

U.S. Department of  
Homeland Security  
**United States  
Coast Guard**



---

# **Auxiliary Specialty Course COMMUNICATIONS (AUXCOM)**



## **STUDENT STUDY GUIDE**

**PUBLISHED FOR EDUCATIONAL PURPOSES ONLY**

---

**COMDTPUB P16794.32B**





COMDTPUB P16794.32B

MAR 20 1997

COMMANDANT PUBLICATION P16794.32B

Subj: AUXILIARY COMMUNICATIONS SPECIALTY COURSE

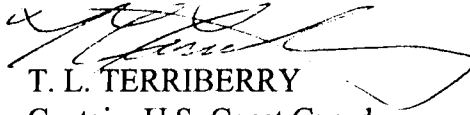
1. PURPOSE. This publication is intended for use as the Student Study Guide for the Auxiliary Communications Specialty Course. It is published for instructional purposes only and is not policy material.
2. ACTION. Area and district commanders, commanders of maintenance and logistics commands, and commanding officers of Headquarters units and assistant commandants for directorates shall ensure units under their command which oversee or direct auxiliary operations adhere to this publications provisions.
3. PUBLICATION AFFECTED. The Auxiliary Communications Specialty Course, Student Study Guide, Commandant Publication P16794.32A is canceled.
4. DISCUSSION. The Auxiliary Communications Specialty Course is a substantial revision of earlier text materials.
5. SUMMARY OF CHANGES. A summary of major changes to this course are listed below:
  - a. Incorporation of antenna criteria to include both HF and VHF with installation and safety information.
  - b. Updated FCC regulations which resulted from the Telecommunications Act of 1996.
  - c. Information on the Global Maritime Distress and Safety System (GMDSS), including implementation timetable and anticipated impact on recreational boating.
  - d. A complete update on Telecommunications Policy as reflected in the Operations Policy Manual, Commandant Instruction M16798.3D.

DISTRIBUTION – SDL No.134

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A									1	1			1	1	1	1		1	1							
B	15	8	20									1		2						2						
C	1	1		1	1				1													1			1	
D				1	1																					
E										2	2	2		1												
H																										

NON-STANDARD DISTRIBUTION: Auxiliary National Executive Committee, DC-O, DC-T and ANSC.

- e. A complete revision of message structure and content as reflected in the Coast Guard Telecommunications School student curriculum.
- f. A revision of logging requirements to allow for logging through the use of electronic devices.
- g. General information on Coast Guard communications organization, station equipment and watch standing.
- h. A new chapter on radio direction finding (RDF) which includes basic theory, equipment types, requirements and legal precautions.
- i. A revision of frequency requirements and availability is presented throughout the course.



T. L. TERRIBERRY  
Captain, U.S. Coast Guard  
Director of Operations Capability

## TABLE OF CONTENTS

### CHAPTER ONE - BASIC MARINE RADIOTELEPHONE SYSTEMS, NOMENCLATURE AND THEORY

A. Introduction.....	1-1
B. Communications Nomenclature.....	1-1
C. Characteristics of Radio Waves.....	1-4
D. Emission Designations.....	1-6
E. Types of Circuits.....	1-6
F. Radiotelephone Systems.....	1-7
G. Single Sideband.....	1-8
H. 156-162 MHz VHF-FM System.....	1-11
I. Citizens Band Service.....	1-13
J. Radio Repeaters .....	1-13
K. Antennas .....	1-14
L. Chapter One Study Questions .....	1-16

### CHAPTER TWO - VOLUNTARILY INSTALLED MARINE RADIOTELEPHONE STATION REGULATIONS

A. General.....	2-1
B. Station License.....	2-1
C. Operator License.....	2-2
D. Distress and Calling Frequencies.....	2-3
E. Ship to Ship Working Frequencies.....	2-4
F. Station Identification and Required Documents...	2-7
G. Adjustments to Radiotelephone Operation.....	2-8
H. Secrecy of Communications.....	2-8
I. Obscenity, Indecency and Profanity.....	2-9
J. Revocation and Suspension of License.....	2-9
K. Monetary Forfeitures (Fines).....	2-10
L. Summary of Radiotelephone Operating Practice....	2-11
M. Global Maritime Distress and Safety System .....	2-14
N. Chapter Two Study Questions .....	2-15

### CHAPTER THREE - CALLING AND ANSWERING PROCEDURES

A. Calling Procedure.....	3-1
B. Answering Procedure.....	3-3
C. Test Transmissions.....	3-4
D. Requests for Radio Checks.....	3-5
E. Chapter Three Study Questions .....	3-5

### CHAPTER FOUR - DISTRESS, URGENCY, AND SAFETY MESSAGES

A. General.....	4-1
B. Distress.....	4-1
C. Urgency.....	4-5
D. Safety.....	4-6
E. Emergency Position Indicating Radio Beacons ....	4-7
F. Automatic Distress Broadcasts.....	4-9
G. Chapter Four Study Questions.....	4-9

### CHAPTER FIVE - TELECOMMUNICATIONS

A. Auxiliary Communications System.....	5-1
B. Radio Facilities.....	5-2

## CHAPTER FIVE - TELECOMMUNICATIONS (Cont'd)

C. Radio Call Signs.....	5-6
D. Administration.....	5-8
E. Required Radiotelephone Communications.....	5-9
F. Citizens Band (CB) Radio .....	5-9
G. Radio Logs.....	5-9
H. Computers.....	5-10
I. Authorized/Required Frequencies.....	5-10
J. Inspection.....	5-13
K. Navy-Marine Corps Military Affiliate Radio System	5-14
L. Reporting Radio Violations.....	5-14
M. Auxiliary Communications Watchstanders.....	5-15
N. Responding to Mariners Requests for Information.	5-16
O. Communication With Civilian Emergency Services..	5-18
P. Frequency Request.....	5-18
Q. Chapter Five Study Questions.....	5-21

## CHAPTER SIX - MESSAGES

A. Introduction.....	6-1
B. Message Parts.....	6-2
C. Transmitting the Message.....	6-10
D. Receiving Messages.....	6-22
E. Sample Messages.....	6-27
F. Signalling.....	6-36
G. Example of Coast Guard Forms.....	6-36
H. Chapter Six Study Questions.....	6-42

## CHAPTER SEVEN - THE RADIOTELEPHONE LOG

A. Requirements.....	7-1
B. Chapter Seven Study Questions.....	7-4

## CHAPTER EIGHT - COAST GUARD COMMUNICATIONS

A. Introduction.....	8-1
B. Frequency Allocation.....	8-1
C. Coast Guard All-Station Broadcasts.....	8-1
D. Coast Guard Communications Organization - District	8-2
E. Coast Guard Communications Watchstanding.....	8-4
F. Chapter Eight Study Questions.....	8-4

## CHAPTER NINE - RADIO DIRECTION FINDING

A. Introduction.....	9-1
B. Applications.....	9-1
C. Precautions.....	9-2
D. Theory of Operation.....	9-3
E. Equipment.....	9-4
F. Operator Training.....	9-6
G. Chapter Nine Study Questions.....	9-6

## CHAPTER ONE - BASIC MARINE RADIOTELEPHONE SYSTEMS, NOMENCLATURE AND THEORY

### A. INTRODUCTION

1. General. Radio equipped vessels and aircraft and some fixed land, land mobile and direction finding stations of the Auxiliary normally operate their radios as private, non government stations. The first four chapters of this text are primarily addressed to the owners of facilities which are voluntarily equipped with 156-162 MHz VHF-FM and/or 2-30 MHz MF/HF-SSB radiotelephone equipment authorized by the Federal Communications Commission (FCC). Emphasis is placed on providing the student with a basic understanding of the operation of radiotelephone systems as well as informing them of its proper use.

### B. COMMUNICATIONS NOMENCLATURE

1. In order to become an Auxiliary Communications Specialist, it is necessary for the student to have a basic knowledge of the terminology and principles of electronic communications. For this reason, the following definitions of basic terms and a discussion of the basic principles are presented.
  - a. Cycle - a single complete reversal of an alternating current (see Fig 1-1). This involves a maximum rise in one direction and a return to zero followed by a maximum rise in the other direction and a return to zero.
  - b. Frequency - the number of cycles per second of an alternating current. The basic measurement of frequency is in Hertz (Hz).
  - c. Hertz - one Hz equals one cycle per second. 1000 Hz equals one kiloHertz (kHz), 1,000,000 Hz or 1000 kHz equals one MegaHertz (MHz), and 1,000,000 kHz or 1000 MHz equals one GigaHertz (GHz).
  - d. These units of frequency measurement honor Henrich Hertz, an early pioneer in radio. Again referring to Fig 1-1, the distance from A to B, from B to C, and from C to D each represent one cycle of the sine wave shown. Since this wave repeats itself three times in one second, the frequency of the wave is 3 cycles per second (Hz).

Table 1-1 Bands of the Frequency Spectrum

<u>Range</u>	<u>Band Name</u>	<u>Aux Interest</u>	<u>Emergency Freqs.</u>
3-30 kHz	Very Low Freq.(VLF)		
30-300 kHz	Low Freq.(LF)		
300-3000 kHz	Medium Freq.(MF)	2-3 MHz	2182 kHz
3-30 MHz	High Freq.(HF)	3-28 MHz	
30-300 MHz	Very High Freq.(VHF)	156-158 MHz	121.5, CH16, CH70
300-3000 MHz	Ultra High Freq.(UHF)		243 MHz*
3-30 GHz	Super High Freq.(SHF)		
30-300 GHz	Extremely High Freq.(EHF)		

\* Commonly referred to as the UHF distress frequency.

2. The frequency spectrum can be broken into two basic categories, audio frequencies (AF) and radio frequencies (RF). Frequencies which range from about 15 to 15,000 Hz are called audio frequencies because the vibrations of air particles at these frequencies are generally recognizable to the human ear. Frequencies greater than 15,000 Hz are generally referred to as radio frequencies because they are used in radio communications. The RF spectrum is further divided into bands of designated ranges of frequencies, as shown above. The Auxiliarist will primarily be interested only in the Medium, High and Very High Frequency bands.
3. Radio waves travel in space at the same speed as light - 300,000,000 meters or about 186,000 miles per second. These waves are set up by a RF current flowing in an antenna. The rapidly changing current sets up a magnetic field that alternates at the same rate as the electric field which, in turn, creates another electric field, and so on and so on. When this happens, the two fields move outward at the speed of light.
4. Suppose an RF current has a frequency of 2,000,000 Hz (2 MHz). The fields will go through a complete reversal (one cycle or Hz) in 1/2,000,000 of a second. In that same period of time, the wave will move  $300,000,000 / 2,000,000$  meters. By the time the wave has moved that distance, the next cycle has begun and a new wave has started out. The first wave, in other words, covers a distance of 150 meters before the beginning of the next one. This distance is called the wavelength.



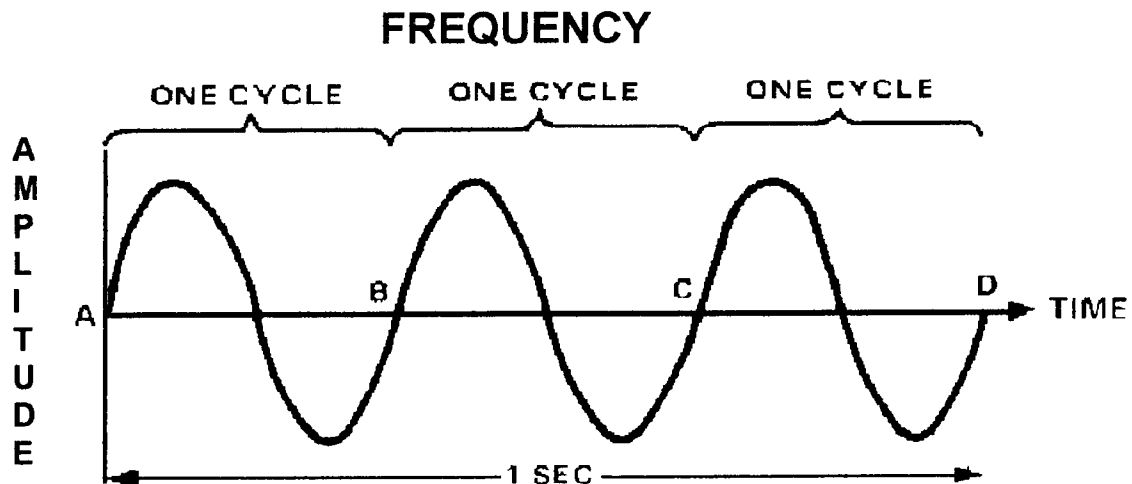


Fig 1-1 The Sine Wave, Cycles and Frequency

5. Wavelength is normally measured in meters. The relationship between wavelength and frequency is shown by the formula:  $\lambda = 300,000/f$

Where  $\lambda$  = wavelength in meters and  $f$ =frequency in kHz

6. The term amplitude is used to describe the size or magnitude of a wave measured from zero to its peak or greatest value.
7. When an RF signal or carrier is radiated from an antenna, it occupies a specific portion of the frequency band called bandwidth. When the carrier is modulated with audio (voice) the bandwidth is increased proportionally to the frequency and strength of the audio. For single sideband (SSB), the bandwidth is equal to the highest audio modulating frequency used. For frequency modulation (FM), the bandwidth is defined as the width of the band of frequencies where the radiated power appears. Stations transmit on an assigned frequency which is normally the center of the band of frequencies. The FCC requires that all radio transmitting equipment, including that used in both the 2-30 MHz SSB and 156-162 MHz VHF marine radiotelephone systems, be designed with a specific frequency tolerance to keep the carrier within a relatively few cycles of the assigned frequency.
8. For purposes of communications daytime is defined as the period extending from two hours after local sunrise until two hours before local sunset (at the transmitter, unless otherwise indicated). Nighttime extends from two hours prior to local sunset until two hours after local sunrise (at the transmitter, unless otherwise indicated).

### C. CHARACTERISTICS OF RADIO WAVES

1. Radio waves, like light, are a form of electromagnetic radiation. These waves can be reflected or refracted.
2. An electromagnetic wave is composed of moving fields of electric and magnetic force. The medium in which these waves travel has a marked effect on the speed with which they move. When the medium is empty space, the speed is 300,000,000 meters per second. (1 meter = 39.37 inches)
3. The intensity of a wave is inversely proportional to the square of the distance from the source. Thus, if in a uniform medium one receiving point is twice as far from the transmitter as another, the field strength at the more distant point will be just one-fourth the field strength at the nearer point. This inverse-distance law is based on the assumption that there is nothing in the medium to absorb energy from the wave as it travels. This is not the case in practical communication along the ground and through the atmosphere.
4. According to the altitudes of the paths along which they are propagated, radio waves may be classified as ionospheric waves, tropospheric waves, or ground waves.
  - a. Ionospheric or sky wave is that part of the total radiation that is directed toward the ionosphere. (The ionosphere is a region of rarefied and ionized atmosphere surrounding the earth at an altitude of from 50 to 250 miles.) Depending upon the variable conditions in that region, as well as upon the transmitting wave length, the ionospheric wave may or may not be returned to earth by the effects of refraction. See Fig 1-2.

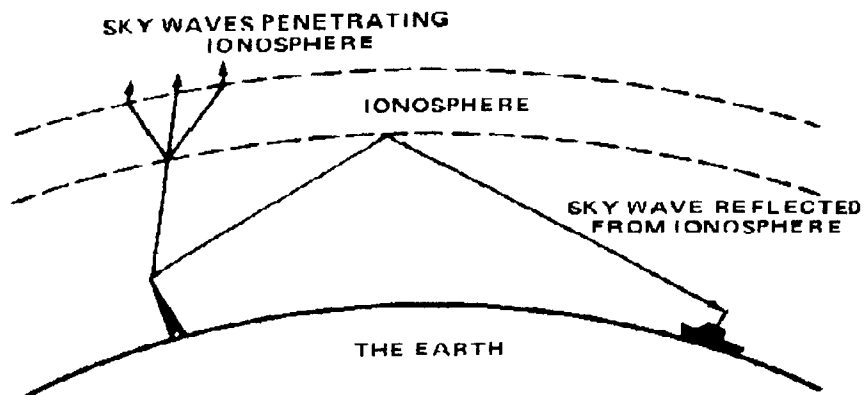


Fig 1-2 Sky Waves and the Ionosphere

- b. Tropospheric wave is that part of the total radiation that under goes refraction and reflection in the troposphere, such as may occur at the boundaries between air masses of differing temperatures and moisture content. The troposphere is the region of atmosphere at the earth's surface which varies from about five miles in height at the poles to about eleven miles at the equator.
  - c. Ground wave refers to waves which stay close to the earth and do not reach their destination by reflection or refraction from the ionosphere.
5. Except for distances of a few miles, nearly all communication on frequencies between 2 and 30 MHz is by means of the sky wave. The area between the end of the useful ground wave and beginning of reception of the sky-wave is called the skip zone, and the distance from the transmitter to the nearest point where the sky wave returns to earth is called the skip distance. (See Fig 1-3.) The extent of the skip zone depends upon the frequency and the state of the ionosphere, and also upon the height of the layer in which the refraction takes place.

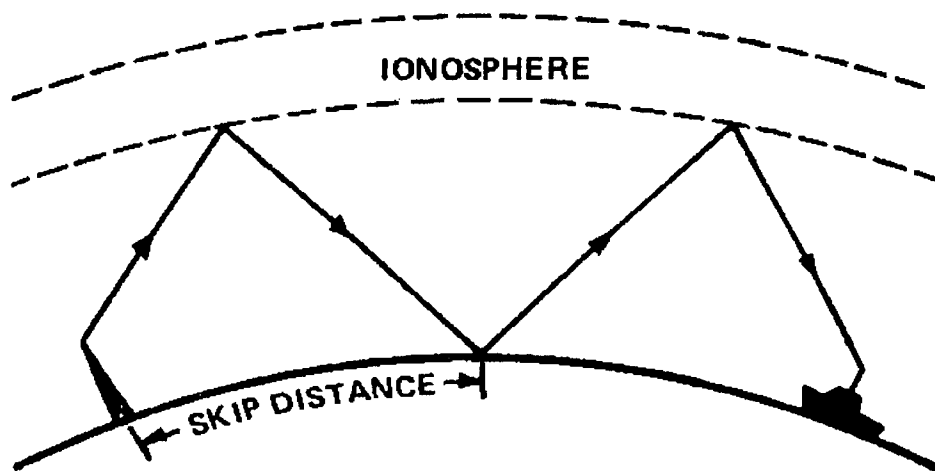


Fig 1-3 Skip Distance

6. Radio waves in the 2-30 MHz band permit reliable long range communications in the higher portions of the band during daylight hours. As nighttime approaches, the frequencies must be lowered in order to maintain long range communications. This is due to the changing state of the ionosphere caused by radiation from the sun.
7. Although the range of VHF-FM is referred to as line-of-sight, ranges of 25 miles or more can normally be obtained. The range is primarily dependent upon the height of the transmitting and receiving antenna.

8. A comparison of the propagation characteristics of the 2-30 MHz SSB and the 156-162 MHz VHF-FM marine radiotelephone systems is shown in Fig 1-4.

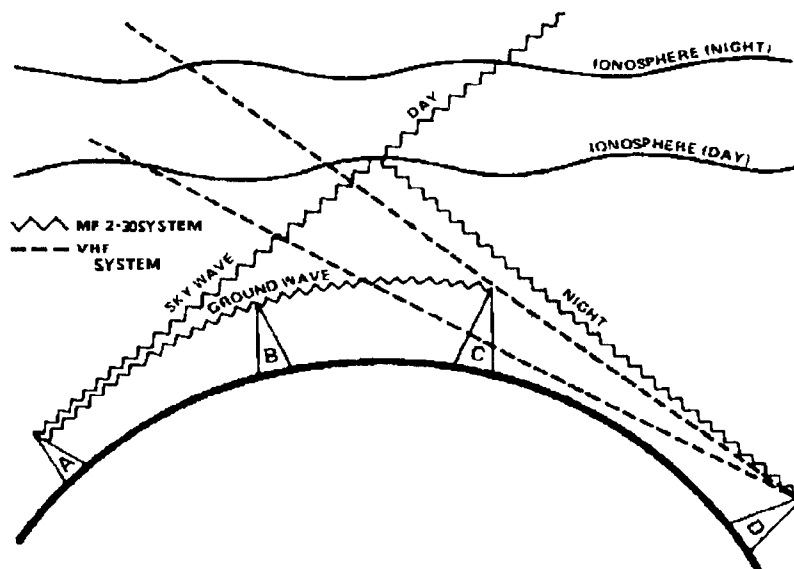


Fig 1-4. Comparison of Propagation Characteristics

#### D. EMISSION DESIGNATIONS

1. Emissions (modulation) are designated according to their classification and bandwidth. Classification is according to type of modulation, mode of transmission, and supplementary characteristics. The first three characters specify the bandwidth and the last three designate the emission type.
2. Examples of specific emission designations:
  - a. 2K8J3E Single Sideband; one 2.8 kHz channel with voice and suppressed carrier.
  - b. 16KF3E Frequency Modulated Voice; 16 kHz bandwidth.

