you will learn to identify the front panel controls and indicators, then to tune and secure the equipment.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.2 Given a list of available equipments, select the appropriate system components needed to set up five communication systems including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1 with at least 80 percent accuracy.

4.2.4 Given specific types of HF transmitters and receivers, UHF transceivers, convertors, audio patch panels, and DC patch panels, select the operational characteristics of those equipments in their alternative modes of operation with at least 80 percent accuracy.

4.5 Given send and receive teletypes, DC patch panels, audio patch panels, HF transmitters, HF receivers, crypto devices, converters, remote transmitter control, and receive antenna patch panels, set up the system components for the Golf system for HF full-duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.5.2 Given system components for the Golf system, adjust system components for optimum performance.

STUDY ASSIGNMENT

Study Notetaking Sheet 5.8 and personal notes. Answer the following study questions on a separate sheet of paper.

STUDY QUESTIONS

1. Which shift on the AN/URA-17 is most commonly used, and what is the frequency of that shift?

2. Which position is the polarity switch placed to use the converter for MARK (low frequency) and SPACE (high frequency)?

3. Which position is the function switch placed in to remove the input signal?

4. In what frequency range is the AN/URA-17 equipment used?

5. Describe the function of the level control?

NOTETAKING SHEET 10.8

AN/URA-17 Converter/Comparator Group

REFERENCE:

NAVSHIPS 0967-034-9010, Technical Manual for AN/URA-17 Converter Comparator Group

NOTETAKING OUTLINE

A. General Characteristics

1. Used in receive side of FSK radio teletype communication systems to convert FSK audio output from a receiver to DC pulses.

2. Intelligence is two distinct audio frequencies.

a. Referred to as MARK and SPACE frequencies

(1) Separated by pre-designated amounts known as the SHIFT

(2) Most common is wide shift, 850Hz (frequencies above 2MHz)

(3) Also uses narrow shift, 170Hz (frequencies below 2Mhz)

3. Applications

a. Normally use one converter for single-channel FSK

b. May utilize both converters with two radio receivers for diversity operation

B. Front panel controls and indicators

1. Power switch and indicator lamp

a. On/Off

(1) Energize/deenergize converter

(2) Indicator lamp glows when energized

2. Speed switch

a. Slow

(1) Used for low speed keying signals up to 100 WPM

b. Fast

(1) Used for high speed keying signals up to 400 WPM

(2) Involves use of four channels, 100 WPM each

3. Polarity switch

a. Reverse

(1) Used with all FSK teletype circuits (MARK - low frequency; SPACE - high frequency)

b. Normal

(1) Would be used IF mark was high frequency and space was low frequency.

4. Function switch

a. Single

(1) Used for single receiver operation

b. Tune

(1) Removes input signal from teletype

(2) Printer remains in mark lock-up condition

(3) Prevents teletype printer garble while tuning

c. Diversity

(1) Function switches of both converters are in diversity

(2) Processes the same intelligence from two different receivers

(3) Strongest signal selected for operation of teletype

5. Shift switch

a. Wide

(1) Will allow total shift of 200 through 1000Hz

(2) FSK utilizes 850Hz for frequencies above 2MHz

b. Narrow

(1) Will allow total shift of 10 through 200Hz

(2) Frequencies below 2MHz utilize 170Hz

6. Level control

a. Used to properly adjust signal level on the tuning indicator display

7. Tuning indicator

   a. Provides video display of signal level

   b. Display adjusted through the use of the level control

   c. Proper adjustment is when the pattern fills space between upper and lower horizontal lines with solid line at top

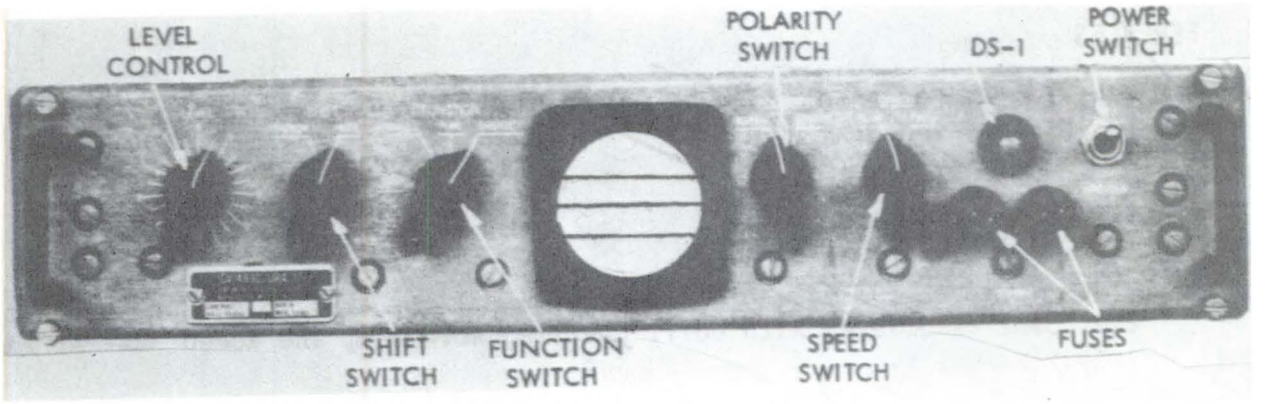


Figure 10.8-1
AN/URA-17

C. Tuning Procedures

1. Single Receiver Operation

   a. Power switch

      (1) On

   b. Function switch

      (1) Tune

   c. Polarity switch

      (1) Reverse

   d. Level control

      (1) Set at "3"

   e. Shift switch

      (1) Wide

f. Speed switch

(1) Slow

g. Level control

(1) Adjust so pattern fills space between upper and lower horizontal lines with solid line at top

h. Function switch

(1) Single

D. Securing Procedures

1. Turn power switch to off

PROGRESS CHECK 10.8

AN/URA-17 Converter/Comparator Group

Answer the following questions on a separate sheet of paper

1. In what type of circuit is the URA-17 used?

2. Which frequency shift is most commonly used on the URA-17?

3. Which position is the speed switch placed in?

4. What polarity is used with all FSK teletype circuits?

5. What condition exists when the function switch is placed in tune?

6. Describe the purpose of the level control.

7. What indicates that the URA-17 is properly adjusted?

8. When using one receiver, which position is the function switch placed?

9. When using two receivers and two frequencies, which position is the function switch placed?

10. Can the URA-17 be used on UHF TTY systems?

ASSIGNMENT SHEET 10.9

CV-2460/SCG Telegraph-Telephone Signal Converter

INTRODUCTION

The CV-2460 is a major component of several system configurations. You will use it later in the Charlie system for covered UHF full-duplex teletype communications. In this lesson, you will learn to identify the CV-2460 controls, then to tune and secure the equipment.

LESSON TOPIC LEARNING OBJECTIVES:

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo and Sierra systems, in accordance with COMNAVTELCOMINST C2796.1.Each system must be set up and operational within 25 minutes.

4.2 Given a list of available equipments, select the appropriate system components needed to set up five communication systems including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1 with at least 80 percent accuracy.

4.2.4 Given specific types of HF transmitters and receivers, UHF transceivers, convertors, audio patch panels, and DC patch panels, select the operational characteristics of those equipments in their alternative modes of operation with at least 80 percent accuracy.

4.4 Given send and receive teletypes, DC patch panels, audio patch panels, crypto devices, converters, and UHF transceivers, set up the system components of the Charlie system for UHF full-duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1

4.4.2 Given system components for the Charlie system, adjust system components for optimum performance.

4.5 Given send and receive teletypes, DC patch panels, audio patch panels, HF transmitters, HF receivers, crypto devices converters, remote transmitter control, and receive antenna patch panels, set up the system components of the Golf system for HF full-duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.5.2 Given system components for the Golf system, adjust system components for optimum performance.

STUDY ASSIGNMENT

Study Notetaking Sheet 10.9 and personal notes. Answer the following study questions on a separate sheet of paper.

STUDY QUESTIONS

1. What function does the CV-2460 perform in the following modes?.

    a. Transmit
    b. Receive

2. Which systems can the CV-2460 be used with?

3. Which frequency option is used on UHF?

4. What position is the keying switch placed for

    a. HF FSK?
    b. UHF Tone Mod RATT?

5. Is the CV-2460 compatible with the AN/URA-17?

6. What position is the mode switch placed for half-dulplex operation?

7. What indicates the CV-2460 is in a send condition?

NOTETAKING SHEET 10.9

CV-2460/SGC Telegraph-Telephone Signal Converter

REFERENCE: NAVELEX 0967-386-3010, Technical Manual for CV-2460/SGC Telegraph-Telephone Signal Converter, Sections 1 and 3.

NOTETAKING OUTLINE

A. CV-2460/SGC General Characteristics

1. Makes possible the transmission and reception of teletype messages by radio communications between stations similarly equipped.

2. Transmit

a. Converts DC pulses into audio tones

3. Receive

a. Converts audio tones into DC pulses

4. Most commonly used in TONE MOD RATT systems

a. Utilizes 200Hz frequency shift

(1) Mark - high frequency
(2) Space - low frequency

5. Also employed in single channel FSK systems (HF)

a. Utilizes 850Hz frequency shift

(1) Mark - low frequency
(2) Space - high frequency

B. Front controls and indicators

1. Power switch and indicator lamp

a. On/Off

(1) Energize/deenergize converter

b. Indicator lamp glows when energized

2. Slo-Blo 1/4 AMP fuses and indicators

a. Fuses protect equipment in case of overload

b. Lamps glow if fuse opens

3. Failure when lit $\pm$ 6 indicator lamps

a. One or both glow if ±6 volts from external power supply becomes shorted inside converter

4. Freq Option Switch

a. Position A

(1) Used for transmission and reception of UHF signals

(2) When Mark frequency is 700Hz and Space frequency is 500Hz.

b. Position B

(1) Used for transmission and reception of HF signals

(2) When MARK frequency is low (1575Hz) and SPACE frequency is high (2425Hz)

5. Keying switch

a. Send N - Receive R

(1) Conditions the converter to send with normal sense (Mark high) and receive with reverse sense (Mark low)

b. Send N - Receive N

(1) Conditions the converter to send and receive with normal sense (Mark high)

c. Send R - Receive R

(1) Conditions the converter to send and receive with reverse sense (Mark low)

d. Send R - Receive N

(1) Conditions the converter to send with reverse sense (Mark low) and receive with normal sense (Mark high)

6. Send Loop Current

a. To adjust send (input) current

b. Adjusted by maintenance personnel

7. Receive Loop Current

a. To adjust receive (output) current

b. Adjusted by maintenance personnel

8. Mode Switch

a. Receive (RCV)

(1) Used for half-duplex (receive only) operation

(2) Disables send section

b. Send

(1) Used for half-duplex (send only) operation

(2) Disables receive section

c. STDBY (stand by)

(1) Used for half-duplex (send and receive, but not simultaneous) operation

(2) Both sections are in a standby condition until a send or receive signal is sensed

d. FDX (full-duplex)

(1) Used for full-duplex (send and receive simultaneous) operation

(2) Both sections enabled for independent operation

e. S/R BTB (send/receive back to back)

(1) Primarly for adjustment and maintenance purposes

(2) External audio signal lines and transmitter keyline are electrically disconnected from converter

9. Send Monitor Jack

a. Permits monitoring of send tone signals with headset or test equipment.

10. Send Lamp

a. Green lamp indicates converter is in send condition

(1) Will light continuously when mode switch in Send, FDX or S/R BTB

11. Meter switch and meter

a. Send current

(1) Used with meter to indicate send signal level

(2) Adjustment is made with Send Loop Current screwdriver adjustment and/or external DC patch panel

b. Send Bias

(1) Used with meter to indicate send bias level

(2) Adjustment is made internally

(3) Not used by operator

c. Send Level

(1) Used with meter to indicate send tone output level when converter is in send condition

d. Off

(1) Disconnects meter from all internal circuitry

e. Receive Current

(1) Used with meter to indicate receive signal level

(2) Adjustment is made with Receive Loop Current screwdriver adjustment and/or external DC patch panel.

f. Receive Bias

(1) Used with meter to indicate receive bias level

(2) Adjustment is made internally

(3) Not used by operator

g. Receive Level

(1) Used with meter to indicate receive tone input level when converter is in receive condition

h. V (internal voltage supply)

(1) Permits monitoring of the plus 24 volts internal power supply voltage

(2) Not used by operator

i. Meter

(1) Gives operator visual indications of input and output tone signals levels

(2) Provides indications for bias, loop current and internal power supply readings, depending upon meter switch setting

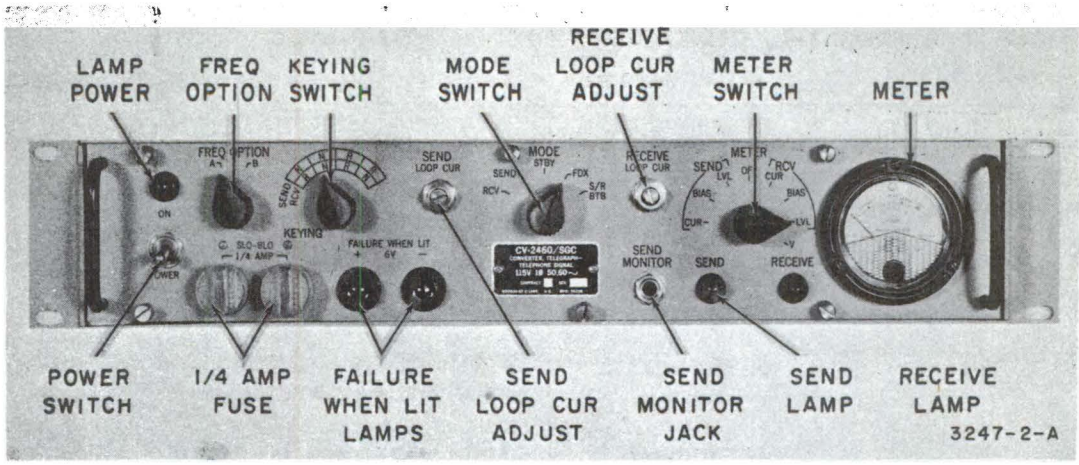


Figure 10.9-1
CV-2460/SGC

C. Tuning Procedures (UHF)

1. Power Switch

a. ON

2. Frequency Option Switch

a. A

3. Mode Switch

a. Stand by

4. Keying Switch

a. Send N - Receive N

5. Meter switch (transmit side)

a. Send Current

(1) With steady mark applied adjust Send Loop Current for 60 ma

6. Meter switch (Receive Side)

a. Receive Current

(1) With incoming mark signal, adjust Receive Loop Current for 60 ma

D. Tuning Procedures (HF)

1. Power switch

a. On

2. Frequency option switch

    a. B

3. Mode Switch

    a. Standby

4. Keying switch

    a. Send R - Receive R

5. Meter switch (transmit side - if used, transmitter and receiver must be in USB)

    a. Send current

        (1) With steady mark applied, adjust send loop current for 60 ma.

6. Meter switch (Receive Side)

    a. Receive current

        (1) With incoming mark signal, adjust receive loop current for 60 ma.

E. Securing Procedures

1. Turn power switch to off

PROGRESS CHECK 10.9

CV-2460/SCG Telegraph-Telephone Signal Converter

Answer the following questions on a separate sheet of paper.

1. What conversion process does the CV-2460 perform in the following modes

   a. Transmit?
   b. Receive?

2. What type circuit is the CV-2460 most commonly used on?

3. What frequency shift is utilized with

   a. Tone Mod RATT systems?
   b. HF FSK systems?

4. Which position on the Freq Option switch is used for

   a. UHF?
   b. HF?

5. Which position on the keying switch is used for

   a. UHF?
   b. HF?

6. Which position on the Mode switch enables the CV-2460 to be used for half-duplex (send and receive, but not simultaneous) operation?

ASSIGNMENT SHEET 10.10

Basic Communication Patch Panels

INTRODUCTION

Each of the five panels introduced in this lesson serves a specific role in system setup. One is used only to interconnect teletypes and cryptographic equipment, another to patch cryptographic equipments to converters and a third to facilitate interconnection and transfer of RF energy from a given operating range. For this reason, it is as important to select the proper patch or transfer switch panel during setup as it is to set the control's correctly.

LESSON TOPIC LEARNING OBJECTIVES:

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo and Sierra systems, in accordance with COMNAVTELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.2 Given a list of available equipments, select the appropriate system components needed to set up five communication systems including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1 with at least 80 percent accuracy.

4.2.4 Given specific types of HF transmitters and receivers, UHF transceivers, convertors, audio patch panels, and DC patch panels, select the operational characteristics of those equipments in their alternative modes of operation with at least 80 percent accuracy.

4.3 Given receive teletype equipments, DC patch panels, audio patch panels, crypto devices, terminal equipments, receive antenna patch panel and an HF receiver, SET UP the system components of the November system for HF multi-channel broadcast operation in accordance with COMNAVTELCOMINST C2796.1

4.3.3 Given system components for an HF November system, interface all components using DC, audio, and antenna patch panels as appropriate.

4.4 Given send and receive teletypes, DC patch panels, audio patch panels, crypto devices, converters, and UHF transceivers, set up the system components of the Charlie system for UHF full duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.4.3 Given system components for the Charlie system, interface all components using DC, audio, and antenna patch panels as appropriate.

4.5 Given send and receive teletypes, DC patch panels, audio patch panels, HF transmitters, HF receivers, crypto devices, converters, remote transmitter control, and receive antenna patch panels set up the system components of the Golf system for HF full duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.5.3 Given system components for the Golf system, interface all components using DC, audio, and antenna patch panels as appropriate.

4.6 Given audio patch panels, UHF transceivers, crypto devices, remote keying position and handset, set up the system components of the Romeo system for wideband secure voice operations in accordance with COMNAVTELCOMINST C2796.1.

4.6.3 Given system components for the Romeo system, interface all components using audio and antenna patch panels as appropriate.

4.7 Given audio patch panels, HF transmitters, HF receivers, crypto devices, remote keying position and handset, set up the system components of the Sierra system for narrowband secure voice operations in accordance with COMNAVTELCOMINST C2796.1

4.7.1 Given system components for the Sierra system, interface all components using audio and antenna patch panels as appropriate.

STUDY ASSIGNMENT

Study Notetaking Sheet 10.10 and personal notes.
Answer the following study questions on a separate sheet of paper.

STUDY QUESTIONS

1. Describe the functions of each of the following patch panels.

   a. SB-1210/UGQ
   b. SB-12-3/UG
   c. SB-963/SRT
   d. SB-973/SRR
   e. AN/SRA-12

2. How many channels are provided for on the SB-1203 and SB-1210 patch panels.

3. When patching on the SB-1203 and SB-1210 patch panels, what is the correct way to

   a. Make a patch?
   b. Disconnect a patch?
   c. Why must patch cords be connected/disconnected in a certain way?

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4. What is the purpose of switch position 20 on the SB-863/SRT Transmitter Transfer Switchboard?

5. Which switch position of the SB-973 and SB-863 patch panels disconnects a patch?

6. What is the primary for the AN/SRA-12?

7. How many different radio receivers can be patched simultaneously on the AN/SRA-12?

8. Which output jack is used for optimum best reception?

NOTETAKING SHEET 10.10

Basic Communication Patch Panels

REFERENCES:

1. NAVSHIP 95718, Technical Manual for Communication Patching Panels, SB-1203A/UG SB-1210/UGQ

2. NAVSHIPS 93120, Technical Manual for Transmitter Transfer Switchboard, SB-863/SRT

3. NAVSHIPS 94537, Technical Manual for Receiver Transfer Switchboard, SB-973/SRR

4. NAVSHIPS 92206, Instruction Book for Electrical Filter Assembly, AN/SRA-12 and AN/SRA-12A

NOTETAKING OUTLINE

A. General Characteristics of Basic Communications Patch Panels

   1. Purpose

      a. To interconnect various equipments to achieve a complete system quickly and easily
      b. Flexibility in equipment utilization

   2. Basic types

      a. SB-1210/UGQ - Communication Patch Panel
      b. SB-1203/UG - Communication Patch Panel
      c. SB-863/SRT - Transmitter Transfer Switchboard
      d. SB-973/SRR - Receiver Transfer Switchboard
      e. AN/SRA-12 - Electrical Filter Assembly

B. SB-1210/UGQ communication patching panel (See Figure 10.10-1)

   1. Provides variable interconnection between teletype(s) and cryptographic equipment.

   2. Direct Current (DC) patch panel

      a. Carries DC unencrypted intelligence
      b. Painted red

   3. Description
      a. Six channels (vertical rows)
      b. Two looping jacks per channel (CRYPTO)
      c. Two set jacks per channel (TELETYPES)
      d. One miscellaneous jack per channel (additional TTY's, test equipment, or trunk lines)
      e. Six rheostats for adjusting loop current on individual channels
      f. Current meter for monitoring loop current on individual channels
      g. Meter switch to select individual channel

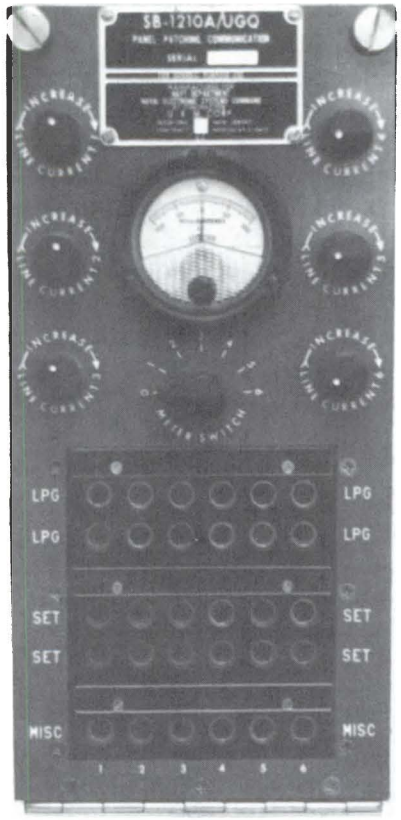


Figure 10.10-1

4. Operation

a. Energize power supply
   (1) Ships have primary and secondary power supplies
      (a) Commonly referred to as rectifiers

b. Select DC patch cord
c. Locate appropriate teletype and crypto equipment on patch panels(s)
   (1) No patch required if teletype in the top set-jack is in the same channel as crypto equipment
   (a) Called normal-through or hard-wired

d. Make patch

   (1) Patching (connecting) equipments: CAUTION: SET TO LOOP ONLY
      (a) Plug into SET first
      (b) Plug into hot side (LOOP) last
         1. No current in cord until connected to loop (patch panel)
         2. "Hot" patch cord carries up to 100 milliamps of current
            a. One (1) milliamp can kill a grounded body
      (c) ALWAYS PATCH SET TO LOOP

   (2) Unpatching (disconnecting) equipments: CAUTION: LOOP TO SET ONLY
      (a) Opposite of patching
      (b) Unplug from hot side (LOOP) first
         1. Deenergizes cord
         2. DO NOT PULL ON CORD TO DISCONNECT

(c) Unplug from SET Last
(d) ALWAYS UNPATCH LOOP TO SET

e. Loop current adjustment
(1) Select desired channel with meter switch
(2) Adjust rheostat on selected channel for 60 milliamps on current meter when:

(a) Initially setting up
(b) Changing equipment
(c) Incorrect current observed

C. SB-1203/UG Communication Patching Panel (See Figure 10.10-2)
1. Provides variable interconnection of cryptographic equipment to converters and transmitters
2. Direct Current (DC) Patch Panel
a. Carries encrypted intelligence on secure communications systems or unclassified intelligence on unsecure communications systems.
b. Painted black or gray

3. Description

a. Six channel (vertical rows)
b. Three looping jacks per channel (CONVERTER or TRANSMITTER)
c. One set jack per channel (CRYPTO)
d. One miscellaneous jack per channel (additional CRYPTO, test equipment
or trunk lines)
e. Six rheostats for adjusting loop current on individual channels
f. Current meter for monitoring loop current on individual channels
g. Meter seitch to select individual channel

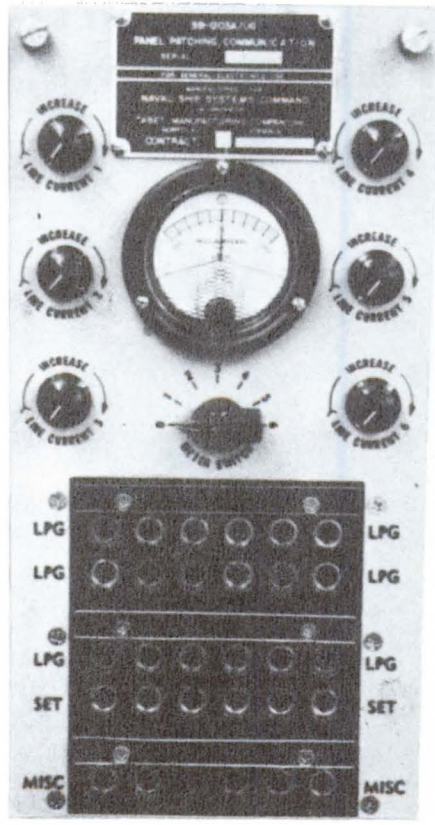


Figure 10.10-2

4. Operation
   a. Energize power supply
      (1) Ships have primary and secondary power supplies
         (a) Commonly referred to as rectifiers.
   b. Select DC patch cord
   c. Locate appropriate crypto equipment and converter or transmitter on DC patch panel(s)
      (1) No patch required if crypto equipment in top set jack in same channel as converter/transmitter
   d. Make patch
      (1) ONLY PATCH SET TO LOOP
      (2) Reverse procedure when removing patches
         (a) UNPATCH LOOP TO SET
         (b) DO NOT PULL ON CORD TO DISCONNECT
      (3) WARNING: Patch cord carries from 0 to 100 milliamps
      (4) Observe same safety precautions as SB-1210
   e. Loop current adjustment
      (1) Select desired channel with meter switch
      (2) Adjust rheostat on selected channel for 60 milliamps on current meter
      (3) Adjust rheostat as demonstrated for SB-1210/UGC

D. SB-863/SRT Transmitter Transfer Switchboard

1. Transfer remote control stations to a choice of radio transmitters
2. Description (See Fig. 5.10-3 next page
   a. Ten (10) knob type switches on each panel
   b. Each knob represents a remote station (audio or teletype)
   c. Each switch has 21 positions
      (1) 1-19 various transmitters
      (2) 20: buss or interconnect to additional SB-863's
         (a) Can only buss horizontally
      (3) Off: removes patch
3. Operation
   a. Connecting equipments
      (1) Locate knob corresponding to assigned remote station or miscellaneous device
      (2) Locate number assigned to desired transmitter
      (3) Rotate knob to assigned number.