NOTE: In each of the preceding cases, the assigned frequency is at the center of the bandwidth indicated.

#### E. TYPES OF CIRCUITS

1. A circuit is defined as an electronic path between two or more locations capable of providing one or more channels. The most basic of these, the SIMPLEX CIRCUIT, is one

which provides a single channel or frequency on which information flows in one direction at a time. All stations on the circuit are capable of transmitting and receiving information, but not simultaneously. A DUPLEX CIRCUIT on the other hand, is one which provides two channels or frequencies linking two different stations, allowing for the simultaneous exchange of information. (See Fig 1-5.)

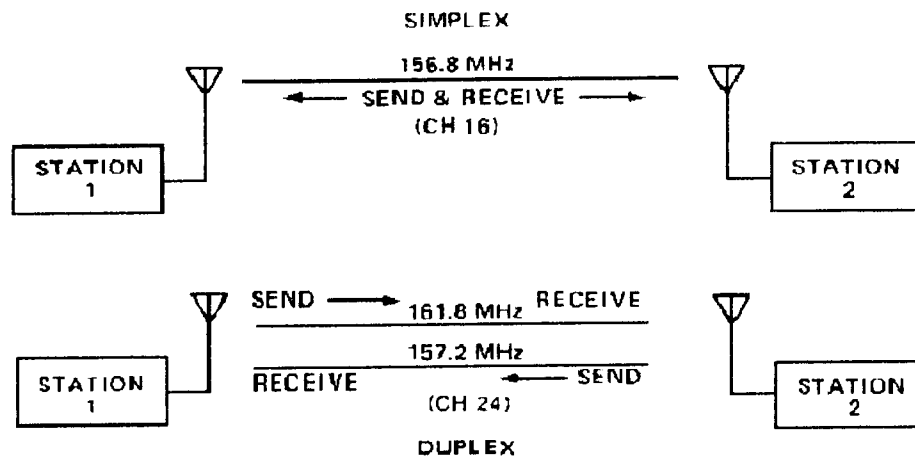


Fig 1-5 Types of Circuits

#### F. RADIOTELEPHONE SYSTEMS

1. General: There are two voice radio communication systems available to marine users which adequately serve dual requirements of both safety and utility. Both systems permit communications between ships and between ship and shore; they are commonly referred to as the Single Side Band (SSB) system and the VHF-FM (156-162 MHz) system.
2. Basic functions: Marine radiotelephone systems provide three basic communication functions. In order of priority, these functions are:
  - a. The Safety function is provided by internationally designating one frequency from each system for safety communications between all stations. 2182 kHz has been designated as the International Distress and Calling frequency in the 2-30 MHz system; similarly, 156.8 MHz (Channel 16) has been designated as the International Safety and Calling frequency for the VHF-FM radiotelephone system. The designated safety frequencies are used for calling and answering to insure that a maximum number of stations stand watch on these frequencies. Provision has been made in the SSB system and the VHF-FM system for shore station broadcasts of weather reports, notices to mariners, and information necessary to the safety of

navigation.

- b. The Operational function is concerned with the exchange of information pertaining to navigation, movement, or management of vessels.
  - c. The Business function is concerned with the economic and commercial matters relating directly to the purpose for which the ship is being used.
3. SSB System: The International Distress and Calling frequency 2182 kHz is the keystone in the SSB radiotelephone system. This relatively long-range frequency is widely guarded by ship and shore stations, and the chances of being heard in an emergency are excellent. The other frequencies available for use in this band have the same distinguishing characteristic of relatively long range. Congestion is a problem in many areas. This band is badly affected by both natural and man-made interference. Range is dependent on the RF power output of the transmitter; the higher the output the greater the range. Skip is most common in this band especially at night. This can be annoying, when a skip transmission drowns out your local contact. The FCC normally limits transmitter power to 150 watts in this system. Some commonly used frequencies in this system together with their use are:

<u>FREQUENCY</u>	<u>USE</u>	<u>AREAS</u>
2003 kHz	Ship-to-ship*	Great Lakes
2182 kHz	Distress-Safety-Calling	All
2638 kHz	Ship-to-ship*	All
2738 kHz	Ship-to-ship*	All less Great Lakes & Gulf of Mexico
2830 kHz	Ship-to-ship*	Gulf of Mexico

\*Commercial vessels may also use for business.

4. Numerous other frequencies are available in the 2-30 MHz band for SSB radiotelephony as well as digital selective calling, morse, facsimile, radio printer and data transmission. There are a large number of frequencies assigned for public correspondence (marine operators). Additionally, the frequencies 4125.0, 6215, 8291, 12290, and 16420 kHz have been specifically assigned on a simplex basis for handling distress and safety communications.

#### G. SINGLE SIDEBAND

1. When an RF carrier is modulated by a single audio tone, two additional frequencies are produced. These are the

sum and difference of the carrier and tone. When the modulating signal is made up of complex tones, as in speech or music, each individual frequency component of the modulating signal produces its own sum and difference frequencies. These side frequencies occupy a band of frequencies lying between the carrier frequency and the lowest produced frequency (difference), and the carrier frequency and the highest produced frequency (sum). (See Fig 1-6.) The frequency spread between the sum and difference frequency is the bandwidth of the modulated carrier.

2. Bands of frequencies containing the side frequencies are called sidebands. The sum frequency is the upper sideband (USB) and the difference frequency is the lower sideband (LSB) as shown in Fig 1-6. Note that both sidebands contain the same information. Therefore, if one of the sidebands is filtered out through various technical applications, and only the remaining sideband is transmitted to the distant station, the same information is received. Additionally, if the transmitting and receiving stations both know before hand the transmit frequency and which sideband will be used, the carrier can also be filtered out and only the desired sideband transmitted. This will permit all available power to be concentrated into the one sideband.

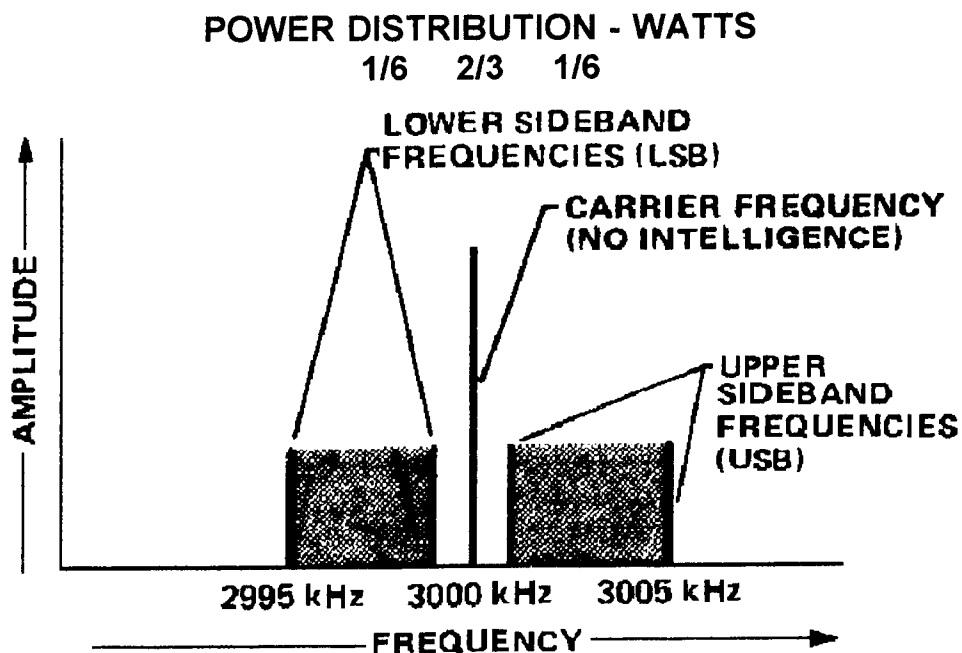


Fig 1-6 Sidebands Radiated when a 3000 kHz Carrier is Amplitude Modulated by a 1 to 5 kHz Complex Audio Signal

4. This is known as single sideband. In this mode, all power is transmitted in one sideband, instead of being divided between the carrier and both sidebands, as in commercial broadcasting (550 - 1600 kHz) which uses conventional amplitude modulation (AM). This provision amounts to an increase in power for the desired sideband. Of equal importance is that the bandwidth required for SSB voice carrier is approximately half that needed for conventional AM. (See Fig 1-7.)

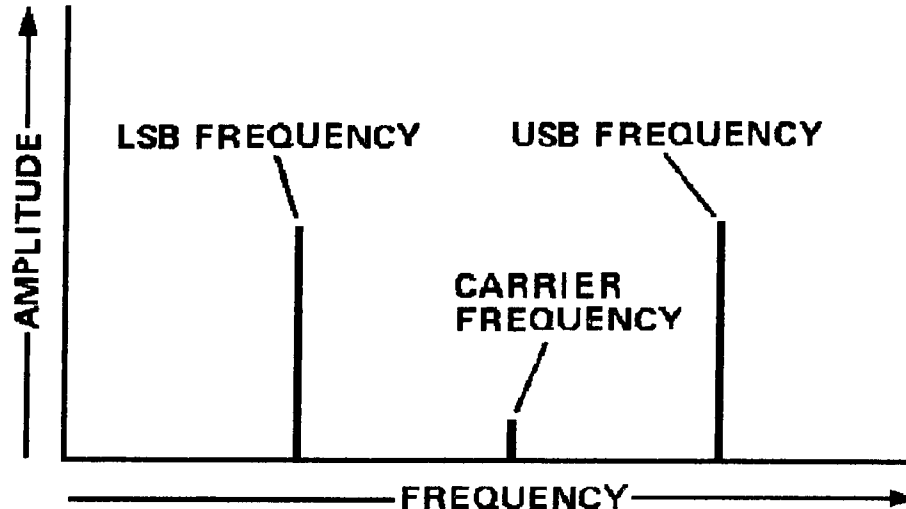


Fig 1-7 Single Sideband (SSB) Operation Showing Increased "Talk Power" Over Conventional Amplitude Modulation (AM).

5. The advantages of SSB over amplitude modulation (AM) are numerous and only a few are presented below.
  - a. Minimizing of distortion: In AM if the sidebands and carrier arrive at the receiver out of phase the signal heard can be fuzzy and distorted. Eliminating one sideband and suppressing the carrier in SSB almost eliminates that problem.
  - b. Increased effective power: In an AM system two thirds of the total power is in the carrier and one sixth in each of the sidebands. Converting to SSB will concentrate all the power in one sideband and have an end result of increasing the power of the modulation you wish to transmit by five sixths. This will greatly increase the range of a SSB transmission over an AM transmission for the same given power output.
  - c. Provision for double the number of channels: Converting from AM to SSB will cut the bandwidth in



half; thus, twice as many SSB channels can occupy a given part of the RF spectrum as AM channels.

- d. Reduction of interference: In AM systems the carrier is transmitted. When several carriers are present they will heterodyne with each other and the result will be squeals and howls in the loudspeaker. In SSB the carrier is greatly reduced (suppressed) with an equal reduction in the interference.

#### H. 156-162 Mhz VHF-FM SYSTEM

1. The VHF-FM (156-162 MHz) maritime mobile communication system in the United States offers a number of channels, including weather channels, which are closely controlled by the FCC. This system uses frequency modulation (FM) which is superior to AM but has a wider signal and uses more bandwidth. The system is located in the VHF band where more RF space is available to handle the wider signals. VHF communications are essentially "line of sight". The communication ranges realized are directly dependent on the height of the transmitting and receiving antennas while being relatively independent of transmitter power. Communication ranges of up to 25 miles are typical. The FCC limits transmitter power in this system to 25 watts output with the provision to reduce power to 1 watt for short range communications.
2. Channel 16 (156.8 MHz) of the VHF-FM marine band has been designated as a national distress, safety, and calling channel. Channel 09 (156.450 MHz) has been designated an alternate calling channel for recreational vessels. There are non-commercial channels available for the recreational boater to conduct operational communications as well as commercial channels for the tug, barge or marina operator to conduct their business. There are public correspondence channels for making regular telephone calls from a vessel. For further information concerning the regulations pertaining to channel usage in this system, reference should be made to the current FCC Rules and Regulations on marine communications. (47 CFR, Part 80)
3. A general list of the frequencies available in the 156-162 MHz VHF-FM system together with their normal use is below. NOTE: In some areas certain channels have been diverted to other use, such as the Vessel Traffic System (VTS), recreational vessel calling, etc. A check of the FCC regulations and/or with local boating interests should be made prior to operation to determine if additional channels are available and their use.

Frequency in MHz

<u>CHANNEL</u>	<u>SHIP</u>	<u>COAST</u>	<u>USE</u>
16	156.800	156.800	Distress and calling
06	156.300	156.300	Intership Safety
13	156.650	156.650	Bridge-to-bridge
15		156.750	Environmental
17	156.850	156.850	State Control
70	156.525	156.525	Digital Selective Calling
65	156.275	156.275	Port Operations for
66	156.325	156.325	intership and ship
12	156.600	156.600	to coast.
73	156.675	156.675	Same.
14	156.700	156.700	Same.
74	156.725	156.725	Same.
20	157.000	161.600	Same.
07	156.350	156.350	Commercial use for
09*	156.450	156.450	intership and ship
10	156.500	156.500	to coast.
11	156.550	156.550	Same.
18	156.900	156.900	Same.
19	156.950	156.950	Same.
79	156.975	156.975	Same.
80	157.025	157.025	Same.
67	156.375		Commercial use for
08	156.400		intership only.
77	156.875		Same.
88	157.425		Same.
68	156.425	156.425	Noncommercial use
09 *	156.450	156.450	intership and ship
69	156.475	156.475	to coast.
71	156.575	156.575	Same.
78	156.925	156.925	Same.
72	156.625		Intership only.
24	157.200	161.800	Public Corres-
84	157.225	161.825	pondence ship to
25	157.250	161.850	coast.(Telephone
85	157.275	161.875	channels)
26	157.300	161.900	Same.
86	157.325	161.925	Same.
27	157.350	161.950	Same.
87	157.375	161.975	Same.
28	157.400	162.000	Same.

\*Chan 9 is an alternate calling channel for recreational vessels.

## I. CITIZENS BAND SERVICE

1. The Citizens Band Service was established in 1958 with the intent of providing private, short-range radio communications between radio units belonging to and licensed under one licensee for the conduct of business or personal activities where no other means of communications was available. An example of this would be a doctor with CB equipment installed in both his office or home and in his automobile.
2. The popular Class D stations in the Citizens Band Service utilize 40 channels in the 27 MHz band. These stations may operate in the AM and SSB modes with a maximum power output of five watts. The 27 MHz Citizens Band is extremely crowded.
3. The Citizens Band Service has the following inherent limitations when compared with the 156-162 MHz VHF-FM and SSB radiotelephone systems:
  - a. No provisions exist for the timely broadcast of emergency weather and marine information.
  - b. No radio watch is required.
  - c. No protection from radio interference is provided.
  - d. No provision is made for foreign vessels or U.S. Government vessels to participate in the Citizens Band Service.
  - e. Power is limited to 5 watts.
4. For these reasons, reliance on the Citizens Band Service for safety purposes can, in many cases, provide the pleasure boater with a false sense of security. It is therefore imperative that the general public be, in no way, led to believe that the Coast Guard supports or encourages the use of Citizens Band for marine safety purposes.

## J. RADIO REPEATERS

1. Concept. A repeater is a combination of a VHF-FM receiver/transmitter coupled together with special circuitry to allow the transmitter to retransmit the signals heard by the receiver. Most marine operator public correspondence channels operate in this manner in that a monitoring station can hear both the vessel and the land based marine operator on one frequency. A repeater is located at as high an elevation as possible, usually 500 to several thousand feet, to provide wide area long distance coverage. Typically, coverage from one

handheld radio to another is less than 1 to 2 miles. With a repeater, coverage can be extended to more than 50 miles.

2. Auxiliary Use. A repeater needs two non-marine frequencies (duplex operation) to operate: one to listen on, called the input; and, one to transmit on, called the output. In addition to repeating signals on its frequencies, a repeater can also be equipped to provide many diverse services such as:
  - a. Interconnection to commercial telephone lines to permit telephone calls from mobile stations. (Autopatch)
  - b. Speed dialing services to frequently called numbers.
  - c. Retransmission of other simplex radio frequencies, such as marine channels, to allow remote monitoring.
  - d. Digital data operation with proper ancillary equipment.
3. OPERATION. A repeater acts as a long distance radio relay as well as a convenient net where Auxiliarists can communicate anytime. Many Auxiliarists will leave their repeater radio on all the time. They can "check in" with their call sign and often find another member monitoring the system. It is an excellent tool to coordinate DF net operations, CME stations, PE classes, and finding crews for patrols or special events. The usefulness of a repeater in emergency and disaster situations cannot be over emphasized.
4. AUTHORIZATION. Establishing and maintaining a repeater system is costly and requires long term support from dedicated qualified members. Repeaters also involve full time operation and special frequency assignments and authorization. Prior to any expenditures, a concept of operation should be coordinated with the Auxiliary National Staff, Operations Department, Telecommunications Division (DVC-OT). (See Chapter 5, paragraph B.1.g.)

#### K. ANTENNAS

1. The basic radio station consists of three major components. These are the power source, radio equipment and antenna system. All three are equally important to the successful operation of the station but the antenna system is possibly the most misunderstood. In shipboard HF operation the antenna is usually a long whip type antenna with a tuner at the transmitter. At land stations, the HF antenna is usually a wire type or a directional beam type antenna. Since numerous sizes and

types are available, they will not be discussed further in this text. Anyone desiring to install an HF antenna should consult with an experienced person to determine the best course of action.

2. The VHF antenna is, due the frequencies involved, much smaller than the HF antenna and usually can be installed without much difficulty. The key to VHF operation is the higher the antenna the farther the radio horizon and, hence, the greater the coverage. Shipboard VHF antennas are usually constructed of fiberglass and are rated by "gain" factors, such as 3, 6, or 9 db. The "db" is short for decibel and is a logarithmic expression of the gain increase over an antenna with a zero gain factor. VHF antennas can be constructed so that the power radiated from the antenna can be concentrated in a beam on a plane 90 degrees to the antenna. (Horizontal concentration from a vertical antenna). The higher the db gain the more the concentration but the more stable the antenna platform must be in order to have uniform coverage. Most sail boats are heeled over to some degree when underway and therefore most use 3 db antennas. Small power boats and runabouts usually have 6 db antennas and 9 db antennas are usually only found on large power boats. Figure 1-8 shows a theoretical representation of various gain factors.

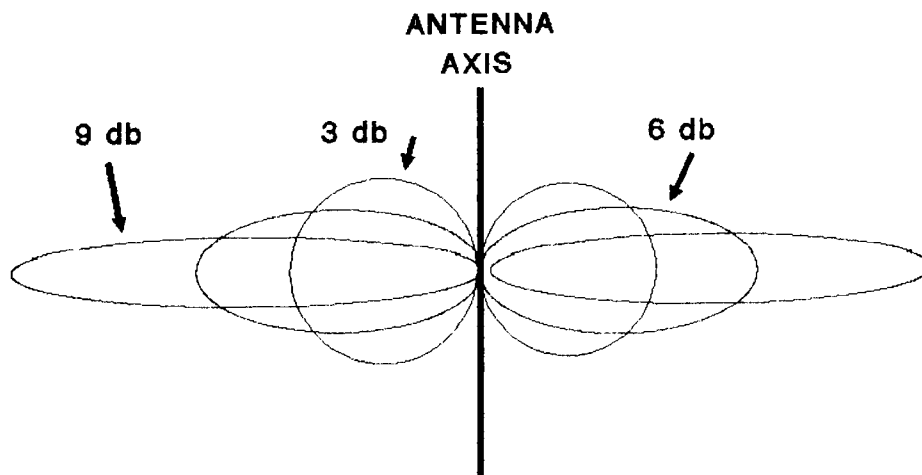


FIG 1-8 Vertical Antenna Gain Patterns

3. VHF antennas for land stations can be tailored to the local area of desired coverage. Directional antennas can be used but most stations use omni-directional antennas. Vessel antennas or antennas designed specifically for land use can be installed. Lightning protection should be included in any installation, especially on those antennas installed higher than surrounding objects. This can be accomplished in various ways with antennas

designed for land use being the most easily protected. Fiberglass antennas can be struck by lightning just as easily as metal antennas. Lightning arresters and a good grounding system are desired. However, the best lightning protection is to disconnect everything when not in use and do not activate the station during electrical storms.