E. SB-973/SRR Receiver Transfer Switchboard (See Fig 10.10-4), next page)

1. Transfers the audio output of radio communication receivers to remote control station audio circuits
2. Description
   a. Ten (10) knob type switches on each panel
   b. Each switch represents a converter or miscellaneous audio device

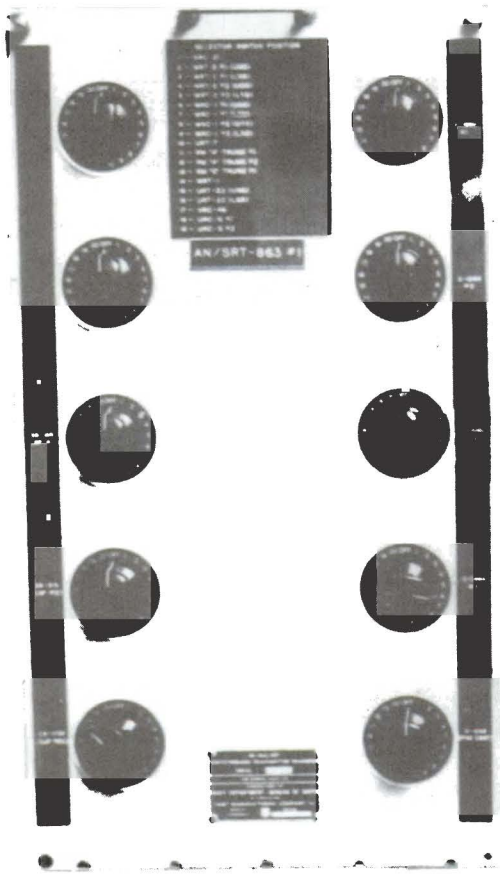


Figure 10.10-3

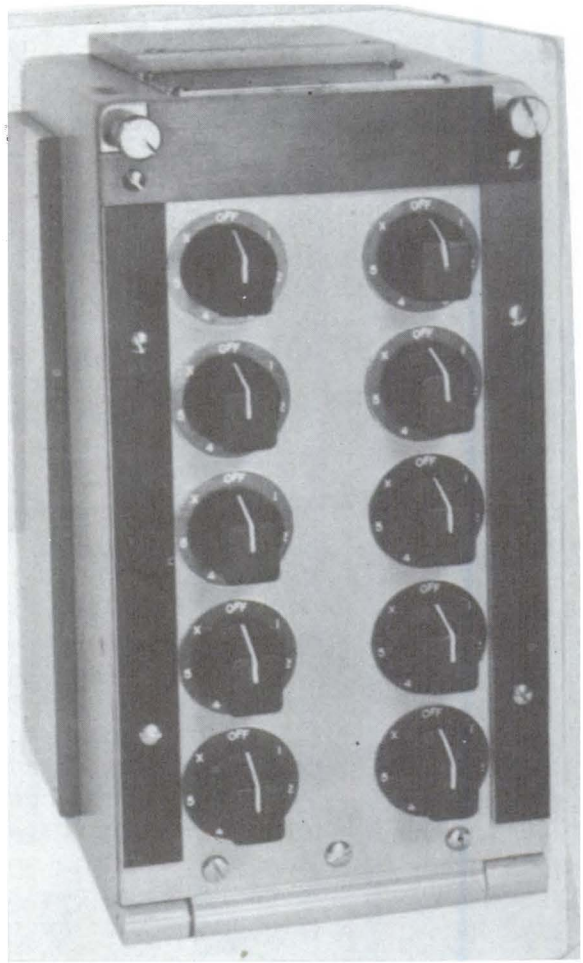


Figure 10.10-4

c. Each switch has 7 positions

(1) 1-5: Different receivers
(2) X: buss or interconnect to additional SB-973's (horizontally)
    (a) Can only buss horizontally
(3) Off: removes patch

3. Operation

a. Connecting equipment

(1) Locate assigned receiver
(2) Locate assigned converter or miscellaneous audio device
(3) Rotate knob to corresponding number for assigned receiver

F. AN/SRA-12 Electrical Filter Assembly (See Figure 10.10-5)

1. By means of filter subassemblies, provides a maximum of seven (7) RF bands in the frequency spectrum between 14KHz and 32 MHz to 28 different receivers from a signle antenna

   a. Mainly HF range

2. Description

   a. Panel with 29 quick disconnect receptacles
   b. 1 receptacle for antenna input
   c. 28 receptacles for connecting receiver to various frequency ranges
   d. Output receptacles in 7 vertical rows
   e. Additional row of quick disconnect receptacles below filter assembly assigned to HF receivers.

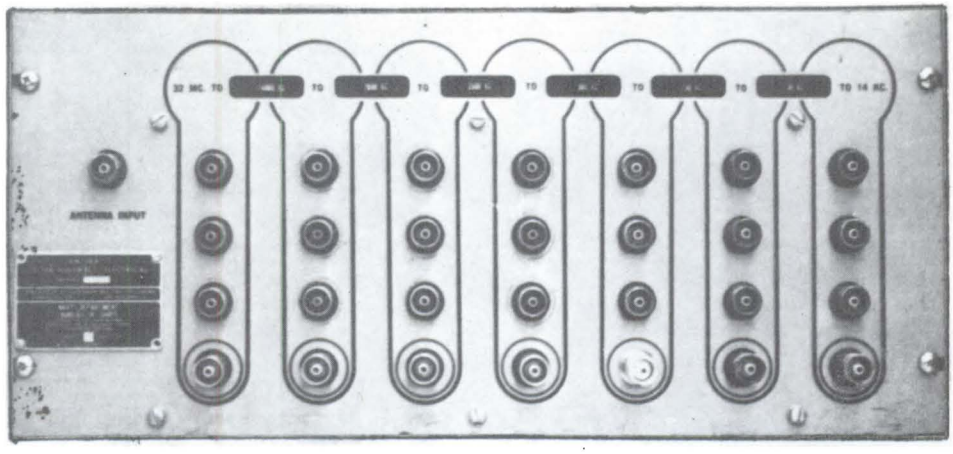


Figure 10.10-5

   f. RF patch cord

      (1) Used for connecting receiver to output receptacle jack
      (2) Patch cord is quick disconnect type with locking ring
      (3) To connect RF patch cord, pull back on locking ring and hold while cord is inserted on receptacle
      (4) Push the locking ring forward after connecting to ensure locking
      (5) To disconnect, pull back on locking ring and withdraw connector from the receptacle
          (a) When removing do not pull on cord

   g. Output jack selection

      (1) For optimum operation, use only bottom output jack on each vertical row
          (a) Identified by red circle
      (2) Remaining conectors in each vertical row are used when strong signal present, or red circled receptacle is already in use.

3. Operation

   a. Locate assigned HF receiver and attach one end of RF patch cord to receptacle
   b. Locate output jack on filter assembly corresponding to frequency assigned and connect other end of RF patch cord
   c. Antenna input receptacle must be connected to an HF antenna.

PROGRESS CHECK 10.10

Basic Communication Patch Panels

Answer the following questins on a separate sheet of paper.

1. Which patch panel provides variable interconnection between teletype(s) and cryptographic equipment?

2. Which patch panel probides variable interconnection of cryptographic equipment to converters and transmitters?

3. What is the quickest way to distinguish the difference between a SB-1203 and a SB-1210?

4. State the correct procedures for patching and unpatching equipments on the SB-1203 and SB-1210 patch panels.

5. What level is the loop current adjusted for on the SB-1203 and SB-1210 patch panels?

6. Which patch panel transfers remote control stations to a choice of radio tranmitters?

7. Which patch panel transfers the audio output of radio communication receivers to remote control station audio circuits?

8. How many RF bands are there on the SRA-12?

9. What is the operating frequency range of the SRA-12?

10. Which connector is used on the SRA-12 for optimum operation?

ASSIGNMENT SHEET 10.11

PLANNED MAINTENANCE SUBSYSTEM

INTRODUCTION

Telecommunications equipment is sometimes in continuous use for very long periods of time. In order to keep this equipment working at maximum efficiency, Radiomen have a vital responsibility to check or test the equipment periodically to detect and correct any deficiencies promptly. This lesson discusses the Planned Maintenance Subsystem, detailing how to perform maintenance and record maintenance actions.

LESSON TOPIC LEARNING OBJECTIVES:

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; send and receive teletype equipment; DC and audio patch panels; crypto devices; converters; antenna patch panels; HF transmitters; HF receivers; UHF transceivers; and patch cords, SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo and Sierra systems, in accordance with COMNAVTEL-COMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.8 Given planned maintenance subsystem (PMS) assignments on the weekly PMS schedule, maintenance requirement cards, and all necessary tools, complete PMS maintenance checks in accordance with procedures and safety precautions set forth on the applicable maintenance requirement card including equipment tag-outs in accordance with SERVSCOLCOMSDIEGOINST 5100.1

4.8.1 Given weekly maintenance schedule, select specific PMS tasks to be performed as indicated by the periodicity codes.

4.8.2 Given maintenance requirement cards for specific communications equipment, select the tools and materials needed to perform PMS on these equipments.

4.8.3 Given maintenance requirements cards, carry out PMS actions as required by Maintenance Index Page numbers C-193/2, C-304/3, C-304/12, C-413/1, C-465/1 and C-726/1.

4.8.4 Given a weekly PMS schedule, record maintenance actions completed or deferred.

STUDY ASSIGNMENT

Study Notetaking Sheet 10.11 and personal notes. Answer the following study questions on a separate sheet of paper.

STUDY QUESTIONS

1. Define the following periodicity codes

   a. W-1

   b. M-2

   c. Q-1

   d. S-2

   e. A-1

   f. R-1

2. What document lists any tools, parts or materials needed to complete a PMS check?

3. What document is used to assign maintenance responsibilities?

4. What document lists all maintenance requirements for a specific item?

5. After a maintenance action is completed, what action is taken on the Weekly Schedule?

NOTETAKING SHEET 10.11

PMS

REFERENCE: 1. OPNAVINST 4790.4, Ship's Maintenance Material Management Manual, Volumes I and II
2. SERVSCOLCOMSDIEGOINST 5100.1, Equipment Tag-Out Bill

NOTETAKING OUTLINE

A. Introduction

1. Planned Maintenance Sub-system

a. One part of the 3-M System
b. 3-M is Maintenance and Material Management
c. PMS as a component of 3-M System provides:
(1) Maintenance procedures
(2) Minimum requirements for maintenance
(3) Scheduling and control of maintenance
(4) Methods, materials, tools, and personnel requirements
(5) Prevention or detection of impending malfunction

2. Assignment of Maintenance Responsibilities
a. Work Center Supervisor
(1) Petty Officer in charge of a work space
(a) Schedules weekly work center maintenance

B. Work Center PMS Manual

1. Ready reference of planned maintenance required for the work center

2. Contains Maintenance Index Pages (MIP's) for all PMS-covered equipment in the Work Center. (See Figure 10.11-1)

a. Identifies the equipment by name and designation

b. For each equipment specifies:
(1) Periodicity codes
(a) How often this maintenance must be performed
(b) Will be discussed in detail later in lesson

(2) Estimated man-hours
(a) Average time needed to complete the maintenance

(3) Recommended minimum rates required to perform PMS

(4) Any other related maintenance that may be needed on that equipment or system

SHIP SYSTEM, SYSTEM, SUBSYSTEM OR EQUIPMENT	REFERENCE PUBLICATIONS	DATE
SB-1203,1203A,B/UG SB-1210, 1210A,B/UGQ Communication Patching Panel	NAVSHIPS 96112 0967-LP-116-9010 0967-LP-874-1010 Tabet Mfg. Co. Inc. Drwg. No. 216-1001-16 Tabet Mfg. Co. Inc. Drwg. No. 216-1001-17	January 1983

CONFIGURATION

SB-1203/UG FC1	TT-23B/SG FC 1,2
SB-1203B/UG FC 1	TT-23C/SG FC 1,2
SB-1210/UGQ FC 1	TT-23D/SG FC 1,2
TT-23/SG FC 2,3,	TT-23E/SG FC 1,2
TT-23A/SG FC 1,2	TT-23F/SG FC 1,2,3

[illegible]	[illegible]	SYSCOM MRC CONTROL NO	MAINTENANCE REQUIREMENT DESCRIPTION	PERIODICITY CODE	RATES	MAN HOURS	RELATED MAINT.
			A scheduling aid: This MIP is also applicable to Communication Patching Panels SB-2244/UG; SB-2405, 2405A/G; SB-3576/UG; SB-4034/UGQ; SB-4035/UGQ; TT-23,23A,B,C,D,E,F,G/SG; CDVH-PPCC-26.				
		13 EV05 N	1. Clean and inspect communication patching panel.	S-1	RMSN	0.2	None
			INACTIVE EQUIPMENT MAINTENANCE				
			The following requirements will be scheduled when equipment is inactivated for periods of prolonged idleness.				
			Lay-Up Maintenance				
		62 EZ30 N	1. Clean communication patching panel. 2. Place desiccant inside communication patching panel cabinet. 3. Cover communication patching panel jack openings.	LU-1	RMSN	0.4	None
			Periodic Maintenance				
			None required.				
			Start-Up Maintenance				
		62 EZ31 N	1. Remove covering from communication patching panel jack openings. 2. Remove desiccant from interior of communication patching panel. 1. Clean and inspect communication patching panel. NOTE: Use MRC S-1.	SU-1	RMSN	0.1	None
			Operational Test				
			None required.				

MAINTENANCE INDEX PAGE (MIP) PAGE 1 OF 1 SYSCOM MIP CONTROL NUMBER C-465/1-13

MAINTENANCE INDEX PAGE
Figure 10.11-1

C. Weekly PMS Schedule

1. Posted in the work center

2. Used by Work Center Supervisor to assign and monitor PMS

3. Content (See Figure 10.11-2)

a. Work center assignment

(1) Assigned numerically by Department
(a) EXAMPLE: CR01 (Comm Department, Radio, 01)

b. Date of current week

c. Division Officer's signature

d. Maintenance Index Page (MIP) Code

(1) MIP is contained in Work Center PMS Manual
(a) EXAMPLE: C-465/1

e. List of components

(1) Includes Equipment Guide List (EGL) number

f. Maintenance responsibilies

(1) By name

(2) One person may be responsible for several maintenance actions

g. Periodicity codes

(1) D - Daily, W - Weekly, M - Monthly, Q - Quarterly, S - Semiannually, A - Annually, R - Situation Requirement (as Required)

(2) May be numbered
(a) EXAMPLE: M-1, Q-1, Q-2 etc.
1. More than one check during a stated period
2. EXAMPLE: M-2 would be the second monthly maintenance item on a piece of equipment, but a different and separate maintenance action from M-1.
(b) As required (R), will be within periodicity code or as required, whichever comes first
1. EXAMPLE: Q-1R may indicate quarterly or when ship gets underway.

4. Recording Maintenance Actions on Weekly Schedule

a. Cross off completed actions

b. Actions not completed, circled and rescheduled by Work Center Supervisor.

c. Requirements satisfied by higher level maintenance action will be marked with a cent sign (¢).

WEEKLY PMS SCHEDULE (CONVENTIONAL)
OPNAV FORM 4790/15 (3-71)
S/N 0107-LF-770-3260

•U.S. GPO: 1978 - 708-124

WORK CENTER			PMS SCHEDULE FOR WEEK OF				APPROVAL SIGNATURE		
COMMUNICATIONS CR01			9 JANUARY 1983				L. M. Eagle		
MIP	COMPONENT	MAINTENANCE RESPONSIBILITY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT.-SUN.	OUTSTANDING REPAIRS AND P.M CHECKS DUE IN NEXT 4 WEEKS
C-193/2	URC-9	SMITH	W-1,W-2	W-3		M-1			
C-193/2	SRC-20	HENRY	W-1,W-2	W-3		M-1			
C-193/2	SRC-21	SMITH	W-1,W-2	W-3		M-1			
C-304/3	WRC-1	JONES		Q-5					
C-304/12	URT-23	EVANS			W-1				
C-413/1	SB-863	MORRIS				S-1			
C-413/1	SB-988	MORRIS				S-1			
C-465/1	SB-1203	CLAY					S-1		
C-465/1	SB-1210	CLAY					S-1		
C-726/1	SB-973	HENRY			A-1				

WEEKLY PMS SCHEDULE
Figure 10.11-2

D. Maintenance Requirement Card (MRC) (See Figure 10.11-3)

1. Provides Applicable Maintenance Information

a. Ship system, subsystem and equipment identification

b. MRC code

(1) First part corresponds to MIP

(2) Second part is the periodicity code.

c. Maintenance requirements description

(1) Clean, inspect, test operate, etc.

d. Rates

(1) Recommended skill level required by rate or Navy Enlisted Classification Code (NEC) for performing maintenance tasks

e. Work Hours (W/H)

(1) Average time required to do the maintenance to the nearest 1/10 of an hour

f. Safety precautions

(1) Warnings or cautions to observe during maintenance

g. Tools, parts, materials, test equipment

(1) Itemized list of all items required for the maintenance action
(a) These items can be obtained from the instructor while in the lab area

h. Procedure

(1) Detailed steps to follow in performing the maintenance action

SHIP SYSTEM	SUBSYSTEM	MRC CODE	
		C-465 S-1	
SYSTEM	EQUIPMENT	RATES	M/H
	SB-1203,1203A,B/UG SB-1210,1210A,B/UGQ Communication Patching Panel	RMSN	0.2

MAINTENANCE REQUIREMENT DESCRIPTION

1. Clean and inspect communication patching panel.

TOTAL M/H 0.2
ELAPSED TIME 0.2

SAFETY PRECAUTIONS

1. Forces afloat comply with Navy Safety Precautions for Forces Afloat, OPNAVINST 5100 series; Shore activities comply with Safety Precautions for Shore Activities, NAVMAT P-5100 series.

TOOLS, PARTS, MATERIALS, TEST EQUIPMENT

MATERIALS
1. [2391] Towel, machinery wiping, lint-free
2. [1606] Brush, paint, sash and trim
3. [1046] Polish, metal, MIL-P-15422
4. [2412] Tag, danger, NSHIP 9890/8, red

TOOLS
1. [1199] Screwdriver, flat tip, 6" round blade
2. [2271] Flashlight, exp proof

MISCELLANEOUS
1. [0268] Cleaner, vacuum, electric, portable, type LVU, with nonmetallic nozzle

NOTE: Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for stock number identification.

PROCEDURE

NOTE 1: This MRC is also applicable to Communication Patching Panels SB-2244/UG; SB-2405, 2405A/G; SB-3576/UG; SB-4034/UGQ; SB-4035/UGQ; TT-23,23A,B,C,D,E,F,G/SG; CDVH-PPCC-26.

Preliminary
a. Turn OFF and tag 120V DC main power switches.

NOTE 2: Step b. applies only to SB-2405, 2405A/G, SB-3576/UG and CDVH-PPCC-26 with operational audible alarm system installed.

b. Turn OFF and tag 115V AC main power switch to alarm circuit.
c. Turn OFF and tag 115V AC power to all crypto equipment, if applicable.

PAGE 1 OF 2 — 13 — EV05 — N

LOCATION | DATE January 1983

MAINTENANCE REQUIREMENT CARD (MRC)

FRONT

PROCEDURE (Cont)

d. Dummy out and tag, at all originating Patch Panels, any Trunk Lines to the Patch Panel being cleaned, if applicable.
e. Turn each potentiometer on the Patch Panel being cleaned clockwise and then turn the meter switch to each position. Verify all circuits at zero current.

1. Clean and Inspect Communication Patching Panel.
a. Loosen captive screws; lower hinged front panel.
b. Wipe accessible surfaces with a clean, lint-free towel.
c. Use brush to remove dust, dirt, and other foreign matter from areas not easily accessible.
d. Remove remaining dust, dirt, and other foreign matter with vacuum cleaner.
e. Inspect interior of equipment. Look for:
(1) Discolored or scorched components
(2) Loose connections
(3) Cracked or frayed insulation
(4) Worn or broken wiring
(5) Presence of foreign matter
(6) Loose isolation resistor mounting screws
(7) Loose terminal board connections
(8) Bulged or leaking capacitors (SB-2244/UG only)
f. Close hinged front panel; tighten captive screws.
g. Inspect exterior of equipment. Look for:
(1) Cracked, broken or missing meter glass
(2) Cracked, broken or missing indicator lamp glass
(3) Broken or missing fuse holder (SB-2405, 2405A/UG, SB-3576/UG and CDVH-PPCC-26 only)
(4) Loose, broken or missing control knobs and switches
h. Ensure front panel controls and switches operate smoothly and do not bind or stick.
i. Inspect patch cord plugs and cable. Look for:
(1) Cracked or frayed cable
(2) Corroded, pitted, or dirty plugs
(3) Loose-fitting plugs on cable
(4) Bent or broken plugs
j. Polish plugs with metal polish.
k. Return equipment to current readiness condition.

PAGE 2 OF 2 — EV05 — N

MAINTENANCE REQUIREMENT CARD (MRC)

BACK

MRC CARD
Figure 10.11-3

i. Location

(1) Location of individual equipment

(2) May refer to equipment guide list

(a) Used with a MRC to locate mutliple equipments of the same type

(b) Each command prepares EGL for their particular situations

(c) Number of items on EGL determined by skill level and work hours required

(d) Eliminates requirements of having a MRC for each piece of similar equipment

EQUIPMENT GUIDE LIST
OPNAV 4790/81 (2-76)
S/N 0107 LF-047-9405

PAGE 1 OF 1

MIP NO C-465/1 MRC PERIODICITY S-1

EQUIPMENT NAME NOMENCLATURE	SERIAL NO QUANTITY	LOCATION	APPLICABLE DATA AS REQUIRED BY MRC
SB-1203/UG	A201	03-81-1-Q	
SB-1203/UG	A166	03-81-1-Q	
SB-1203/UG	C488	03-83-1-Q	
SB-1203/UG	A357	03-83-1-Q	

EQUIPMENT GUIDE LIST
Figure 10.11-4

E. Tag Out Procedures

1. Purpose

a. Provides a procedure to be used to prevent improper operation when a component, equipment, system, or portion of a system is isolated or in an abnormal condition

(1) Necessary due to the complexity of modern equipment and the hazard to personnel and equipment from improper operation of the equipment

2. Types of Tags

a. DANGER Tags

(1) A RED tag prohibiting operation of equipment which could jeopardize safety of personnel or endanger equipment, systems, or components

(a) WARNING: UNDER NO CIRCUMSTANCES WILL EQUIPMENT BE OPERATED WHEN TAGGED WITH RED DANGER TAGS

b. CAUTION Tag

(1) A YELLOW tag used as a precautionary measure to provide temporary special instructions or indicate that unusual caution must be exercised to operate equipment

(a) Instructions on the tag must state the SPECIFIC reason the tag is installed

1. Example: Caution: 400HZ signal must be applied prior to energizing equipment

(b) A CAUTION tag is NOT used if personnel or equipment can be endangered while performing evolutions using normal operating procedures

1. In this case, a RED DANGER tag must be used

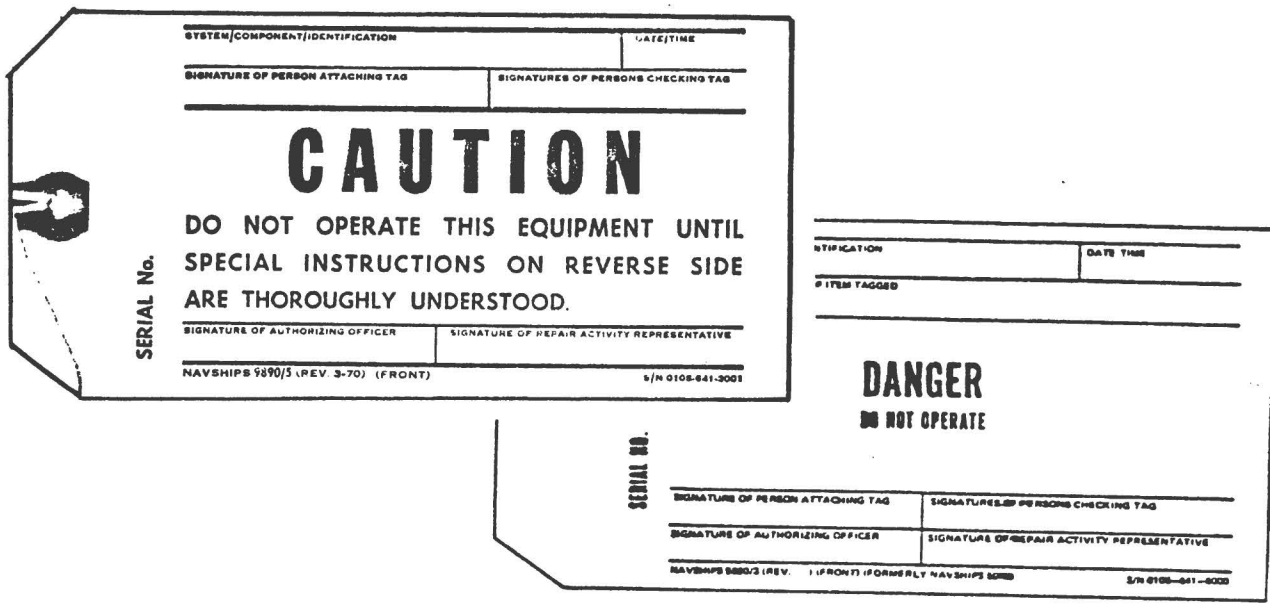
c. PMS RED DANGER Tag

(1) A laminated RED DANGER tag used where special circumstances require frequent energizing and deenergizing of equipments

(a) Used when performing preventive or corrective maintenance

(b) Equipment will not be left unattended for more than a short period of time (1-2 hours) when these tags are in place

(c) Equipment that is in a condition such that a hazard exists, i.e. open and energized, will not be left unattended



DANGER/CAUTION TAGS
Figure 10.11-5

d. Out-of-Commission Labels

(1) RED labels used to identify instruments that will not correctly indicate parameters because they are defective or isolated from the system

(a) Indicates that instrument cannot be relied upon and must be repaired and recalibrated before use

1. Example: Milliampmeter on SB-1210/UGQ

e. Out-of-Calibration Labels

(1) ORANGE labels used to identify instruments which are out-of-calibration and will not accurately indicate parameters

(a) This label indicates the instrument may be used for system operation only with extreme caution

3. Policy

a. The tag-out procedure shall be strictly enforced at all times

(1) Violation of any tag compromises the entire tag-out system and could, in itself, have serious consequences

(a) Strict adherence to the tag-out procedure WITHOUT EXCEPTION is required by all personnel

(2) The use of tags or labels is not a substitute for other safety measures such as removing fuses or racking out circuit breakers

(3) The absence of a tag or label is not to be construed as permission for unauthorized operation of equipment

4. Procedures

a. The Tag-out Log

(1) Each tag-out log shall be maintained in a three-ring binder divided into sections containing the following

(a) A copy of the command tag-out instruction

(b) DANGER/CAUTION Tag-out Index and Record of Audits (Index/Audit Record)

1. Sequential list of all tag-outs issued

2. Provides a ready index of existing tag-outs, assures serial numbers are sequentially numbered, and records completion of required audits

(c) Effective DANGER/CAUTION Tag-out Record Sheets

(d) Effective PMS RED Tag-out Record Sheets

(e) Instrument Log

1. Sequential listing of all out-of-commission and out-of-calibration instruments

(f) Cleared DANGER/CAUTION Tag-out Record Sheets

b. Preparing the Tag-out: Non-PMS Procedure

(1) Person designated to prepare the tag-out shall determine the number of tags required and prepare the tags and record sheets

(a) System diagrams or circuit schematics should be used to determine the adequacy of tag-out actions

(2) Record sheets and tags shall be filled out as follows

(a) Fill out the index/audit record sheet clearly indicating the following

1. The log serial number using the next number in sequence and the applicable work center prefix

a. Work center prefix: RM

2. The date of the tag-out

3. The type of tag-out

a. DANGER or CAUTION

4. A brief description of the system or component tagged out

DANGER/CAUTION TAG-OUT INDEX AND RECORD OF AUDIT
(INDEX/AUDIT RECORD)

LOG SERIAL	DATE ISSUED	TYPE (DANGER/CAUTION)	DESCRIPTION (SYSTEM, COMPONENT, WORK PERMIT OR TEST DOCUMENT REFERENCE)	TAG NUMBER	DATE CLEARED

DANGER/CAUTION TAG-OUT INDEX
AND RECORD OF AUDITS
Figure 10.11-6

(b) Fill out the tag-out record sheet clearly indicating the following

1. The log serial number from the index/audit record

2. The reason for the tag-out

3. Hazards involved

   a. MANDATORY FOR DANGER TAGS

4. Amplifying instructions

   a. MANDATORY FOR CAUTION TAGS

5. Work necessary to clear the tags

6. The number of each tag

7. The location and position or condition of the tagged item, using the most easily indentifiable means

   a. Deenergized, open, etc

NAVSEA 9210/9 (6-78) (FRONT)
(formerly NAVSHIPS 9880/91)

DANGER/CAUTION TAG-OUT RECORD SHEET

SYSTEM OR COMPONENT	LOG SERIAL NUMBER
DATE, TIME TAG-OUT ISSUED	NUMBER OF EFFECTIVE TAGS

REASON FOR TAG-OUT

PERSONNEL/EQUIPMENT HAZARDS INVOLVED
(Mandatory for DANGER Tags)

AMPLIFYING INSTRUCTIONS
(Mandatory for CAUTION Tags)

WORK NECESSARY TO CLEAR TAG(S)
(Including Tests)

INDEPENDENT TAG COVERAGE CHECKS MADE BY	REPAIR ACTIVITY REPRESENTATIVE (When Appropriate)
PETTY OFFICER IN CHARGE OF WORK ________ (Signature)	________ (Signature)
SECOND PERSON ________ (Signature)	OFFICER AUTHORIZING TAG(S) (Watch Team Officer) ________ (Signature)

OPERATIONS/WORK ITEMS INCLUDED IN TAG-OUT

APPLICABLE DOCUMENTATION (e.g., [illegible]) NUMBER & TITLE	ADDITIONAL TAG NUMBERS*	DATE/TIME* ADDED	PETTY OFFICER IN CHARGE* / SECOND PERSON (Signature)*	AUTHORIZING OFFICER* / REPAIR ACTIVITY REP. (when appropriate)*	WORK COMPLETE: AUTHORIZING OFFICER / REPAIR ACTIVITY REP. (when appropriate)	DATE

DANGER/CAUTION TAG-OUT RECORD SHEET

Figure 10.11-7

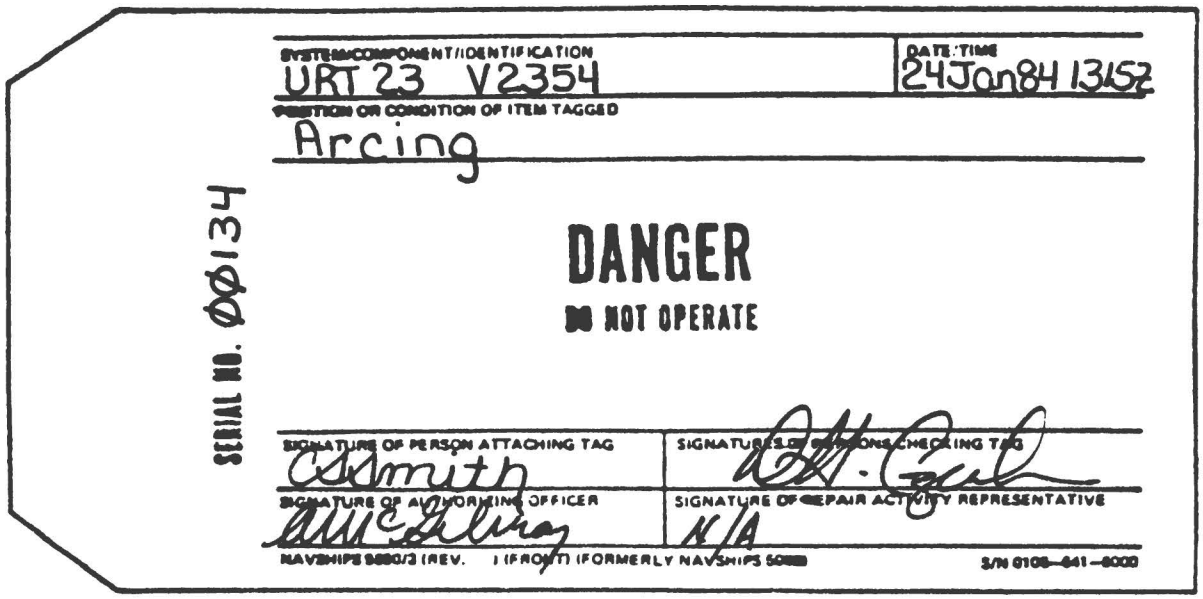
(c) Fill out DANGER or CAUTION tags, clearly indicating the information required on the tags

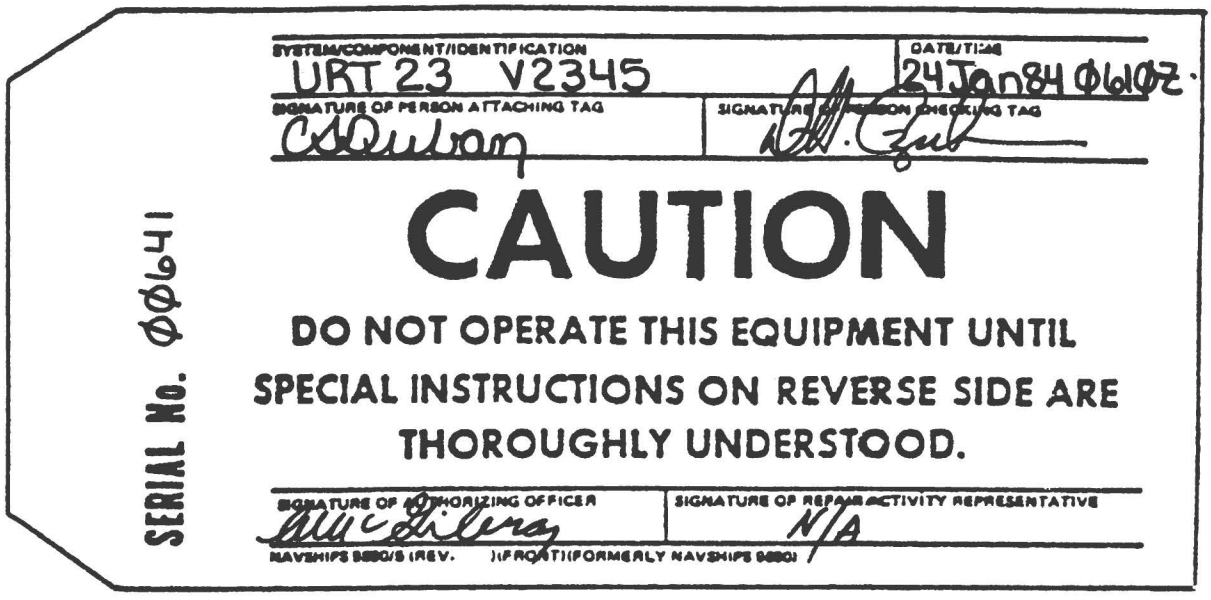
1. Log serial number from the index/audit record

2. System/component identification

3. Date/time of the tag-out

4. Position or condition of item tagged





DANGER/CAUTION TAGS

(3) When the tag and the tag-out record sheets are filled out, they shall be presented to a second person for review

c. Preparing the Tag-out; PMS Procedure

(1) Person designated to prepare the tag-out shall prepare the tags and record sheets

(2) Record sheet and tags shall be filled out as follows

(a) Fill out the work center PMS RED Tag record sheet indicating the following

1. Date/time out

2. Serial numbers

a. Record from laminated RED DAGNER tags

3. Person issued to

WORK CENTER _____

TOTAL TAGS ACCOUNTABLE _____

SSC Form Sheet No.

Date/Time out	Serial Numbers	Issued To (Signature)	Auth. Off Initial	Time In	Authorizing Officer (Signature)

WORK CENTER PMS RED TAG RECORD

TAG GUIDE LIST
OPNAV 4790/107 (10-80) S/N 0107-LF-047-9548

MIP & MRC NO. _____
EQUIPMENT _____

NUMBER OF TAGS PER EQUIP

NOTIFICATION DATA

COLD IRON	INPORT STEAMING	UNDERWAY

EQUIPMENT SERIAL NO.	SERIAL NO. SWITCH/VALVE	LOCATION OF SWITCH/VALVE	POSITION OF TAGGED ITEM	AMPLIFICATION DATA

VERIFICATION/APPROVAL SIGNATURES

WCS	DIV OFF	DEPT HEAD	CO

TAG GUIDE LIST

Figure 10.11-8

(b) Fill out the laminated RED DANGER tag

1. A tag list containing the number of tags required for the tag-out, the location of each tag, and the position of the tagged item will be laminated and attached to the applicable PMS MRC's in the same manner as EGL's

a. Fill out the number of tags indicated

2. Serial numbers will be indicated on tags prior to laminating

d. Review of Tag-out

(1) When the tag and tag-out record have been filled out, a second person shall make an independent check of tag coverage and usage

(a) Instructor will fulfill this function in this course

(2) When the second person is satisfied with the completeness of the tag-out plan, he shall sign the record sheet indicating his concurrence

(3) The tag-out sheet shall then be presented to the authorizing officer for review

e. Authorization

(1) The authorizing officer shall be the officer or senior petty officer designated to supervise the tag-out log

(a) Senior instructor will fulfill this function in this course

(2) The authorizing officer shall

(a) Check the tag coverage for adequacy

(b) Check the tags and record sheet for completeness and accuracy

(c) Sign the individual tags and the tag-out record sheet

f. Installation and Check of Tags

(1) After the tag-out has been authorized, tags shall be installed

(2) The person attaching the tag shall ensure that the item tagged is in the prescribed position or condition

(3) As each tag is attached and the position or condition verified, the person attaching the tag shall sign the tag, and initial the tag-out record sheet if applicable

(a) Tags should be installed directly on the item being tagged

1. Breaker, fuse holder, etc

(4) After completion of tag attachment, a second person shall independently verify that the item is in the proper position or condition and that the tag is properly installed

(a) The second person will then sign the tag, and initial the tag-out record sheet if applicable

1. Instructor will fulfill this function in this course

(5) Upon completion of these steps, the tag-out record sheet shall be filed in the tag-out log and the authorizing officer informed that the tag-out has been completed

g. Removal of Tags

(1) DANGER and CAUTION tags should be removed immediately when the situation requiring the tag-out has been corrected

(a) Tags, EXCEPT for PMS RED tags, should be removed only on signed authorization of the authorizing officer

(b) As the tags are removed, the date/time of removal shall be entered on the record sheet and each entry initialed

1. Ditto marks shall not be used

(c) Removed tags, with the exception of PMS RED tags, should be destroyed AFTER they have been delivered to the authorizing officer

1. PMS RED tags will be returned to the PMS RED tag folder

(d) The authorizing officer will make entries on the index/audit record, tag-out record sheet, or PMS RED tag record as appropriate when the system has been returned to normal operating condition

F. Steps of Procedures

1. Check weekly PMS schedule for maintenance assignment

a. Assigned by name

2. Draw MRC from card deck for assigned maintenance

3. Draw all items necessary for the maintenance action as listed on MRC

4. Check EGL if necessary for location of assigned equipment (See Figure 10.11-4)

5. Perform maintenance in accordance with procedures outlined on the MRC

a. Deenergize and tag all associated equipment and power panels

b. Observe safety precautions

6. Note any discrepancies found during maintenance action

7. Stow all materials

8. Return MRC to card deck in Work Center

9. Remove tags

10. Record results on Weekly Schedule

a. Completed, not completed, partially completed, or rescheduled.

G. Before PMS Practice or Testing

1. Lesson 11.1 (Safety) must be completed with passing grade

2. Review information in Student Guide Section 11.1

PROGRESS CHECK 10.11

PMS

DO NOT WRITE ON THIS PROGRESS CHECK

1. Who schedules weekly PMS maintenance?

   a. Division Officer
   b. Work Center Supervisor
   c. Department Head
   d. 3-M Coordinator

2. The work center PMS Manual contains:

   a. Maintenance Requirement Cards
   b. Equipment Guide List
   c. Weekly PMS Schedule
   d. Maintenance Index Pages

3. A monthly maintenance action is indicated on the weekly PMS schedule by which periodicity code?

   a. M-2
   b. W-3
   c. Q-1R
   d. S-2

4. A maintenance action which is scheduled for this week can not be completed due to an operational need. How would that action be recorded on the weekly PMS schedule?

   a. Cross Off
   b. Mark with cent sign (¢)
   c. Circle
   d. Leave Blank

5. A maintenance requirement card:

   a. Provides maintenance information
   b. Is used to record completed actions
   c. Is signed by the Division Officer
   d. Eliminates requirement for the EGL

6. Where are safety precautions related to the maintenance action found?

   a. In the PMS Manual
   b. On the EGL
   c. On the MRC
   d. On the weekly schedule

7. Weekly PMS maintenance checks are assigned by:

   a. Billet
   b. Rate
   c. NEC
   d. Name

8. The materials and tools needed to accomplish assigned maintenance are listed on the:

   a. EGL
   b. MRC
   c. MIP
   d. ERP

9. Which item eliminates the requirements of having a MRC for each similar piece of equipment?

   a. MIP
   b. MRC
   c. EGL
   d. APL

10. What is the final step of a maintenance procedure?

    a. Record results on weekly schedule
    b. Return MRC to card deck
    c. Note any discrepancies found
    d. Stow all materials

11. Why are tag-out procedures necessary?

12. Which tag prohibits operation of equipment which could jeopardize safety of personnel or endanger equipment?

13. When are PMS RED DANGER tags used?

14. When, and by whom, are tags signed?

15. What happens to tags, other than PMS RED tags, after they have been removed?

ASSIGNMENT SHEET 11.1

Safety Regulations/Precautions

INTRODUCTION

Throughout the entire course, safety will be checked in all activities where personal injury or serious damage may arise. This lesson discusses safety precautions to be followed before going aloft and while working on antennas, how to rescue and handle victims in contact with energized electrical/electronic systems and safety precautions to follow when servicing electronic equipments.

LESSON TOPIC LEARNING OBJECTIVES

5.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, COMPLY WITH ALL SAFETY PRECAUTIONS prescribed in current volumes of "Safety Precautions for Afloat Activities", and "Safety Precautions for Ashore Activities", while performing Radioman tasks. Safety practices will be evaluated as a direct part of all laboratory and watch station activities.

5.1 Given the Radioman tasks of working aloft on antenna installations, select the safety precautions that must be followed while performing those tasks.

5.2 After observing a simulated rescue of a person in contact with a life-threatening energized circuit, select the procedures to be followed in rescuing electrical shock victims including removal from the danger area and permissible treatment.

5.3 Select the safety precautions to be observed while servicing electronic equipment.

STUDY ASSIGNMENT

Study Notetaking Sheets and personal notes.

NOTETAKING SHEET 11.1

SAFETY REGULATIONS/PRECAUTIONS

REFERENCES:

1. OPNAVINST 3120.32, Standard Organization and Regulations of the U.S. Navy
2. OPNAVINST 5100.19, Department of the Navy Safety Precautions for Forces Afloat
3. NAVMATP-5100, Safety Precautions for Shore Activities
4. SERVSCOLSCOMDSDIEGOINST 5100.1, Equipment Tag-Out Bill

NOTETAKING OUTLINE:

A. Introduction

1. Responsibility for Safety

a. SAFETY IS AN ALL-HANDS RESPONSIBILITY

b. The Commanding Officer has the ultimate responsibility for all safety matters within his command

(1) A Safety Officer is appointed to provide day-to-day staff assistance to the Commanding Officer

(a) Uses the policies and goals established by the Commanding Officer to formulate a safety program based on Chapter 7 of the Standard Organization and Regulations of the U.S. Navy (SORM) and directives of higher authority

2. General Safety Precautions

a. In the performance of normal duties, Radiomen are exposed to many potentially dangerous conditions and situations

(1) Particularly during the performance of preventive or corrective maintenance by operator or maintenance personnel

b. Most accidents which occur in non-combat situations can be prevented if care is exercised to eliminate unsafe acts and conditions

c. Each individual should strictly observe the following general safety precautions as applicable to work or duty

(1) Report any unsafe condition on any equipment or material which you consider to be unsafe

(2) Warn others whom you believe to be endangered by known hazards or by failure to observe safety precautions

(3) Wear or use available protective clothing or equipment of the type approved for safe performance of your work or duty

(4) Report any injury or evidence of impaired health occuring in the course of work or duty

(5) In the event of any unforeseen hazardous occurrence, exercise reasonable caution as appropriate to the situation

B. Electrical/Electronic Safety Regulations

1. Electrical/electronic equipment includes the following:

a. Electrical: Generators, electrically powered machines, power cables controllers, transformers and associated equipment

b. Electronic: Radars, sonars, radios, power amplifiers, antennas, electronic warfare equipment, computers, and associated controls

2. Safety Regulations

a. No person shall operate, repair, adjust, or otherwise tamper with any electrical or electronic equipment except in the performance of assigned duties

b. No person shall be assigned to operate, repair, or adjust electrical or electronic equipment unless he/she has demonstrated a practical knowledge of its operation or repair and of all applicable safety regulations

c. No person shall remove, paint over, or otherwise destroy or multilate any markings, name plates, cable tags or other identification on any electrical or electronic equipment

d. No person shall hang anything on, or secure a line to, any power cable, antenna, wave guide, or other electrical or electronic equipment

e. Only authorized portable equipment which has been tested and certified by the electric shop shall be used

(1) Portable electrical equipment shall be tested weekly

f. Equipment shall be de-energized and checked with a voltmeter to ensure that it is de-energized before servicing or repairing it

(1) Circuit breakers and switches of de-energized circuits shall be locked or placed in the "OFF" position and a suitable warning tag attached

(a) "TAG-OUT" procedures will be covered in detail in the Planned Maintenance Sub-system lesson

g. If it is necessary to work on energized circuits, such work shall be performed ONLY WITH THE SPECIFIC PERMISSION OF THE COMMANDING OFFICER

h. Personnel shall not be permitted to go aloft near energized antennas unless it is determined in advance that no danger exists

(1) If any danger exists, the equipment concerned shall be secured and a warning tag attached to the main supple switches

(a) Danger could exist from rotating antennas, induced voltages in rigging and superstructure, or from high power radiation causing direct biological injury

(2) These precautions shall also be observed if any other antenna is in the vicinity, as on an adjacent ship

i. Approved non-conductive rubber matting shall be installed in areas in and around radio, radar, sonar, and countermeasures equipment spaces which may be entered by personnel in servicing or tuning energized equipment

j. All protective electrical enclosures are to be kept closed and permanent electrical grounds maintained

C. Electrical/Electronic Safety Precautions

1. Capacitors

a. Capacitors are circuit components that can hold high voltage charges for several hours after the circuit has been disconnected from the power source

b. Capacitors must be discharged in circuits individually prior to performing maintenance

(1) Discharge accomplished by shorting the capacitor terminals to ground using an approved shorting probe

(a) Connect test clip on shorting probe to a good ground FIRST

1. If necessary, scrape any paint off the metal ground to ensure good contact

(b) Hold shorting probe by the insulated handle and touch brass probe end to the capacitor terminals

1. NEVER TOUCH ANY METAL PARTS OF THE SHORTING PROBE WHILE THE BRASS PROBE IS EXPOSED TO CAPACITOR TERMINALS

SHORTING/GROUNDING BAR

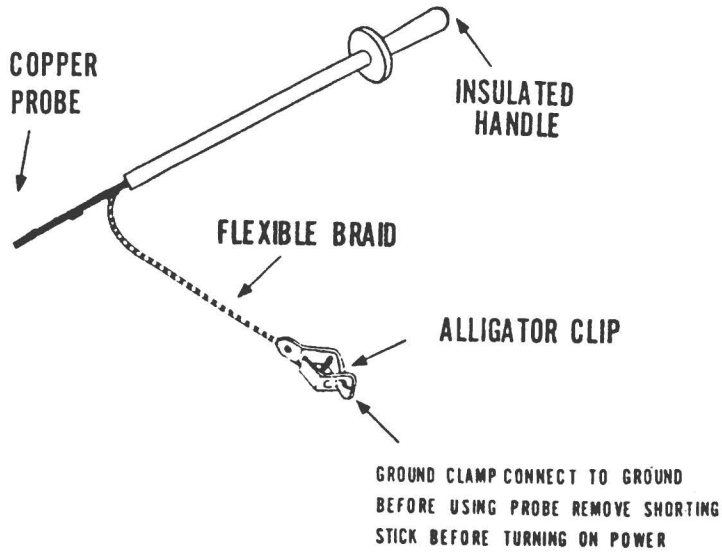


FIGURE 11.1-1

2. Rubber Matting

   a. Visually inspect rubber matting to be sure all foreign substances that could contaminate or impair its dielectric properties are removed

      (1) Dielectric: A term applied to insulating material

3. Electrical/Electronic Maintenance

   a. Work with another person at all times

   b. Secure all power sources

      (1) Equipment tag-out procedures must be strictly adhered to

   c. Remove all rings, wristwatches, bracelets, ID tags, and similar metal items

   d. Do not work on electrical/electronic equipment with wet hands or while wearing any wet clothing

   e. Keep the doors to switch and fuse boxes closed except when working inside or replacing fuses

(1) Replace fuses with fuses of the same voltage and current rating

(2) Use a fuse puller to remove cartridge fuses

f. Discharge capacitors using a shorting probe

g. Use one hand for performing maintenance whenever possible

h. NEVER short out, tamper with or block open an interlock switch

(1) Interlock: Spring loaded switches which de-energize equipment or equipment components whenever cabinet doors, drawers, covers, etc. are opened

(a) Primarily designed to protect personnel from accidental contact with energized circuits

4. Working Aloft

a. Personnel must obtain specific permission from the Officer of the Deck (OOD) before working aloft

b. Before authorizing personnel to go aloft, the OOD must

(1) Ensure that all power on radar and radio antennas in the vicinity of the work has been secured

(a) Controls associated with the antenna(s) must be tagged "SECURED! MEN ALOFT"

(2) Ensure that main engine control does not lift safety valves

(a) Steam to the steam whistle must be secured if work is to be done in its vicinity

(3) Ensure that personnel assigned to work in the vicinity of stack gases wear protective breathing masks and remain there only for a short time

(4) Determine that wind and sea conditions will not endanger aloft personnel

(5) Ensure that all personnel working aloft wear a parachute-type safety harness with its safety line attached to the ships superstructure at the same level

(a) All tools, buckets, paint pots, and brushes must be secured by a line when used in work on masts or stacks

c. The OOD will authorize the work after sighting and signing the "Request For Permission to Go Aloft"

(1) Commonly referred to as a "Man Aloft Chit"

USS HALSEY (CG-23)

REQUEST FOR PERMISSION TO PERFORM WORK ALOFT

1. PERMISSION IS REQUESTED FROM THE OOD BY THE _____ DIVISION TO GO ALOFT ON THE STACK/MAST FOR APPROXIMATELY _____ HOURS FOR THE PURPOSE OF _____. IN ACCORDANCE WITH "SAFETY PRECAUTIONS FOR FORCES AFLOAT", APPROVAL HAS BEEN OBTAINED FROM THE FOLLOWING OFFICERS, AND APPROPRIATE EQUIPMENTS HAVE BEEN SECURED.

CIC WATCH OFFICER _____ TIME_____

A. SPS-46 SECURED_____
B. SPS-48 SECURED_____
C. SPS-17 SECURED_____

COMM WATCH OFFICER_____ TIME_____

A. FORWARD WIRE ANTENNA SECURED_____
B. AFTER WIRE ANTENNA SECURED_____
C. DISCONE CAGE SECURED_____
D. FORWARD WHIPS SECURED_____
E. AFTER WHIPS SECURED_____

ENG DUTY OFFICER_____ TIME_____

A. SAFETY VALVES SECURED_____
B. STEAM WHISTLE SECURED_____

2. I HAVE READ AND UNDERSTAND THE SAFETY PRECAUTIONS AND PROCEDURES FOR WORKING ALOFT CONTAINED IN "SAFETY PRECAUTIONS FOR FORCES AFLOAT" AND CURRENT SHIPS REGULATIONS.