4. The feed line, that is the coaxial cable between the radio and the antenna, is also a critical part of the antenna system. All feed lines have some loss or resistance to the RF energy. The amount is dependent on the type of cable and frequency being used. VHF marine antennas using the popular RG-58 cable will have a loss of 4 to 6 db per hundred feet of cable which may negate the entire gain factor of the antenna. Switching to a larger cable, such as RG-8 or RG-214, may reduce the line loss to 2 to 3 db without an appreciable increase in cost. Other feed lines are available which can reduce the loss to around 1 db but these are larger, bulkier and more costly. Feed lines should be routed in such a manner to avoid sharp bends or kinks. The condition of an antenna and feed line can be easily checked with a rather inexpensive testing meter called a Standing Wave Ratio (SWR) meter. Check with a more experienced person on the availability and use of an SWR meter if system testing is desired.
5. A final note of caution on antenna installations. Always locate the antenna and feed line away from power and telephone lines. Make sure that, should the antenna fall, it and the feed line will not come into contact with any other line that could result in electrical shock. Also, exercise extreme caution during installation to avoid accidental contact with lethal conductors.

#### L. CHAPTER ONE STUDY QUESTIONS

1. In communications nomenclature, the band named "very-high frequency" covers what frequency range?
2. Express 2.182 MHz in kilohertz.
3. What is the typical range of VHF-FM radio communications?

4. What is a most important characteristic of the VHF-FM frequencies?
5. What is the difference between Simplex and Duplex circuits?
6. Skip is most often found within what range of frequencies?
7. What is the SSB Distress and Calling frequency?
8. What is the VHF-FM marine Calling and Distress frequency?
9. The bridge tender will likely be listening on what channel?
10. After calling a commercial vessel on Channel 16, what are some of the working channels you could switch to?
11. Why is Class D Citizens Band unreliable for boaters?
12. What is a radio repeater?

13. List the three basic communications functions of the marine radiotelephone system in priority order.
14. What are the three major components of a radio station?
15. Lightning protection should be used with what type antennas?
16. What are some of the precautions that should be taken when erecting an antenna.



## CHAPTER TWO - VOLUNTARILY INSTALLED MARINE RADIOTELEPHONE STATION REGULATIONS

### A. GENERAL

1. This chapter summarizes the most significant rules which should be familiar to all licensees and operators of voluntarily installed ship radiotelephone stations. Rules for mandatory installations and special rules applicable only in small areas are not included. It must be understood that this rule digest and the paraphrased rules appearing elsewhere in this text may not fully agree with the current rules of the Federal Communications Commission (FCC).
2. The rules under which maritime communications operate are constantly being changed to increase safety at sea and utilize the latest technological advances in telecommunications. The Telecommunications Act of 1996 brought about sweeping changes in the telecommunications industry and allowed the FCC to make significant changes in marine radiotelephone regulations. Students are cautioned to check the accuracy of the material herein against the current edition of the complete FCC regulations on this subject, 47 CFR Part 80.
3. The textual material presented below is a summary of pertinent FCC regulations, either in force or proposed at the time of printing. As a convenience in locating the in force rules in CFR 47, Part 80, the applicable rule numbers are indicated at the beginning of the pertinent text.

### B. STATION LICENSE

#### 1. Authorization

- a. 80.13. A voluntarily installed radio station in the maritime service may operate, in US waters and in accordance with the current FCC rules and regulations, VHF-FM, Radar and/or EPIRB's without a license. Satellite, MF/HF SSB or operation in non-US waters requires a valid station license issued by the FCC.
- b. 80.15. A station license may be granted, except to an alien, on submission of a properly completed formal application (and payment of any required fee).

#### 2. Posting of License

- a. 80.405. When a station license, if required, cannot be posted as in the case of a recreational boat

without an enclosed wheelhouse, it must be kept on board and be readily available for inspection.

3. Application

- a. 80.23. Appropriate application forms may be obtained from any FCC field office. Applications must be filed with the FCC per the instructions noted on the form. The appropriate fee must accompany those applications requiring payment of fees.

4. Interim Station License

- a. If an applicant needs to operate the ships radiotelephone station while waiting for FCC action on a formal application, the applicant may immediately generate an Interim Ship Station License by following the instructions on the application form.

5. Renewal of Station License

- a. Application for renewal of a station license should be made within 90 days but not later than 30 days before its expiration date. Timely application for renewal will assure the licensee of uninterrupted operation. Failure to receive a renewed license in a timely manner should be brought to the attention of the FCC.

C. OPERATOR LICENSE

1. Persons Operating in the Domestic Maritime Service

- a. There is no requirement for an operator license on voluntary installed marine radiotelephone stations in the continental United States. However, if foreign operation is anticipated, the Restricted Radiotelephone Operator Permit is available and should be obtained.

2. Persons Authorized to Adjust Equipment

- a. 80.169. All adjustments or tests of the radiotelephone transmitter must be performed by or under the immediate supervision and responsibility of a person holding a First or Second Class Radiotelegraph or a General Radiotelephone Operator License, who shall be responsible for the proper operation of the station equipment.

#### D. DISTRESS AND CALLING FREQUENCIES

##### 1. 2-30 MHz Band

- a. 80.369. For ship radiotelephone stations operating in the 2-30 MHz band, the distress and calling frequency is 2182 kHz. An efficient listening watch must be maintained on 2182 kHz when the radio is on and is not in use for communications on another frequency.

##### 2. 156-162 MHz Band

- a. 80.369. For ship radiotelephone stations operating in the VHF band, the distress, calling and safety frequency is 156.800 MHz (Channel 16). An efficient listening watch is required on this frequency at all times when the radio is on and is not in use for other communications. 156.450 MHz (Channel 9) is an alternate calling frequency for recreational vessels and may be watched in lieu of Channel 16 when used for calling. 156.525 MHz (Channel 70) is the distress frequency for DSC equipped vessels and is monitored in lieu of Channel 16.

##### 3. Use of Distress and Calling Frequencies. The operational use of 2182 kHz and 156.800 MHz is restricted to:

- a. 80.314. Distress signal MAYDAY, followed by a distress message.
- b. 80.327. Urgency signal PAN PAN, followed by a very urgent message directly concerning safety.
- c. 80.329. Safety signal SECURITY, followed by a brief message concerning the safety of navigation or an important meteorological warning.
- d. 80.369. Call to or reply to a specific station. (Channel 9 may also be used for recreational boats.)
- e. 80.116. Brief operating signals, such as agreeing on a working channel.

##### 4. Time Limitations

- a. 80.116. Calling a particular station shall not continue for a period of more than 30 seconds in each instance. If you do not hear the called station reply, wait at least 2 minutes before calling again. When a station does not reply to a call sent three times at intervals of 2 minutes, cease calling and do not call again until after an interval of 15 minutes. However, this 15 minute interval may be reduced to 3 minutes if the channel is unused and no interference

will result. These limitations do not apply in emergency situations.

5. Establishing Communications

- a. 80.116. Ship stations first establish contact on 156.800 MHz or 2182 kHz and then switch to an appropriate working frequency. However, when a calling station knows that the called station is maintaining a listening watch on an authorized working channel, or alternate calling channel, contact may be initiated on that channel. (ie: Public Correspondence Channels, bridge tenders)

E. SHIP TO SHIP WORKING FREQUENCIES

1. 2-30 MHz Ship-to-Ship Working Frequencies

- a. 80.373. The following frequencies are currently assigned for intership "working" primarily for safety communication and secondarily for certain operational business purposes:
  - (1) 2003 kHz, for use exclusively in the Great Lakes.
  - (2) 2082.5 kHz, all areas except the Great Lakes.
  - (3) 2142 kHz, Pacific Coast south of latitude 42 degrees north, on a daytime basis only.
  - (4) 2203 kHz, Gulf of Mexico.
  - (5) 2638 kHz, for use in all areas.
  - (6) 2738 kHz, for use in all areas except the Great Lakes and the Gulf of Mexico.
  - (7) 2830 kHz, for use in the Gulf of Mexico.
- b. All emissions in the U.S. are now made on single sideband (SSB) using the upper sideband. The emission type designator for this type transmission is J3E.

2. 156-162 MHz Ship-to-Ship Working Frequencies

- a. The following frequencies are currently assigned for use in all areas in the VHF 156-162 band:
  - (1) 156.300 MHz (Channel 6) for Intership Safety. This channel is mandatory on ships. International VHF-FM ship-to-ship frequency. (Internationally used for on scene Search and

Rescue (SAR) communications.)

- (2) 156.800 MHz (Channel 16) for Distress, Safety and Calling. This channel is mandatory.
  - (3) 156.425 MHz (Channel 68) for intership and ship-to-coast use.
  - (4) 156.625 MHz (Channel 72) for intership use.
  - (5) 156.450 MHz (Channel 9) for intership and ship-to-coast use. (Shared with commercial vessels.) Also designated as an alternate calling channel for recreational vessels.
  - (6) 156.525 MHz (Channel 70) for Digital Selective Calling (DSC).
- b. 80.371; 80.373; 80.379. Lists other intership and ship-to-coast channels available for specific use; such as port operations and public correspondence.

### 3. Use of Ship-To-Ship Working Frequencies

- a. Use of the intership "working" frequencies in the SSB band (2-30 MHz) requires a license and is authorized solely for communications pertaining to safety, operational, and ship business purposes. Permissible use is further limited according to the class of vessel, as explained below.
- b. The PRIMARY use of these intership frequencies by all ship radiotelephone stations is for safety communications, defined as follows:
  - (1) 80.5. Safety communications: the transmission or reception of distress, alarm, urgency, or safety signals, or any communications preceded by one of these signals, or any form of radio communication which, if delayed in transmission or reception, may adversely affect the safety of life or property.
- c. On a SECONDARY basis, on condition that interference is not caused to safety communication, these intership frequencies may be used by commercial vessels for OPERATIONAL COMMUNICATIONS concerning the navigation, movement, or management of a ship or ships. These terms are defined as follows:
  - (1) NAVIGATION: Piloting of the vessel.
  - (2) MOVEMENT: Information and necessary communication relative to when and where the

ship will move or be moved as, for example, a rendezvous with tugs for a berthing assignment.

- (3) MANAGEMENT: Obtaining the necessary supplies for the ship, limited to immediate needs and the scheduling of repairs to the ship or changes in the movement of the ship as a result of those repairs.
- d. Noncommercial intership frequencies in the VHF-FM (156-162 MHz) band are subject to the following conditions of use:
- (1) 156.425 MHz (Channel 68) is available to fulfill the wide scope of needs of noncommercial boats. It should not be used in lieu of channels allocated for Distress, Calling, and Safety or those allocated for Port Operations or Public Correspondence.
  - (2) 156.625 MHz (Channel 72) is available, on an interim basis, for noncommercial intership communications during localized fleet operations during a cruise or rendezvous.
- e. All transmissions on an intership working frequency between two or more stations, engaged in any one exchange of signals or communications with each other, shall take place on only one frequency (simplex operation). This requirement, however, is waived in the event of an emergency whenever interference or limitation of equipment prevent simplex operation.
- f. When you cannot use VHF and must use SSB, remember that an FCC license is required, an assigned call sign must be used, and that you share the 2-30 MHz frequencies with other ship stations worldwide. It is obvious that unless each one of the multitude of users of these shared frequencies exercises restraint and common sense, the circuits will easily be reduced to an intolerable confusion and made useless for their legitimate purposes. Because of the propagation characteristics of these frequencies, your transmissions may seriously interfere with other stations thousands of miles away even though you are not able to contact or are not plainly heard by another relatively close station. The only solution, other than transferring your operations to the VHF band, is to:
- (1) Use your transmitter only when necessary and only for authorized types of transmissions.

- (2) Use the lowest power output required to maintain contact.
- (3) Keep your transmissions short.
- (4) Announce your call sign clearly.
- (5) Habitually treat other users with courtesy.

4. Time Limitation of Ship-to-Ship Working Frequencies

- a. 80.116. Any one exchange of communication between any two ships on an intership working frequency shall not exceed 3 minutes in duration after the two stations have established contact by calling and answering.
- b. 80.116. Subsequent to such exchange of communications on the intership working frequencies in the 2-30 MHz band, these frequencies shall not be used again for communications between the same two stations until 10 minutes have elapsed.
- c. The foregoing time limitations are not applicable in the event of an emergency involving safety.

F. STATION IDENTIFICATION AND REQUIRED DOCUMENTS

1. Identification of Station With Permanent License

- a. 80.102. All transmissions shall be identified by a voice announcement in the English language of the FCC station's assigned call sign. This identification shall be made:
  - (1) At the beginning and the end of each communication with any other station.
  - (2) At the beginning and the end of each transmission for any other purpose.
  - (3) At intervals not exceeding 15 minutes whenever transmission is sustained for a period exceeding 15 minutes.

2. Identification of Station Without a License

- a. A ship station, such as a recreational vessel without SSB, which does not require a permanent license, will utilize the name of the vessel as its call sign and operate as outlined in paragraph 1 above.

### 3. Required Documents

- a. 80.13. A station license, if required, issued by the FCC, must be carried on the vessel. One ship station license will be granted for operation of all maritime services transmitting equipment on board a vessel.
- b. A copy of the station license must be posted at the operating position. However, if this is not feasible, a copy must be kept aboard that is readily available to the operator.

### G. ADJUSTMENTS TO RADIOTELEPHONE EQUIPMENT

#### 1. Responsibility for Proper Technical Operation

- a. The station licensee is responsible for the proper technical operation of the equipment. All transmitter adjustments or tests that may effect the proper operation of the station must be made under the supervision and responsibility of a person holding a First or Second Class Radiotelegraph or a General Radiotelephone Operator License. For this reason, it is important to only use a properly licensed and reliable technician.

#### 2. Requirements for Proper Radio Ground Connection

- a. Effective operation of the antenna system of a SSB shipboard installation depends on an adequate radio ground connection. This is usually obtained by making a connection directly to metallic hull vessels or installing a ground plate on the hull of non-metallic vessels. Usually a corrosive-resistant metal surface of at least 12 square inches, mounted below the waterline and connected to the radio ground terminal, will suffice. VHF stations usually utilize antenna systems that do not require grounding systems.

### H. SECRECY OF COMMUNICATIONS

#### 1. Divulgence of Communications Prohibited

- a. 80.88. The station licensee, vessel master, radio operator, or any person who may have knowledge of the radio communications must observe the secrecy requirements of the Communications Act and the Radio Regulations.
- b. Obviously, the above requirement of secrecy does not apply to radio communications relating to ships in distress, nor to any broadcast intended for use by the general public. It does apply, however, to all other communications. These statutory secrecy



provisions cover messages addressed to a specific station or to a person via such a station. For example, calls made on public correspondence channels by other vessels and overheard by your station should not be divulged nor can the knowledge thereby gained be used.

I. OBSCENITY, INDECENCY, AND PROFANITY

1. Prohibited

- a. When two or more ship stations are communicating with each other, they are talking over an extensive party line. Users should always bear this fact in mind and assume that many persons are listening. These listeners include family members who are monitoring in order to hear other family members or relatives on board vessels at sea. All users therefore have a compelling moral obligation to avoid offensive remarks. They also have a strict legal obligation, inasmuch as the U.S. Criminal Code makes it a criminal offense for any person to transmit communications containing obscene, indecent, or profane words, language, or meaning. Fines of not more than \$10,000 or imprisonment for not more than 2 years can be imposed.

J. REVOCATION AND SUSPENSION OF LICENSE

1. Revocation of Station License or Authorization

- a. Use of a radio station may be revoked for:

- (1) Willful or repeated violation of or willful or repeated failure to observe any provision of the Communications Act or any rule or regulation of the Commission authorized by a treaty ratified by the United States.
- (2) Willful or repeated failure to operate substantially as set forth in the regulations.
- (3) Violation of or failure to observe any cease and desist order issued by the Commission.
- (4) False statements knowingly made either in the application for a license or in any statement of fact which may be required pursuant to such application.
- (5) Conditions coming to the attention of the Commission which would cause it to refuse to grant a license on an original application.

## 2. Suspension of Radio Operator License

- a. A radio operator license is not required for domestic operation in the VHF-FM band. However, a minimum of a Restricted Radiotelephone Operator Permit is required for voice communications below 30 Mhz (SSB) and for international voyages. The operator license may be suspended if the FCC has sufficient proof that the operator has violated any provision, act, treaty, or convention binding the United States or any regulation promulgated by the FCC. This is not limited to but includes the following:
  - (1) False or deceptive signals, including false MAYDAY's.
  - (2) Superfluous or obscene communications.
  - (3) Malicious or willful interference.
  - (4) Willful damage or permitting radio apparatus or installations to be damaged.
  - (5) Obtaining or attempting to obtain, or assisting another to obtain a license by fraudulent means.

## K. MONETARY FORFEITURES (FINES)

### 1. Offenses Against Licensee and Operator

- a. In addition to any of the penalties already stated, both the licensee and the person operating the station, if they are not the same person, may be fined for the following offenses:
  - (1) Operation of a radio station without proper station identification at the times and in the manner prescribed.
  - (2) Transmission of a false call sign or a false distress call or message.
  - (3) Transmission of unauthorized communications on any frequency designated as a distress or a calling frequency.
  - (4) Operation of a radio station so as to interfere with any distress call or distress message.

### 2. Offenses Against the Licensee Only

- a. The licensee only may be fined for the following offenses:

- (1) Operation of a radio station on a frequency not authorized by the FCC for use by such station, including operation with a frequency deviation beyond tolerances in FM installations.
- (2) Failure to attenuate spurious emissions of a radio station to the extent required.
- (3) Operation of a radio station with power in excess of that authorized.
- (4) Use of a radio station to transmit unauthorized communications.
- (5) Operation of a radio station with a type of emission not authorized.
- (6) Operation of a radio station with transmitting equipment not authorized by the FCC.
- (7) Failure to respond to a written official communication from the FCC.

### 3. Amount of Fines

- a. Fines are imposed for willful or repeated violations of the types listed above. The second offense for the same violation is sufficient to constitute a repeated violation. A fine can be as much as \$100 for each separate instance of a repeated violation. There are certain maximum amounts for multiple offenses within 90 days prior to the date of notice of apparent liability (i.e., \$500 for the licensee and \$400 for the operator if it is a different person from the licensee). Additionally, it is now a felony offense to knowingly and willfully cause the U.S. Coast Guard to respond to false calls for help. Fines of up to \$20,000 and imprisonment of up to five years can be levied against individuals convicted of this felony.
- b. The FCC completes its legal responsibility for notifying you of these fines when it mails a notice to the last address of record. The burden is on the licensees to keep the FCC informed of their latest addresses. This is important if they wish to take advantage of any defense procedures provided subsequent to a notice of apparent liability for a forfeiture.

## L. SUMMARY OF RADIO TELEPHONE OPERATING PRACTICE

### 1. Licensee Responsibility for Transmission

- a. A radio operator should remember that the station being operated must be authorized by the FCC. In order to prevent interference and give others an opportunity to use the airways unnecessary calls and transmissions should be avoided. Always remember that radio signals normally travel outward in all directions and can be heard by anyone in range of the station.
- b. Before making a call the operator should listen on the channel to insure that interference will not be caused to a communication already in progress. An operator should be courteous at all times.
- c. Station identification should be made clearly and distinctly so that unnecessary repetition of call signs is avoided and to enable other stations to clearly identify all calls.
- d. While a radio transmitter is in a public place it should be attended at all times by a qualified operator or the transmitter should be made inaccessible to unauthorized persons, especially children or any irresponsible persons.
- e. When radio communications at a station are unreliable or disrupted due to static or fading, it is not a good practice for the operator to continuously call other stations in attempting to make contact because his calls may cause interference to other stations that are not experiencing static or fading.

## 2. Operator's Voice Technique

- a. Radiotelephone operators should make an effort to train their voice for the most effective communication. The voice should be loud enough to be distinctly heard by the receiving operator and not too loud to be distorted and difficult to understand. Operators should articulate their words and avoid speaking in a monotone as much as possible. The working distance range of the transmitter is affected to some extent by the loudness of the speaker's voice. Speaking too low will decrease the effective range, however, speaking too loud can result in distortion and reduce the effective range to zero. In noisy locations the operator may cup their hands over the microphone to exclude background noise. Normally, the microphone is held from 2 to 6 inches from the operator's lips.

### 3. Proper Use of Prowords and Abbreviations

- a. It is important in radiotelephone communications that operators use familiar and well known words and phrases in order to insure accuracy and clarity. Many communications services use the same operating prowords as the military. For example, ROGER means "I have received all of your last transmission"; WILCO means "Your last message received, understood, and will be complied with"; OUT means "My transmission is ended and I do not expect an answer"; and, OVER means "My transmission is ended and I do expect an answer". These are some of the prowords used in marine communications.

### 4. Use of the Phonetic Alphabet

- a. Often in radiotelephone communications a "phonetic alphabet" or word list is useful in identifying letters or words that may sound like other letters or words of different meaning. For example, "group" may sound like "Scoop", or "bridge" may sound like "ridge". A phonetic alphabet or word list consists of a list of 26 words each beginning with a different letter for identifying that particular letter. Spelling the word "group" phonetically could be "Golf, Romeo, Oscar, Uniform, Papa" and would be transmitted as "Group, I spell Golf, Romeo, Oscar, Uniform, Papa."