PERSON GOING ALOFT_____ TIME_____

ASSISTANT_____ TIME_____

3. PERMISSION IS GRANTED/NOT GRANTED FOR WORKING ALOFT.

ADJACENT SHIP OOD_____ TIME_____

ADJACENT SHIP OOD_____ TIME_____

OOD_____ TIME_____

4. I HAVE COMPLETED WORKING ALOFT AND NOTIFIED APPROPRIATE OFFICERS.

PERSON WORKING ALOFT_____ TIME_____

5. MAN ALOFT HAS BEEN SECURED

OOD_____ TIME_____

Figure 11.1-2

5. Electrical Fires

a. In case of electrical fires, the following steps should be taken

(1) De-energize the circuit

(2) Call the fire department or fire fighting team

(3) Control or extinguish the fire

(a) Use a CO2 (Carbon dioxide) fire extinguisher

(b) Direct extinguisher toward the base of the fire

6. Work Tools

a. Hand tools

(1) Use only serviceable tools

(a) Not broken, chipped or damaged in any way which could endanger personnel

(2) Use only in the way they are meant to be used

(3) Stow properly after use

b. Electrical Power Tools

(1) Check cords for damage

(a) Frayed, broken insulation, broken strands, etc.

(2) Check ground connector

(3) Connect power tools to extension cords BEFORE plugging extension cord into energized receptacle

(4) Position cords so that they will not endanger other personnel or become damaged

(5) Stow properly after use

D. Electric Shock

1. Electric shock is a jarring, shaking sensation resulting from contact with energized electric circuits

a. The victim usually feels that he has received a sudden blow

b. If the voltage and resulting current is sufficiently high, the victim may become unconscious

c. Severe burns may appear on the skin at the place of contact

d. Muscular spasm may occur, causing the victim to clasp the component or wire which caused the shock, and be unable to turn it loose

2. The amount of current that may pass through the body without danger depaends on the individual and the current quantity, type, path and length of contact time

a. Body resistance is lowered by moisture, and is higher with dry skin

(1) Resistance: Ability to oppose current flow

b. A current of 1 milliampere can be felt and will cause a person to avoid it

(1) Ampere: The basic unit of current or electron flow

(2) 1 Milliampere equals 1/1000th of an ampere

c. Current as low as 5 milliamperes can be dangerous

d. A current of only 25 milliamperes has been known to be fatal; 100 milliamperes is likely to be fatal

3. The danger from shock also depends on the number of vital organs the current passes through, especially the amount that reaches the heart

a. Ventricular fibrillation of the heart occurs when the current through the body approaches 100 milliamperes

(1) Ventricular fibrillation: Uncoordinated action of the walls of the heart, causing the loss of the heart's pumping action

(a) Blood does not circulate

(2) This fibrillation will usually continue until some force is used to restore the coordination of the heart's action

E. Rescue and Care of Electric Shock Bictims (In procedural order)

1. Remove the victim from electrical contact at once

a. DO NOT ENDANGER YOURSELF

(1) Throw power switch if it is nearby

(2) If power switch is not readily accessible

(a) Drag or push the victim to safety using a dry stick, rope, belt, coat, blanket, or any other nonconducting material

OR

(b) Cut the cable or wires to the equipment, using an axe with a wooden handle

1. Protect your eyes from the flash when the cables are severed

2. Send for medical help

3. Determine whether the victim is breathing and has a pulse

a. The adequacy or absence of breathing and circulation must be determined immediately so that artificial respiration or Cardiopulminary Resuscitation (CPR) can be started if necessary

(1) IF THE VICTIM IS NOT BREATHING, ARTIFICIAL RESPIRATION MUST BE STARTED AT ONCE

(2) If the victim is not breathing and has no pulse, CPR should be started at once by properly trained individuals

(a) CPR: Combination of artificial respiration and artificial blood circulation by external cardiac compression

4. When pulse and breathing are present, treat for shock

a. Elevate feet

b. Keep victim warm

5. Remain with victim until medical help arrives

PROGRESS CHECK 11.1

SAFETY REGULATIONS/PRECAUTIONS

DO NOT WRITE ON THIS PROGRESS CHECK-USE SEPARATE SHEET OF PAPER TO ANSWER QUESTIONS

1. State three general safety precautions that everyone should observe.
2. Are antennas considered to be electrical or electronic equipment?
3. What must you demonstrate before operating electronic equipment?
4. How often should portable equipment be tested?
5. What must be done before repairs can be started on equipment?
6. Who may authorize work to be performed on energized equipment?
7. What dangers may exist from energized antennas?
8. State the procedures for shorting a capacitor.
9. What is an interlock?
10. Why were interlocks designed?
11. Who may authorize personnel to work aloft?
12. What must main engine control do before personnel may work aloft?
13. What type of fire extinguisher is used on electrical fires?
14. What is electric shock?
15. What causes a victim to clasp a wire which caused shock?
16. What is resistance, as relates to electric shock?
17. State the steps, in correct order, for rescue and care of electric shock victims.

ASSIGNMENT SHEET 12.1

HF Multichannel Fleet Broadcast: November System

INTRODUCTION

The HF Multichannel Fleet Broadcast is a teletype receive only system. A major new component of this system is the UCC-1 telegraph terminal, which is capable of receiving 16 separate message channels on a single carrier. Audio signals are converted to DC signals within the UCC-1.

The only other new components are the KWR-37 and KG-14 cryptographic units, and the SB-3195 crypto patch panel. The National Bureau of Standards Time and Frequency Standard (WWV)--also introduced with the system--provides the time standard for crypto synchronization.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or shore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, converters, antenna patch panels, HF transmitter, HF receivers, UHF transceivers, and patch cords; SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo and Sierra systems in accordance with COMNAVTELCOMINST C2796.1. Each must be set up and operational within 25 minutes.

4.3 Given receive teletype equipments, DC patch panels, audio patch panels crypto devices, terminal equipments, receive antenna patch panels, and an HF receiver, set up the system components of the November system for HF multichannel broadcast operation in accordance with COMNAVTELECOMINST C2796.1.

4.3.1 Given a blank sheet of paper, draw a block diagram of the November system including labeling each block and showing signal flow.

4.3.2 Given system components for an HF November system, adjust system components for optimum performance.

4.3.3 Given system components for an HF November system, interface all components using DC, audio, and antenna patch panels as appropriate.

STUDY ASSIGNMENT

Study Notetaking Sheet 12.1 and personal notes. Notetaking Sheet may not be used during the performance test. The information presented in this lesson is also included in the Progress Check 12.1.

4101

NOTETAKING SHEET 12.1

HF Multichannel Fleet Broadcast: November System

REFERENCES

1. KAO-34
2. KAO-89
3. COMNAVTELCOMINST C2796.1, Shipboard Communication Systems, Quality Monitoring
4. NTP-7, Navy Marine Corps and Coast Guard Cryptographic Equipment Information Manual Guidance

NOTETAKING OUTLINE

A. General Characteristics of the HF Multichannel Broadcast: November System

1. Fleet Multichannel Broadcast (MULCAST): One-way communication system to deliver shore-to-ship message traffic

a. Primary means of delivering message traffic to forces afloat

b. Operates continuously except for daily cryptographic restart period

c. Contains sixteen separate information channels

(1) Ships assigned to broadcast channels by class of ship and similarity of mission

(a) Examples: Destroyers may be assigned to channel 1, amphibious units to channel 3

(2) Units are assigned a channel for selectively addressed traffic and a channel for general traffic (Common channel)

(a) General traffic: Collective addresses, general messages, etc.

2. National Bureau of Standards Time and Frequency Standard used for crypto synchronization

a. Emission designator: 6K00A3E

(1) 6K00 = 6.00 KHz

(2) A = double sideband

(3) 3 = single channel

(4) E = telephony (including sound)

b. November HF emission designator: 3K00J7B

(1) 3K00 = 3.00 KHz

(2) J = single sideband

(3) 7 = two or more channels

(4) B = telegraphy (automatic reception)

B. Crypto Devices

1. KWR-37/TSEC Cryptographic Equipment (See Figure 12.1-1)

a. Mythological designator: JASON

b. Purpose

(1) Decrypts incoming signal on primary channel

(2) Major (master) piece of crypto equipment in November system

(3) Supplies timing signal for KG-14/TSEC

(a) Must be synchronized (in sync) before KG-14 will sync

c. Keying material

(1) Changes every 24 hours

(2) Issued in books with a different keylist for each day of the month

(3) Card reader must be kept closed and the key removed during operation (TEMPEST)

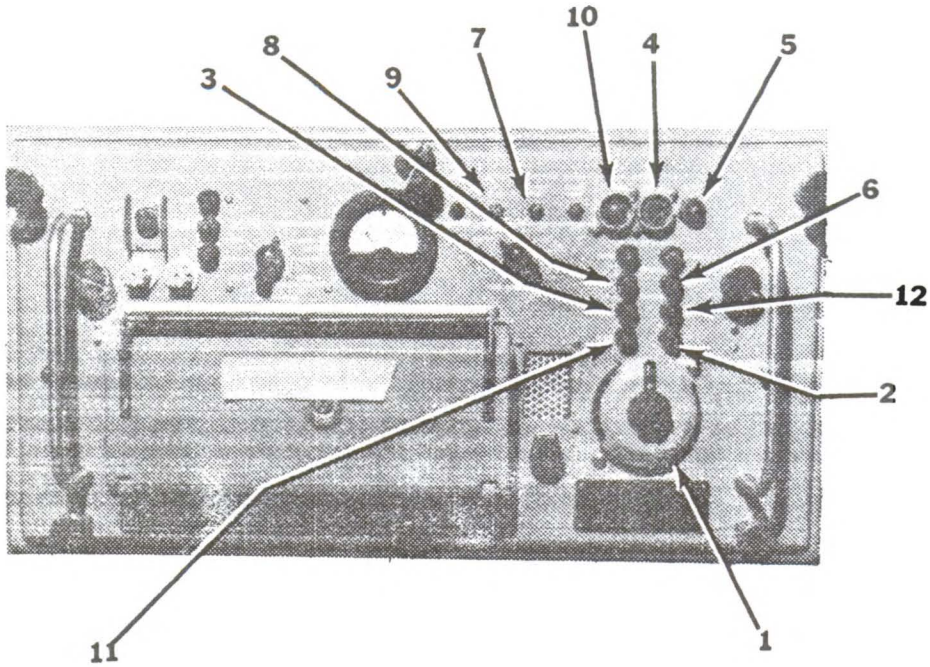


Figure 12.1-1, KWR-37/TSEC

1. INNER CLOCK DIAL
2. CIPHER TEXT button
3. CIPHER TEXT indicator
4. SET UP button
5. START button
6. HIGH-SPEED light
7. KEY light
8. SPEED NORMAL light
9. TIME DIFFERENCE switch
10. SEARCH button
11. SYNC light
12. ORDER WIRE indicator

2. KG-14/TSEC Cryptographic Equipment (See Figure 12.1-2)

   a. Mythological designator: CREON

   b. Purpose
      (1) Decrypts incoming signals on secondary channel

   c. Keying material requirements same as the KWR-37, including
      (1) regular cleaning of the receptacle

   d. Description
      (1) One-step synchronization is dependent upon the KWR-37 "sync"

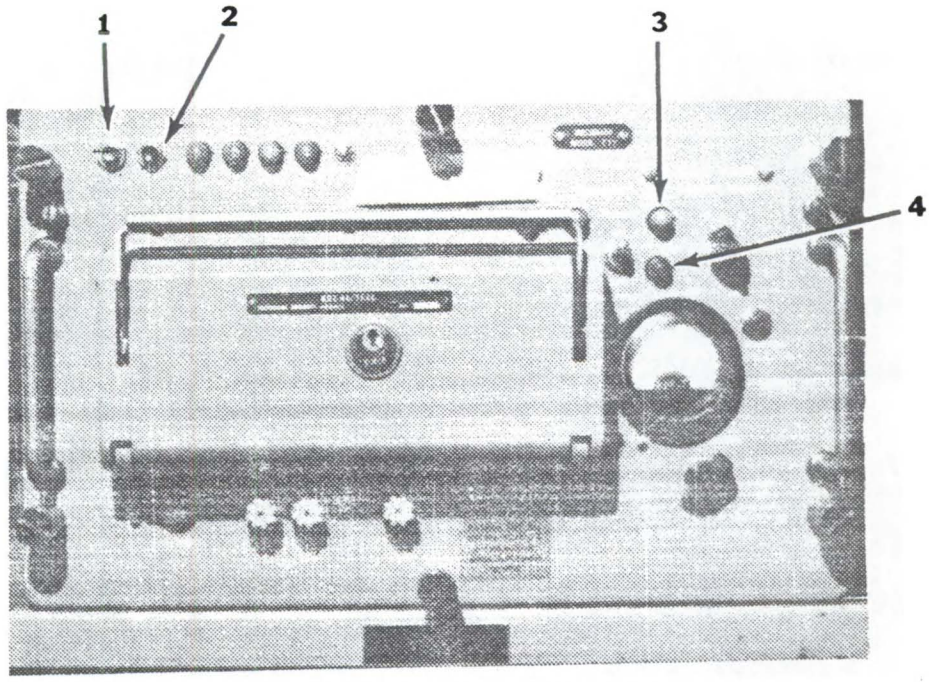


Figure 12.1-2, KG-14/TSEC

1. SET UP button
2. START button
3. SYNC light
4. ALARM light

3. SB-3195 Patch Panel

   a. Purpose
      (1) Patches KWR-37 to KG-14
      (2) Ties in timing signal for KG-14 synchronization

   b. Description
      (1) Four numbered rotary switches on front panel correspond to equal number of KG-14's
      (2) Positions on each switch correspond to KWR-37s:
          (a) Only one switch used when patching a single KG-14 to a single KWR-37.

C. Configuration and Signal Flow

1. SRA-12 Electrical Filter Assembly

   a. Provides a means for connecting one or more HF Receivers to a receive antenna.

   b. Contains 29 QUICK DISCONNECT receptacles, 1 for antenna input, 28 for connecting receivers to various frequency ranges.

   c. Each of seven vertical rows represent a different frequency range.

2. R-1051/URR Radio Receiver

   a. Selects the proper incoming signal according to a preset frequency and then reduces it to a usable audio frequency (AF)

3. SB-973/SRR Receiver Transfer Switchboard

   a. Transfers the audio output of a radio communications receiver to a converter.

      (1) In November system the signal is transferred from the R-1051 to the AN/UCC-1.

4. AN/UCC-1(V) Telegraph Terminal

   a. Purpose:

      (1) Converts audio output of receiver to DC marks and spaces for input to cryptographic devices.

      (2) Provides for multiplex operation - multiple channels of information received on a single frequency at the same time.

   b. Description

      (1) Two sections: cabinets A and B

      (2) Each cabinet has nine pullout drawers

         (a) Eight drawers represent information channels within assigned frequency

         (b) Ninth drawer is control attenuator

   c. Frequency Diversity reception

      (1) Fleet system setup usually includes two R-1051 receivers patched to the UCC-1.

      (2) With two receivers on different frequencies connected to the two sections of the UCC-1, only the stronger signal selected by the converter is fed to the teletype.

5. SB-1203/UG Communications Patching Panel

   a. Provides variable interconnection of converters to cryptographic equipment.

   b. Carries DC encrypted intelligence

      (1) Painted black or gray

   c. Description

      (1) Six channels (vertical rows)

      (2) Three loop jacks per channel (CONVERTER OR TRANSMITTER)

      (3) One set jack per channel (CRYPTO)

      (4) One miscellaneous jack per channel (additional CRYPTO, test equipment or trunk jack)

      (5) Six rheostats for adjusting loop current on individual channels

      (6) Current meter for monitoring loop current on individual channels

      (7) Meter switch to select individual channels

6. Crypto Group

   a. KWR-37 and KG-14 as explained earlier in this lesson.

7. SB-1210/UGQ Communication Patching Panel

   a. Provides variable interconnection between teletype(s) and cryptographic equipment.

   b. DC patch panel

      (1) Carries unencrypted intelligence

      (2) Painted RED

   c. Description

      (1) Six channels (vertical rows)

      (2) Two looping jacks per channel (CRYPTO)

      (3) Two set jacks per channel (TELETYPE)

      (4) One miscellaneous jack per channel (additional TTY's, test equipment, or trunk lines)

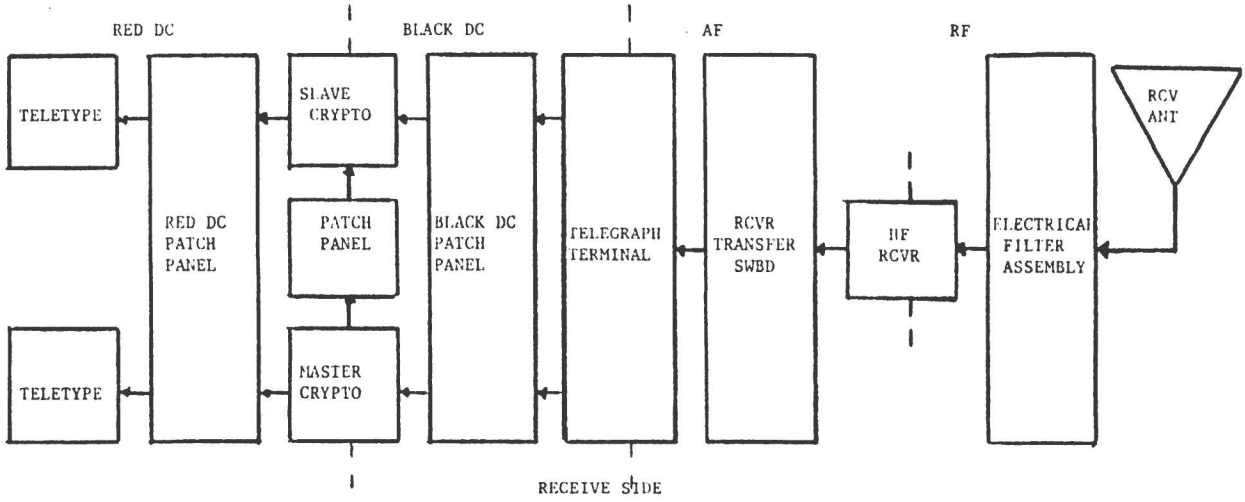
      (5) Six rheostats for adjusting loop current on individual channels

      (6) Current meter for monitoring loop current on individual channels

      (7) Meter switch to select individual channel

8. AN/UGC-25A Teletype

   a. Converts electrical energy (DC pulses) to mechanical energy (teletype printer)



November Block Diagram
Figure 12.1-3

D. HF Multichannel Broadcast System Setup (November)

1. Record assigned equipments and frequencies from circuit status board
2. Set up Receiver Group

a. Patch HF antenna to receiver using SRA-12 antenna coupler

(1) Locate assigned R-1051 receiver receptacle on SRA-12 front panel
(2) Locate lowest available output jack on electrical filter assembly corresponding to frequency assigned
(3) Make patch

b. Tune R-1051 receiver

(1) Set MODE SELECTOR switch to USB
(2) Dial in assigned frequency (subtracting 2 KHz for USB reception)
(3) Set CPS switch to 000 to lock-in frequency
(4) Rotate RF GAIN control fully clockwise
(5) Set USB LINE LEVEL switch to Odb
(6) Adjust USB LINE LEVEL control for Odb reading on USB LINE LEVEL meter
(7) Plug headset into USB PHONE jack to monitor signal

c. Patch R-1051 receiver to assigned UCC-1 telegraph terminal converter using the SB-973 receiver transfer switchboard

(1) Locate switches on SB-973 front panel that correspond to the assigned UCC-1 telegraph terminal sections A and B
(2) Locate remote station switch for R-1051 receiver
(3) Set remote station switches in appropriate number positions adjacent to assigned receivers
(4) Working from right to left, set appropriate SB-973 switches to X position

3. Set up Converter Group

a. Energize the UCC-1 telegraph terminal converter

(1) Turn ON/OFF POWER switches on control drawer of each cabinet to ON
(2) Ensure that power indicator lights are lit

b. Patch assigned channels for UCC-1 to assigned cryptos using SB-1203 patch panel

(1) Locate set jacks for assigned KWR-37 and KG-14

WARNING (2) Insert DC patch cord - SET TO LOOP

(3) Adjust LOOP current on assigned channels for 60ma

4. Set up Crypto Group

a. Set up KWR-37 crypto

(1) Turn POWER ON/OFF switch ON (if necessary; should not be turned off)

(2) Depress CIPHER TEXT button

(3) Set AUDIBLE ALARM to ENABLE position

(4) Observe MARK and SPACE indicator lights flashing to indicate signal presence

(5) Turn POWER SUPPLY TESTS meter switch to INPUT to observe signal level

(a) Needle should fluctuate near one-third mark on scale

b. Patch timing signal of KWR-37 to KG-14 using SB-3195 patch panel

(1) Set assigned KG-14 rotary switch to assigned KWR-37 position

c. Set up KG-14 crypto

(1) Turn POWER ON/OFF switch to ON

(a) Yellow RECEIVE light glows steadily

(b) SYNC light and tone come on

(2) Depress SET UP button

(a) ALARM light comes on with steady red glow

(b) SYNC light goes off and tone stops

(3) Ensure that METER CONTROL switch is at INPUT; observe dial fluctuations

(a) Needle should fluctuate near one-third mark

d. Connect crypto equipment to assigned teletypes using SB-1210 patch panel

(1) Locate set jacks for TTY's and loop jacks for assigned KWR-37 and KG-14 on patch panel

WARNING --- (2) Patch SET to LOOP

(3) Adjust LOOP current on assigned channel to 60ma

e. Energize UGC-25's (simulation)

(1) Turn ON/OFF switches to ON

5. Nation Bureau of Standards Time and Frequency Standard

a. Purpose: To provide an accurate time signal to synchronize November HF crypto equipment

(1) International call signs WWV (Washington) and WWVH (Hawaii)

b. Time Standard Set up

(1) Connect antenna to assigned R-1051 HF receiver using SRA-12 electrical filter assembly

(a) Locate receptable on SRA-12 front panel for assigned R-1051 receiver
(b) Locate lowest available output jacks on filter assembly corresponding to assigned frequency
(c) Make patch

(2) Tune R-1051 receiver

(a) Set MODE SELECTOR switch to AM
(b) Dial in assigned frequency
(c) Set CPS switch to 000 to lock-in frequency
(d) Rotate RF GAIN control fully clockwise
(e) Set USB LINE LEVEL switch to ±20db
(f) Plug headset into USB phone jack to monitor signal

(3) Patch R-1051 receiver to assigned J-939 remote jack using SB-973

(4) Plug headset into remote jack

E. System Operation

1. Synchronizing the KWR-37 Using WWV Time Standard

a. Five-minute interval synchronization

(1) Set inner clock dial to next possible five-minute start time

(a) Set outer clock dial for hour change if necessary

(2) Ensure CIPHER TEXT indicator is on

(3) Depress SET UP button

(4) Depress START button as tone for five-minute interval is heard on WWV

(a) Observe that HIGH SPEED and KEY lights are now on
(b) NORMAL light goes on when HIGH SPEED light goes out and beeping sound is heard
(c) Beeping sound will stop and SYNC light will come on when KWR-37 is in sync
1. If KWR-37 goes to ORDER WIRE, depress CIPHER TEXT button to retain synchronization
2. If beeping sound goes to a steady tone and SYNC light does not come on, repeat procedure

b. Late Starts

(1) Ensure KWR-37 is still in CIPHER TEXT and that MARK and SPACE lights are flashing

(2) Set inner clock dial to the last completed five-minute interval

(3) Depress SET UP button

(4) Depress START button as the tone for the minute is heard
(a) Observe that HIGH SPEED and KEY lights are now on
1. 11 seconds in high speed = 1 hour catch-up

(5) When NORMAL light comes on, turn TIME DIFFERENCE switch to 15-second position

(6) Depress SEARCH button three times for each minute past the five-minute interval

(7) Return TIME DIFFERENCE switch to AUTO
(a) If SYNC light does not come on and beeping sound goes to a steady tone, repeat procedure

2. Synchronizing the KG-14

a. After synchronizing KWR-37, depress START button on KG-14

(1) ALARM light goes off and steady tone is heard

(2) When steady tone changes to intermittent, alarm light comes on

(3) SYNC light begins to flash intermittently during search

(4) When synchronized, SYNC and ALARM light illuminate with steady glow, and tone stops

F. Securing Equipment

1. Securing the Time Standard

a. J-939

(1) Remove headphones

b. SB-973

(1) Turn appropriate knob(s) to OFF

c. R-1051

(1) Turn all MCS/KCS frequency knobs to 0

(2) Turn MODE SELECTOR switch to STBY

d. SRA-12

(1) Remove appropriate RF patch cord

2. Securing the November HF System

a. UGC-25 (simulation)

(1) Turn power switch to OFF

b. SB-1210

(1) WARNING: Remove appropriate DC patch cord - LOOP FIRST

c. KG-14

(1) Turn POWER switch to OFF

d. SB-3195

(1) Turn appropriate knob to OFF

e. KWR-37

(1) Push SET up button

(2) DO NOT TURN POWER OFF

f. SB-1203

(1) WARNING: Remove appropriate DC patch cord - LOOP FIRST

g. UCC-1

(1) Turn both control attenuator power switches to OFF

h. SB-973

(1) Turn appropriate knob(s) to OFF

i. R-1051

(1) Turn all MCS/KCS frequency knobs to 0

(2) Turn MODE SELECTOR switch to STBY

j. SRA-12

(1) Remove appropriate RF patch cord

PROGRESS CHECK 12.1

HF Multichannel Fleet Broadcast (November) System

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. When late starting your KWR-37 at a time of 0318, where are the clock dials on the KWR-37 placed?

2. What is the most probable cause if you have an incoming signal present on the KWR-37, but not on the KG-14?

3. With the time-difference switch in the 15 second position, how many times will you hit the search button for a 3 minute late start?

4. Which positions are the Mode Selector switches on the R-1051's placed for the November and WWV circuits respectively?

5. Which patch panel is used to tie the timing signal from the KWR-37 to the KG-14?

6. What type of signal is present at the output of the UCC-1?

7. What is the effect on synchronization of your crypto equipment with a bad patch on the SB-1210 patch panel?

8. What patch panel routes the output of the UCC-1 to the crypto equipment?

9. If your KWR-37 shifts into an "orderwire" condition while synchronized, which button should be depressed to return it to a "cipher" condition without losing synchronization?

10. What is the emission designator for the November systems?

ASSIGNMENT SHEET 12.2

Covered HF Full-Duplex Teletype: GOLF System

INTRODUCTION

The GOLF system is used in the fleet for long range, single channel teletype communications. This system provides the fleet with an HF link between ships and NAVCOMMSTAs. The equipment previously taught will be used to make the system operational.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, converters, antenna patch panels, HF transmitters, HF receivers, UHF transceivers, and patch cords; SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo, and Sierra systems in accordance with COMNAV-TELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

4.5 Given send and receive teletypes, DC patch panels, audio patch panels, HF transmitters, HF receivers, crypto devices, converters, remote transmitter control, and receive antenna patch panels, set up the Golf system for HF full-duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.5.1 Given a blank sheet of paper, draw a block diagram of the Golf system including labeling each block and showing signal flow within 5 minutes.

4.5.2 Given system components for the Golf system, adjust system components for optimum performance.

4.5.3 Given system components for the Golf system, interface all components using DC audio and antenna patch panels as appropriate.

STUDY ASSIGNMENT

Study Notetaking Sheet 12.2, personal notes, and information received in Progress Check 12.2. NOTE: You will not be able to use notes or aids when you take the Performance Test 760.

NOTETAKING SHEET 12.2

Covered HF Full-Duplex Teletype (GOLF) System

REFERENCES:

1. KAO-83
2. COMNAVTELCOMINST C2796.1, Shipboard Communications Systems, Quality Monitoring

NOTETAKING OUTLINE

A. General System Characteristics

1. Purpose

a. Exchange of classified teletype information between ships, ships and shore installations, ships and aircraft, or aircraft and shore stations.

b. Transmitter/receiver group: The transmitter group causes the intelligence to be radiated through the atmosphere. The receiver group intercepts and selects the desired radio frequency and reduces it to a usable audio frequency.

2. Emission designator is 1K24F1B

3. High frequency (HF)

a. Operates in the 2 to 30MHz frequency range.

b. Allows long distance, point-to-point communications.

4. Full duplex

a. Simultaneous transmission and reception of information

b. Requires one set of equipment for the SEND side and another set for the RECEIVE side.

B. Crypto Devices

1. KW-7/TSEC

a. Protects transmissions by electrically encrypting outgoing DC pulses (marks and spaces) from the teletype to provide security for transmitting classified information.

b. Also decrypts incoming DC pulses and produces CLEAR marks and spaces which are patched to the receive teletype.

2. KWX-8/TSEC Remote Phasing Unit

a. Allows the teletype operator to control the KW-7 from the operating position at the teletype.

(1) Used when the KW-7 and the teletype are physically separated.

3. SB-988/SRT Transmitter Transfer Switchboard

a. Electronically connects the KWX-8 Remote Phasing Unit to the KW-7

b. Description

(1) Ten rotary selector switches in two vertical rows

(2) Each switch corresponds to a KWX-8

(3) Each switch has 6 positions which correspond to 6 KW-7s

(4) An X position allows for cross-connection or bussing to additional SB-988s

C. Configuration and Signal Flow (Refer to Figure 12.1-1)

1. Transmit Side

a. AN/UGC-6 teletype

(1) Converts mechanical energy (keyboard) to electrical energy (direct current pulses).

(2) Utilized for versatility of keyboard operation, teletype tape production, and transmitter-distributor (TD) capability for tape transmission

b. SB-1210/UGQ Communications Patch Panel (RED)

(1) Electrically connects (patches) teletypes to crypto devices (KW-7s).

(2) Red indicates SB-1210 used for patching classified teletype signals which have NOT been encrypted.

(3) Six teletypes are connected to the six LPG (loop) jacks. Six KW-7s are connected to the six SET jacks.

c. KW-7/TSEC Crypto Device

(1) As described earlier in this lesson.

d. SB-1203/UG Communications Patch Panel (BLACK)

(1) Electrically connects the KW-7 to the HF transmitter.

(2) Operation is identical to that used on the SB-1210/UGQ.

(3) Black indicates the information being patched to the transmitter has been electrically encrypted and the signal is now unclassified.

e. URT-23 Radio Transmitter

(1) Produces radio frequency (RF) energy and radiates a useful signal through the transmit antenna.

f. KWX-8/TSEC Remote Phasing Unit:

(1) As earlier described in this lesson.

g. SB-988/SRT Transmitter Transfer Switchboard

(1) As earlier described in this lesson

h. C-1004B Transmitter-Teletypewriter Control:

(1) Allows the operator to key the transmitter from the local operating position at the teletype.

i. SB-863/SRT Transmitter Transfer Switchboard

(1) Electrically connects the C-1004B transmitter-teletypewriter control to the HF transmitter.

(2) Description

(a) Ten rotary switches in two vertical rows

(b) Each switch corresponds to a C-1004B transmitter-teletypewriter control to the HF transmitter.

(c) Each switch has 19 positions which correspond to a radio transmitter.

(d) Position 20 allows for cross-connecting or bussing to additional SB-863s.

2. Receive Side

a. AN/SRA-12 Electrical Filter Assembly

(1) Provides a means for connecting one or more HF receivers to a RECEIVE antenna.

(2) Contains 29 QUICK DISCONNECT receptacles, 1 for antenna input, 28 for connecting receivers to various frequency ranges.

(3) Each of 7 vertical rows represents a different frequency range.

b. R-1051/URR Radio Receiver:

(1) Selects the proper incoming signal according to a preset frequency and changes it to a usable audio frequency (AF).

c. SB-973/SRR Receiver Transfer Switchboard

(1) Electrically connects the R-1051 receiver to the URA-17 converter.

(2) Description:

(a) Ten rotary switches in 2 vertical rows

(b) Each switch corresponds to a converter.

(c) Each switch has 5 positions which correspond to radio receivers.

(d) An X position allows for interconnection or bussing to additional SB-973s.

d. AN/URA-17 Converter:

(1) Changes the AF signal received from the R-1051 through the SB-973 to direct current (DC) pulses (mark/space).

e. SB-1203 Communications Patch Panel (BLACK)

(1) Electrically connects the output of the AN/URA-17 to the KW-7 crypto.

(2) Operation is the same as the TRANSMIT side.

f. KW-7/TSEC Crypto Device

(1) As described earlier in this lesson

g. SB-1210/UGQ Communications Patch Panel (RED)

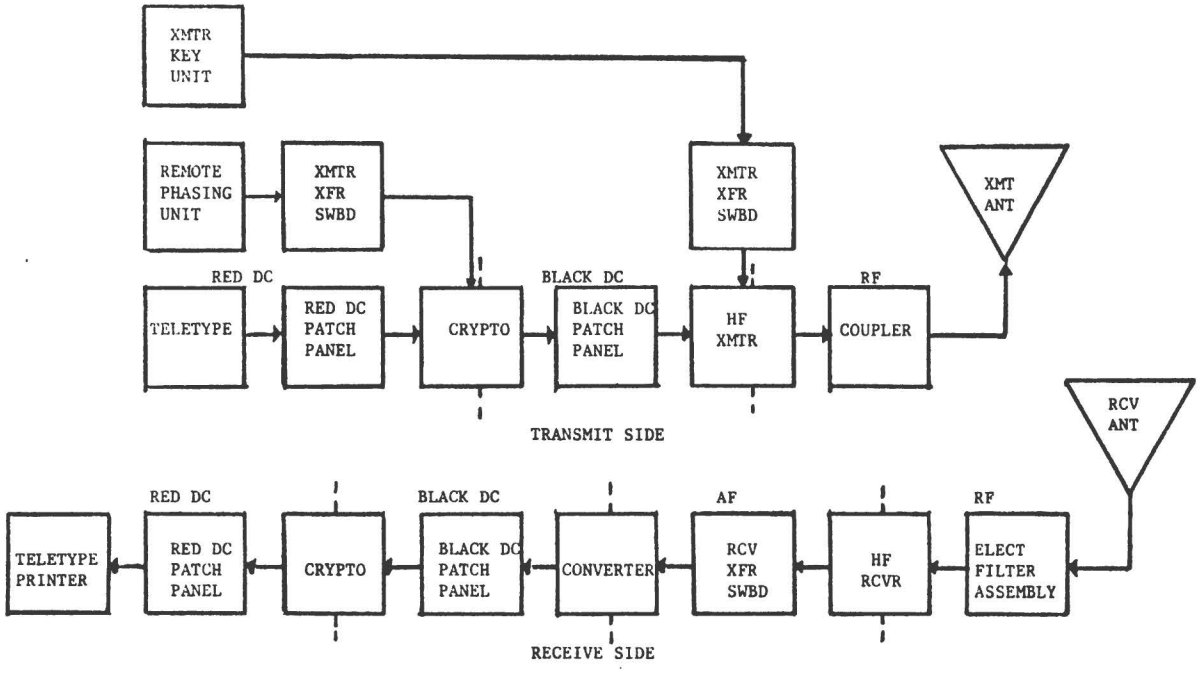
(1) Electrically connects the KW-7 to the receive teletype.

(2) RED indicates classified teletype signals which have been decrypted

(3) Operation is the same as on the TRANSMIT side

h. AN/UGC-25A Teletype

(1) Converts electrical energy (DC pulses) to mechanical energy (teletype printer)



COVERED HF FULL-DUPLEX TELETYPE: GOLF SYSTEM

Golf System Block Diagram
Figure 12.2-1

D. System Setup

1. Transmit Side

a. Record assigned equipment for circuit status board.

b. AN/UGC-6L Teletype

(1) Energize

(2) Ensure LINE/TEST switch is in LINE position

(3) Teletype will "run open" until 60ma current from KW-7 is applied to provide mark or locked-up condition

c. SB-1210/UGQ Communications Patch Panel (RED)

(1) If teletype equipment assigned is on the same channel as the assigned crypto equipment, no patch cord is required (this applies to the top SET JACK only).

(2) If teletype equipment is on a different channel, a DC patch cord must be used to complete the connection.

(3) WARNING: Always patch from SET to LPG. After making the patch, turn the meter switch to appropriate LPG channel number and use the corresponding channel rheostat to adjust line current for 60ma.

d. KW-7/TSEC Crypto Device

(1) Power ON/OFF switch to ON (power indicator light will come on)

(2) REMOTE/CIPHER/PLAIN switch to CIPHER

(a) REMOTE position used when SEND teletype is remotely located from the KW-7/TSEC

(b) CIPHER position used for local send/receive operations and when checking alarms.

(c) PLAIN position used to bypass internal crypto circuits.

1. Steel plate prevents operator from accidentally placing switch in PLAIN position.

2. PLAIN indicator lamp will light (red) when switch is in the PLAIN position. Warns of a possible security violation in the crypto unit.

(3) ALARM TEST switch

(a) REMOTE/CIPHER/PLAIN (R-C-P) switch in CIPHER position

(b) ALARM TEST switch has 12 positions (1-10 check internal circuits for proper operations).

1. Positions 1-5: M&I light and ALARM light (red) plus audio tone

2. Position 6: P&I light (yellow) and ALARM light (red) plus audio tone

3. Positions 7-9: ALARM light (red) plus audio tone

4. Position 10: No lights with audio tone

5. Position 11: Not labeled and has no visual or audio indicators

6. OFF position: Normal operating position for KW-7 after completion of alarm checks. ENSURE switch is not left in the 11th (unlabeled) position

(c) When operating from a remote position, alarm checks must be made prior to turning the R-C-P switch to REMOTE. Do NOT operate the KW-7 if any alarm test position fails to operate as specified; secure the KW-7 and notify maintenance personnel.

(d) REMOTE/CIPHER/PLAIN switch to REMOTE

e. SB-1203/UG Communications Patch Panel (BLACK): Connects the KW-7 to the HF transmitter.

(1) If crypto equipment assigned is on the same channel as assigned transmitter, no patch cord is required.

(2) If crypto equipment is on different channel, a DC patch cord must be used to complete connection.

(3) WARNING: Always patch from SET to LPG.

(4)After making the patch, turn the meter switch to appropriate LPG channel number and use the corresponding channel rheostat to adjust line current for 60ma.

f. URT-23, WRC-1 HF Transmitter: Produces radio frequency (RF) energy which is modulated and radiated through the transmitting antenna.

(1) Mode selector switch to AM

(2) Local/Remote switch to LOCAL

(3) Dial in assigned frequency.

(4) Tune transmitter.

(5) Mode selector switch to FSK or RATT

(6) Local/Remote switch to REMOTE

g. SB-988/SRT Transmitter Transfer Switchboard: Connects various KWX-8 Remote Phasing Units to KW-7/TSEC Crypto Devices.

(1) Locate the rotary switch which corresponds to the KW-7 you have selected for use

(2) Turn the rotary switch to the number of the KW-7 selected for the transmit side

h. KWX-8/TSEC Remote Phasing Unit: Allows the operator to key the KW-7 phasing circuitry (SEND) from a remote teletype

(1) Observe READY light. Green READY light will be on when KWX-8 is patched to an energized KW-7/TSEC.

(2) Depress SEND button.

(a) Places steady phasing signal on KW-7/TSEC

(3) Observe that both SEND button and P&I are lit.

i. SB-863 Transmitter Transfer Switchboard: Connects the C-1004B/UG Transmitter-Teletypewriter Control to the HF transmitter

(1) Locate the rotary switch corresponding to the assigned C-1004B

(2) Turn the rotary switch to the number of the HF transmitter selected for use

j. C-1004B/SG Remote Transmitter Keying Unit

(1) Place knob in CFS SEND position

(2) Red power light and green carrier light should light up

2. Receive Side

a. AN/SRA-12 Electrical Filter Assembly: Connects antenna to the R-1051

(1) On the SRA-12, locate the input jack for your R-1051

(2) Locate the lowest usable SRA-12 output jack in the range of your assigned receiver frequency

(3) Make patch

b. R-1051/URR Radio Receiver

(1) Observe that the mode switch is in the STBY position

(2) Slowly turn the mode switch to the FSK position

(3) Dial in assigned transmit frequency (-2 KHz)

(a) For conducting back-to-back test

(4) Insert an earphone plug into the USB phone jack

(5) Turn the RF gain control fully clockwise

(6) Turn USB line level to approximately midrange

(7) Turn the USB phone level control until static is heard in the headphone

(8) Turn the USB line level meter switch to the +20db position

c. SB-973 Receiver Transfer Switchboard: Connects R-1051 to URA-17

(1) Locate the switch for your assigned URA-17 converter

(2) Locate the SELECTOR SWITCH POSITION nameplate which gives the position number of your assigned R-1051

(3) Turn the switch to the position number which corresponds to your R-1051

(a) On multiple-unit SB-973s, any positions to the left of the switch marked for your assigned R-1051 must be moved to the X position to patch it to the correct URA-17

d. AN/URA-17 Converter

(1) Turn the FUNCTION switch to the TUNE position

(2) Turn the POWER switch to the ON position

(3) Turn the SPEED switch to the SLOW position

(4) Turn the POLARITY switch to the REVERSE position

(5) Turn the SHIFT switch to the WIDE position

(6) Turn the LEVEL control to position 3

(7) Turn the FUNCTION switch to the SINGLE position

e. SB-1203/UG Communications Patch Panel (BLACK): Connects URA-17 to KW-7 crypto

(1) Locate the SET JACK for your KW-7 (RCV) on the set jack nameplates.

(2) Locate the LPG JACK for your URA-17 on the looping jack nameplate.

(3) Make patch

(a) WARNING: Patch set to LPG

f. KW-7 Crypto

(1) Conduct back-to-back check as previously demonstrated for transmit KW-7

(2) REMOTE/CIPHER/PLAIN switch in CIPHER

g. SB-1210/UGC Communications Patch Panel (RED) connects KW-7 to UGC-25

(1) Locate SET JACK for your UGC-25 on the SET JACK nameplate

(2) Locate the LPG JACK for your KW-7 (RCV) on the LPG JACK nameplate.

(3) Make patch

(a) WARNING: Patch SET to LPG

h. AN/UGC-25A Teletypewriter

(1) Turn the POWER ON/OFF switch to the ON position

E. System Operation

1. Conduct back-to-back system test

a. Press Send button on KWX-8/TSEC to casue phase signal to drop.

b. Hold down LTRS and RPT keys until P&I Light goes out (approx. 6 seconds)

(1) When P&I light goes out, SND & RCV KW-7s are in sync.

c. Begin typing on keyboard/send tape

d. Observe receive teletype is receiving information as transmitted

e. Press SEND button on KWX-8/TSEC

(1) Returns phase to KW-7

2. Operate GOLF System to communicate with distant station

a. Change frequency on R-1051B/URR receiver to send frequency of distant station

b. Make any necessary adjustments to receiver

F. Securing the Golf System

1. Receive side

   a. AN/UGC-25A - Turn power switch to OFF position

   b. SB-1210/UGQ - Remove DC patch cord (if required)

      (1) WARNING: Remove LOOP side FIRST!

   c. KW-7/TSEC - Turn power switch to OFF Position

   d. SB-1203/UG - Remove DC patch cord (if required)

      (1) WARNING: Remove LOOP side FIRST!

   e. AN/URA-17 - Turn power switch to OFF position

   f. SB-973/SRR - Turn switch(es) to OFF position

   g. R-1051/URR

      (1) Turn all MCS/KCS freq knobs to "O"

      (2) Turn Mode Selector switch to STBY

   h. AN/SRA-12 - Remove antenna patch cord

2. Transmit side

   a. SB-863/SRT - Turn switch to OFF position

   b. SB-988/SRT - Turn switch to OFF position

   c. AN/WRC-1 or AN/URT-23(V)

      (1) Change transmit frequency to 10,000

      (2) Turn Mode Selector switch to STBY

      (3) Turn off AN/URA-38 or AM-3007

      (4) AN/URT-23(V) only--Turn POWER control down and turn off power switch on AM-3924

   d. SB-1203/UG - Remove appropriate DC patch cord--LOOP-to-SET

      (1) WARNING: Remove LOOP first!

   e. KW-7/TSEC - Turn power switch to OFF position

   f. SB-1210/UGQ - Remove appropriate DC patch cord--LOOP--to--SET

      (1) WARNING: Remove LOOP first!

   g. AN/UGC-6L - Turn power switch to the OFF position

PROGRESS CHECK 12.2

Covered HF Full-Duplex Teletype: GOLF System

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. What is the emission designator for Golf System?

2. What frequency range is used for Golf system operation?

3. What unit is used to key and unkey the transmitter in the Golf system?

4. Which switchboard is used to patch a KWX-8 to a KW-7?

5. Which position is the REMOTE/CIPHER/PLAIN switch placed on the send KW-7?

6. What are the indications in position 10 of the alarm test switch on the KW-7?

7. Leaving the cover of the KW-7 open is a _____ violation.

8. Which colored light will come on when the KWX-8 is patched to an energized KW-7?

9. The Golf system is what type of configuration?

10. Which patch panel is used to patch the audio output from an R-1051 receiver to a converter?

ASSIGNMENT SHEET 12.3

Covered UHF Full-Duplex Teletype (CHARLIE) System

INTRODUCTION

The Charlie system is designed for shipboard use in line-of-sight (LOS) ship-to-ship or ship/shore/ship communications in the UHF frequency range. It provides covered, full-duplex (simultaneous send and receive) teletype communication.

As a shipboard Radioman, you will use the Charlie system frequently to transmit message traffic.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, converters, antenna patch panels, HF transmitters, HF receivers, UHF transceivers, and patch cords; SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo, and Sierra systems in accordance with COMNAVTELCOMINST C2796.1. Each must be set up and operational within 25 minutes.

4.4 Given send and receive teletype, DC patch panels, audio patch panels, crypto devices, converters, and UHF transceivers, set up the system components of the Charlie system for UHF Full-Duplex teletype operations in accordance with COMNAVTELCOMINST C2796.1.

4.4.1 Given a blank sheet of paper, draw a block diagram of the Charlie system, including labeling each block and showing signal flow.

4.4.2 Given system components for the Charlie system, adjust system components for optimum performance.

4.4.3 Given system components for the Charlie system, interface all components using DC, audio and antenna patch panels as appropriate.

STUDY ASSIGNMENT

Study Notetaking Sheet 12.3, personal notes, and information received in Progress Check 12.3. NOTE: You will not be able to use notes or aids when you take the Performance Test 12.3.

NOTETAKING SHEET 12.3

Covered UHF Full-Duplex Teletype (CHARLIE) System

REFERENCES:

1. KAO-83
2. COMNAVTELCOMINST C2796.1, Shipboard Communications Systems, Quality Monitoring
3. NAVSHIPS 0967-301-7020, Vol II

NOTETAKING OUTLINE

A. General System Characteristics and Capabilities

   1. Used to exchange classified and unclassified teletype information between ships, or between ships and shore installations.

   2. UHF radio signals do not follow the curvature of the earth

   3. Limited to line-of-sight (LOS), approximately 30 miles

   4. Full-duplex

      a. Simultaneous transmission and reception of information

      b. Requires one set of equipment for transmit side and one set for the receive side

   5. Emission designator is 300HF1B

      a. 300H = 300HZ bandwidth

      b. F = Frequency modulation

      c. 1 = Single channel

      d. B = Telegraphy (automatic reception)

B. Crypto Device and Associated Switchboard

   1. KW-7/TSEC

      a. Protects transmissions by electrically encrypting outgoing DC pulses (marks and spaces) from the teletype to provide security for transmitting classified information.

      b. Also decrypts incoming DC pulses and produces CLEAR marks and spaces which are patched to the receive teletype.

   2. KWX-8/TSEC Remote Phasing Unit

      a. Allows the teletype operator to control the KW-7 from the operating position at the teletype.

(1) Used when the KW-7 and the teletype are physically separated

3. SB-988/SRT Transmitter Transfer Switchboard

a. Electronically connects the KWX-8 Remote Phasing Unit to the KW-7 Crypto Equipment

b. Description

(1) Ten rotary selector switches in two vertical rows

(2) Each switch corresponds to a KWX-8

(3) Each switch has 6 positions which correspond to 6 KW-7s

(4) An X position allows for cross-connection or bussing to additional SB-988s

C. System Configuration and Signal Flow (Figure 12.3-1)

1. Transmit Side

a. AN/UGC-6 Teletype

(1) Converts mechanical energy (keyboard) to electrical energy (direct current pulses)

(2) Utilized for versatility of keyboard operations, teletype tape production and transmitter-distributor (TD) capability for tape transmission

b. SB-1210/UGQ Communications Patch Panel (RED)

(1) Electrically connects teletypes to crypto devices

(2) RED indicates SB-1210 used for patching classified teletype signals which have NOT been encrypted

(3) Six teletypes are connected to the six LPG jacks. Six KW-7s are connected to the six SET jacks

c. KW-7/TSEC Crypto Device

(1) As described earlier in this lesson

d. SB-1203/UG Communications Patch Panel (BLACK)

(1) Electrically connects the KW-7 to the CV-2460 Converter

(2) Operation is identical to that used on the SB-1210/UGQ

(3) BLACK indicates the information being patched to the converter has been electrically encrypted and the signal flow is now UNCLASSIFIED

e. CV-2460/SGC Telegraph-Telephone Signal Converter

(1) Converts DC pulses from the KW-7 into an Audio Frequency (AF) signal

(2) Covered in detail in Lesson 10.9

f. SB-963/SRT Transmitter Transfer Switchboard

(1) Electrically connects the CV-2460 to the UHF Transceiver

(2) Description

(a) Ten rotary switches in two vertical rows

(b) Each switch corresponds to a CV-2460 Converter

(c) Each switch has 19 positions which correspond to a radio transceiver

(d) Position 20 allows for cross-connecting or bussing to additional SB-863s

g. URC-9, SRC-20, or SRC-21 UHF Transceiver

(1) Accepts AF signal from the CV-2460 and converts it into RF energy for transmission through the antenna

(2) Covered in detail in Lesson 10.7

2. Receive Side

a. URC-9, SRC-20 or SRC-21 UHF Transceiver

(1) Receives RF energy signal from the antenna and converts it to AF signal for transfer to the CV-2460

(2) Covered in detail in Lesson 10.7

b. SB-973/SRR Receiver Transfer Switchboard

(1) Electrically connects the UHF Transceiver to the CV-2460 Converter

(2) Description

(a) Ten rotary switches in two vertical rows

(b) Each switch corresponds to a converter

(c) Each switch has five positions which correspond to a radio transceiver

(d) An X position allows for interconnection or bussing to additional SB-973s

c. CV-2460/SGC Telegraph-Telephone Signal Converter

(1) Converts Audio Frequency (AF) Signal received from the UHF Transceiver to DC pulses

(2) Covered in detail in Lesson 10.9

d. SB-1203/UG Communications Patch Panel (BLACK)

(1) Electrically connects the CV-2460 Converter to the KW-7 Crypto Device

(2) Described earlier in this lesson

e. KW-7/TSEC Crypto Device

(1) Described earlier in this lesson

f. SB-1210/UGQ Communications Patch Panel (RED)

(1) Elecrically connects the KW-7 Crypto Device to the UGC-25 Teletype

(2) Described earlier in this lesson

g. AN/UGC-25 Teletype

(1) Converts electrical energy (DC pulses) to mechanical energy (teletype printer)

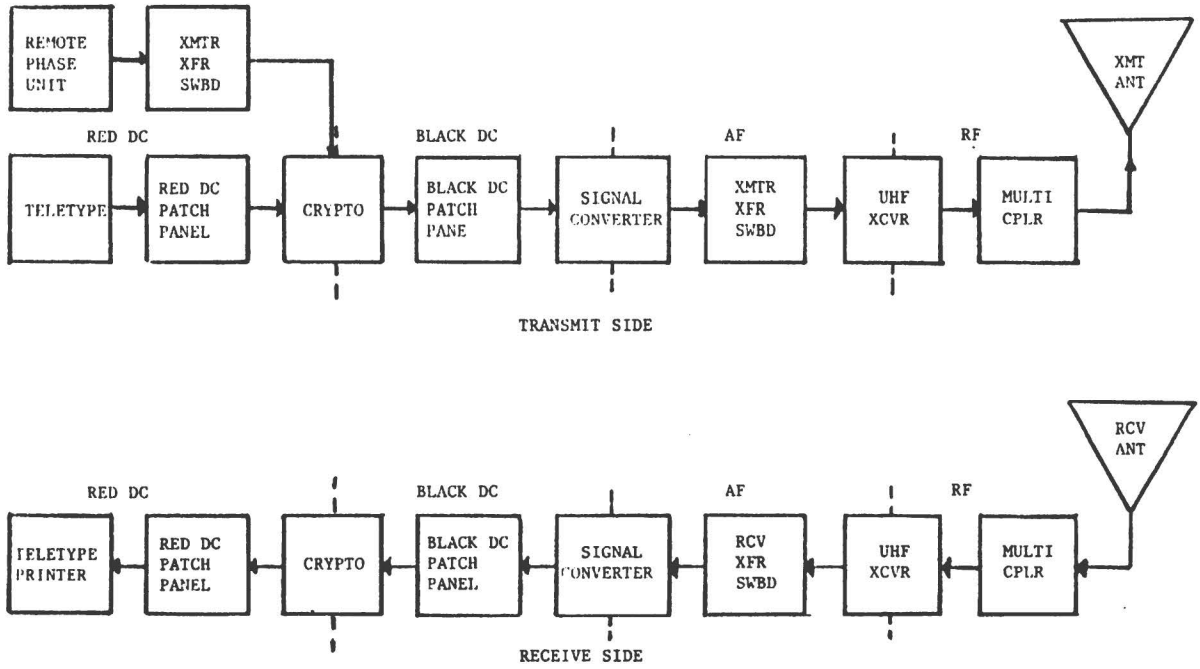


Figure 12.3-1
CHARLIE SYSTEM BLOCK DIAGRAM

D. System Set UP

1. Record assigned equipment from circuit status board

2. Transmit Side

a. AN/UGC-6 Teletype

(1) Energize

(2) Ensure LINE/TEST switch is in LINE position

(a) Teletype will "run open" until 60ma current from KW-7 is applied to provide mark or lock-up condition

b. SB-1210/UGQ Communications Patch Panel (RED)