### 5. Proper Radiotelephone Procedures

- a. When testing a radiotelephone transmitter the operator should clearly indicate that it is a test. The station call sign or name of the vessel, as required by the rules, should be clearly spoken. Tests should be as brief as possible.
- b. If a radio station is used only for occasional calls, it is a good practice to test the station regularly. Regular tests may reveal defects or faults which, if corrected immediately may prevent delays when communications are necessary. Caution should be observed by persons testing a station to make certain their test message will not interfere with other communications in progress on the same channel.
- c. Radio checks with the Coast Guard on VHF-FM Channel 16 are strictly forbidden unless specifically authorized. Licensed FCC technicians and/or FCC inspectors are authorized to conduct radio checks with the Coast Guard when conducting station repairs or inspections.

- d. Technical repairs or adjustments to radiotelephone communication stations are made only by or under the immediate supervision and responsibility of operators holding the appropriate FCC technician license.
- e. When an operator in charge of a radiotelephone station permits another person to talk on the air they must remember that they are still responsible for the proper operation of the station.

M. GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM

1. The Global Maritime Distress and Safety System (GMDSS) is a worldwide maritime system that was first defined in the 1974 International Maritime Organization (IMO) Convention for the Safety Of Life At Sea (SOLAS). The GMDSS is designed to provide efficient and effective emergency and safety communications and to disseminate marine safety information to all ships regardless of location or atmospheric conditions.
2. Implementation of the GMDSS started in 1988 and is scheduled to be fully operational by 1 February 1999. It will incorporate the resources of numerous MF, HF, VHF and satellite communications systems operating in a Digital Selective Calling (DSC) mode. When operated in conjunction with a position determining system, GMDSS will allow for automatic transmission and reception of distress calls that will identify the vessel and give its location. The system will also provide for exchanges of navigational and meteorological warnings and forecasts and any other urgent safety messages related to ships.
3. When IMO implemented the GMDSS, the regulations only covered ships subject to the SOLAS Convention which are primarily cargo and passenger ships on international voyages. GMDSS (DSC) uses 156.525 MHz (Channel 70) as the VHF distress and calling frequency. In 1999 these vessels will no longer have a requirement to monitor Channel 16 and many are already neglecting the radio watch on Channel 16.
4. Since the GMDSS does not address the voluntarily installed radio station the majority of the implementation has passed the recreational boater unnoticed. The Coast Guard foresaw the 1999 situation whereby one group of maritime interests would be using the GMDSS and the rest would still be using the existing system; without an effective means to communicate with each other. To alleviate the situation, the Coast Guard petitioned the Federal Communications Commission (FCC) to require all marine radios sold in the U.S. after February 1997 to have a minimum DSC capability. To date (1996), the FCC has not ruled on this request.

5. The present VHF FM system is expected to stay in place for some time and co-exist with the digital system. Radios will be capable of operating in both modes. There are various Coast Guard sponsored working groups evaluating methods of system interoperability, the establishment of additional marine radio channels and the impact of recent FCC regulatory changes, as well as keeping the boating public informed.
6. While the GMDSS will probably not have much impact on inland recreational boating, any waters where international shipping is present will be effected to some extent. Auxiliary communicators should be aware of the GMDSS and what it means to boating interests in their area. Possibly, some Auxiliary radio facilities may be required to operate dual, FM and DSC, facilities in order to properly support the Coast Guard mission.

N. CHAPTER TWO STUDY QUESTIONS

1. A non-government radio station may only be operated in accordance with the rules and regulations issued by whom?
2. All ship radiotelephone stations using the 2-30 MHz marine band must maintain an efficient listening watch on which frequency?
3. An efficient listening watch is required on which VHF channel and under what conditions?
4. When a station does not respond to a call sent three times at intervals of two minutes, you are permitted to call again after how many minutes have passed?
5. What is the procedure to initiate a call on a ship's radiotelephone?
6. Is it always necessary to establish contact on a calling channel?

7. What is the PRIMARY use of intership frequencies?
8. After two ship stations have established contact on an intership working frequency, FCC regulations limit the maximum duration of the communication to what period of time?
9. All transmitter adjustments to marine radiotelephone transmitters must be performed by or under the immediate supervision of a person holding which class of license?
10. The secrecy provision of the communications regulations does not apply to what type of communications?
11. What are some of the violations which can cause license revocation or fines against the licensee or operator?
12. What are desirable voice characteristics when speaking on a radio?
13. Under what conditions are radio checks with the Coast Guard allowed on Channel 16?
14. Use of VHF-FM Channel 16 is restricted to what type of communications?
15. Which SSB working frequency can be used in all areas?
16. What is the VHF distress and calling frequency for the GMDSS?



## CHAPTER THREE - CALLING AND ANSWERING PROCEDURES

### A. CALLING PROCEDURE

#### 1. General

- a. Operators must listen carefully to make certain the frequency is not busy. They will usually hear voices on busy frequencies and an intermittent busy tone from most public correspondence stations.
- b. Operators usually establish contact on the Distress and Calling frequencies (Channel 16 or 2182 kHz) or the Alternate Calling Channel (Channel 9) and then immediately shift to an agreed upon working channel. Calls may also be initiated on a working channel if it is known that the other station maintains a listening watch on that frequency in addition to the distress frequency (Channel 16 or 2182 kHz).
- c. When the conversation is to take place through a commercial shore station, initial contact should be made on the working channel for that station. This procedure will reduce congestion on the calling and distress frequencies.

#### 2. Ship-to-Ship Calls

- a. The operator must listen first to make sure the frequency is not busy. When not busy, the transmitter is turned on (usually by depressing the microphone push-to-talk button) and the operator should say:

**"(Station called) THIS IS (Name and FCC call sign of calling vessel) OVER. "**

**NOTE:** Since the deregulation of the vessel rules by the FCC, most recreational vessels do not have assigned FCC call signs. Therefore, that part of the call would be omitted and only the name of the vessel used.

- b. When necessary, the identification of the station called and the call sign and name of the calling vessel may each be repeated not more than three times. The entire calling transmission must not last longer than 30 seconds. If contact is not established, the call may be repeated two times after an interval of at least 2 minutes between each call. The reply to the initial call should be:

**"(Name of calling vessel) THIS IS (Name and call sign of vessel) OVER. "**

- c. Upon receiving the reply to the original call, the calling vessel should use "Abbreviated Form" (omitting call sign) since communications already have been established, and the calling vessel should also designate the local working frequency desired, by saying:

**"(Name of vessel called) THIS IS (Name of calling vessel) SHIFT TO (Local working frequency desired) THIS IS (Name and call sign of vessel calling) OVER. "**

- c. When the working frequency designated is satisfactory, the reply should be:

**"THIS IS (Name and call sign of vessel called) WILCO OUT. "**

- e. Upon receiving the above reply the calling vessel will shift to the working frequency and listen to make certain the frequency is clear. The vessel called also shifts to the agreed frequency and stands by for the originator of the call to say:

**" (Name of vessel called) THIS IS (Name and call sign of vessel calling) OVER. "**

The reply should be as follows:

**"(Name of calling vessel) THIS IS (Name of vessel called) OVER. "**

- f. The following reply, which omits the name of the vessel called, should be:

**"THIS IS (Name of calling vessel), (The message), OVER. "**

- g. After receiving the transmission, the called vessel replies:

**"THIS IS (Name of vessel called), (The response to the message), OVER "**

- h. A response is made if necessary, otherwise the transmission is concluded as follows:

**"THIS IS (Name and call sign of calling vessel) OUT."**

- i. The called vessel will also conclude with:

**"THIS IS (Name and call sign of called vessel) OUT."**

- j. The operator should not say "Returning to Channel 09 or 16 or 2182 kHz" at the conclusion of the communication. This action is legally required and thus understood without saying.
- k. By following the above procedure, calling should be completed within the 30 second legal time allotment.
- l. Contact with the same vessel shall not be established again until at least 10 minutes have elapsed.

### 3. Ship-to-Shore Public Correspondence (Telephone) Calls

- a. The operator should listen to make certain the telephone channel is not busy. If clear, the transmitter may be turned on and the operator should say:

**" (Coast station desired) MARINE OPERATOR, THIS IS (Name and call sign of calling vessel) OVER.:**

- b. When the Marine Operator responds, the vessel operator should say:

**"(THIS IS (Name and call sign of calling vessel) I WISH TO PLACE A CALL TO (Name city, state, area code and telephone number desired) OVER. "**

- c. The Marine Operator will usually confirm the name and number and determine billing procedures and then initiate the telephone call.

- d. Upon conclusion of the telephone call the vessel operator should say:

**"THIS IS (Name and call sign of calling vessel) OUT. "**

- e. Billing is usually accomplished with a credit card, collect call or marine telephone charge account.

### B. ANSWERING PROCEDURES

#### 1. General

- a. Vessels can be reached only when the receiver is turned on and tuned to the frequency on which calls are expected.
- b. The receiver used to maintain watch on Channel 09 or 16 or 2182 kHz will provide for the receipt of calls from other stations. To receive calls on

other frequencies, an additional receiver will be required in order to maintain a listening watch on the distress and calling frequencies. Many modern radio units have a dual watch or scanning capability which allows more than one frequency to be monitored and negates the requirement for a second receiver.

### C. TEST TRANSMISSIONS

#### 1. Procedures

a. When making a test transmission, every precaution must be taken so as not to cause interference. Reduce power output as much as possible.

b. Before making the test, the operator must listen to make certain that the frequency on which the test is to be made is not busy. Permission must also be obtained prior to making the test by saying:

**"THIS IS (Name and call sign of vessel testing) TEST."**

c. If the reply "WAIT" is not received, the operator may proceed with the test by saying:

**"THIS IS (Name and call sign of vessel testing) TESTING (A number count or other phraseology which will not confuse listeners, of not more than 10 seconds duration; followed by the name and call sign of the testing vessel and its general location), OUT" .**

d. Tests shall not be repeated on 156.8 MHz and 2182 kHz until after a wait of at least 5 minutes; on other frequencies, a waiting period of at least 1 minute is required.

e. An operator does not use figures in response to a request for a radio check, such as "I HEAR YOU FIVE BY FIVE".

f. An operator should always use the word "HEAR" rather than "READ". The word "READ" implies a check by meter.

g. The increasing volume of requests for radio checks directed to Coast Guard stations has placed a potentially dangerous burden on safety and distress frequencies. FCC rules and regulations have made it illegal to call a Coast Guard station on 2182 kHz or 156.8 MHz for a radio check unless tests are being conducted by an FCC representative or when qualified radio technicians are installing equipment or correcting deficiencies in the station radio equipment. In these cases the test shall be identified as "FCC" or "TECHNICAL" and logged accordingly.

D. REQUESTS FOR RADIO CHECKS

1. Procedures

- a. The request for a radio check must be made directly to a specific station, using procedure prescribed in paragraph A.2.a. through i. of this Chapter, for establishing contact.
- b. After properly establishing contact and moving to a working channel, the operator should say:  
  
"HOW DO YOU HEAR ME?"
- c. The proper response to such a request is as follows:  
  
"I HEAR YOU LOUD AND CLEAR", or  
  
"I HEAR YOU WEAK BUT CLEAR", or  
  
"YOU ARE LOUD BUT DISTORTED", etc.
- d. An operator does not respond to a call which is not directed to his station.

E. CHAPTER THREE STUDY QUESTIONS

1. What should you do before calling a station?
2. Are the calling procedures on the 2-30 MHz band the same as on the VHF marine band?
3. At the end of your call to establish radio contact with another vessel what proword should be used?

4. When calling another station, what are the time limitations on the initial call and any additional calls?
5. Who may conduct radio checks with the Coast Guard?
6. Who may answer requests for a radio check?

## CHAPTER FOUR - DISTRESS, URGENCY, AND SAFETY MESSAGES

A. GENERAL. Most communications, as specified by the rules and regulations, are usually directed to a specific station. Distress, urgency and safety messages, due to the nature of the messages, are exceptions and are broadcast to any and all stations. Also, as noted in Chapter 2 an FCC call sign may not be required depending on current regulations.

### B. DISTRESS

#### 1. Procedures

- a. The distress call should be transmitted on 156.8 MHz or 2182 kHz only when grave or imminent danger exists and immediate assistance is required. The distress call is preceded by the radiotelephone alarm signal (if available). The distress call is made by transmitting the word "**MAYDAY**" spoken three times. The word "**MAYDAY**" is from the French expression "m'aider" which means "HELP ME."

#### 2. Responsibility

- a. The distress call shall be sent only on the authority of the person responsible for the vessel or aircraft station. Common sense shall prevail as to who shall assume responsibility in the absence or incapacitation of the person initially responsible.

#### 3. Priority

- a. The distress message has absolute priority over all other transmissions. Stations hearing a distress call immediately cease transmission and continue to listen and record the distress message.

#### 4. Radiotelephone Alarm Signal

- a. The international radiotelephone alarm consists of two audio tones of different frequencies transmitted alternately. This signal shall be transmitted continuously for at least 30 seconds but shall not exceed 1 minute. The purpose of this special signal is to attract the attention of persons on radio watch and to actuate automatic devices which will sound an alarm. It shall be issued only to announce that a distress call or message is about to follow or announce the loss of a person overboard.

5. Distress Call

- a. The distress call shall be transmitted as follows:

<u>TRANSMISSION</u>	<u>MEANING</u>
"MAYDAY MAYDAY MAYDAY"	The Distress Call
"THIS IS".....	Proword for FROM
"(Name and FCC call sign of distressed vessel, transmitted three times)"	Calling Station

- b. The radiotelephone distress call and message transmission shall be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

6. Distress Message

- a. IF ABOARD VESSEL IN TROUBLE - give:

- (1) WHO you are (your vessel's name and call).
- (2) WHERE you are (your vessel's position in latitude/longitude or true bearing and distance in nautical miles from a widely known geographical point - local names known only in the immediate vicinity are confusing).
- (3) WHAT is wrong (nature of distress or difficulty, if not in distress).
- (4) Kind of assistance desired.
- (5) Number of persons aboard and condition of any injured.
- (6) Present seaworthiness of your vessel.
- (7) Description of your vessel - length, type, cabin, masts, power, color of hull, superstructure, and trim.
- (8) Your listening frequency and schedule.

- b. IF OBSERVING ANOTHER VESSEL IN DIFFICULTY - give:

- (1) Your position and the bearing and distance of the vessel in difficulty.
- (2) Nature of distress or difficulty, if not in distress.
- (3) Description of the vessel in distress or difficulty, if not in distress (see Item 7



above).

- (4) Your intentions, course, and speed, etc.
- (5) Name of your vessel, your radio call sign, listening frequency, and schedule.

7. Distress Call and Message Example

156.8 MHz or 2182 kHz

**"MAYDAY, MAYDAY, MAYDAY, THIS IS BLUE DUCK, Whiskey Zulu 6789, BLUE DUCK, Whiskey Zulu 6789, BLUE DUCK Whiskey Zulu 6789.**

**MAYDAY BLUE DUCK Whiskey Zulu 6789, 133 DEGREES TRUE 12 MILES OFF MONTAUK POINT, STRUCK SUBMERGED OBJECT, TAKING WATER FAST, ENGINE DISABLED, ESTIMATE CANNOT STAY AFLOAT MORE THAN ONE HOUR. FOUR PERSONS ON BOARD, BLUE DUCK IS A 26 FOOT CABIN CRUISER, WHITE HULL. MAINTAINING CONTINUOUS WATCH ON 2182. THIS IS BLUE DUCK Whiskey Zulu 6789, OVER."**

8. How and When to Acknowledge Receipt of a Distress Message

- a. Vessels shall defer acknowledgement of distress messages for a short interval in areas where reliable communications with the Coast Guard or coast station exist, to permit these stations to acknowledge first. However, message acknowledgement shall be made by a vessel in the immediate vicinity of the distressed vessel when prompt acknowledgement is not made by the Coast Guard, coast station, or other vessels nearer the distress vessel.
- b. Acknowledgement of receipt of a distress call shall be as follows:

**"MAYDAY"** (One time)  
**"(Name and call sign of distress vessel, transmitted three times)"**  
**"THIS IS"**  
**"(Name and call sign of acknowledging vessel, transmitted three times)"**  
**"RECEIVED MAYDAY"**

The acknowledgement vessel shall transmit the following information after a momentary pause to ensure that it is not interfering with another vessel better situated to render immediate assistance:

**"MAYDAY"**  
**"(Name and call sign of distressed vessel)"**  
**"THIS IS"**

"(Name and call sign of acknowledging vessel)"  
"(Position of acknowledging vessel by latitude and longitude or true bearing and distance from known charted geographical point)"  
"(Speed of acknowledging vessel and the estimated time it will require to reach the distressed vessel)"

9. Distress Acknowledgement Message Example

**"MAYDAY BLUE DUCK, Whiskey Zulu 6789, BLUE DUCK, Whiskey Zulu 6789, BLUE DUCK, Whiskey Zulu 6789, THIS IS WHITE WHALE, Whiskey Xray 9876, WHITE WHALE, Whiskey Xray 9876, WHITE WHALE, Whiskey Xray 9876, RECEIVED MAYDAY."**

- a. Following momentary delay to permit stations which might be closer to the distressed vessel to acknowledge, the following is transmitted:

**"MAYDAY BLUE DUCK Whiskey Zulu 6789, THIS IS WHITE WHALE, Whiskey Xray 9876 WE ARE 9 MILES FROM MONTAUK LIGHT ON A BEARING OF 82 DEGREES, 10 MILES FROM YOUR POSITION ON A COURSE TO YOU OF 175 DEGREES. OUR SPEED IS 12 KNOTS, WILL REACH YOU IN 50 MINUTES, THIS IS WHITE WHALE, Whiskey Xray 9876 OVER."**

10. Distress Communications

- a. Distress communications consist of all messages relating to the immediate assistance required by the distressed vessel.
- b. Each distress communication shall be preceded by the distress signal "MAYDAY".
- c. The vessel in distress or the station in control of distress communications may impose silence on any station which interferes, by transmitting the following:

**"SEELONCE MAYDAY"** (Pronounced "C-LONCE MAYDAY")

- d. Silence may also be imposed by any other station which believes it essential, by transmitting the following:

**"SEELONCE DISTRESS"** (Pronounced "C-LONCE DISTRESS")  
(Name and call sign of station imposing silence).

11. Transmission of Distress Message by Vessel or Coast Station not Itself in Distress

- a. A vessel or shore station which learns that a vessel is in distress shall transmit a distress message in

any of the following cases:

- (1) When the vessel in distress is not itself in a position to transmit the distress message.
- (2) When a vessel or a shore station considers that further help is necessary.
- (3) When, although not in a position to render assistance, it has heard a distress message which has not been acknowledged.

b. In such cases, the transmission shall consist of:

The radiotelephone alarm signal (whenever possible)  
**"MAYDAY RELAY, MAYDAY RELAY, MAYDAY RELAY"**  
**"THIS IS"**  
"Name and call sign of vessel or shore station,  
spoken three times."

c. When a vessel transmits a distress under these conditions, it shall take all necessary steps to contact the Coast Guard.

## 12. Termination of Distress

a. When distress traffic has ceased, or when silence no longer necessary on the frequency used for distress traffic, the station in control shall transmit on that frequency a message to all stations as follows:

**"MAYDAY"**  
**"HELLO ALL STATIONS HELLO ALL STATIONS HELLO ALL STATIONS"**  
**"THIS IS"**  
"(Name and call sign of the station terminating the distress)"  
"(The time)"  
"(Name and call sign of vessel in distress)"  
**"SEELONCE FEENEE"** (Pronounced "C-LONCE FEE-NEE")  
(The words Seelonce Feenee are spoken phonetically for correct pronunciation of the French words meaning Silence Finished.)

## C. URGENCY

### 1. Procedures

a. In radiotelephone, the urgency signal consists of the word **"PAN PAN"** (pronounced "PAWN PAWN") spoken three times, and indicates that the calling station has a very urgent message concerning the safety of a ship, aircraft of other vehicle, or the safety of a person. This call should be made on 156.8 MHz or 2182 kHz.

## 2. Responsibility

- a. Responsibility for transmission of the urgency message shall be the same as that indicated for the distress message.

## 3. Priority

- a. The urgency message shall have priority over all other communications except distress and shall be recorded by all stations hearing the message.

## 4. Urgency Message Example

- a. On 156.8 MHz or 2182 kHz:

**"PAN PAN, PAN PAN, PAN PAN, THIS IS DOLPHIN WHISKEY ZULU 2345, 3 MILES EAST OF BARNEGAT LIGHT, HAVE LOST MY RUDDER, AM DRIFTING TOWARD SHORE AND REQUIRE A TOW, SEVEN PERSONS ON BOARD, DOLPHIN IS A 32 FOOT CABIN CRUISER, GREEN HULL, WHITE DECK HOUSE. THIS IS DOLPHIN WHISKEY ZULU 2345 OVER"**

## D. SAFETY

### 1. Procedures

- a. The safety signal in radiotelephone consists of the word "**SECURITY**" (pronounced SAY-CUR-EE-TAY) spoken three times and indicates that the station is about to transmit a message concerning the safety of navigation or giving important meteorological warnings. Where practical, the safety message is sent on a working frequency, following the call on 156.8 MHz or 2182 kHz.
- b. Auxiliarists on patrol in areas where Coast Guard radio is not available should prepare and broadcast SECURITY messages as required, with the Auxiliary call sign being used. In areas where Coast Guard radio coverage is available, the information for the broadcast should be forwarded to the Coast Guard station for its information and decision as to whether or not to broadcast the message.