(1) If teletype equipment assigned is on the same channel as the crypto equipment, no patch is required

(a) This applies to the top SET jack only

(b) Referred to as "NORMAL THROUGH"

(2) If teletype equipment is on a different channel, a DC patch cord must be used to complete the connection

(3) WARNING: Always patch from SET to LPG

(4) After making the patch, turn the meter switch to appropriate LPG channel number and use the corresponding channel rheostat to adjust the line current for 60ma

c. KW-7/TSEC Crypto Device

(1) Power ON/OFF switch to ON

(a) Power Indicator Light will come on

(2) REMOTE/CIPHER/PLAIN switch to CIPHER

(a) REMOTE position used when SEND teletype is remotely located from the KW-7/TSEC

(b) CIPHER position used for local send/receive operations and when checking alarms

(c) PLAIN position used to bypass internal crypto circuits

1. Steel plate prevents operator from accidentally placing switch in PLAIN position

2. PLAIN indicator lamp will light (RED) when switch is in the PLAIN position. Warns of a possible security violation in the crypto unit

(3) ALARM TEST switch

(a) REMOTE/CIPHER/PLAIN switch in CIPHER position

(b) ALARM TEST switch has 12 positions (1-10 check internal circuits for proper operation)

1. Positions 1-5: M&I light and ALARM light (RED) plus audio tone

2. Position 6: P&I light (YELLOW) and ALARM light (RED) plus audio tone

3. Position 7-9: ALARM light (RED) plus audio tone

4. Position 10: No lights with audio tone

5. Position 11: Not labeled and has no visual or audio indicators

6. OFF position: Normal operating position for KW-7 after completion of alarm checks

a. Ensure switch is not left in the 11th (unlabeled) position

(c) When operating from a remote position, alarm checks must be made prior to turning the REMOTE/CIPHER/PLAIN switch to REMOTE

1. DO NOT operate the KW-7 if any alarm test position fails to operate as specified

2. SECURE the KW-7 and notify maintenance personnel

(d) REMOTE/CIPHER/PLAIN switch to REMOTE

d. SB-1203/UG Communications Patch Panel (BLACK)

(1) If crypto assigned is on the same channel as the assigned converter, no DC patch is required

(a) NORMAL THROUGH

(2) If crypto is on different channel, a DC patch cord must be used to complete the connection

(3) WARNING: Always patch from SET to LPG

(4) After making the patch, turn the meter switch to appropriate LPG channel number and use the corresponding channel rheostat to adjust the line current for 60ma

e. CV-2460/SGC Telegraph-Telephone Signal Converter

(1) Power switch to ON

(2) FREQ OPTION switch to "A"

(3) KEYING switch to "N-N"

(a) SEND normal, RCV normal

(4) MODE switch to STBY

(5) Meter switch SEND CV-2460 to SEND CUR

(a) With steady mark applied, adjust Send Loop Current for 60ma

f. SB-863/SRT Transmitter Transfer Switchboard

(1) Turn appropriate switch to transfer audio output from CV-2460 to assigned UHF transceiver

g. AN/URC-9 UHF Transceiver

(1) Energize

(2) MODE selector switch to NOR

(3) CHAN SEL switch to Manual

(4) SQUELCH control to OFF

(5) Dial in your assigned transit frequency

(6) LOCAL/REMOTE switch to REMOTE

h. SB-988/SRT Transmitter Transfer Switchboard

(1) Turn appropriate switch to transfer KWX-8 to assigned SEND KW-7

i. KWX-8/TSEC Remote Phasing Unit

(1) Observe green READY light is ON

(2) Press SEND button once

(3) P&I light and light inside SEND button should light

(4) P&I light on KW-7 should light

3. Receive Side

a. AN/URC-9 UHF Transceiver

(1) Set up as instructed for TRANSMIT side

(2) Dial in assigned transmit frequency

(a) For conducting back-to-back test

b. SB-973/SRR Receiver Transfer Switchboard

(1) Turn appropriate switch to transfer audio output from assigned UHF Transceiver to assigned CV-2460/SGC

c. CV-2460/SGC Telegraph-Telephone Signal Converter

(1) POWER switch to ON

(2) FREQ OPTION switch to "A"

(3) KEYING switch to "N-N"

(a) SEND normal, RCV normal

(4) MODE switch to STBY

(5) METER switch RECEIVE CV-2460 to RECEIVE CUR

(a) With steady mark applied adjust Receive Loop Current for 60ma

d. SB-1203/UG Communications Patch Panel (BLACK)

(1) If converter assigned is on same channel as assigned crypto equipment, no DC patch is required

(a) NORMAL THROUGH

(2) If crypto equipment and converter are on different channels, a DC patch is required to complete the connection

(3) WARNING: Always patch from SET to LPG

(4) After making patch, turn the meter switch to appropriate LPG channel and use the corresponding channel rheostat to adjust line current for 60ma

e. KW-7/TSEC

(1) Conduct alarm check as previously demonstrated for transmit KW-7

(2) REMOTE/CIPHER/PLAIN switch to CIPHER

f. SB-1210/UGQ Communications Patch Panel (RED)

(1) If teletype assigned is on same channel as assigned crypto equipment, no DC patch is required

(a) NORMAL THROUGH

(2) If teletype is on different channel, a DC patch cord must be used to complete the connection

(3) WARNING: Always patch from SET to LPG

(4) After making patch, turn the meter switch to appropriate LPG channel number and use the corresponding channel rheostat to adjust line current for 60ma

E. System Operations

1. Conducting Back-to-back Test

a. Press SEND button on KWX-8 once to drop phase

b. Hold down LTRS and RPT keys on UGC-6 until P&I light goes out (approximately 6 seconds)

(1) Prevents SEND and RECEIVE KW-7s from losing sync

c. Begin typing on keyboard or send test tape

d. Observe RECEIVE teletype to ensure it is receiving information being transmitted by your UGC-6

e. Make any adjustments necessary

f. Press SEND button on KWX-8 once to activate phasing signal

2. Communications with Distant Station

a. Change frequency on RECEIVE UHF transceiver to the SEND frequency of the distant station

b. Make any necessary adjustments to the receive side

F. Securing the System

1. Transmit Side

a. SB-988/SRT - Turn rotary switch to OFF

b. AN/URC-9 - Turn power switch to OFF

c. SB-863/SRT - Turn rotary switch to OFF

d. CV-2460/SGC - Turn power switch to OFF

e. SB-1203/UG - Remove DC patch cord if necessary

(1) WARNING: Remove LOOP first, then SET

f. KW-7/TSEC - Turn power switch OFF

g. SB-1210/UGQ - Remove DC patch cord if necessary

(1) WARNING: Remove LOOP first, then SET

h. AN/UGC-6 - Turn power switch to OFF

2. Receive Side

a. AN/UGC-25 - Turn power switch to OFF

b. SB-1210/UGQ - Remove DC patch cord if necessary

(1) WARNING: Remove LOOP first, then SET

c. KW-7/TSEC - Turn power switch to OFF

d. SB-1203/UG - Remove DC patch cord if necessary

(1) WARNING: Remove LOOP first, then SET

e. CV-2460/SGC - Turn power switch to OFF

f. SB-973/SRR - Turn rotary switch to OFF

g. AN/URC-9 - Turn power switch to OFF

4103

PROGRESS CHECK 12.3

Covered UHF Full-Duplex Teletype (CHARLIE) System

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. What conversion process does the CV-2460 perform on the send and receive side of the Charlie system?

2. What is the emission designator for the Charlie system?

3. What is the operating frequency range for the Charlie system?

4. What are the indications in position 6 of the alarm test switch on the KW-7?

5. Which converter(s) can be used for the Charlie system?

6. The SB-863 is used to patch what two pieces of equipment together in the Charlie system?

7. How often is the keying material changed in the KW-7?

8. How is the transmitter keyed in the Charlie system?

9. Where is the polarity switch on the CV-2460 placed for the Charlie system?

10. Which frequency option is used on the CV-2460 for the Charlie system?

ASSIGNMENT SHEET 12.4

Romeo UHF Secure Voice System

INTRODUCTION

When secure voice communications between fleet units is required, you will have to set up a ROMEO or VINSON circuit--commonly known as a NAVY-RED circuit. The systems differ primarily in the types of crypto gear utilized for each. This is the fourth of the five basic systems you will be expected to be able to set up for fleet communications.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, convertors, antenna patch panels, HF transmitters, HF receivers, UHF transceivers, and patch cords; SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo, and Sierra systems in accordance with COMNAV-TELCOMINST C2796.1. Each must be set up and operational within 25 minutes.

4.6 Given audio patch panels, UHF transceivers, crypto devices, remote keying position and handset, set up the Romeo system for wideband secure voice operation in accordance with COMNAVTELCOMINST C2796.1.

4.6.1 Given a blank sheet of paper, draw a block diagram of the Romeo system including labeling each block and showing signal flow within 5 minutes.

4.6.2 Given system components for the Romeo system, adjust system components for optimum performance.

4.6.3 Given system components for the Romeo system, interface all components using audio and antenna patch panels as appropriate.

STUDY ASSIGNMENT

Study Notetaking Sheet 12.4, personal notes, and information received in Progress Check 12.4. NOTE: You will not be able to use notes or aids when you take Performance Test 12.4.

NOTETAKING SHEET 12.4

Romeo UHF Secure Voice System

REFERENCES

1. NTP-5, Naval Telecommunications Procedures, Voice Communications
2. KAM 337/TSEC, Limited Maintenance Manual for KY-58/TSEC
3. CSESD-15D, Communications Security Equipment System Document
4. KAO 168B, Operating Procedure for KY-8/TSEC
5. COMNAVTELCOMINST C2796.1, Shipboard Communication Systems, Quality Monitoring

NOTETAKING OUTLINE

A. General Characteristics

   1. Designed primarily for tactical UHF (line-of-sight) secure voice communications

      a. Coordination of ship maneuvers

      b. Coordination of gun/missile fire control

      c. Air strike coordination

      d. Tactical instructions to ground forces ashore

   2. To prevent enemy interception of message traffic, speech is digitized, encrypted, transmitted, decrypted, and reconverted (or synthesized) to audio form

   3. Keying material held in common by talker and listener is contained within the crypto equipment

      a. Keying variable is used to generate the encryption/decryption process

      b. Only cryptos operating with the same keying generator will synchronize

   4. Romeo operation is simplex with one crypto device; half-duplex with two

   5. Emission designator for Romeo System Operation: 37K5P2D

B. Cryptographic Devices for Romeo System Operation: KY-8 or KY-58

   1. KY-8/TSEC (See Figure 12.4-1)

      a. Older model crypto that is not cryptographically compatible with the new KY-58.

         (1) If KY-8 is used on send side, must use KY-8 for receive also

b. Capable of storing only one crypto-variable at a time

c. Keylist inserted manually each RADAY

(1) In this course, KY-8 training keylists inserted by instructors

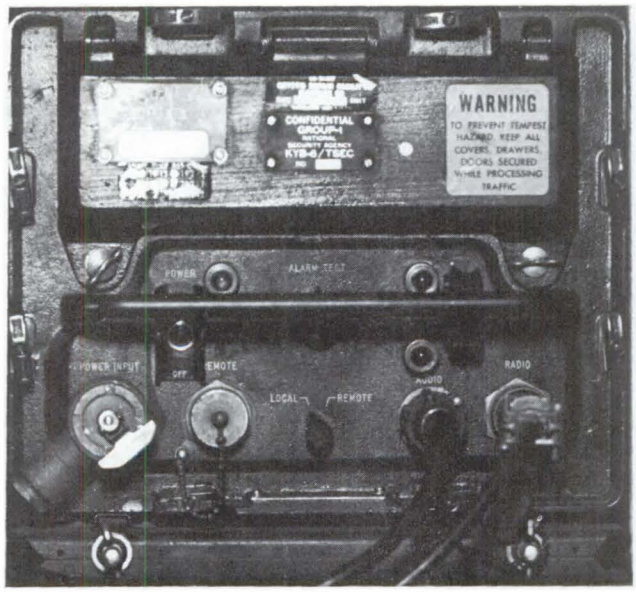


Figure 12.4-1, KY-8/TSEC

2. KY-58/TSEC (See Figure 12.4-2)

a. Newer crypto, synchronizes faster, holds synchronization longer than KY-8

b. Smaller in size, lighter in weight for portable use or fixed plant installation where space is limited

c. Advanced remote keying via KOI-18 tape reader

(1) KOI-18

(a) Separate fill device that reads keylist into crypto via 8-level paper tape

(b) KOI-18 cable is connected to front panel of KY-58, and tape is inserted and pulled through reader

(c) Crypto provides audible cue (beep) when keylist is received in register

d. KY-58 stores and selects up to 6 crypto-variables at one time

(1) Slots 1-5 stores cryptonet (talk) variables; slot 6 used only for remote keying

(2) Allows user to be involved in as many as five communication nets simultaneously

e. HYX-58 unit installed under the KY-58 provides for remote interface with KY-58 controls and for local handset operation

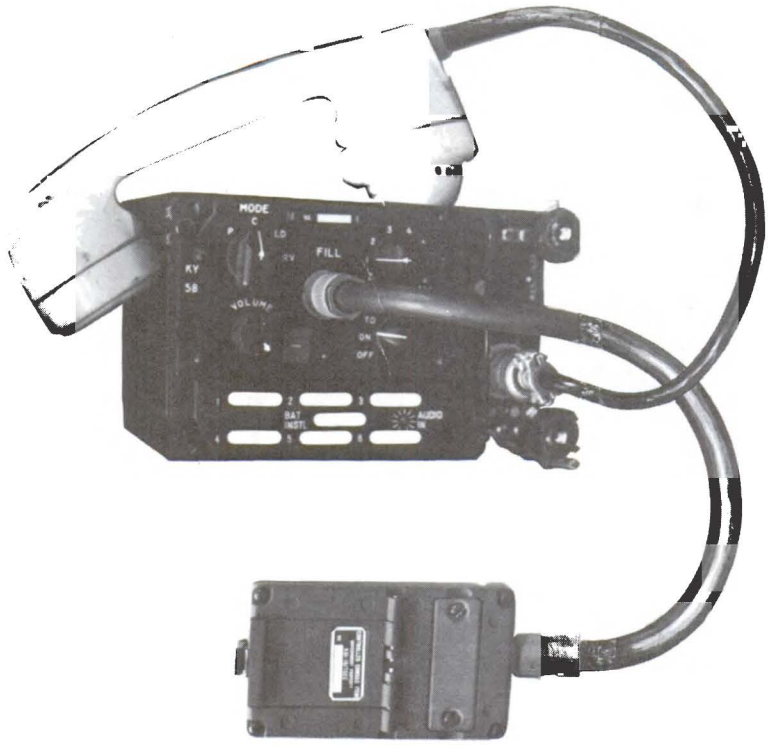


Figure 12.4-2, KY-58/TSEC and KOI-18

3. Common characteristics

a. Both the KY-8 and KY-58 can receive CIPHER when in PLAIN mode either at remote or local stations

b. If necessary, both UHF devices may be operated simultaneously with one or more HF cryptos--all on different frequencies for a full HF/UHF secure voice capability

C. Romeo System Configuration and Signal Flow

1. Transmit

a. TA-970/U Telephone Set (RED)

(1) Converts sound waves into electrical audio signals

(2) Permits send and receive operations in PLAIN or CIPHER from remote stations

(3) Button handset provides for push-to-talk (PTT) and release to listen

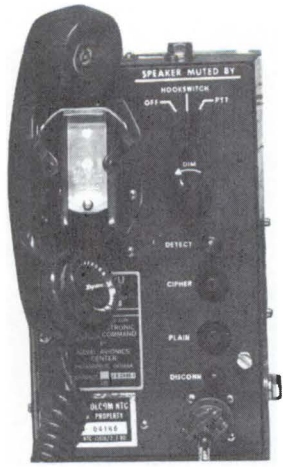


Figure 12.4-3, TA-970/U Telephone Set

b. C-10315 Remote Switching Control (Matrix) (See Figure 7.4-4)

(1) Supplies power to TA-970 and connects it to various crypto's (See Figure 12.4-3)

(2) Programs up to 9 separate TA-970s with as many as 5 crypto's by depressing white buttons in accordance with status board equipment assignments

(a) TA-970 remote stations keyed to individual white buttons on horizontal rows

(b) Crypto devices listed above vertical rows of white buttons

(c) Red button in horizontal row at bottom of panel disconnects equipments.

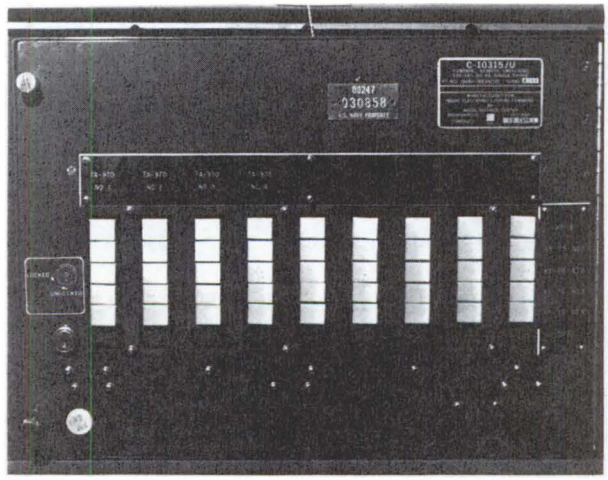


Figure 12.4-4, C-10315 switching matrix

c. KY-8 or KY-58 crypto

d. SB-863/SRT Transmitter Transfer Switchboard

(1) Applied previously to Golf and Charlie systems

e. AN/URC-9 UHF transceiver

(1) Applied previously to Charile system

(2) AN/SRC-20 or AN/SRC-21 may be substituted

f. AN/SRA-33 antenna multicoupler

(1) Allows use of four Transceivers using the same antenna

(2) Tunes antenna to UHF transceiver to allow strongest carrier transmission or reception

2. Receive side

a. SB-973/SRR Receiver Transfer Switchboard

(1) Applied previously to Golf and Charlie systems

b. AM-3729/SR Audiofrequency Amplifier

(1) Amplifies incoming signal from telephone set (TA-970)

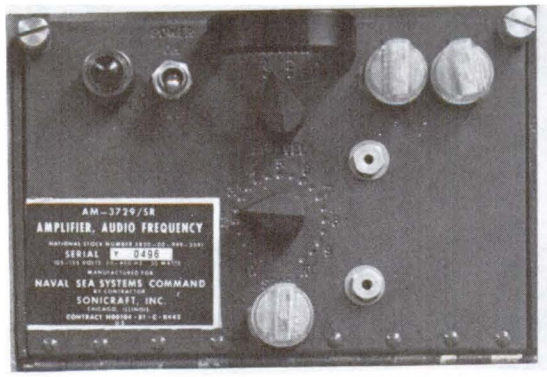


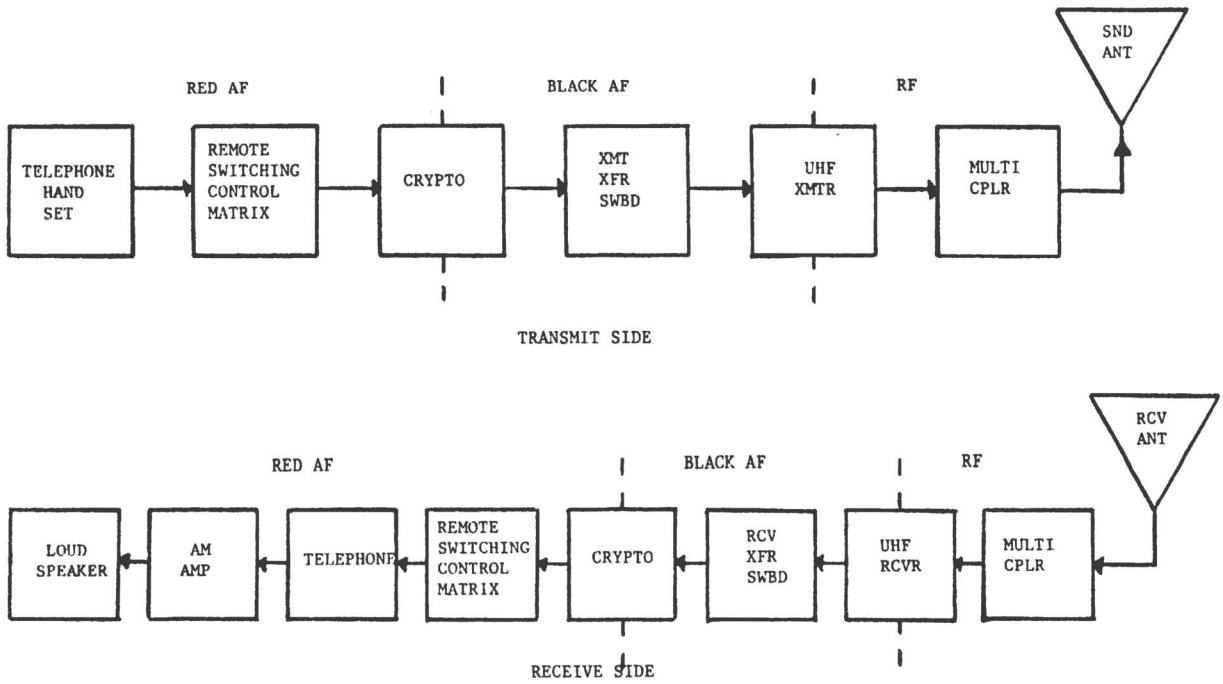
Figure 12.4.5, AM-3729/SR Audio Frequency Amplifier

(2) Adjusts audio level for speaker components

(3) Hard-wired to TA-970 telephone

c. LS-474 Loudspeaker

(1) Hard-wired to amplifier (AM-3729)



ROMEO UHF SECURE VOICE SYSTEM

Romeo System Block Diagram
Figure 12.4-6

D. Romeo System (KY-8/TSEC) Setup and Operation

1. Record equipment, channel, and frequency numbers from Circuit Status Board

2. Set up crypto group using KY-8

   a. Set TA-970 MUTING switch to push-to-talk (PTT)

   b. Turn KY-8 POWER switch to ON

   c. On C-10315 matrix, depress white button representing assigned TA-970 in horizontal row opposite assigned KY-8 in vertical row

   d. Turn KY-8 LOCAL/REMOTE switch to LOCAL

   e. Conduct alarm check

      (1) Turn alarm TEST switch to each of the 11 numbered positions

      (2) Ensure that CIPHER LIGHT flashes red at each position

3. Set up transceiver group (transmit side)

   a. Patch KY-8 to URC-9 UHF Transceiver using SB-863/SRT Transmitter Transfer Switchboard

   b. Tune URC-9 using manual tuning procedures

      (1) On PP-2702

         (a) POWER switch to ON

         (b) DIMMER switch to mid-range

      (2) On RT-581

         (a) SQUELCH control to OFF

         (b) VOLUME control to comfortable level

         (c) METER switch to PWR

         (d) MODE switch to NOR

         (e) CHAN SEL switch to MANUAL

         (f) MANUAL FREQ selector switches to assigned frequency (TENS, UNITS, TENTHS)

         (g) SQUELCH control clockwise until CALL LIGHT just goes out

      (3) On MX-8430:

(a) POWER switch to ON

(b) LOCAL-REMOTE switch REMOTE

4. Set up transceiver group (receive side)

a. Patch URC-9 Transceiver to KY-8 crypto using SB-973/SRR Receiver Transfer Switchboard

5. Set up remote group (receiver side only)

a. On AM-3729/SR Audiofrequency Amplifier

(1) POWER switch to ON

(2) CHANNEL SELECTOR switch to Channel "1"

(3) AF LEVEL control for LS-474 to mid-range

6. Operate Romeo System with KY-8

a. Monitor speaker to ensure distant station is not transmitting

b. Depress button on handset and wait for tone burst prior to transmitting

(1) Anything spoken before tone burst (preamble) will not be transmitted

c. After transmission is completed, release button on handset

d. Monitor speaker for incoming signal; adjust level on AM-3729 amplifier

7. Secure KY-8

a. Turn KY-8 POWER switch to OFF

b. Disconnect KY-8 crypto and TA-970 telephone from C-10315 matrix

(1) Depress appropriate red button on panel

(2) Ensure that white indicator light goes out and red light comes on

c. Secure SB-863/SRT Switchboard

d. Secure SB-973/SRR Switchboard

E. Romeo System (KY-58/TSEC) Setup and Operation

1. Record circuit status board assignment(s)

2. Set up crypto group using KY-58

a. Connect assigned KY-58 to assigned TA-970 on C-10315

b. Connect H-169 local handset to HYX-58 front panel, and turn LOCAL/REMOTE switch to LOCAL

c. Patch URC-9 Transceiver to KY-58 on SB-973 Switchboard

d. Patch KY-58 to URC-9 on SB-863 Switchboard

3. Zeroize KY-58 to cancel existing crypto-variables prior to reloading

a. KY-58 POWER switch may be in the ON or OFF position

b. To zeroize registers 1 through 5, pull out and turn FILL SELECT switch to Z 1-5.

c. To zeroize registers 1 through 5 and the remote crypto-variable (register 6), pull and turn FILL SELECT switch to Z ALL

4. Execute parity check on KY-58 to ensure variables zeroized

a. Turn POWER switch to ON

b. Clear crypto alarm (continuous beeping with background noise) by pressing and releasing PTT button on H-169 handset

c. Turn MODE switch to "C" (cipher)

d. Turn FILL SWITCH to each register to be checked; press and hold PTT at each register

(1) A single beep in headset indicates a valid cryptovariable stored in register

(2) A constant tone indicates an empty storage register or an invalid cryptovariable stored in register

5. Load KY-58 from KOI-18 tape reader

a. Connect KOI-18 tape reader to KY-58 with fill cable

b. Turn KY-58 FILL SWITCH to storage register to be filled

c. Turn MODE switch to LD

(1) A constant tone will result in the LD (load) mode indicating an empty storage register

(2) Clear by pressing and releasing the PTT button on headset

d. Insert tape leader into KOI-18 slot marked IN

(1) Ensure that small holes on tape lineup with white dots on KOI-18

e. Press and release PTT

f. Pull tape through KOI-18 at a steady rate

(1) A beep should be heard in handset to indicate good parity

(2) If beep is not heard, re-insert tape into KOI-18 and pull through again

g. Repeat procedure E.5.d through E.5.f for each register to be filled

h. Enter identifying information for each variable on KY-58 writing surface

i. Turn POWER switch to OFF

j. Disconnect fill cable from KY-58

6. Set up HYX-58 line interface unit

a. Turn Diphase/Baseband (DO/BB) control to DO (for UHF AM)

b. Turn LOCAL/REMOTE switch to REMOTE for TA-970

c. Disconnect H-169 handset

7. Operate Romeo System with keyed KY-58

a. Ensure that KY-58 MODE switch is on "C"

b. Turn FILL switch to storage register containing desired crypto-variable

c. Turn POWER switch to ON

(1) Clear alram using TA-970

d. When ready to transmit

(1) Monitor speaker to ensure distant station is not transmitting

(2) Press PTT on TA-970

(3) Wait for preamble--single beep--before speaking

e. After transmission is completed, release button on handset

f. Monitor speaker for incoming signal; adjust as necessary on AM-3729 amplifier

F. Secure Romeo System

1. AM-3729/SR POWER switch to OFF

2. TA-970/U MUTING switch to OFF
3. On C-10315, push appropriate red button to disconnect patch
4. KY-58/TSEC POWER switch of OFF
5. SB-973/SRR switches to off
6. AN/URC-9 POWER switches (PP-2702, RT-581, and MX-8430) to OFF
7. SB-963/SRT switch to OFF

PROGRESS CHECK 12.4

Romeo UHF Secure Voice System

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. What is the purpose of the Romeo system?

2. Which piece of equipment supplies power to the TA-970/U and connects it to the secure voice crypto?

3. How many positions are there on the KY-8 alarm test switch?

4. Which piece of equipment is a red handset with a push-to-talk, release-to-listen button?

5. What is the operating frequency range of the Romeo system?

6. What is the purpose of the white buttons on the C-10315?

7. How many crypto-variables can the KY-58 store at any one time?

8. How are crypto-variables loaded into the KY-58?

9. Which position should the DIPHASE/BASEBAND (DO/BB) switch be placed for UHF/AM operations?

10. How are all crypto-variables erased from the KY-58 simultaneously?

ASSIGNMENT SHEET 12.5

Sierra-Parkhill HF Secure Voice System

INTRODUCTION

As in the previous lesson, when secure voice long-haul voice communications are required, you will have to set up a Sierra circuit--commonly know as Parkhill. These two systems, Romeo and Sierra, differ primarily in equipment configurations and use. This is the fifth and last of the five systems you will be expected to be able to set up for fleet communications.

LESSON TOPIC LEARNING OBJECTIVES

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, converters, antenna patch panels, HF transmitters, HF receivers, UHF transceivers, and patch cords; SET UP FIVE COMMUNICATION SYSTEMS including the November, Charlie, Golf, Romeo, and Sierra systems in accordance with COMNAV-TELCOMINST C2796.1. Each must be set up and operational within 25 minutes.

4.6 Given audio patch panels, HF transmitters, HF receivers, crypto devices, remote keying position and handset, set up the system components of the Sierra system for narrowband secure voice operations in accordance with COMNAVTELCOMINST C2796.1.

4.6.1 Given a blank sheet of paper, draw a block diagram of the Sierra system including labeling each block and showing signal flow within 5 minutes.

4.6.2 Given system components for the Sierra system, adjust system components for optimum performance.

4.6.3 Given system components for the Sierra system, interface all components using audio and antenna patch panels as appropriate.

STUDY ASSIGNMENT

Study Notetaking Sheet 7.5, personal notes, and information received in Progress Check 7.5. Notetaking Sheet may not be used during the Performance Test 7.5.

NOTETAKING SHEET 12.5

Sierra-Parkhill HF Secure Voice System

REFERENCES:

1. NTP 5, Naval Telecommunications Procedures Voice Communications, Chapter 3
2. KAM 334/TSEC, Limited Maintenance Manual for KY-75/TSEC
3. CSESD-15D, Communications Security Equipment System Document for TSEC/KY-65/75
4. KAO 154A

NOTETAKING OUTLINE

A. General Characteristics

1. Designed for general-purpose HF secure voice communications ship-to-ship and ship-shore
2. Narrower 3KHZ bandwidth applied to HF extends range to 1500 miles or more, yet uses only a small portion of the valuable radio spectrum
3. HF also offers greater carrier frequency stability and greater effective power utilization
4. Like Romeo System, Sierra System operation is simplex with one crypto; or half-duplex with two crypto's operating on different frequencies
5. Emission designator for Sierra System: 3K00J3E

B. KY-75/TSEC Cryptographic Device (Refer to Figure 12.5-1)

1. Microminiaturized airborne or shipboard speech security equipment in two parts:

a. KY-75 processor unit

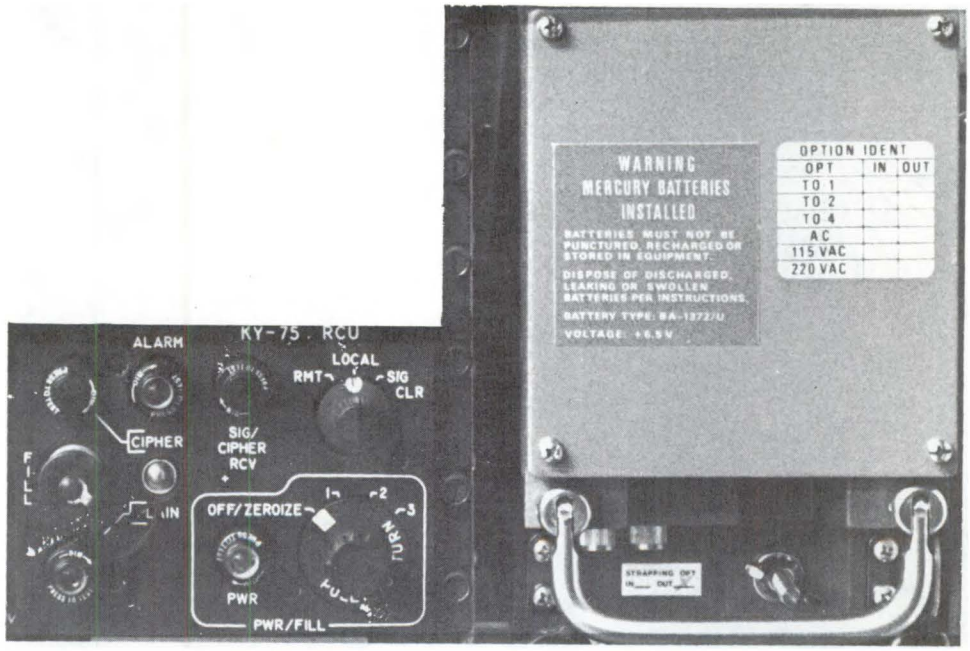
(1) Contains battery, crypto processing equipment, and test points
(2) No external controls

b. Remote control unit (RCU)

(1) Interfaces unit that allows for control and operation of the KY-75 processor
(2) Front panel includes all crypto indicators, controls, and input/output connectors

2. Stores and selects up to three cryptovariables
3. Remote keying via KOI-18 tape reader using procedure similar to KY-58/TSEC
4. CIPHER and PLAIN mode section

a. When in CIPHER mode, can only cipher text; in PLAIN mode, can send only plain text
b. Messages can be received in PLAIN and CIPHER when tuned to either mode



FOR OFFICIAL USE ONLY

Figure 12.5-1 KY-75/TSEC

C. Sierra System Configuration and Signal Flow

1. Transmit side
   a. TA-970/U Telephone Set (RED)
      (1) Applied previously to Romeo System

   b. C-10315 Remote Switching Control (Matrix)
      (1) Applied previously to Romeo System

   c. KY-75/TSEC crypto

   d. SB-863/SRT Transmitter Transfer Switchboard

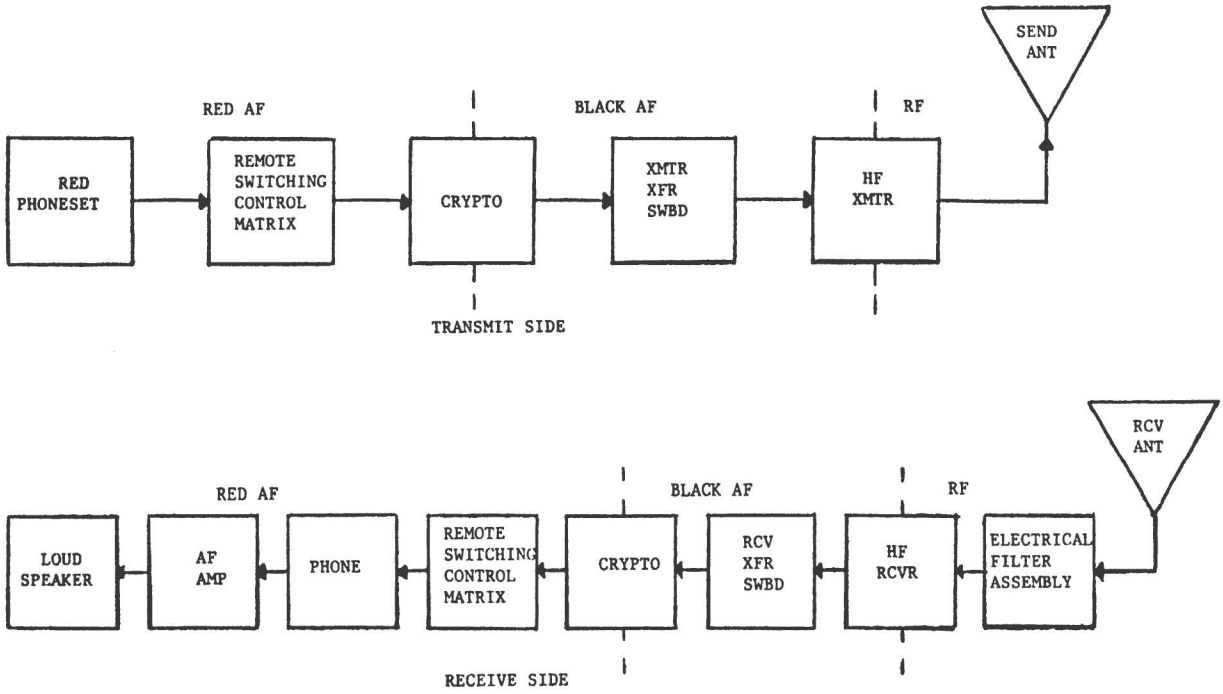
      (1) Applied previously to Golf, Charlie, and Romeo Systems

   e. URT-23 HF Transmitter
      (1) Applied previously to Golf System

2. Receive side
   a. AN/SRA-12 Electrical Filter Assembly
      (1) Applied previously to November HF System

   b. R-1051 HF Receiver
      (1) Applied previously to Golf and November System in FSK
      (2) USB tuning procedures will be demonstrated during system setup.

c. SB-973/SRR Receiver Transfer Switchboard
   (1) Applied previously to Golf, Charlie and Romeo Systems
d. KY-75 crypto
e. C-10315 matrix
f. TA-970 telephone
g. AM-3729/SR Audio Frequency Amplifier
   (1) Applied previously to Romeo System
h. LS-474 loudspeaker
   (1) Applied previously to Romeo System



Sierra System Block Diagram
Figure 12.5-2

D. Sierra System Setup

1. Record equipment, channel, and frequency numbers from Circuit Status Board
2. Set up crypto group

   a. Set TA-970 MUTING switch to push-to-talk (PTT)
   b. On C-10315 matrix, depress appropriate button for assigned TA-970 and KY-75

3. Zeroize KY-75 crypto

   a. Pull out and turn RCU PWR/FILL switch counter-clockwise to OFF/ZEROIZE

      (1) All power is removed from the KY-75 processor
      (2) Cryptovariables in all three registers are zeroized

4. Load KY-75 crypto using KOI-18 tape reader

   a. Turn RCU MODE switch to CIPHER
   b. CONNECT KOI-18 to RCU fill connector
   c. Pull out and turn RCU PWR/FILL switch to desired storage register

      (1) Crypto alarm (continuous tone burst) should be heard in handset
      (2) Alarm indicator (amber) should be lit

   d. Insert tape leader into KOI-18 slot marked "IN" and line up tape feed holes with white dots on reader
   e. Turn RCU RMT-LOCAL-SIG/CLR and release

      (1) Spring-loaded switch will return to LOCAL position from SIG/CLR
      (2) If incorrectly set to REMOTE, control is transferred to the processor instead of the RCU

   f. Pull tape through KOI-18 at steady rate

      (1) Crypto alarm should stop
      (2) Alarm indicator should go out
          (a) If alarm tone and indicator do not clear, repeat steps from KOI-18 tape insertion through parity check (clearing)

   g. To load variables in remaining two registers, turn RCU PWR/FILL switch to desired number, insert tape into reader and pull through

   h. Disconnect KOI-18 from RCU

5. Set up transmitter group

   a. Patch KY-75 to assigned URT-23 transmitter using SB-863 transmitter transfer switchboard

6. Set up and tune receiver group

a. Patch R-1051 receiver to antenna using SRA-12 Electrical Filter Assembly

(1) Using an antenna patch cord, connect input jack for receiver to output jack in assigned transmit frequency range
(2) Select lowest available output jack

b. Tune R-1051 receiver

(1) MODE switch to USB
(2) MCS/KCS selectors to a value 2KHZ less than assigned transmit frequency
(3) CPS control to 000
(4) RF GAIN control fully clockwise
(5) USB LINE LEVEL control to mid-range
(6) Turn USB PHONE LEVEL control until static is heard on TA 970 telephone handset
(7) USB LINE LEVEL meter switch to ±20db

c. Patch tuned R-1051 receiver to KY-75 crypto using SB-973 receiver transfer switchboard

7. Set up remote group (receiver side only)

a. On AM-3729/SR audio frequency amplifier

(1) POWER switch to ON
(2) CHANNEL SELECTOR switch to Channel "1"
(3) AF LEVEL control for LS-474 loudspeaker to MIDRANGE
(a) Amplifier is hard-wired to red telephone
(b) Loudspaker is hard-wired to amplifier

E. Sierra System Operation Using Keyed KY-75

1. Turn RCU-REMOTE-LOCAL-SIG/CLR switch to REMOTE
2. Ensure that MODE switch is still in CIPHER (loading step)
3. Turn PWR/FILL switch to storage register containing desired fill

NOTE: The RCU power switch is in the storage register. Standby power is activated whenever the prime power is interrupted with the processor in the fill position.

4. To transmit:

a. Depress PTT in handset
b. Wait for preamble (brief tone) to stop
c. Send message
d. Release PTT
e. Wait to hear postamble
f. Monitor speaker for incoming signal; adjust audio level on amplifier

F. Secure Sierra System

1. AM-3729/SR POWER switch to OFF

2. TA-970/U MUTING switch to OFF
3. On C-10315, push appropriate red button to disconnect patch
4. SB-973/SRR switches to OFF
5. R-1051 MCS/KCS selectors to zeros
6. R-1051 MODE selector switch to STBY
7. SB-963/SRT switch to OFF

NOTE: DO NOT turn crypto RCU PWR/FILL switch to OFF/ZEROIZE unless cryptovariables in all registers are to be erased.

PROGRESS CHECK 12.5

Sierra-Parkhill HF Secure Voice System

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER.

1. What is the emission designator for the Sierra system?

2. How many crypto-variables can be stored in the KY-75 at any one time?

3. What piece of equipment is used to load crypto-variables into the KY-75?

4. What mode of operation is the transmitter/receiver placed for Sierra system?

5. What position is the RCU REMOTE-LOCAL-SIG/CLR switch placed for secure voice operation?

6. Which patch panel is used to connect the KY-75 crypto to the transmitter?

7. Which piece of equipment is used to connect the TA-970/U to the KY-75 crypto equipment?

8. How is the KY-75 crypto zeroized?

9. Which frequency range is the Sierra system operated in?

10. What indication must first be received before transmitting secure voice using the KY-75 crypto?

ASSIGNMENT SHEET 13.1

Initialize NAVMACS V2 System

INTRODUCTION

Computers and satellites have made communications between ships, shore stations, and aircraft faster and more reliable. This unit discusses the Naval Modular Automated Communications System (NAVMACS) which can process message traffic almost 30 times faster than conventional teletype communication. In this lesson you will be introduced to the NAVMACS V2 System and learn how to initialize the system--how to set it up to handle message traffic.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or a shore communication center, messages with corresponding tapes in ACP 126, Modified ACP 126 or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

(JTI Nos. A7-2, A7-6, A7-8, A18-3, B8-2, B8-3, B11-1, B12-1, B40-1, B42-1, C18-1, C27-1 through C27-4, C28-1, through C28-3, E9-1, E9-3 through E9-6)

(NAVMACS JTI Nos. A1-A3, A5, C10-C13, D15-D17, E18-E23, F24-F25, J55-J59, J61-J67, M82-M83, M91)

7.3. Given the NAVMACS V-2 Automated Communication System, broadcast check-off logs, command guard list tape, internal distribution tape, and incoming broadcast messages, process the messages in accordance with NAVTELSYSIC 2D7.1D.

7.3.1 Given the NAVMACS V-2 System, release program tapes, command guard list tape, internal distribution tape and system parameter values, initialize the system for operation.

STUDY ASSIGNMENT

Study Notetaking Sheet 13.1 and personal notes. Your understanding of the information will be checked in Progress Check 13.1

NOTETAKING SHEET 13.1

Initialize NAVMACS V2 System

REFERENCE

1. NAVTELSYSIC 2D7.1D, NAVMACS V2 Computer Program Operator's Manual

NOTETAKING OUTLINE

A. Overview of NAVMACS V2 System

1. Purpose of NAVMACS V2 System

a. A shipboard message processor for small to medium ships

b. Guards as many as four broadcast channels

(1) Compares every addressee on each incoming first-run message against entries on the Command Guard List (CGL)

(2) Prints the complete message of:

(a) Addressees found on CGL

(b) Flash messages

(c) Emergency messages

(3) Prints only headings of all other messages

c. Automated shipboard terminal for a satellite link interface with the Common User Digital Information Exchange System (CUDIXS) ashore

d. Provides accountability for all incoming and outgoing messages

2. CUDIXS link traffic

a. Half-duplex, automated digital communications net using a satellite

b. Up to 60 subscribers

(1) Special subscribers

(a) Assigned Subscriber Identification (SID) numbers 01-10

(b) Can send/receive messages

(c) Same as full-period term

(2) Primary subscribers

(a) Assigned SIDs 11-60

(b) Send only

(c) Same as using Primary Ship/Shore circuit

3. NAVMACS V2 System Equipment

a. General-purpose minicomputer (AN/UYK-20)

(1) Also called Central Processing Unit (CPU)

(2) Most important piece of equipment in V2 System

b. Magnetic Tape Cartridge Unit (AN/USH-26(V))

(1) Loads computer program

(2) Takes "memory dumps" from computer

(3) Some stations have RD-396 vice AN/USH-26

c. Voltage Level Converter Patch Panel (CV-3022)

(1) Connects computer to multichannel broadcast

d. Interconnecting Group (ON-143) connects computer to the CUDIXS link

e. High-speed Perforated Tape Reader/Punch Unit (RD-397)

(1) Tape punch operates at 75 characters per second

(2) Tape reader used for

(a) entering outgoing messages to UYK-20 at 300 characters per second

(b) Inputting CGL entries

(c) Inputting LRL entries

(d) Backup program load device

(3) Backup devices

(a) Low-speed reperforator (TT-192) is a backup for tape punch. Capable of tape perforation at 100 wpm.

(b) Transmitter-distributor (TT-187) is a backup for tape reader. Capable of reading tape at 100 wpm.

f. Line Printers (TT-624)

(1) Prints incoming messages

(2) Prints operator requested reports

(3) Operates at 300 lines per minute

g. Control Teletype (AN/UGC-20) (CTTY)

(1) Used by operator to control NAVMACS operation

(2) Used for operator-to-operator communications with CUDIXS

(3) Once the equipment is set up, the operator will initialize the system using the control teletype

(4) Operates at up to 100 words per minute

B. Commands

1. Use of Commands

a. Commands control the way the system performs functions

b. Typed (entered) on CTTY

2. Command format

a. First part consists of three characters

b. A period (.) precedes first three characters to indicate an operator entry

c. If not typed and executed within 40 seconds, TIME OUT will occur

(1) System will take control of CTTY

(2) System will generate three exclamation points (!!!)

(3) Depressing any key regains control of keyboard

(4) Operator must reenter entire command

d. Execute command by depressing blank key twice; this is represented by (X) (X)

e. System acknowledgement of valid operator command

(1) Three spaces

(2) Hyphen, three-digit command validation number, another hyphen

(3) 2 CR, 1 LF, 1 LTR

3. Correcting commands entered on CTTY

a. Type an uppercase H (#) for each incorrect character or space

b. Invalid command

(1) Command not accepted by the system

(2) System repeats portion of command recognized and question mark (?)

(3) Command Validation Number is counted but not printed

4. Canceling and reentering commands

   a. Depress uppercase F (!) twice

   b. Reenter entire command

   c. Only unexecuted commands can be canceled

   d. Command Validation number is counted but not printed

C. Patches to the Program

   1. Provide modifications to existing computer program

   2. Entering patches

      a. After the program is loaded, the system generates:

         NAVMACS V2 REL _____ LOADED. PATCHES?

      b. Type N after the question mark

      c. Program is fully operable and initialized with parameter settings

         (1) Parameter settings need to be corrected for local station use

D. System Parameters

   1. Purpose of system parameters

      a. Parameter: A specific value or bit of information

      b. Control functions of NAVMACS System

      c. Preset parameters can be changed by the operator

   2. Entering system parameters

      a. Operator enters a command on the CTTY

      b. After the patch in entered, the system prints:

         SYSTEM READY. ENTER:

         Followed by a list of parameters

      c. Do not enter the parameter PWD and WML. The WML will be discussed in the next lesson

      d. Enter each parameter in the order listed

      e. Channel status must be entered last

E. Parameters To Be Entered

1. TIM (Time)

   a. Represents time in computer clock

   b. Entered as date time group (ddhhmmZ MON yr)

   c. Command to replace

      .RPL TIM ddhhmmZ MON yr (X) (X)

   d. System generates printout of time every five minutes

2. SID (Subscriber Identification Number)

   a. Each NAVMACS assigned number by Net Control Station (NECOS)

   b. Command to replace

      .RPL SID (nn) (X) (X)

3. CGL (Command Guard List)

   a. List of plain language addresses to which ship is responsible for message delivery

   b. Message containing addressee(s) found in CGL is called "CGL MATCH"

   c. Paper tape of CGL read from RD-397. CHAD perforated tape is used

      (1) Three holes in tape face toward RD-397

   d. Command to have tape read into computer:

      .ADD CGL (X) (X)

   e. After tape is read, CTTY prints:

      CGL MOD COMPL

4. OMN (Output Message Number)

   a. Indicates serial number of last outgoing narrative message

   b. Command to replace:

      .RPL OMN (nnnnn) (X) (X)

5. OON (Output OTO Number)

   a. Indicates serial number of last outgoing operator-to-operator message

   b. Command to replace:

      .RPL OON (nnnnn) (X) (X)

6. LRL (Local Routing List)

   a. LRL will be printed at bottom of every incoming message

   b. Paper tape of LRL read from RD-397

   c. Command to have tape read into computer:

      .RPL LRL (X) (X)

   d. The LRL will print out on the TT-624 with heading INTERNAL ROUTING IS:

7. QRK (Addressee Recognition Threshold)

   a. Determines percent of characters in message addressee that must match the characters in CGL entry

   b. Codes for broadcast channels are BI1 through BI4

   c. QRK values are 1 to 5

      (1) System initializes at 1 (no screening provided), if not changed by the operator

      (2) Value of 5 requires 87% match of message addresses to CGL

   d. Command to replace:

      .RPL QRK(n), BI1 (X) (X)

8. RRM (Rerun Mode)

   a. Affects handling of broadcast rerun messages

   b. System initializes in N (Normal) mode meaning all rerun traffic with CGL match is printed in full

   c. S (Special) mode causes only Flash and Emergency (Y and Z) rerun traffic with CGL Match to be printed in full. Only heading prints for nonaddressed Flash and Emergency rerun traffic

   d. All others are discarded

   e. Command to replace:

      .RPL RRMS, BI1 (X) (X)

9. CID (Circuit Identification)

   a. Identifies broadcast channels with four-letter entry for each

      (1) Referred to as broadcast channel designator in HF configuration.

   b. Command to replace CID for channel 1:

      RPL CID HMAA, BI1 (X) (X)

10. Preset Parameter Values

a. ARQ (Automatic Repeat Request)

(1) Sets limit on number of times NAVMACS V2 honors a request from NECOS to repeat a link transmission

(2) Values between 00 to 10

(3) Preset by program at 05

(4) Command to replace:

.RPL ARQ (nn) (X) (X)

b. NOB (Link Transmission Number of Output Blocks)

(1) Determines the length of an outgoing link transmission

(2) Values are 03, 06 and 10

(3) Preset 06

(4) Command to replace:

.RPL NOB (nn) (X) (X)

c. NIB (Link Transmission Number of Input Blocks)

(1) Preset at 5 (single digit)

(2) Cannot be changed

d. BOD (Link Baud Rate)

(1) Preset at 2400-DO NOT CHANGE

11. Channel status

a. Last command entered when system is initialized

b. To bring up broadcast channel enter:

.CUP BI1 (X) (X)

c. To bring up link from NECOS enter:

.CUP LK (X) (X)

F. Verify Initialization

1. Retrieve system parameter page (SPP)

a. SPP lists all parameter values entered.

b. Command to retrieve values entered via CTTY:

.SPP (X) (X)

c. Commands to retrieve via printer:

.SPP PR1 (X) (X) or .SPP PR2 (X) (X)

2. Retrieve Broadcast portion only (SPB of SPP)

.SPB (X) (X)

.SPB PR1 (X) (X)

.SPB PR2 (X) (X)

3. Retrieve Link portion only (SPL of SPP)

.SPL (X) (X)

.SPL PR1 (X) (X)

.SPL PR2 (X) (X)

4. Retrieve device portion only:

.SPD (X) (X)

.SPD PR1 (X) (X)

.SPD PR2 (X) (X)

5. Verify parameter values on printouts to ensure accuracy of operator input.

6. Retrieve CGL on printer:

.CGL (X) (X)

.CGL PR1 (X) (X)

.CGL PR2 (X) (X)

SAMPLE CTTY PRINTOUT

```
NAVMACS V2 REL _______ LOADED.   PATCHES? N ---------- (1)
SYSTEM READY.  ENTER: ---------- (2)

TIM
SID
CGL
OMN
OON
LRL
QRK
RRM
PWD ---------- (3)
WML
CID

CHANNEL STATUS
.RPL TIM 022253Z APR 84   -001- ---------- (4)
.RPL SID 02  -002- ---------- (5)
.ADD CGL   -003- ---------- (6)
CGL MOD COMPL
.RPL OMN 0021   -004- ---------- (7)
.RPL OON 00015   -005- ---------- (8)
.RPL LRL   -006- ---------- (9)
.RPL QRK5, BI1   -007- ---------- (10)
.RPL RRMS, BI1   -008- ---------- (11)
.RPL CID HMAA, BI1   -009- ---------- (12)
.RPL ARQ 03   -010- ---------- (13)
.CUP BI1   -011- ---------- (14)
.CUP LK   -012- ---------- (15)

.SPP   -013- ---------- (16)

SPP REL_____ TIM: 022258Z APR 84   OVL: 0
SPD   PR1   PR2   TP  TR
STA   UP    UP    UP  UP

SPB BI1     BI2     BI3     BI4     PWD
STA UP      DN      DN      DN
CID HMAA
QRK 5       1       1       1
RRM S       N       N       N

SPL  STA  SID  ARQ   NIB   NOB   SUP   BOD     OON     OMN
UP   UP   02   03    5     06    DN    2400    00015   0021

.CGL PR1   -014- ---------- (17)
```

CTTY PRINTOUT
FIGURE 13.1-1

Figure 13.1-1

PROGRESS CHECK 13.1

Initialize NAVMACS V2 System

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER

1. What does the system generate to indicate an operator initiated command?

2. Within how many seconds must a command be typed and executed?

3. How do you execute a command?

4. What is a command validation number?

5. How do you correct an error made while typing a command?

6. What does the system generate if a command is invalid?

7. How do you cancel a command?

8. What does the TIM parameter represent and how is it entered?

9. What does the parameter SID represent?

10. Which parameter represents the serial number of the last outgoing narrative message?

11. Which parameter represents the last outgoing operator-to-operator message?

12. Which parameter sets a limit on the number of times NAVMACS will repeat a transmission?

13. What are the two Rerun Modes (RRM)?

14. Which Rerun Mode will cause all traffic to be printed in full?

ASSIGNMENT SHEET 13.2

Process NAVMACS Incoming Messages

INTRODUCTION

In the preceding lesson, you learned to initialize the NAVMACS System. During this lesson you will learn how to use the NAVMACS System to handle high speed, fleet multichannel broadcast effectively.