### 2. Responsibility

- a. Responsibility for transmission of the safety message shall be the same as that indicated for the distress and urgency messages.

### 3. Priority

- a. The safety message shall have priority over all

transmissions except distress and urgency. All stations hearing the safety signal shall listen to the safety message until they are satisfied that the message does not concern them.

#### 4. Safety Message Example

- a. On 156.8 MHz or 2182 kHz:

**"SECURITY, SECURITY, SECURITY, THIS IS BARBARA ANN WHISKEY ZULU 3456 SHIFT TO (a local working channel) FOR SAFETY MESSAGE. THIS IS BARBARA ANN WHISKEY ZULU 3456 OUT"**

- b. On local working channel:

**"SECURITY, SECURITY, SECURITY, THIS IS BARBARA ANN WHISKEY ZULU 3456, A LOG APPROXIMATELY 20 FEET LONG 2 FEET IN DIAMETER IS ADRIFT OFF HAINES POINT IN THE POTOMAC RIVER. THIS IS BARBARA ANN WHISKEY ZULU 3456 OUT"**

#### E. EPIRBs

1. Emergency Position Indicating Radio Beacons (EPIRBs) and Emergency Locator Transmitters (ELTs) are small emergency radios that may be fully automatic, semi-automatic, or hand activated. EPIRBs are passive devices for transmitting maritime distress alerts; ELTs are for aeronautical use. Six classes of EPIRBs are currently in use by U.S. vessels.

- a. Class A EPIRBs operate on 121.5 and 243 MHz and are automatically activated. They transmit for at least 48 hours. Uninspected ocean going vessels are encouraged to carry EPIRBs if the travel over 20 miles from shore or a safe refuge.
- b. Class B EPIRBs operate on 121.5 and 243 MHz and are manually activated. They transmit for at least 48 hours. Both Class A and B EPIRBs are being phased out in favor of the newer and more accurate Category I and II EPIRBs.
- c. Class C EPIRBs operate on VHF-FM. They transmit a 1.5-second alert signal on Channel 16 (156.800 MHz) to call attention to a distress, then transmit a 15-second locating signal on Channel 15 (156.750 MHz) to allow homing. Both signals repeat periodically, and are designed after the international two-tone alarm signal. They automatically transmit for 24 hours and then shut off. They can then be manually reactivated. The FCC will phase out the use of Class C EPIRBs by 1 February 1999.

- d. Class **S** EPIRBs operate on 121.5 and 243 MHz and are used in survival craft. These EPIRBs can be automatically or manually activated and (optionally) be required to float. These EPIRBs may provide either continuous or intermittent operation. If intermittent, the duty cycle is 50% for a 2 minute period.
  - e. Category I 406 MHz Satellite EPIRBs are automatically activated, float free devices operating in the 406 MHz band internationally allocated for satellite EPIRBs. These devices are coded with vessel information and when activated this coded information will be transmitted via the satellite system to the appropriate Rescue Coordination Centers. These devices provide accurate location information worldwide. Similar to Class **A** EPIRBs in usage, SOLAS and other classes of vessels (e.g. fishing vessels) will be required to carry Category I 406 MHz Satellite EPIRBs. These EPIRBs transmit for at least 48 hours.
  - f. Category II 406 MHz EPIRBs are similar to the Category I devices except the Category II EPIRBs are manually activated. Similar to the Class **B** EPIRBs in usage, vessels are encouraged to replace aging 121.5 MHz EPIRBs with the 406 MHz Satellite EPIRBs. These EPIRBs transmit for at least 48 hours.
- 2. Only Category I and II EPIRBs transmit an EPIRB identification which is used to access the registration database maintained by the National Oceanic and Atmospheric Administration (NOAA). The information from this database, coupled with the much more accurate (with respect to the Class **A**, **B**, or **S** EPIRBs) location allows the Coast Guard to immediately commence a response to the alert. Therefore, it is very important that all 406 MHz EPIRBs be registered with NOAA and that this information be kept up to date at all times. There is no cost to the user to register an EPIRB in the NOAA database.
  - 3. False alerts from EPIRBs that are activated inadvertently or falsely are a significant problem to the Coast Guard SAR authorities. Each alert must be acted on until it is determined that it is not a genuine distress case. Through a cooperative agreement with the Federal Communications Commission (FCC), the Coast Guard routinely refers cases involving the non-distress activation of an EPIRB (e.g., as a hoax, through gross negligence, carelessness or improper storage and handling) to them for prosecution. However, the Coast Guard has suspended forwarding non-distress activations of properly registered 406 MHz EPIRBs to the FCC, unless activation was due to hoax or gross negligence. These

cases are not routinely reported because they are less costly to prosecute due to the database information and, also, as an incentive to users to ensure that their EPIRB is registered.

- F. AUTOMATIC DISTRESS BROADCASTS. In recent years there have been various innovations of automatic distress broadcasts. These have included prerecorded distress messages with alarm signals which only required the location and nature of distress to be added. Additionally, under the GMDSS, DSC incorporates a general distress broadcast capability that will automatically alarm other DSC radios and contains a digital identifier of the distressed station. DSC units, interfaced with a positioning system, like GPS, will also automatically broadcast the position of the distress station. DSC distress broadcasts are sent on VHF-FM Channel 70 (156.525 MHz). All of these automatic systems, however, perform the same function as the basic system; to notify any and all stations that an emergency situation exists and to solicit assistance.

G. CHAPTER FOUR STUDY QUESTIONS

1. Who has responsibility for issuing a distress call?
2. Name the three words, any one of which may be used to precede a broadcast to any and all vessels and stations?
3. You hear a distress broadcast and the nearby Coast Guard station does not answer, what action should you take?
4. The vessel in distress or the station in control of distress communications may impose silence on any station that interferes by transmitting what?
5. When a MAYDAY situation is in progress, any other station which believes silence is essential transmits what?

6. What is the urgency signal?
7. What precedes an announcement of a message to be transmitted concerning the safety of navigation?
8. What is the priority order for distress, urgent and safety messages?
9. What class EPIRB's transmit an identification and on what frequency?



## CHAPTER 5 - TELECOMMUNICATIONS

- A. AUXILIARY COMMUNICATIONS SYSTEM. The Auxiliary communications system consists of Auxiliary fixed land, land mobile and radio direction finding (RDF) stations which the director accepts as radio facilities. It also includes those boats and aircraft that have radios. Auxiliarists may not use any single radio for more than one facility. A radio facility is operational if it passes the facility inspection, the owner offers it for use, and the director accepts it.

### 1. Definitions.

- a. A **fixed land radio** facility is radio equipment which an Auxiliarist permanently operates from a fixed location (home, garage, office, etc.). It may or may not have direction finding (RDF) capabilities. A **transportable station** is a type of fixed land radio facility which an Auxiliarist transports to various locations but does not use while in motion.
  - b. A **land mobile radio** facility is radio equipment which an Auxiliarist can operate while in motion (e.g., in a vehicle, walking, etc.). It may be installed in a vehicle or just be hand carried. This includes regular marine radios and those type of portable radios known as handi-talkies, walkie-talkies, H/Ts, Comcos, etc. It may or may not have direction finding (RDF) capabilities.
  - c. Radios on boat and aircraft facilities, equipped to operate on designated Coast Guard frequencies, with or without direction finding (RDF) capabilities, are not facilities in themselves. They are simply functional equipment installed on board the facility. Therefore, directors must not count this equipment as a radio facility.
  - d. **VHF-FM RDF** facilities are those facilities with passive direction finding capability, separate and independent of any other facility, and where land line or other non-marine communications are available. Units meeting the accuracy, range, and scope of direction finding requirements of paragraph B.1.e. are eligible for facility status.
  - e. **Portable Radios** are radios which an Auxiliarist can hand carry and operate by means of a self-contained antenna and power source.
2. Purpose. The following are the primary purposes of the Auxiliary communications system, in order of precedence.
- a. Coordinating authorized Auxiliary activities in

support of Coast Guard operations.

- b. Augmenting the Coast Guard communications system, when required.
- c. Communicating urgent matters of official Auxiliary business.
- d. Training.

3. Control.

- a. The district commander is responsible for control of the Coast Guard Auxiliary communications system. This includes such activities as training and drills. Auxiliary radio facilities may use certain frequencies authorized by the district commander for specific authorized Auxiliary activities. These activities include regattas, coordinated CME efforts, patrols, drills, training and administration.
- b. Auxiliarists must conduct operations on Coast Guard frequencies per current instructions.
- c. Coast Guard and Auxiliary communications plans may include frequency assignments and Auxiliary call signs. If not, then they should reference publications that contain such data.
- d. Each Auxiliary district must conduct communications drills, at least quarterly. Operators of radio facilities must conduct these drills using the guidelines issued by the Coast Guard district telecommunications branch.
- e. District commanders may authorize the use of the Federal Telecommunications System (FTS) and local Coast Guard landline voice and data systems for relay of official Auxiliary administrative messages. District commanders may also issue FTS 2000 calling cards to selected Auxiliarists to relay official Auxiliary communications.

B. RADIO FACILITIES.

- 1. Government Station. Any radio station or VHF-FM radio direction finding station, while assigned to Coast Guard duty, is a radio station of the Coast Guard and a "government station" within the meaning of 14 U.S.C. 829. To operate as a government station, the Director must accept an Auxiliary radio station for use as a radio facility or the radio equipment must be on board a surface or aircraft facility.

- a. Auxiliarists who meet the owner/operator requirements set forth in paragraph B.4. may operate Auxiliary radio facilities on government frequencies. Auxiliarists under direct supervision of the owner/operator may also operate these facilities without meeting the requirements of paragraph B.4. Compliance with regulations and procedures is the responsibility of the facility owner.
- b. When under orders, the operators of radio equipped boats and aircraft may operate on assigned government frequencies. All boat and aircraft facilities must be VHF-FM equipped. The district commander may grant a facility a waiver but only on a case by case basis.
- c. Auxiliarists may only use the frequency designated by the appropriate district commander as their local working frequency.
- d. Paragraph I lists additional frequencies available for Auxiliary use when required and authorized by the appropriate district commander.
- e. Directors may accept VHF-FM RDF stations as facilities if they meet the following criteria.
  - (1) Antenna height will provide a minimum range of 10 nautical miles.
  - (2) The arc of unobstructed direction finding must be a minimum of 130 degrees with no reflected signals noted. The operator must orient the station to cover the anticipated area of transmissions.
  - (3) Demonstrated bearing error does not exceed plus or minus 5 degrees within the service arc.
  - (4) The Auxiliarist locates the station close to assigned patrol areas. It must also provide accurate DF support to operational facilities working in the patrol area.
  - (5) Station must have landline or non-marine communications capability, such as 143.28 Mhz, to relay lines of position (LOPs) and fixes. Operators may not pass LOPs and fixes on VHF-FM marine channels unless requested by a unit commander.
  - (6) Two or more stations operating together to form a network should appoint one station as the plot station. Each station in the net should provide the plot station with their geographical

coordinates. The plot station will receive LOPs, plot positions, and report the fix coordinates to the unit commander. The plot station must give the Coast Guard unit handling the case all LOP's, a fix if available, and other information as soon as possible.

- (7) The owner must show all radio station equipment on their Form CG-2736A. This includes non-marine radios which operate on an authorized Auxiliary frequency, such as 143.28 Mhz. Acceptance by the Director of the RDF station will also authorize use of the supporting radio. The support radio is not a radio facility, but Auxiliarists must operate it under current Coast Guard procedures.

f. Auxiliary radio facilities may operate, according to Coast Guard policy and only on the frequencies listed in paragraph I. Operations on these frequencies is subject to the conditions noted and the net control of Coast Guard commands in the operating area. In addition, they may operate:

- (1) On frequencies specifically authorized by Commandant (G-SCT) (See para B.1.g).
- (2) On any frequency that is required to maintain valid SAR communications for the duration of an incident.

NOTE: Use of any other frequency by Auxiliary radio facilities is prohibited.

g. Fixed land Auxiliary radio facilities that need authority to operate on radio frequencies not presently authorized for that station must receive frequency assignments from Commandant (G-SCT). Auxiliarists must send authorization requests via their District Communications Officer (DSO-CM) to the National Operations Department, Telecommunications Division Chief (DVC-OT). The DVC-OT must coordinate and forward the request to Commandant (G-SCT) via the cognizant DIRAUX and district telecommunications staff. See paragraph P. for the specific information required. Facilities requesting authorization for new frequencies may not use any of the new frequencies contained in the request until Commandant (G-SCT) grants approval. Those fixed land stations which require authorization for new frequencies are only required to obtain authorization one time. The authorization remains valid until any change in facility characteristics reported as part of the original request is made (that is, frequencies,

location, antenna, call sign, etc.). Then another request is necessary.

h. Auxiliarists may only activate Auxiliary fixed land, land mobile, and direction finding facilities under the following conditions.

- (1) For a mission ordered or scheduled by the Coast Guard.
- (2) When necessary to handle valid DISTRESS traffic.
- (3) While conducting technical tests to determine facilities capability (for example, facility inspection).
- (4) When necessary to contact a Coast Guard unit to determine if Auxiliary help is required.

NOTE: Use of radio facilities without proper authority may affect the protection and benefits afforded to those Auxiliarists properly assigned to Coast Guard duty.

2. Portable Radio. A director may certify a portable radio as the primary radio aboard a facility (operational or special purpose) if that director determines a portable radio is appropriate for the facility's missions. One facility, operating in confined waters, may only require a portable radio while another, operating off-shore, may require a larger radio (i.e. 25 watts) and a permanently installed boat antenna. Also, the director may require additional antenna, power, or other capabilities to augment the performance of a basic portable radio.

3. FCC License. An Auxiliary surface or aircraft facility does not require a Federal Communications Commission (FCC) license when operating on orders or when performing a mission directed by or scheduled by the Coast Guard. However, most Auxiliarists use their facilities for non-government (recreational, etc.) and government (orders, etc.) purposes. For that reason, Auxiliarists must have an FCC license if required (i.e., for foreign port visits) for the appropriate facility inspection. If Auxiliarists use a specific facility exclusively for government purposes, the Director may issue a waiver of the license requirement on request of the owner. Auxiliarists that use fixed land and land mobile facilities in accordance with this manual are considered government stations and, therefore, do not require FCC licenses.

a. License applications by Auxiliarists shall not refer to any Auxiliary affiliation or the use of the

equipment for official government business.

- b. Auxiliarists must route all communications with the FCC about Auxiliary communications matters via the appropriate chain of command to the Commandant (G-TTM). Auxiliarists are not to communicate directly with the FCC regarding official Auxiliary business.
4. Owner or Operator. Auxiliarists owning or operating an Auxiliary communications facility must have the following training:
- a. Auxiliarists owning or operating fixed land, land mobile, or RDF facilities must complete the Auxiliary Communications Specialty Course (AUXCOM). They must also take any other training required by the district commander.
  - b. Auxiliarists operating radios on boats, aircraft, or special purpose facilities must have the appropriate boat or air crew qualifications or they must complete the AUXCOM and any other training required by the district commander.
  - c. Auxiliarists standing communications watches at a Coast Guard unit must be Basically Qualified (BQ) or higher and meet the qualification requirements set by that unit.
5. Equipment. For a fixed land, land mobile, or direction finding radio station to qualify for facility status, it must meet all facility, frequency and inspection requirements. It must also have a transmitter that is FCC type accepted/type approved. Receive only RDF stations are exempt from the transmitter type requirement. Stations operating on authorized frequencies outside the VHF marine band, (for example, repeaters) must also be type accepted/type approved. However, they do not have to contain the required frequencies listed in paragraph I.

C. RADIO CALL SIGNS.

1. Authorization. All Auxiliary radio facilities must use Auxiliary radio call signs when:
- a. Conducting SAR, emergency, or routine patrol communications.
  - b. Conducting official Coast Guard business on appropriate Coast Guard assigned frequencies. This includes official Auxiliary business such as the coordination of training exercises, CME stations and operational training.

NOTE: Auxiliarists must never use an FCC call sign with an Auxiliary call sign. Written orders are **not** required in order to use Auxiliary call signs.

## 2. Designations.

- a. Auxiliary fixed land facilities co-located with a Coast Guard radio facility: "Coast Guard (unit name) Auxiliary radio."

EXAMPLE: "COAST GUARD MIAMI AUXILIARY RADIO."

- b. Auxiliary fixed land facility: "Coast Guard Auxiliary (Geographical location of station) radio."

EXAMPLE: "COAST GUARD AUXILIARY LAKE POWELL RADIO."

Auxiliarists may not use the name of an existing Coast Guard unit unless co-located as described above. If two or more fixed land stations exist within the same geographical area, the director must assign each a call sign using their subdivision, street or other local area name or simply using a unique number for each.

EXAMPLE: "COAST GUARD AUXILIARY LAKE POWELL RADIO 3"

NOTE: In lieu of the above, fixed land facilities, if so equipped, may request from their district assignment of an international call sign (e.g. **NMN73**) for use **only on 2-30 MHz SSB frequencies.**

- c. Auxiliary land mobile facility: "Coast Guard Auxiliary (flotilla geographical name from charter) mobile number \_\_\_\_" or a district approved land mobile numbering system such as "U. S. Coast Guard Auxiliary 1353 Mobile." Here 13 would be the division number, 5 the flotilla number and 3 the number of the unit in the flotilla. The Auxiliary may not use the name of an existing Coast Guard radio equipped unit.
- d. Auxiliary aircraft facility: "Coast Guard Auxiliary aircraft (aircraft identification number)."
- e. Auxiliary surface facilities: "Coast Guard Auxiliary Vessel (number)." **All Auxiliary surface facilities must use a district approved number call sign.** For example, a six number call sign where the first two digits are the boat's length in feet, the third digit shows the type of propulsion, and the last three digits are in sequence with the acceptance of the facilities for use. Another example is the five number system. Here the first two digits are the

length in feet and the last three are the last three digits from the boat's registration or documentation number.

NOTE: Authorized short term events (e.g., CME stations, conferences, training exercises, etc.) may use temporary call signs to facilitate operations. The event coordinator may assign the call signs but may assign only those call signs (e.g., NACO, DCP, DOCK MASTER, CONTROL, etc.) that would not be confused with district approved call signs.

D. ADMINISTRATION.

1. Coast Guard.

a. The director must, under the guidelines established by the cognizant Coast Guard telecommunications staff:

- (1) Coordinate general supervision over Auxiliary communications.
- (2) Approve potential fixed land, land mobile, or RDF station owners for membership in the Auxiliary.
- (3) Accept or reject radio facility inspections.
- (4) Approve communications drill schedules.
- (5) Encourage development of the Auxiliary communications system to the maximum level of effectiveness.
- (6) Keep a current listing of available Auxiliary communications facilities.
- (7) Promulgate the approved radio call sign numbering system.

b. The Coast Guard district telecommunications branch chief must coordinate with the Director the use or distribution of Coast Guard supplied radio equipment to Auxiliarists.

2. Decal Display. Auxiliarists may display the miniature decal and wreath on the exterior or interior of the building in which the communications equipment is housed. Auxiliarists may also display the decal on any legal place on a motor vehicle or on the radio itself. Radio facilities must not use the large size decal and wreath.



- E. REQUIRED RADIOTELEPHONE COMMUNICATIONS. Auxiliary surface facilities must follow the provisions of the Bridge to Bridge Radiotelephone Act as implemented by 33 CFR Part 26, unless exempted therein. Also, Auxiliary surface facilities must follow the applicable provisions of any mandatory Vessel Traffic Services.
- F. CITIZENS BAND (CB) RADIO. The Coast Guard once participated to a limited extent in the use of CB radio at search and rescue stations. In 1989 the Coast Guard removed all requirements for monitoring or supporting CB radios.
1. Although the Coast Guard prefers the Auxiliary to use authorized marine frequencies, Auxiliary facilities may use CB equipment to communicate with boats when no other method is available.
  2. Auxiliarists using CB equipment will use Auxiliary call signs and proper radiotelephone procedures. Auxiliarists will not use the "10" code and CB slang.
  3. CB radio equipment does not satisfy the requirements for radio facility status.
- G. RADIO LOGS.
1. The operator of all boat, aircraft and radio facilities must maintain radio logs and formal message logs. All facilities except those in the following list must make Log entries.
    - a. Boats under 65 feet in length,
    - b. Aircraft, and;
    - c. Vehicles with land mobile radio facilities aboard.
  2. The above exceptions apply only when operating for a Coast Guard or Auxiliary shore unit. Facilities not under the direct control of a Coast Guard station or Auxiliary fixed land facility must make log entries. Where possible operators of boats and aircraft must set up and maintain a fixed shore-side radio guard. These facilities are better equipped to maintain accurate radio logs.
  3. Auxiliarists must make radio logs available to cognizant authority upon request.
  4. Auxiliarists must maintain radio logs for one year except when distress traffic is recorded. When distress traffic is recorded, the retention period is three years. When the radio log contains information pertinent to an investigation or claim, the retention period may be

longer.