LESSON TOPIC LEARNING OBJECTIVES

7.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, messages with corresponding tapes in ACP 126, Modified ACP 126 or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 7, and NAVTELSYSIC 2D7.1D.

7.3. Given the NAVMACS V-2 Automated Communication System, broadcast check-off logs, command guard list tape, internal distribution tape, and incoming broadcast messages, process the messages in accordance with NAVTELSYSIC 2D7.1D.

7.3.2 Given an initialized NAVMACS V2 System, incoming logs, printed command guard list, and incoming broadcast messages, process the messages to either the inrouter or broadcast file as appropriate.

STUDY ASSIGNMENT

Study Notetaking Sheet 13.1, 13.2 and personal notes. Your understanding the information in this lesson will be checked in Progress Check 13.2.

NOTETAKING SHEET 13.2

Process NAVMACS Incoming Messages

REFERENCE:

1. NAVTELSSIC 2D7.1D, NAVMACS V2 Computer Program Operator's Manual

NOTETAKING OUTLINE

A. Purpose and Function of TT-624 Teletypewriters (2)

1. Purpose

a. Print incoming messages at 300 lines per minute

(1) Addressed messages received on PR1 (TT-624 #1)

(2) Non-addressed messages received on PR2 (TT-624 #2)

b. Also used to print operator-requested reports on unit specified by the operator

2. Functions of controls and indicators

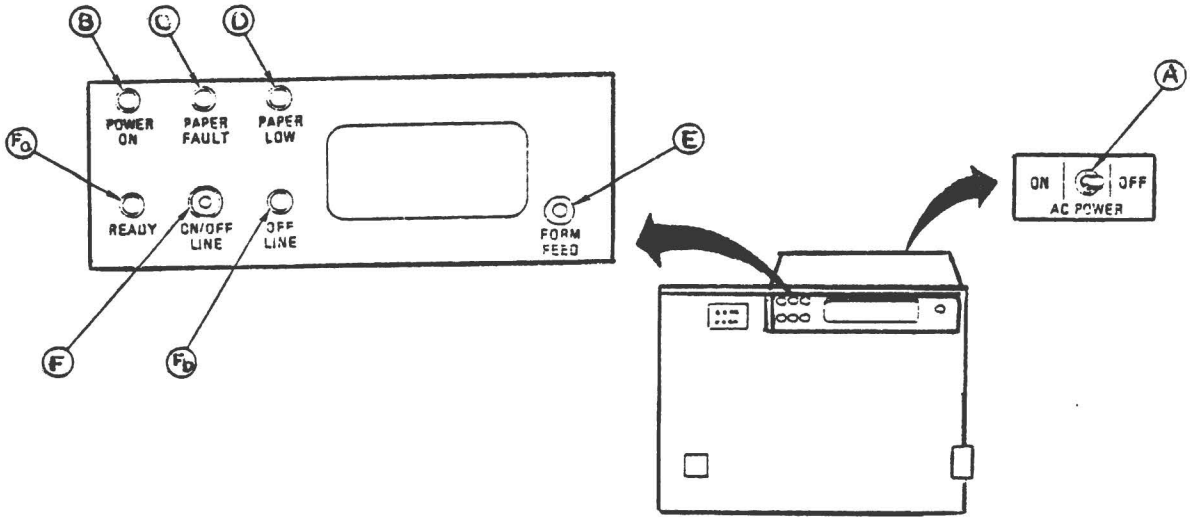


Figure 13.2-1

a. AC POWER ON/OFF switch

(1) Located at top rear of printer

(2) Applies AC power

b. POWER ON indicator--When lit (white light), power has been applied.

c. PAPER FAULT indicator--When lit (red), paper is out, torn or jammed.

d. PAPER LOW indicator--When lit (yellow), paper supply is low.

e. FORM FEED switch--When depressed, advances paper

f. ON/OFF LINE switch

(1) When depressed, indicator lights on either side show status

(a) READY indicator--When lit (green), printer is ready to receive messages

(b) OFF LINE indicator--When lit (red), printer not operational

B. Screen Incoming Broadcast Messages

1. Command Guard List (CGL)

a. Entered into computer during initialization

b. Contains all addressees for which your command is responsible

c. Computer matches addressees on incoming messages to CGL, identifies guarded addressees by printing CGL MATCH at top of printout

2. Wanted Message List (WML)

a. Entries made individually on CTTY to start computer search to recover original messages received garble or incomplete, or missed

b. Provides computer with message channel identifier (CID) and channel sequence number (CSN)

(1) Command: .ADD WML, (CID/CSN) (X) (X)

c. Numbers deleted from WML automatically if message is recovered by computer

d. If message retrieved by other means, WML entry must be deleted by NAVMACS operator

(1) Command: .DLT WML, (CID/CSN) (X) (X)

e. If a received message has been misplaced or a CGL match not picked up, a copy may be retrieved from the computer memory when requested before stored message is purged from memory.

(1) Command: .MSG (CID/CSN) (X) (X)

3. Screening procedures

a. Check message for garbles

b. Check message format lines for completeness

c. Check for missing messages using Message Summary Log (MSL)

(1) MSL automatically prints at the CTTY one-line log entries showing disposition of each message received or entered into the system

(2) Use MSL to check for the following:

(a) Missing channel sequence numbers (CSNs)

1. Add CID/CSN of missing, garbled and incomplete messages to WML

(b) Flagged addressees for validity

1. $ = perfect match to CGL

2. ? = imperfect match

3. X = XMT or ZEN addressees with perfect or imperfect match

(c) Non-addressed heading

1. Check against CGL

2. Discovered CGL match may be retreived by using command:

.MSG (CID/CSN) (X) (X)

(d) Messages requiring special handling

1. All high precedence/emergency action or fast reaction drill messages must be advance (prerouted) IAW local SOP

a. Action addressees of PRIORITY or above

b. Information addressees of IMMEDIATE or above

2. Advance routed messages delivered to inrouter before Watch Supervisor

3. Use most direct means to advance route

4. NEVER let original copy of message out of message center

5. After advance routing is completed, normal routing will follow

6. Check for special handling designations

a. Sending station will notify you when a message requires authorized personnel to receive

b. Notify Watch Supervisor

c. Monitor roll copy must be removed for SPECAT and TOP SECRET

C. Log Broadcast Messages

1. New broadcast message log started each new RADAY

2. Broadcast logging procedures

a. Place RADAY date at bottom right corner of log

b. Fill in first three digits next to first number as appropriate

c. Write broadcast channel CID in upper left corner

d. Draw a straight line above the first number used for new RADAY and "X" out any number(s) used on previous RADAY

e. Message addressed to your command (CGL MATCH)

(1) Circle number on log and circle appropriate classification

f. Message NOT addressed to your command--Draw a single straight line through the number on the log.

g. Recap message--Circle the number, circle appropriate classification and write "RECAP" to the right of the classification symbol.

h. CANTRAN--Draw a single straight line through the number on the log.

(1) Write BUST across the classification symbols.

i. Open or missed numbers

(1) Add to WML

(2) Leave number open on the log

(3) Notify Watch Supervisor of all missing numbers

j. Incompleted message/Number mismatch

(1) Complete message (through FL 15) not received

(2) Station serial number (SSN) in FL2 does not match that in FL 15

(3) If addressed to your command, leave broadcast channel nmber open and pass message to watch supervisor

(a) Write Opsig ZES1 (incomplete transmission) to right of the classification symbols

(4) If not addressed to your command draw diagonal line through the broadcast channel number

k. Garbled Message

(1) Portion of or entire message is unreadable

(2) If heading is complete, and message is not addressed to your command, draw diagonal line through broadcast channel number.

(3) If heading is incomplete, or message is addressed to your command, leave broadcast channel number open and pass to watch supervisor.

(a) Write Opsig ZES2 (garbled transmission) to right of classification symbols

l. Draw straight line under the last number received for the RADAY

(1) "X" out any remaining numbers to be used on the next RADAY

m. File the log in the broadcast file on the top on the same RADAY's traffic

D. Filing Broadcast Messages

1. File messages

a. File in proper broadcast channel file

b. File by CSN in numerical order

2. Prepare filler for CGL match messages

a. Record DTG

b. Record originator

c. Record CSN

d. Record message classification

E. Respond to System Alarms

1. Alarms generated by the system are printed at the CTTY to advise the operator of malfunctioning channels or devices. They are preceded by bells and an exclamation point.

a. ! DEVICE/CHANNEL CODE (BI1, BI2, PR1, PR2) INOP

(1) Meaning--Device indicated did not respond properly the last time the system tried to use it, or no traffic has been input on an UP broadcast channel for more than 30 seconds

(2) Action

(a) Check broadcast status and verify printers are on line, operating normally

(b) Turn on backup printers as necessary

(c) Check broadcast input

b. ! PR1 + PR2 DOWN hhmm

(1) Meaning--Both printers in a down status at the same time

(2) Action--Bring one printer up as soon as possible to avoid an overload condition

c. ! BCST INPUT SUSPENDED hhmm

(1) Meaning

(a) Computer system is in an overload condition and both printers are down.

(b) hhmm h = hour digit

m = minute digit

(2) Action--Reroute the broadcast to backup printers until one of the printers is up and the backlog is cleared

(a) Patch in the available low-speed units on the SB-1210 patch panel

d. ! BCST INPUT RESUMED hhmm

(1) Meaning--One printer is up and the system is out of overload condition

(2) Action--Reroute the broadcast channel(s) back to the NAVMACS system

e. ! PWR FAULT hhmm - RPL TIM

(1) Meaning--NAVMACS has resumed operation automatically following power failure

(2) Action

(a) Press the FAULT POWER/CLR switch on the UYK-20 control panel

(b) Replace TIM on CTTY by typing command:

.RPL TIM ddhhmmZ MON yr (X) (X)

(c) Check need for additions to WML

NAVMACS GLOSSARY

ACK	Indicates OTO message acknowledged by Net Control Station
ADD	Add command
AN/UYK-20	NAVMACS central processing unit; standard Navy minicomputer
ARQ	Automatic repeat request limit on Link transmissions; a system parameter
CAN	Cancel command
CANTCO	Cannot comply
CANTRAN	Cancel transmission received on incoming message
CID	Channel identifier
CGL	Command Guard List
CGL MATCH	Message addressed to addee on CGL
CLR	Clear command
CSN	Channel sequence number
CTTY	Control teletypewriter
CUP	Channel up command
CUDIXS	Common User Digital Information Exchange System
GARBLE	Unable to identify enough formal lines to screen broadcast messages
LK	Channel code for CUDIXS Link
LRL	Local Routing List printed on first page of each incoming message
MSL	Message summary log
NAK	Indicates OTO Not acknowledged by NECOS
Narrative Message	A standard naval message
NAVMACS	Naval Modular Automated Communications System
NECOS	Net Control Station
NON-ADDR	Broadcast message of no concern (nonaddressed)
OMN	CUDIXS Link output message number

OON	CUDIXS Link output OTO Number
OSRI	Originating station routing indicator
Parameter	A variable; a value that controls decisions in NAVMACS Operation
Primary Subscriber	A CUDIXS subscriber that can send narrative messages on the Link but cannot receive them
QRK	Threshold recognition command code; a system parameter
RPL	Replace command
RRM	Rerun mode command
SATCOM	Satellite communications
SID	CUDIXS subscriber identification number
Special Subscriber	A CUDIXS subscriber who receives narrative message traffic as well as sends it
SPP	System parameter page command code
SSN	Station serial number
Subscriber	A station that joins the CUDIXS Link
TIM	Command code for time in hours and minutes
TOF	Time of file
TOR	Time of receipt
TOT	Time of transmission
TRA	Command code for transmit message
WML	Wanted Message List
WML Match	Broadcast message on WML
???	Imperfect match on WML
$	Perfect match of CGL and message address on WML
!	MSL printout indicating operator alert

PROGRESS CHECK 13.2

Process NAVMACS Incoming Messages

DO NOT WRITE ON THIS PROGRESS CHECK--ANSWER THE FOLLOWING QUESTIONS ON A SEPARATE SHEET OF PAPER

1. What is the purpose of the TT-624 line printer?
2. What is the function of the AC POWER ON/OFF switch?
3. What is the function of the PAPER FAULT indicator?
4. What switch setting controls READY indicator illumination?
5. What is the CGL used for?
6. What is the purpose of the WML?
7. What actions are required to locate and retrieve missing messages?
8. What does the dollar sign indicate?
9. What action does the operator take when a message is incomplete?
10. What action does the operator take when advance routing messages?
11. What actions are received and/or taken by the operator when checking for special handling designators?
12. Which messages require logging of classification?
13. When do you start a new broadcast log?
14. When do you prepare a filler?
15. How do you file broadcast messages?
16. What operator action is required by the alarm ! BCST INPUT RESUMED hhmm?
17. What operator action is requied by the alarm ! DEVICE/CHANNEL CODE (PR1, PR2/BI1, BI2) INOP?

ASSIGNMENT SHEET 14.1

Introduction to Watch Station Qualifications;
Watch Station Qualification and Evaluation

INTRODUCTION

During the final two weeks of the course, you will be evaluated to determine your ability to function as part of a watch section in both sea and shore watch station positions.

LESSON TOPIC LEARNING OBJECTIVES

3.0 Given a practical application laboratory configured as a secure afloat or ashore communication center; controlled access to the space; classified material consisting of publications, instructions, cryptographic keying material, and crypotgraphic equipment; message drafts classified for training purposes only; stowage containers; burn bags; vistors' log; inventory sheets; and classification stamps and stamp pads, COMPLY WITH ALL SECURITY REGULATIONS GOVERNING CLASSIFIED MATERIAL including access to, handling, dissemination, storing, inventorying, and disposing of classified material, during the performance of watch station qualifications in accordance with the following publications: OPNAVINST 5510.1 and 5510.45, ACP 121 US SUPP-1, ACP 122, CMS 4, KAG-1, NTP 5, NTP 7, NTP 4, and NWP 4.

4.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, send and receive teletype equipment, DC and audio patch panels, crypto devices, converters, antenna patch panels, HF transmitters, HF receivers, UHF transceivers, and patch cords; SET UP FIVE COMMUNICATION SYSTEMS including the NOVEMBER, CHARLIE, GOLF, ROMEO, and SIERRA systems, in accordance with COMNAVTELCOMINST C2796.1. Each system must be set up and operational within 25 minutes.

5.0 Given a practical application laboratory configured as a secure afloat or ashore comunication center, COMPLY WITH ALL SAFETY PRECAUTIONS prescribed in current volumes of "Safety Precautions for Afloat Activities" and "Safety Precautions for Shore Activities", while performing Radioman tasks. Safety practices will be evaluated as a direct part of all laboratory and watch station activities.

6.0 Given a practical application laboratory configured as a secure afloat or ashore communication center, tapecutting equipment, send and receive teletypes, IBM Correcting Selectric III Typewriter, outgoing message drafts, DD-173 OCR Joint Messageform, Julian calendar, outgoing message log, broadcast checkoff log, broadcast files, file of incoming messages, central message log, command guard list, internal distribution guide, rubber stamps and stamp pads, DD-173 Template, communication center message file, general message file, blank fillers and Columbia file binders; PROCESS MESSAGE TRAFFIC AT WATCH STATION POSITIONS including tapecutter, outrouter, broadcast operator, inrouter, reproduction-distribution clerk, file clerk, and DD-173 OCR Joint Messageform preparation in accordance with the following publications: ACP 121, ACP 126, ACP 127, NTP 3, NTP 3 SUPP-1, NTP 4, NWP 4 or JANAP 126.

7.0 Given a practical application laboratory configured as a secure afloat or shore communication center, messages with corresponding tapes in ACP 126, Modified ACP 126 or JANAP 128 format, circuit logs, send and receive teletypes, cryptographic equipment, radiotelephone equipment, voice messages, NAVMACS V-2, command guard list tape, incoming link and broadcast messages, release program tape, internal distribution tape, NAVMACS V-2 parameter values, and a broadcast file; OPERATE COMMUNICATION SYSTEMS including radiotelephone, radioteletype, and NAVMACS V-2 Automated system in accordance with the following publications: ACP 100, ACP 112, ACP 113, ACP 121, ACP 126, ACP 127, ACP 131, JANAP 128, NTP 4, NTP 5, and NAVTELSYSIC 2D7.1D.

STUDY ASSIGNMENT

Review evaluation checklists following this lesson

NOTETAKING SHEET 14.1

Introduction to Watch Station Qualifications;
Watch Station Qualification and Evaluation

REFERENCES:

1. OPNAVINST 5510.1, Department of the Navy Information Security Program Regulation
2. COMNAVTELCOMINST C2796.1, Shipboard Communication Systems Quality Monitoring
3. SERVSCOLCOMSDIEGOINST 5510.1, Emergency Action Plan for Communication Security Material
4. SERVSCOLCOMSDIEGOINST 5100.1, Equipment Tag-out Bill
5. ACP 112, Task Organization Call Sign Book
6. ACP 112 Supp-1(A), Task Organization Call Sign Book
7. ACP 113, Call Sign Book for Ships
8. ACP 126, Communication Instructions Teletypewriter (Teleprinter)
9. ACP 131, Communication Instructions Operating Signals
10. JANAP 128, Automatic Digital Network Operating Procedures (AUTODIN)
11. NTP 3, Telecommunication Users Manual
12. NTP 3 SUPP-1, Plain Language Address Directory
13. NTP 4, Fleet Communication
14. NTP 5, Voice Communication
15. NTP 6 SUPP-1, Recommended Frequency Bands and Frequency Guide

NOTETAKING OUTLINE

A. Performance Evaluation

1. During the final two weeks of the course, you will be evaluated to determine your ability to function as part of a watch section in both sea and shore watch station positions

a. Watch stations simulate real-life communication center situations

(1) Enable you to put together the individual tasks you have learned in the classroom and through laboratory application

(2) Divided into three main areas

(a) Systems set-up (Sea watch stations only)

1. HF Multichannel Broadcast (November system)

2. Covered Full-Duplex HF Teletype (Golf system)

3. Covered Full-Duplex UHF Teletype (Charlie system)

4. UHF Wideband Secure Voice (Romeo system)

5. HF Narrowband Secure Voice (Sierra system)

(b) Systems (circuit) operation

1. Radiotelephone

2. Radioteletype

a. Task Group Orestes

A. Sea watch station area only

b. Primary Ship/Shore

c. Full Period Termination

(c) Message Processing

1. Inrouter

2. Reproduction/Distribution and File Clerk

3. Broadcast Operator

a. Sea watch station area only

4. Tapecutter

5. Outrouter

a. Sea watch station area only

6. DD-173 OCR Joint Messageform Preparation

(3) Security and safety procedures are an integral part of the performance tests

(4) The instructor will act as the watch supervisor and evaluator

b. Three simulated communication centers in operation

(1) USS STODDARD - Room 108

(2) USS MULLINNIX - Room 108

(3) NAVCOMMSTA SAN DIEGO - Room 120

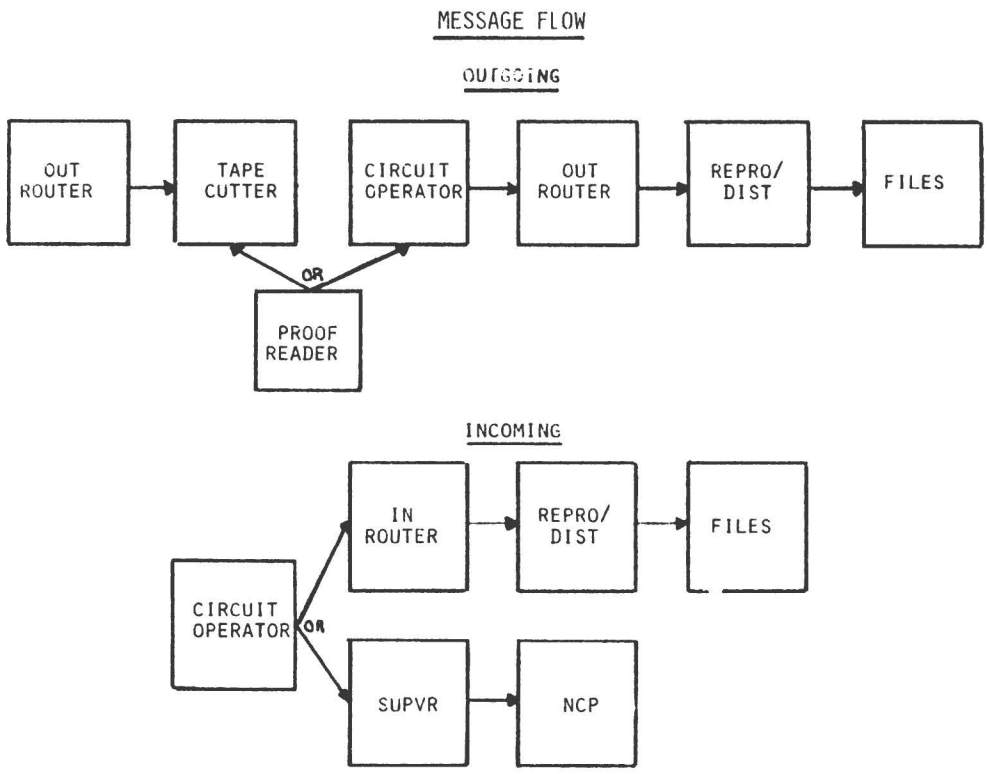


Figure 14.1-1

B. Performance Evaluation Administration

1. Each student will be evaluated at each watch station within one of the shipboard communication centers, and in the shore communication center

   a. An evaluation checklist will be used by the instructor for each shipboard/shore watch station position

   b. Each step on the evaluation checklist must be satisfactorily completed

      (1) Computer graded answer sheets will be used to record the performance of each student

      (2) Score achieved on the first formal evaluation will be entered into students record

         (a) Used for determining students final class standing

      (3) Student will be reevaluated on any missed step(s)

         (a) All steps MUST be satisfactorily completed before a student is evaluated in a different watch station

   c. As a performance evaluation is satisfactorily completed, you will be rotated to a different watch station position

d. Graduation from the course is dependent on satisfactory completion of ALL performance evaluations

2. SAFETY is paramount in all watch station performance activities

a. DO NOT attempt to fix any equipment

(1) Notify instructor of equipment failures

b. During orientation tour of the communication centers pay particular attention to

(1) Location of equipment power panels

(2) Location of main power panels

(3) Location of aids to remove personnel who are in contact with an energized circuit

(4) Location of fire extinguishers

C. Tour of Simulated Communication Centers

1. Upon completion of this lesson you will be given an orientation tour of the simulated communication centers

2. During this tour the instructor will

a. Demonstrate method of entering and exiting communication centers

b. Point out location of access lists and visitors log

(1) ONLY instructors are authorized to log visitors into the communication centers

c. Point out location of emergency equipment

(1) Including power panel locations

d. Point out watch station positions

(1) Including location of status boards for use in system set up and circuit operation

e. Demonstrate procedures for removing a person who is in contact with an energized circuit

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