5. Auxiliarists must not allow the act of keeping a radio log to interfere with the safe operation of the facility. If completing a log entry during an event could create an unsafe situation or is impractical (as in the case of a land mobile handheld facility), the Auxiliarist may defer the log entry until the event is over. The Auxiliarist will then make log entries from memory. The use of an audio cassette recorder is helpful.

H. COMPUTERS. Auxiliarists may apply computers in Auxiliary operations and communications where possible (including administrative communications). Computers are effective for such activities as SAR planning and the transmission of "electronic mail" through bulletin boards. The national staff's telecommunications division of the operations department is the focal point to coordinate efforts to expand Auxiliary computer use in the operational area.

I. AUTHORIZED/REQUIRED FREQUENCIES. The following list of frequencies contains frequencies authorized for Auxiliary use and those required to operate. Auxiliarists may use the authorized frequencies for official use. However, facility radios must contain the required frequencies as indicated.

#### AUTHORIZED FREQUENCIES

PURPOSE	FREQUENCY	MODE	MAX POWER
VHF-FM CG Working	Channel 21A (157.050 Mhz)	FM	25W
	Channel 23A (157.150 MHz)	FM	25W
	Channel 81A (157.075 MHz)	FM	25W
	Channel 83A (157.175 MHz)	FM	25W
-----			
Coast Guard Liaison/Working	Channel 22A (157.100 MHz)	FM	25W
	2671.4 (2670) kHz	SSB	100W
-----			
HF-AM/DSB CG Auxiliary Working	27.980 MHz	AM	5W
-----			
Distress, Safety, Calling Alternate Channel -	Channel 16 (156.800 MHz)	FM	25W
	2183.4 (2182) kHz	SSB	100W
	Channel 09 (156.450 MHz)	FM	25W
-----			
Intership Safety or SAR Ship to Aircraft	Channel 06 (156.300 MHz)	FM	25W
-----			
2 - 4 MHz District Working	(As Appropriate)	SSB	100W
-----			
CG Aeronautical Working	121.5 MHz (distress)	AM	10W
	122.9 MHz (SAR training)	AM	10W
	123.1 MHz (SAR)	AM	10W

PURPOSE	FREQUENCY	MODE	MAX POWER
Non-Marine Working	143.280 MHz	AM/FM	25W
Aircraft HF	3121.4 (3120) kHz (rotary wing)	SSB	400W
	3124.4 (3123) kHz	SSB	400W
	5693.4 (5692) kHz (prim)(rotary)	SSB	400W
	5697.4 (5696) kHz (primary)	SSB	400W
	8981.4 (8980) kHz (rotary wing)	SSB	400W
	8985.4 (8984) kHz	SSB	400W
UHF Air to Air,	381.7 MHz (air/surface)	AM	30W
Air to Ground	381.8 MHz (air/surface)	AM	30W
	383.9 MHz (air/surface)	AM	30W
Datum marker	240.6 MHz		
buoys	242.65 MHz		
	275.1 MHz		
	156.75 MHz (Ch 15)		

#### REQUIRED FREQUENCIES

FREQUENCY	LAND	AIR/SURFACE	REMARKS: See next page for numbered notes.
Ch 21A (157.050 MHz)	X	X	Notes 1, 2.
Ch 23A (157.150 MHz)	X	X	Notes 1, 2.
Ch 81A (157.075 MHz)	X	X	Notes 1, 2.
Ch 83A (157.175 MHz)	X	X	Notes 1, 2, 3.
27.980 MHz (AM)			Note 4.
Ch 22A (157.100 MHz)	X	X	Government to non-government liaison frequencies.
2671.4 (2670) kHz			
Ch 16 (156.800 MHz)	X	X	Notes 2, 5.
2183.4 (2182) kHz			Note 5.
Ch 06 (156.300 MHz)	Note 6.	X	Note 7.
2 - 4 MHz			Assigned by Districts
121.5 MHz		X	Notes 8, 10.
122.9 MHz		X	Notes 8, 10.
123.1 MHz		X	Notes 8, 10.
143.280 MHz			

			REMARKS:
			See next page
FREQUENCY	LAND	AIR/SURFACE	NUMBERED NOTES
3121.4 (3120) kHz			Notes 9, 10.
3124.4 (3123) kHz			"
5693.4 (5692) kHz (Primary)			"
5697.4 (5696) kHz (Primary)			"
8981.4 (8980) kHz			"
8985.4 (8984) kHz			"
381.8 MHz			Note 10.
240.6 MHz			Most frequently used datum marker buoy frequencies.
242.65 MHz			
275.1 MHz			
156.750 MHz (Ch 15)			

#### Notes on authorized frequencies:

- NOTE 1:** Auxiliarists need only the appropriate group/district VHF-FM working frequencies for the operation area. The director, with the approval of the cognizant district chief of telecommunications, may also authorize Auxiliary operational facilities to use secondary Coast Guard working frequencies on a sole use or shared basis.
- NOTE 2:** The following limitations apply to Auxiliary aircraft use of VHF-FM Marine Band frequencies:
- Auxiliarists must not use air-to-air VHF-FM except when needed for a common band on multiple unit SAR operations.
  - Aircraft must use 1 watt power output (low). Higher power may be used ONLY when needed to ensure communications.
  - Aircraft must not transmit on VHF-FM frequencies when operating above 3000 feet above ground level. The only exceptions are in emergencies or when no other means of communications with a Coast Guard or Auxiliary ground station is available.
  - Aircraft must monitor Channel 16, or the Coast Guard working channel specified by the controlling base station, if practical.
- NOTE 3:** Auxiliarists must not use Channel 83A (157.175 MHz) in areas where interference with Canadian users of this frequency is possible.

**NOTE 4:** 27.980 MHz is for hand held portable use only, in inland areas beyond the range of established Coast Guard VHF nets. The district commander must recommend to Commandant (G-TTM) specific geographic areas for 27.980 MHz use.

**NOTE 5:** Distress, Safety, Calling.

- a. Channel 16 (156.800 MHz) is a required frequency for the Auxiliary. However, Auxiliarists must remember that the maritime community and the general boating public may also use this frequency.
- b. 2183.4 (2182) kHz is not a required frequency, but the ability to monitor or work this distress frequency is an operational asset.
- c. Auxiliarists must avoid operating on Channel 16 (156.800 MHz) or 2183.4 (2182) kHz unless absolutely necessary to establish or maintain SAR communications. Channel 22A (157.100 MHz) is the government to non-government liaison frequency.

**NOTE 6:** Auxiliarists with fixed land radio direction finding stations must have the capability of receiving on Channel 6 (156.300 MHz). Also, the Coast Guard requires that fixed land and mobile radio stations have the capability of working on Channel 6.

**NOTE 7:** For SAR or safety purposed only, Auxiliarists may use Channel 6 (156.300 MHz).

**NOTE 8:** The Director must coordinate with the chief of the telecommunications branch use of the aeronautical frequency 123.1 MHz for SAR operations, and 122.9 MHz for SAR training with Auxiliary aircraft facilities.

**NOTE 9:** These are the most common HF aircraft frequencies used by the Coast Guard. Auxiliary aircraft with HF transceivers should coordinate their frequency selection with the Coast Guard or Auxiliary ground stations and aircraft with which they will be working.

**NOTE 10:** Aircraft use only.

**J. INSPECTION.**

1. The director must arrange to conduct an initial inspection of each fixed land, land mobile, and RDF facility and, thereafter, once each year. However, commencing with the inspection period for 1996, the annual inspection requirement will change to inspection every three years (that is, the inspection for 1996 will be good through 1998). Only an AUXOP member or a

flotilla, division, district or National communications officer who has successfully completed the Auxiliary Communications Specialty Course may conduct an inspection. The inspector must report the results on form CG-2736A to the Director. The Auxiliary will complete all inspections following the initial inspection before the district deadline set by the Director. RDF facilities must meet the technical requirements for paragraph B.1.e.

2. Radio equipment permanently installed on operational boats and aircraft is boat/aircraft equipment. The boat or aircraft inspector must report the initial and each annual inspection on inspection form CG-2736 or CG-2736B, as appropriate.
3. The owner of inspected radio equipment is solely responsible for the proper and timely maintenance of the equipment.
4. Auxiliarists may not inspect their own radio facility or those owned by members of their immediate family.
5. Land mobile owners may carry a copy of their approved Radio Facility Inspection Report, Form 2736A, in the vehicle. The inspection form lists the basic radio unit as well as any supporting equipment. This, along with the facility decal and the Auxiliarist's ID card, will probably satisfy any enforcement agency query as to why the equipment is in a vehicle (or being carried) and for what purpose.

K. NAVY-MARINE CORPS MILITARY AFFILIATE RADIO SYSTEM (NAVMARS). The U.S. Navy set up the Navy-Marine Corps Military Affiliate Radio System (NAVMARS) to provide emergency communications as an adjunct to normal Naval Communications. The Coast Guard Auxiliary can use NAVMARS for administrative and other quasi-official traffic, exercise traffic, drill messages, and emergency communications.

1. Auxiliarists holding a Technician, or higher class amateur radio license, wishing to join the NAVMARS program, or who need its services, may contact their local NAVMARS program director either directly, if known, or through their DSO-CM.
2. Auxiliarists should keep the DSO-CM advised of their NAVMARS activity.

L. REPORTING RADIO VIOLATIONS. Auxiliarists hearing a violation of FCC rules should submit a Report of Violation of Radio Regulations or Communications Instructions, CG-2861A.

1. Auxiliarists must tape record, if possible, all violations, especially hoax distress calls. When recording violations, turn the radio receiver squelch off. This will permit an analysis of transmitter signature characteristics.
2. Auxiliarists must submit the violation reports, along with the recording, to the district commander (dtm).
3. The violation reports must include the name and location of the alleged offender, if known, date and time of offense, description and circumstances of violation. The report must include, if available, a transcript or audio tape of the transmissions in the violation.
4. If a violation case goes to court, Auxiliarists may be required to testify. Therefore, always maintain a complete log with notes of all relevant activities.
5. Facility owners with 121.5 MHz, 243 MHz, or 406.025 MHz RDF capability must be especially alert for EPIRB false alarms. Up to 95% of EPIRB transmissions are due to negligence, carelessness, improper handling or stowage.

M. AUXILIARY COMMUNICATIONS WATCHSTANDERS. Auxiliary communicators are an integral part of the Coast Guard's radio network. To the mariner, an Auxiliary communicator is the COAST GUARD—not a volunteer, a part-timer, or a novice. The Auxiliary communicator must strive to maintain the public trust in the integrity of the Coast Guard radio network.

1. Qualifications.

- a. At Coast Guard Units. Auxiliary communications watchstanders at Regular units must meet the unit's training and qualification requirements. This means completing the Group and Station Communications Watchstander Qualification Guide, COMDTINST M16120.7 (series) and any local requirements.
- b. At Auxiliary Facilities. Auxiliary communications watchstanders at Auxiliary facilities must have completed the Communication Specialty (AUXCOM) course and any other requirements established by the director.
- c. Local Knowledge. Auxiliary watchstanders, in addition to local qualifications and training, should be thoroughly familiar with the local operating area. This includes the local names of places that may not be the same as those charted.

2. On the Air. Auxiliary communicators deal with people exhibiting a wide variety of emotions. These include

confusion, hysteria, impaired thinking (due to alcohol, drugs, fatigue, or hypothermia), aggression, panic, and simple ignorance. By talking in a calm, professional tone of voice, an Auxiliary communicator can soothe a distressed boater enough to complete the necessary communications and effectively provide help. Some important skills for the communicator are:

- a. Speech - keep it even, not too fast, and not too loud.
- b. Speak clearly.
- c. Concentrate - be clear on what you intend to say-  
THINK.
- d. Relate to the level of the caller - adult,  
child, novice, fisherman, professional mariner, etc.
- e. Give your full attention - LISTEN, TAKE NOTES.
- f. Use Coast Guard radio procedures, but NOT slang or  
acronyms. The average boater may not understand words  
like POB, PIW, and PFD.
- g. Do not be defensive. Keep calm.
- h. Be confident-remember, you represent the Coast Guard.
- i. Accept the distance between you and the crisis. You  
cannot reach through the microphone to help.
- j. Know your area of responsibility (AOR).
- k. Be objective-overcome personal reactions to  
situations.
- l. Accept there is only so much you can do.

N. RESPONDING TO MARINERS REQUESTS FOR INFORMATION. Mariners may, from time to time, request Auxiliary communicators to provide various types of information. Auxiliary communicators may respond to information requests as per the below policies. Local Coast Guard policies will guide Auxiliary communications watchstanders at activity duty units.

1. Navigational Information. Auxiliarists may pass any information contained in any recognized published document. This includes current NOAA and Army Corps of Engineers charts, Local Notice to Mariners, Light Lists, Coast Pilots, etc. Auxiliarists may also provide bearings (either true or magnetic) between charted objects. However, Auxiliarists



may not give or recommend compass courses because of the unique aspects of deviation, wind, and current. In all cases, the Auxiliarist must be sure the mariner understands whether true or magnetic bearings are being provided. If a mariner asks for a specific compass course, the Auxiliarist should advise them that these cannot be determined or calculated over the radio. When using bearings on buoys, the Auxiliarist must advise the mariner that the charted position is being used and he buoys could be off station.

2. Lost or Disoriented. Finding the lost or disoriented boater without on scene reference points is difficult, if not impossible.
  - a. Even with radio direction finding (RDF) units an appreciable error may exist. Ask the boater about any visual landmarks, aids to navigation, or area characteristics that could help determine their location.
  - b. If a general location can be determined, an appropriate response might be: "Based on the information you have provided, your boat appears to be in the vicinity of \_\_\_\_\_. Recommend you study the chart for that area or consult with a passing boat before proceeding further."
  - c. If poor visibility or darkness is the cause, suggest the boater anchor until the situation changes. Before making this suggestion, however, always evaluate all on scene factors to make sure the suggestion will not change their situation to a distress.
3. Weather. Auxiliarists may pass weather information, but remember that the Coast Guard does not forecast weather. Advise boaters requesting weather information to listen to the continuous NWS broadcasts and what channels to use in the local area. If a boater does not have NWS capability, Auxiliarists may read the entire text of the latest NWS local weather forecast or warnings (Small craft, gales, etc.). The Auxiliarist must read the weather forecast exactly as written, including that it is NWS information for a particular area, the geographic area for the weather information, and period for which the forecast is valid. Auxiliarists may also pass observed weather conditions, as long as they are reported as "observed" and the time and location of observation noted. Always make a log entry of the transmission and the weather information passed.
4. Third Party Radio Traffic. The Coast Guard does not normally handle third party traffic. Auxiliary radio

facility operators should advise boaters requesting this type of service of the local marine operator channels. This does not, however, prevent an Auxiliary facility from passing requests for non-distress help per Coast Guard policy. This allows the Auxiliarist to pass information to a local salvor, a marina, or a friend who could help.

5. Accuracy. Auxiliary communicators must always remember that they represent the Coast Guard. They must do everything possible to be sure no transmission places the organization in jeopardy or impairs the public trust. Do not assume, guess, or try to have all the answers. Stick to the facts and be sure that the person receiving the information understands the source, limiting factors, and cautions of all information. Make sure when passing information that it is prudent and based on fact. Auxiliarists must never pass information which is opinion or conjecture. Always make a log entry of the transmission and the information passed.
  6. Timeliness. Auxiliarists must immediately respond to requests where the boater's navigation safety is in jeopardy. Auxiliarists may pass other types of information, usually for the convenience of the mariner, if it does not interfere with operations.
- O. COMMUNICATION WITH CIVILIAN EMERGENCY SERVICES. Many SAR and disaster situations involve both Coast Guard resources and civilian (non-federal government) emergency services. In these situations it may be necessary for all emergency resources to communicate with each other to coordinate the use and safety of emergency personnel. The preferred communication method is for the civilian station to shift to a government frequency for the duration of the case. On VHF-FM this would be Channel 21A, 23A, or 83A. Remember, using Channel 22A would probably cause interference problems if any other SAR situations develop in the local area. Use Channel 81A only if the event is an environmental problem. The use of a government channel by a non-government station is allowed by the FCC rules. Using a government channel also precludes Auxiliary facility involvement in possible law enforcement actions or operation with a civilian service which has a totally different set of operating procedures. In addition, if the non-Coast Guard station is another federal government station, such as a CAP or DOD unit, the same guidance applies. Most units in maritime SAR have radio equipment capable of working on VHF-FM marine channels.
- P. FREQUENCY REQUEST. The following is a sample letter format for requesting new frequency assignments (as specified in paragraph B.1.g).



DEPARTMENT OF TRANSPORTATION  
**UNITED STATES COAST GUARD AUXILIARY**

(AUTHORIZED BY CONGRESS 1939)

THE CIVILIAN COMPONENT OF THE U.S. COAST GUARD

16798  
(Date)

FROM: (Name) (Member Number)  
TO: DVC-OT  
VIA: DSO-CM

SUBJ: REQUEST FOR FREQUENCY ASSIGNMENTS FOR AUXILIARY  
RADIO STATION

REF: (a) Chapter 9., Paragraph B.1.g, Auxiliary Operations  
Policy Manual, COMDTINST M16798.3 (Series)

1. As per reference (a), I request authority for an Auxiliary Radio  
Station, (state reason for request).

2. DATES REQUIRED: (Specify)

3. TRANSMITTER LOCATION: (Specify)

4. TRANSMITTER COORDINATES:  
(Latitude and Longitude in degrees, minutes and seconds)

5. CALL SIGN: (If required)

6. FREQUENCIES: (Specify)  
(NOTE: If more than one frequency is required, provide  
frequency separation criteria between F1, F2, etc. If  
frequency separation criteria is not required, state:  
"Frequency separation not applicable.")

7. EMISSIONS: (e.g. 16KF3E, 6KA3E, etc)

8. POWER: (Maximum power for each emission)

9. TYPE: (point to point, ship/shore, air/ground,  
radio navigation, test and maintenance, etc.)

10. ANTENNA DATA: (Required for all land station emissions  
above 30 MHz.)

- a. Antenna name: (Generic preferred)
- b. Orientation:
- c. Gain: (Nominal)
- d. Site (terrain) elevation above mean sea level:

- e. Antenna height above terrain:
- f. Antenna polarization:  
(Required only for assignments above 420 MHz. For fixed  
(point to point) assignments, receiver location,  
coordinates, and antenna data for receiving site are also  
required.)

11. EQUIPMENT NOMENCLATURE: (for example, Manufacturer's model  
number or series)

12. MILEAGE RADIUS AND NUMBER OF MOBILES: (Specify)

(owner's name and signature)

Q. CHAPTER FIVE STUDY QUESTIONS.

1. Can an individual radio used on a vessel facility be accounted for in any other facility?
2. What are the various types of Auxiliary Radio Facilities?
3. Can a portable radio qualify as a facility?
4. All operations on Coast Guard frequencies by Auxiliarists must be conducted in accordance with rules and procedures promulgated by whom?
5. Vessel facility radios are considered as government stations under what circumstances?
6. Can land mobile radio facilities engage in personal business on their facility radio frequencies?
7. Under what conditions may fixed land, land mobile and direction finding facilities be activated?
8. What training is required for an Auxiliarist to be able to use a vessel facility radio?

9. What are the requirements for VHF-FM RDF stations with respect to its location and capabilities?
10. How should LOP's from a direction finding facility be exchanged?
11. Who can inspect radio equipped Auxiliary aircraft facilities?
12. What are the conditions under which CB radio may be utilized?
13. Under what circumstances may an Auxiliarist contact the FCC about Auxiliary radio problems?
14. Vessel and aircraft facilities must be capable of operating on which VHF-FM marine channels?
15. Communication with civil emergency services is preferred on what channels?

## CHAPTER SIX - MESSAGES

### A. INTRODUCTION

#### 1. General

- a. As an Auxiliarist, you have accumulated some knowledge of messages. You know a message is any thought or idea expressed briefly and prepared in a form suitable for transmission by any means of communication. Although the exchange of most Auxiliary information is done in an informal manner, information that is required to be a matter of record should be put in a precise format and sent as a formal message.
- b. There are many varieties of messages, each requiring slightly different formatting; those that may be encountered by the Auxiliary will be discussed here. An Auxiliarist qualifying as a communications watchstander at a Coast Guard activity will, as part of the qualification process, learn additional formatting and message switching system information.
- c. There are basically three types of messages: Single Address, Multiple Address and General messages. A Single Address Message is destined for only one addressee; either ACTION or INFO, which will be discussed later. A Multiple Address Message has two or more addressees. A General Message has a wide distribution; such as ALDIST for all Coast Guard Districts, ALCOAST for all Coast Guard Units and ALMILACT for all Military Activities.
- d. Several types of messages may be transmitted or received but most Auxiliary messages will deal with operations which concern the movement of SAR resources. These messages may be either actual or drill in nature. A proper understanding of messages is necessary if you are to function effectively as a member of the Auxiliary. For messages originated and transmitted, your concern is that they reach their destination accurately, securely, and promptly. For messages received, the same requirements apply.
- e. Auxiliary administrative matters which deal with routine subjects, personnel and logistic requirements are usually handled in non-message system channels; such as mail, telephone, facsimile, etc.

#### 2. Originator and Drafter

- a. Messages are released by an individual designated to authorize the transmission of a message for and in

the name of the originator. The command by whose authority a message is sent is called the "originator." The person who actually composes the message for release by the originator is the "drafter." The originator and the drafter may be the same individual.

- b. There are separate responsibilities for originating and drafting a message:

- (1) Originator's responsibility:

- (a) Determine if a message is necessary. A message is not to be used when another form of communication will suffice.
    - (b) Determine addressee(s) and type of message.
    - (c) Indicate necessary references when essential for brevity or clarity.
    - (d) Determine the precedence.
    - (e) Forward message for draft and transmission.

- (2) Drafter's responsibility:

- (a) Prepare the text of a message, making it clear, accurate, and brief. (Brevity, however, must not be obtained at the expense of clarity or accuracy).
    - (c) Use proper format for the type of message being drafted.

## B. MESSAGE PARTS

### 1. General

- a. The two major parts of the message are the "heading" and "text". These are subdivided by specific "Format Lines" numbered 5 through 13. Each will be discussed separately. Lines 1 through 4 contain the initial call and reply to make contact and notification that a message will follow. On land line digital message switching systems these lines also contain switching symbols used by the system to properly route the message.
- b. Heading. The heading of a radiotelephone message consists of format lines 5 through 10 which contain the precedence, date-time group, originator, action addressees, information addressees, exempt addressees and accounting information.



- c. Text. The text of the message, format line 12, is the basic thought or idea the originator wishes to communicate. Difficult words or groups within the text of a message are spelled out in the phonetic alphabet. Groups or words to be spelled are preceded by the proword "I SPELL." If the operator can pronounce the word, he should do so before and after spelling.
- d. Format lines 11 and 13 consist of the Proword "BREAK". Line 11 separates the heading from the text and line 13 marks the end of the message.

#### MESSAGE PARTS

	Line <u>No.</u>	<u>Line Content</u>
	*****	
	1	Station Called
	2	THIS IS Station Calling
Initial Call	3	MESSAGE FOLLOWS
	4	OVER
	*****	
	5	Precedence & Date Time Group
	6	FROM <u>          (Originator)          </u>
	7	TO <u>          (Action Addressee)          </u>
Heading	8	INFO <u>          (Information Addressees)          </u>
	9	Exempt Address - Not used
	10	ACCT (Accounting Symbol) Not Used
	*****	
	11	BREAK
	*****	
	12A	UNCLAS (SSIC - Not used)
Text	12B	Text of Message
	*****	
	13	BREAK

## 2. Heading

- a. The heading of a message determines where it is going and how it will be handled. It is determined by the originator and cannot be altered by anyone other than the originator.

(1) Format line 5 contains the precedence, date-time

group and, if required, operating signals. Operating signals are usually not used in Auxiliary messages.

- (a) Precedence designations. In a message the first letter in the heading is the precedence prosign. This precedence is assigned to a message by the originator to show the relative order in which the message is to be transmitted. The precedence is placed on a message to show the receiving station the relative order in which it is to be handled and delivered. A Priority (P) message is an important one. It literally takes priority over the handling of Routine (R) messages. If an operator has several messages of the same precedence, for instance, three Priorities to be transmitted, he will send them out in the order in which they were received. When messages of the same precedence are being relayed, they are relayed in the order in which they are received. The precedence designations are listed in order of importance and although abbreviated in the written message, are transmitted as the word and not as the phonetic initial:

<u>PRECEDENCE</u>	<u>DESIGNATION</u>
Z . . . . .	.Flash
O . . . . .	.Immediate
P . . . . .	.Priority
R . . . . .	.Routine

- (b) Flash (Z) precedence is reserved for initial enemy contact reports. It is also used for special emergency operational-combat traffic originated by specifically designated senior commanders of units directly affected. Z messages take priority over all other traffic but will not be encountered in Auxiliary communications.
- (c) Immediate (O) precedence is used for important messages pertaining directly to operations in progress. O is also used, when necessary, for messages concerning aircraft flight information, flight plans and changes, aircraft movements, initial surface distress, medico information, affirmative replies to and messages declaring uncertainty or communications alert, requests or directions concerning

distress assistance, reports or warning of grave natural disaster (hurricane, tornado, etc.). This precedence is given only to operational traffic. O messages are handled and transmitted ahead of all other traffic except Flash.

- (d) Priority (P) precedence is used for messages pertaining to SAR situation reports (SITREPS), A/N deficiencies, important weather information, urgent administrative matters and is the highest precedence normally authorized for administrative messages. Priority messages are handled ahead of Routine messages.
- (e) Routine (R) precedence is used for normal operational messages, ship movements, and administrative matters requiring rapid transmission.
- (f) The Date-Time Group, a series of six numbers and a letter suffix, is used primarily for reference purposes identifying individual messages. The first two numbers indicate the day of the month, the second two indicate the hour of the day, and the final two stand for the minutes of the hour. The designating letter suffix indicates the time zone used. When a message is originated before the tenth of the month, the first number in the date-time group will be a zero. Thus, the first day of the month appears as 01, the sixth day 06, and so forth. Beginning with the tenth day, the first two numbers will read 10, 11, 12, etc. The time of origin is the last four numbers in the date-time group. The first two digits tell the hour, from 00 through 23, a period of 24 hours. The last two digits indicate the minutes of the hour from 00 to 59 inclusive. In civilian life the day is divided into two 12 hour periods. Civilian time is from midnight to 12 noon and is designated A.M. and time from noon until midnight is designated P.M. In military communications there is no A.M. or P. M. The day is considered to be one period of 24 consecutive hours beginning at midnight and ending at midnight the next day. To indicate message time, four figures are used. For example, 1445 means 14 hours and 45 minutes after midnight; 0420 means 4

hours and 20 minutes past midnight. One o'clock in the morning is written 0100. Two o'clock in the morning is written 0200. Noon is 1200. One o'clock in the afternoon is 1300; three o'clock is 1500; and midnight is 2400. The time of origin of a message is normally the time the message is prepared. The entire Coast Guard communications organization operates on Universal Coordinated Time (UCT), previously called "Greenwich Mean Time" (GMT). All clocks are set at the same time. Time zones change as ships travel, but with reference to UCT or GMT the communication clocks never change. The Date-Time Group 050630Z means the message originated on the fifth day of the month at 0630 UCT. The Date-Time Group 162315Z means the message originated on the sixteenth day of the month at 2315. The date is the date in Greenwich and the time is UCT (GMT) time. Fig 6-1 shows the world time zones, suffixes used for each zone time, and the correction factor showing the difference between UCT and each time zone. Note that Greenwich, England is in the "Z" or "ZULU" zone which has a zero factor. The map should be referred to in order to eliminate confusion and errors resulting from incorrect calculation of the Date-Time Group. To summarize: The Date-Time Group is a six-digit group and when used in the heading is always followed by the letter Z and transmitted "ZULU". The month and last two digits of the year must follow the letter Z in all messages and are transmitted "AUG 96". When other local area time is used in the text of a message the appropriate letter suffix will follow the six digits.

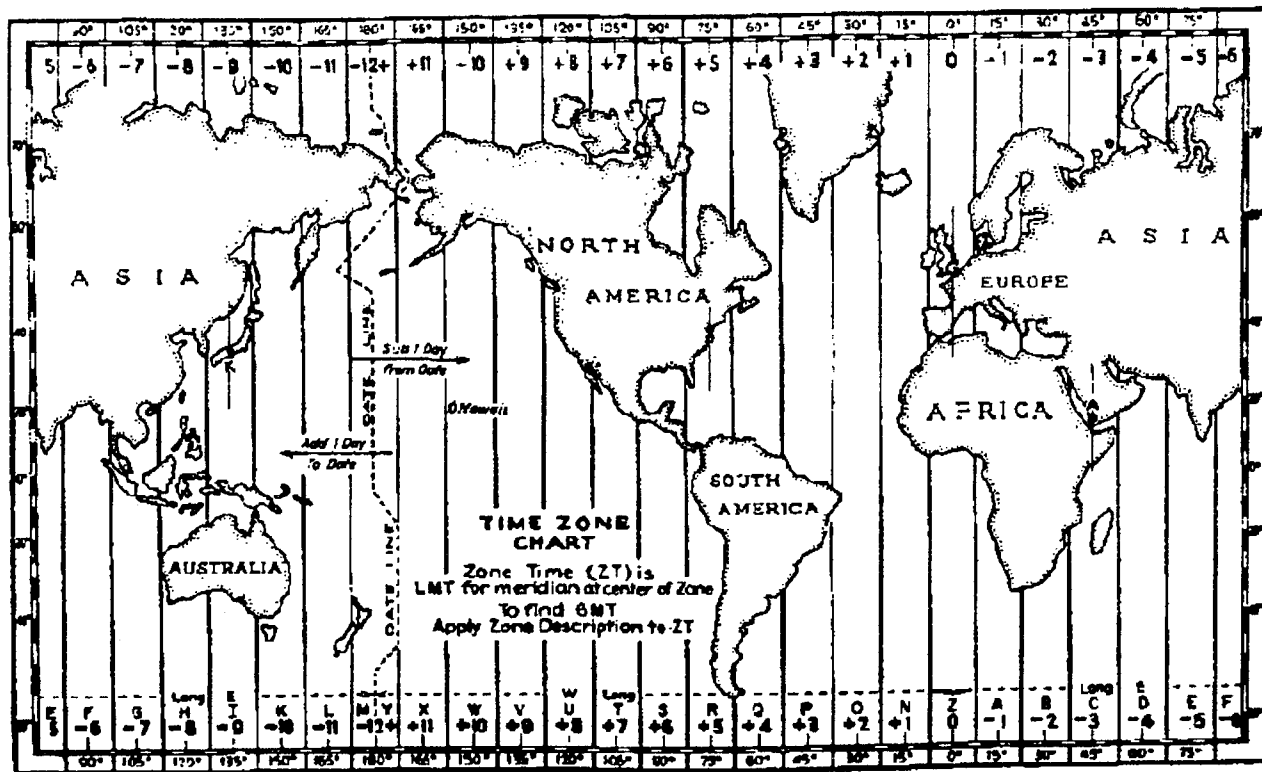


Figure 6-1 Standard Time Zones

Table 6-1

Zone	Description	Suffix
7-1/2 W to 7-1/2 E	- 0	Z <sup>1</sup>
7-1/2 E to 22-1/2 E	- 1	A
22-1/2 E to 37-1/2 E	- 2	B
37-1/2 E to 52-1/2 E	- 3	C
52-1/2 E to 67-1/2 E	- 4	D
67-1/2 E to 82-1/2 E	- 5	E
82-1/2 E to 97-1/2 E	- 6	F
97-1/2 E to 112-1/2 E	- 7	G
112-1/2 E to 127-1/2 E	- 8	H
127-1/2 E to 142-1/2 E	- 9	I
142-1/2 E to 157-1/2 E	-10	K
157-1/2 E to 172-1/2 E	-11	L
172-1/2 E to 180	-12	M

Zone	Description	Suffix
7-1/2 W to 22-1/2 W	+1	N <sup>2</sup>
22-1/2 W to 37-1/2 W	+2	O
37-1/2 W to 52-1/2 W	+3	P
52-1/2 W to 67-1/2 W	+4	Q
67-1/2 W to 82-1/2 W	+5	R
82-1/2 W to 97-1/2 W	+6	S
97-1/2 W to 112-1/2 W	+7	T
112-1/2 W to 127-1/2 W	+8	U
127-1/2 W to 142-1/2 W	+9	V
142-1/2 W to 157-1/2 W	+10	W
157-1/2 W to 172-1/2 W	+11	X
172-1/2 W to 180 W	+12	Y

<sup>1</sup>GMT is indicated by suffix Z. For time midway between zones, use both letters.

<sup>2</sup>Letter N is also used to designate -13; this is to provide for ships in zone -12 keeping daylight saving time.

In the continental United States the following time zones apply when operating under STANDARD time:

EST-ROME0+5 CST-SIERRA+6 MST-TANGO+7 PST-UNIFORM+8

The following applies when operating under DAYLIGHT SAVING time:

EDT-QUEBEC+4 CDT-ROME0+5 MDT-SIERRA+6 PDT-TANGO+7

To convert from local time to GMT/UCT all that is needed is to first find the local time and then add the number of hours indicated. For example, if the local time was 1PM (1300) Mountain Daylight Time (MDT), the addition of 6 hours would produce 1900 GMT. Remember to add or subtract a day if the time conversion crosses the 2400 hour mark.

- (2) Address. Format Line 6 contains the proword "FROM" and the identity of the originator. Line 7 contains the proword "TO" followed by the action addressees. Line 8 contains the proword "INFO" followed by the information addressees. Line 9, Exempt Addressees, is not used in Auxiliary messages. Normally lines 6, 7 and 8 are sent as shown in the example below:

<u>TRANSMITTED</u>	<u>MEANING</u>
"FROM" . . . . .	Originators sign
"COMMANDER COAST GUARD . . . . . ACTIVITIES BALTIMORE". . . . .	The address group (or call sign) of the originator
"TO" . . . . .	Action addressee sign
"COMMANDER, COAST GUARD DISTRICT FIVE" . . . . .	The address group(s) and/or call sign(s) of the action addressees
"INFORMATION". . . . .	The information addressee sign
"COAST GUARD AUXILIARY VESSEL 42122" . . . . .	The address group(s) and/or call sign(s) of the information addressee(s)

- (a) The originator's sign "FROM" (FM) marks the beginning of the address. It means, the ORIGINATOR OF THIS MESSAGE IS INDICATED BY THE CALL SIGN OR ADDRESS GROUP(S) IMMEDIATELY FOLLOWING.
- (b) The "addressee" is the authority to whom a message is directed by its originator. There are both "action" and "information" addressees. The action addressee is the authority to whom the message is directed for whatever action is necessary. The information addressee is the authority to whom the originator directs the message for information only. For instance, a SITREP

message closing the case of an assist in the Annapolis area would be addressed to Commander Activities Baltimore with an info to Coast Guard Station Annapolis which had handled the local aspects of the case.

- (3) Format line 10 contains the prosign "ACCT", indicating the accounting symbol, followed by an accounting symbol and a program designator code. This line is not used in Auxiliary messages.

### 3. Text.

- a. Format line 12 is the text of the message and is subdivided into lines 12A and 12B. Line 12A contains the message classification and Standard Subject Identification Code (SSIC). Auxiliary messages are Unclassified (UNCLAS) and do not use SSIC's. Line 12B is the text of the message and starts with the subject line followed by the thought the originator wishes to communicate to the addressee(s). Auxiliarists should use only standard abbreviations and terminology when drafting the text. When events in the text include a time, that time with appropriate suffix precedes the statement of the event or action. Time in the text is stated as local time with its letter suffix. Fig 6-1, Table 6-1, and local district instructions should be consulted for determination of the letter suffix for a local area. Sample messages with typical texts are included in this chapter.

### 3. BREAK

- a. Format lines 11 and 13 contain the proword "BREAK". The line 11 "BREAK" separates the message heading from the text. The line 13 "BREAK" marks the end of the message. It may be followed by final instructions such as message corrections, more messages will follow or if the sending station needs to pause. The radiotelephone transmission must end with one of the prowords, "OVER" or "OUT." With the use of "OVER," the sender tells the receiver to go ahead and transmit because, "This is the end of my transmission to you and a response is necessary." With the use of "OUT," the sender tells the receiver, "This is the end of my transmission to you and no response is required." NEVER use "OVER" and "OUT" together.

## C. TRANSMITTING THE MESSAGE

### 1. Introduction

- a. Auxiliarists studying radiotelephone transmitting procedures must remember they are subject to continual improvement and change. This Chapter furnishes the basic knowledge, but one can keep current only by continued study of updated communications instructions.
- b. Auxiliarists must remember that they are transmitting on government frequencies assigned to the U.S. Coast Guard and subject to Coast Guard rules and regulations.

### 2. Voice Radio

- a. The radiotelephone, commonly known as the voice radio, is an effective and convenient method of communication. It is used extensively for ship-to-ship communication, for the control of airborne aircraft, and for countless tasks requiring rapid communications.
- b. Voice radio supplements both digital and visual methods of communications, but does not replace either. It has the advantages of simplicity of operation and direct transmission of the spoken word: but ease of operation has led to abuse. Careless use of voice procedure, plus circuits overloaded with unnecessary traffic, has created much confusion at times when good communications was imperative. Whether in a small boat or aircraft the Auxiliarist must use proper voice radio procedures.

### 3. Operation

- a. Voice radio is considered the most insecure means of communication. A message sent by radio is open to interception by anyone who has the necessary equipment and is within reception range. The following practices are specifically forbidden:
  - (1) Violation of radio silence.
  - (2) Unofficial conversation between operators.
  - (3) Transmitting in a directed net without permission.
  - (4) Excessive tuning and testing or radio checking.
  - (5) Unauthorized use of plain language.



- (6) Transmission of an operator's name or personal sign.
  - (7) Use of unauthorized prowords.
  - (8) Profane, indecent, or obscene language.
- b. In operating a microphone there are important DOs and DON'Ts:
- (1) Listen before transmitting. Unauthorized breaking is lubberly and causes confusion. Often, neither transmission gets through.
  - (2) Speak clearly and distinctly. Both slurred syllables and clipped speech are difficult to understand.
  - (3) Speak slowly at a copying speed in short phrases. Give the recorder a chance to get the entire message the first time. You save time and repetitions.
  - (4) Avoid extremes of voice pitch. A high voice cuts best through interference, but is shrill and unpleasant. A lower pitch is easier on the ear, but is hard to understand.
  - (5) Be natural. Maintain a normal speaking rhythm. Send your message phrase by phrase instead of word by word.
  - (6) Use standard pronunciation. Speech with geographical peculiarities is difficult for persons from other parts of the country to understand.
  - (7) Keep correct distance between lips and microphone. A distance of about 2 inches is correct for most microphones.
  - (8) Speak in a moderately strong voice. This overrides unavoidable background noises and reduces requests for repeats.
  - (9) Shield your microphone. Keep your head and body between noise-generating sources and the microphone while transmitting.
  - (10) Keep the volume of a handset earphone low.
  - (11) Keep speaker volumes to a moderate level.

- (12) Give an accurate evaluation in a response to a request for a radio check.
- (13) Pause momentarily, when possible, when transmitting long messages, to allow any station with higher precedence messages to break in.
- (14) Adhere strictly to prescribed procedures.
- (15) Transmit your message and get off the air. It is not necessary to blow into a microphone to test it, nor to repeat portions of messages when no repetition is requested.
- (16) Do not transmit while surrounded by other persons talking loudly, it confuses receiving stations.
- (17) Do not hold the microphone button in the push-to-talk position until ready to transmit, as this will hinder communications on the net.
- (18) Do not hold a handset loosely. A firm pressure on the microphone button prevents unintentional release and consequent transmission interruption.
- (19) Do not send test signals for longer than 10 seconds.
- (20) DO NOT use your FCC call sign when operating on Coast Guard frequencies.
- (21) Do not use the phonetics, "Charlie Golf Alfa," when transmitting. Use "Coast Guard Auxiliary," and your vessel name for identification.

#### 4. Pronouncing Numerals

- a. Care must be taken to distinguish numerals from similarly pronounced words. The proword "FIGURES" is used preceding such numbers. Pronounce numerals as follows:

<u>NUMERAL</u>	<u>SPOKEN AS</u>	<u>NUMERAL</u>	<u>SPOKEN AS</u>
0 . . . . .	Zero	5 . . . . .	Fi-yiv
1 . . . . .	Wun	6 . . . . .	Six
2 . . . . .	Too	7 . . . . .	Seven
3 . . . . .	Thuh-ree	8 . . . . .	Ate
4 . . . . .	Fo-wer	9 . . . . .	Niner

- b. The numeral "O" is always spoken as "ZERO" and never as "OH," and when written has a slant bar through it so it is not confused with the letter "O," (Oscar).

(1) Decimal points are spoken as "DAY-SEE-MAL."

(2) In the text, numbers are transmitted digit by digit, except for exact multiples of hundreds and thousands, and are spoken as follows:

<u>NUMBER</u>	<u>SPOKEN AS</u>
44 . . . . .	Fo-wer fo-wer
90 . . . . .	Niner zero
136 . . . . .	Wun thur-ree six
500 . . . . .	Fi-yiv hun-dred
1478 . . . . .	Wun fo-wer seven ate
7000 . . . . .	Seven thow-zand
16000 . . . . .	Wun six thow-zand
164000 . . . . .	Wun six fo-wer thow-zand
812681 . . . . .	Ate wun too six ate wun

- c. Roman numerals are transmitted as the corresponding letters prefixed by the word "ROMAN NUMERAL". For example, IV would be spoken as "ROMAN NUMERAL FO-WER".

- d. Punctuation shall be spoken as follows:

<u>Punctuation</u>	<u>Spoken as</u>
Comma . . . . .	COMMA
Period . . . . .	PERIOD
Parenthesis . . . . .	PAREN/UNPAREN or OPEN BRACKETS/CLOSE BRACKETS
Oblique Stroke . . . . .	SLANT
Quotation Marks . . . . .	QUOTE/UNQUOTE
Hyphen . . . . .	HYPHEN
Colon . . . . .	COLON
Semicolon . . . . .	SEMICOLON

- e. Bearings are always given in three digits and are transmitted digit by digit. True bearings are always used unless otherwise stated. Examples are:

<u>BEARING</u>	<u>SPOKEN AS</u>
090 . . . . .	Zero niner zero
189 . . . . .	Wun ate niner
295 . . . . .	Too niner fi-yiv

## 5. Phonetic Alphabet

- a. Any letter of the alphabet that occurs in a radiotelephone transmission is identified by using the standard phonetic alphabet equivalent. The accent for pronunciation is shown by underscores.

<u>LETTER</u>	<u>EQUIVALENT</u>	<u>PRONUNCIATION</u>
A . . . . .	ALFA . . . . .	<u>AL</u> FAH
B . . . . .	BRAVO . . . . .	<u>BRAH</u> VOH
C . . . . .	CHARLIE . . . . .	<u>CHAR</u> LEE
D . . . . .	DELTA . . . . .	<u>DELL</u> TAH
E . . . . .	ECHO . . . . .	<u>ECK</u> OH
F . . . . .	FOXTROT . . . . .	<u>FOKS</u> TROT
G . . . . .	GOLF . . . . .	GOLF
H . . . . .	HOTEL . . . . .	HO <u>TELL</u>
I . . . . .	INDIA . . . . .	<u>IN</u> DEE <u>AH</u>
J . . . . .	JULIETT . . . . .	JEW LEE <u>ETT</u>
K . . . . .	KILO . . . . .	<u>KEY</u> LOH
L . . . . .	LIMA . . . . .	<u>LEE</u> MAH
M . . . . .	MIKE . . . . .	MIKE
N . . . . .	NOVEMBER . . . . .	NO <u>VEM</u> BER
O . . . . .	OSCAR . . . . .	<u>OSS</u> CAH
P . . . . .	PAPA . . . . .	PAH <u>PAH</u>
Q . . . . .	QUEBEC . . . . .	KEH <u>BECK</u>
R . . . . .	ROMEO . . . . .	<u>ROW</u> ME OH
S . . . . .	SIERRA . . . . .	SEE <u>AIR</u> RAH
T . . . . .	TANGO . . . . .	<u>TANG</u> GO
U . . . . .	UNIFORM . . . . .	<u>YOU</u> NEE FORM
V . . . . .	VICTOR . . . . .	<u>VIK</u> TAH
W . . . . .	WHISKEY . . . . .	<u>WISS</u> KEY
X . . . . .	XRAY . . . . .	<u>ECKS</u> RAY
Y . . . . .	YANKEE . . . . .	<u>YANG</u> KEY
Z . . . . .	ZULU . . . . .	<u>ZOO</u> LOO

- b. Phonetic spelling is desirable in expressing lettered designations and in spelling words in radiotelephone operations. They are not be used:

- (1) When the actual word might be used; 26 degrees West instead of 26 degrees Whiskey.
- (2) When the abbreviation is readily recognizable and authorized; such as USCG, CGAUX, etc.....

## 6. Prowords

- a. Procedure words (prowords) are words and phrases used to speed the transmission of radiotelephone messages. They perform the same functions and are used in the same manner as the procedure signs (prosigns) used digital transmissions. Many prosigns and prowords

have similar meanings, such as the proword FROM and prosign FM.

- b. Table 6-2 contains a list of prowords together with an explanation of each.

TABLE 6-2

<u>PROWORD</u>	<u>MEANING</u>
"ALL AFTER"	All after
"ALL BEFORE"	All before
"BREAK"	Separation of text from other portions of the message
"CORRECTION"	Error
"DISREGARD THIS TRANSMISSION"	This transmission is in error-disregard it
"FIGURES"	Numerals or numbers follow
"FROM"	Originator's sign
"INFO"	The addressee(s) designation immediately following are addressed for information
"INITIAL"	The following phonetic equivalent is to be recorded as a single letter initial
"I READ BACK"	The following is my response to the instructions to read back
"I SAY AGAIN"	I am repeating transmissions or portion indicated
"I SPELL"	I shall spell the next word phonetically
"I VERIFY"	I have verified with originator and am repeating
"MESSAGE"	A message requiring recording is about to follow
"OUT"	End of transmission: no receipt required (Not used with OVER)
"OVER"	Go ahead, or this is the end of my transmission, a reply is expected (Never used with OUT)
"READ BACK"	Repeat this entire transmission back exactly as received
"RELAY (TO)"	Transmit this message to all addressees immediately following
"ROGER"	I have received your last transmission satisfactorily
"SAY AGAIN"	Repeat
"SPEAK SLOWER"	Your transmission is too fast a speed-send slower
"THAT IS CORRECT"	Correct
"THIS IS"	From
"TIME"	What follows is time or Date-Time Group of this message

TABLE 6-2 (Cont'd)

<u>PROWORD</u>	<u>MEANING</u>
"TO"	Action addressee
"UNKNOWN STATION"	Unknown station
"VERIFY"	Verify with originator and repeat
"WAIT"	I must pause a few seconds
"WAIT OUT"	I must pause longer than a few seconds
"WILCO"	I have received your message, I understand, and I will comply
"WORD AFTER"	Word after
"WORD BEFORE"	Word before
"WORDS TWICE"	Communication is difficult - transmit each phrase twice (Can be used as an order or as a request)
"WRONG"	Your last transmission was incorrect - the correct version is a.....

## 7. Radiotelephone Net

- a. A radiotelephone net is an organization of stations capable of direct communications on a common channel or frequency.
- b. The establishment of Auxiliary radiotelephone nets may be authorized by the Coast Guard District Commander.
- c. Radiotelephone nets are categorized with respect to the usage for which the network was primarily established, as follows:
  - (1) Administrative Net. A net primarily established for administrative purposes linking any echelon of authority with immediate subordinates and such other stations as may be specifically designated.
  - (2) Traffic Net. A net primarily established to handle record message traffic.
  - (3) Training Net. A net primarily established to promote technical and procedural training in matters pertaining to Coast Guard and Coast Guard Auxiliary operations.
  - (4) Command and Control Net. A net primarily established for coordination purposes between the District Commander, district units, and Auxiliary Communications Units as may be

specifically authorized. Such a net would be used for alerting Auxiliarists of an emergency, actual or exercise, and to promulgate information relating to such an emergency.

- (5) Operational Net. A net primarily established to meet the communications requirements of Auxiliary operations among Auxiliary Communications Units.

## 8. Full Call and Answer

- a. Radiotelephone communications are usually established by use of the full call to the station desired such as:

**"COAST GUARD AUXILIARY . . . . .** Call sign of called  
**VESSEL 42122" . . . . .** station  
**"THIS IS" . . . . .** From  
**"COAST GUARD ANNAPOLIS . . . . .** Call of calling  
**STATION" . . . . .** station  
**"OVER" . . . . .** Go ahead; transmit

- b. The reply is in full form also:

**"COAST GUARD ANNAPOLIS . . . . .** Call name of calling  
**STATION" . . . . .** station  
**"THIS IS" . . . . .** From  
**"COAST GUARD AUXILIARY . . . . .** Call name of called  
**VESSEL 42122" . . . . .** station  
**"OVER" . . . . .** Go ahead; transmit

- c. Units calling foreign vessels or stations should use the words "UNITED STATES" before "COAST GUARD" on the initial call to clearly identify the unit as an official government facility.

## 9. Abbreviated Call and Answer

- a. After communications have been established as in paragraph C.8., the call sign of the called station may be omitted. This is also allowed only when no confusion will result between the stations.

**"122, THIS IS , ANNAPOLIS, OVER"**

- b. The abbreviated reply to abbreviated call is:

**"THIS IS, 122, OVER"**

## 10. Collective Call

- a. A Collective Call is one that includes a group of stations, usually operating together. They are

prescribed and used when many transmissions are expected to be sent to all concerned stations.

#### 11. Phonetic Spelling

- a. The procedure for the spelling of difficult words, using the prowords **"I SPELL"** is as follows:

**".....THE NAME OF THE OWNER IS MILJANOVITCH, I SPELL MIKE INDIA LIMA JULIETT ALPHA NOVEMBER OSCAR VICTOR INDIA TANGO CHARLIE HOTEL, MILJANOVITCH....."**

#### 12. Repetitions

- a. When words are missing or are doubtful, repetition is requested by the receiving station. The proword **"SAY AGAIN,"** alone or with prowords, **"ALL BEFORE," "ALL AFTER," "WORD BEFORE," "WORD AFTER,"** and **"TO,"** is used for this purpose. In complying with such requests, the transmitting station identifies that portion to be repeated.

- b. An example of this is: Coast Guard Auxiliary vessel 42122 has sent a message to Coast Guard Auxiliary vessel 34013. 34013 missed the word following "boat".

34013 transmits (using abbreviated call)

**"THIS IS - 013 - SAY AGAIN - WORD AFTER BOAT - OVER"**

42122 transmits (using abbreviated call)

**"THIS IS - 122 - I SAY AGAIN - WORD AFTER BOAT - SIGHTED - OVER"**

- c. Having received the doubtful portion of the message, 34013 receipts for the entire message with:

**"THIS IS - 013 - ROGER - OUT"**

#### 13. Correcting an Error

- a. When an error is made by a transmitting operator, the proword, **"CORRECTION"** is sent. The operator then repeats the last word or phrase correctly sent, sends the correct words, and proceeds with the rest of the message. An example:

**"1305Q RECEIVED FROM SUBJECT ON CHAN 22. HE WAS DISABLED TWO MILES NORTH OF HOWELL POINT. CORRECTION TWO MILES NORTHWEST OF HOWELL POINT...."**



- b. A completed message, fully transmitted and concluded with the proword, "**OVER**," or, "**OUT**," requires a new message to make a correction.

#### 14. Canceling a Message During Transmission

- a. During the transmission of a message and prior to the transmission of the proword, "**OVER**," or, "**OUT**," the message may be canceled by use of the proword, "**DISREGARD THIS TRANSMISSION**." A message which has been completely transmitted can be canceled only by another message.
- b. An example of this: During the transmission of a message, Coast Guard Annapolis Station discovers it is being sent to the wrong station. At the place where the error is discovered the proword, "**DISREGARD THIS TRANSMISSION**," is inserted, followed by "**OUT**."

**"COAST GUARD AUXILIARY VESSEL 22782 - THIS IS - COAST GUARD ANNAPOLIS STATION - ROUTINE - TIME - ZERO SIX ZERO TWO ZULU - BREAK - COMMENCE PATROL AT DAWN SIXTEENTH - PROCEED - DISREGARD THIS TRANSMISSION - OUT"**

#### 15. Read Back

- a. When necessary to verify the accuracy of the reception or recording of a message being sent, use the prowords, "**READ BACK**." Identify the message and that portion of the message you want read back. Transmit the proword, "**READ BACK**," immediately after the call and acknowledgement.

**"THIS IS - 22782 - READ BACK - (the) TEXT - (of the message sent at ) TIME ONE SIX THREE ZERO ZULU - BREAK - PATROL DELAYED ONE HOUR - BREAK - OVER"**

The reply:

**"THIS IS - 39300 - I READ BACK - TEXT - PATROL DELAYED ONE HOUR - OVER"**

The reply:

**"THIS IS - 782 - THAT IS CORRECT - OUT"**

#### 16. Wrong

- a. There are times when transmission is distorted and the read back is incorrect. The proword, "**WRONG**," followed by the corrected version is transmitted. In the example given in paragraph C.15, "**READ BACK**," assume that 22782 made a mistake when he transmitted

the message back to 39300. 22782 must correct.

**"THIS IS - 782 - WRONG - PATROL DELAYED ONE  
HOUR - OVER"**

39300 will reply:

**"THIS IS - 300 - I READ BACK - PATROL DELAYED  
ONE HOUR - OVER"**

22782 replies:

**"THIS IS - 782 - THAT IS CORRECT - OUT"**

#### 17. Words Twice

- a. The prowords, **"WORDS TWICE,"** may be used when communications are difficult. An example:

**"22782 - 22782 - THIS IS 39300 - 39300 - OVER"**

The reply is also with, **"WORDS TWICE."**

**"39300 - 39300 - THIS IS - 22782 - 22782 -  
OVER"**

39300 then sends the message:

**"22782 - 22782 - THIS IS - 39300 - 39300 - WORDS  
TWICE - WORDS TWICE - SUPPLIES REQUESTED - SUPPLIES  
REQUESTED - ARE ENROUTE - ARE ENROUTE - BREAK -  
OVER"**

#### 18. Acknowledgment

- a. An acknowledgment is a reply from an addressee indicating that a message has been received, is understood and can be complied with. The word, **"ACKNOWLEDGE,"** which is not a proword, may also be used to request an acknowledgment. Used as a request it must be the last word of the message text. An example (after call and acknowledgement of call):

**"THIS IS - ANNAPOLIS - PROCEED TO GALESVILLE  
WITH DISABLED CRAFT - ACKNOWLEDGE - OVER"**

39300 wishes to consider the condition of the disabled craft before acknowledging; he transmits:

**"THIS IS - 300 - ROGER - WAIT OUT"**

If 39300 can acknowledge without evaluating the situation, he transmits:

**"THIS IS - 300 - WILCO - OUT"**

19. Relay

- a. The proword, "**RELAY**," used alone indicates the station called is to relay the message to all addressees. The proword, "**RELAY TO**," followed by an addressee, means that the station called is to relay the message to the station indicated. When more than one station is called, the call sign of the station to relay precedes the proword, "**RELAY TO**." Consult section B of this Chapter for further information concerning use of "**RELAY**" in the message.

20. Auxiliary Facility Under Operational Orders

- a. Operational messages from Auxiliary craft under official orders should be addressed to the command originating the orders. When necessary these messages may be sent by relay.

21. Auxiliary Facility not Under Operational Orders

- a. Messages by Auxiliary craft not operating under official orders should be addressed to the nearest Coast Guard unit, or to the unit concerned with the subject of the message to be transmitted.

22. Transmitting Speed

- a. "Never transmit faster than you can copy" is a good rule to follow. Transmit messages in short phrases and not word by word.

23. News Category Broadcasts by Auxiliary Units

- a. No information concerning any operational action by Coast Guard Auxiliary units or Coast Guard units may be released to public news agencies. Such release must be made by the Coast Guard.
- b. No Coast Guard Auxiliary unit may make public radio news broadcasts from Auxiliary facilities without the specific authority of the District Commander. Requests for permission for such broadcasts must be made through and fully coordinated with the district Director of Auxiliary.

24. Confidential Status of Auxiliary Radiotelephone Station

- a. The unauthorized disclosure or improper use of any

information gained in the course of any official assignment of duties renders that Auxiliarist liable to legal action under security regulations.

## 25. Unusual Circumstances

- a. The use of initiative and common sense shall be the rule to follow in all unusual instances.

## 26. False Messages

- a. No person shall knowingly or willfully send by any communication system a false or forged message, or deliver or cause to be delivered to any person, a message falsely purporting to have been received by the Coast Guard Communication System.

## D. RECEIVING MESSAGES

### 1. Introduction

- a. Incoming messages are those communications addressed to or received by you for your action or information, and/or relay to other addressees. Always be prepared to copy, that is, have paper, a copying surface (a notebook, a cleared hard surface, or a clipboard), and several pencils at the receiver location at all times. Do not use red pencils or pens, since normally the only light you should use at night on the bridge is a red light which renders red print invisible. A suitable light and timepiece must be located near radiotelephone station.

### 2. Message

- a. When the proword, "**MESSAGE**," is received it is a verbal order to copy all of the message as it is received. The proword means, "A message that requires recording is about to follow."

### 3. Abbreviations

- a. Definitions. The word, "abbreviation," as used in this Chapter, means a shortened form of a word or phrase which will convey the same unmistakable meaning as though the word or phrase itself were written.
- b. Use of Abbreviations. Abbreviations are intended for Auxiliarists to use only to shorten message recording, thereby saving time when receiving a message. The use of abbreviations must be limited and kept within the confines of assured intelligibility. Over use of abbreviations places

brevity above clarity with a resultant loss of message exactness. To avoid misunderstanding, the use of abbreviations by the Auxiliary is restricted to those well recognized and which fall into one of the following categories:

- (1) Points of the compass and chart coordinates.
- (2) Military commands and activities.
- (3) Titles, ranks, and grades.
- (4) Geographic locations.
- (5) Common dictionary abbreviations.
- (6) Punctuation.

#### 4. Abbreviations for Message Reception

TABLE 6-3

<u>ABBREVIATION</u>	<u>MEANING</u>	<u>ABBREVIATION</u>	<u>MEANING</u>
ABS . . . . .	Absent	ACFT . . . . .	Aircraft
ACK . . . . .	Acknowledge	ADD . . . . .	Additional, Addition
ADEE . . . . .	Addressee	ADMIN . . . . .	Administration
A/N . . . . .	Aids to Navigation	APRX . . . . .	Approximate
APPR . . . . .	Approved	ARR . . . . .	Arrive
ASAP . . . . .	As soon as Possible	ASST . . . . .	Assist
ATTN . . . . .	Attention	AUTH . . . . .	Authorized, Authority
AUTO . . . . .	Automatic	AUX . . . . .	Auxiliary
AVAL . . . . .	Available	BAL . . . . .	Balance
BLDG . . . . .	Building	BT . . . . .	Break
CAMS. . . . .	Comm. Area Master Station	C/C . . . . .	Cabin Cruiser
CGACT . . . . .	Coast Guard Activities	CCGD . . . . .	Commander Coast Guard District
CGBASE . . . . .	Coast Guard Base	CGAS . . . . .	Coast Guard Air Station
CGC . . . . .	Coast Guard Cutter	CGDIST . . . . .	Coast Guard District
CGLASTA . . . . .	Coast Guard Light Attendan Station	CGLORSTA . . . . .	Coast Guard Loran Station
CGSTA . . . . .	Coast Guard Station	CGLTSTA . . . . .	Coast Guard Light Station
CGYD . . . . .	Coast Guard Yard	CGSUPCEN . . . . .	Coast Guard Supply Center
COGARD . . . . .	Coast Guard	CHAP . . . . .	Chapter
DEPT . . . . .	Depart, Department	COMDT . . . . .	Commandant
DET . . . . .	Detachment Detach	DESC . . . . .	Description
		DESTN . . . . .	Destination
		DIST . . . . .	District
		DIV . . . . .	Division

TABLE 6-3 (Continued)

<u>ABBREVIATION</u>	<u>MEANING</u>	<u>ABBREVIATION</u>	<u>MEANING</u>
DTG . . . . .	Date-Time-Group	EA . . . . .	Each
EMERG . . . . .	Emergency	ENCL . . . . .	Enclosure, Enclose
EST . . . . .	Estimate	ETA . . . . .	Estimated Time of Arrival
ESTAB . . . . .	Establish	ETR . . . . .	Estimated Time of Return
ETD . . . . .	Estimated Time of Departure	F/V . . . . .	Fishing Vessel
FM . . . . .	From	GOVT . . . . .	Government
FOL . . . . .	Follow	HOSP . . . . .	Hospital
FWD . . . . .	Forward	ICW . . . . .	Intercoastal Waterway
GRUCOM . . . . .	Group Commander	KHZ . . . . .	Kiloheretz
HQ . . . . .	Headquarters	LL . . . . .	Light List
IMMED . . . . .	Immediate	LTR . . . . .	Letter
INFO . . . . .	Information	MAX . . . . .	Maximum
KT . . . . .	Knot (s)	MEMO . . . . .	Memorandum
LTD . . . . .	Lighted	MISC . . . . .	Miscellaneous
LTSTA . . . . .	Light Station	NEG . . . . .	Negative
M/B . . . . .	Motorboat	NTM . . . . .	Notice to Mariners
MHZ . . . . .	Megahertz	OIC . . . . .	Officer in Charge
MSG . . . . .	Message	ORIG . . . . .	Origin, Originator
NR . . . . .	Number	PARA . . . . .	Paragraph
O . . . . .	Immediate	POB . . . . .	Persons on Board
O/B . . . . .	Outboard	QTR . . . . .	Quarter
O/O . . . . .	Owner/Operator	QUAL . . . . .	Qualify
OPLAN . . . . .	Operations Plan	RCVD . . . . .	Received
OSC . . . . .	On Scene Commander	S/B . . . . .	Sailboat
P . . . . .	Priority	SITREP . . . . .	Situation Report
PAREN . . . . .	Parenthesis	STA . . . . .	Station
POSIT . . . . .	Position	TRASTA . . . . .	Training Station
PRI . . . . .	Primary	UNAUTH . . . . .	Unauthorized
QTY . . . . .	Quantity	UNK . . . . .	Unknown
R . . . . .	Routine	USCGA . . . . .	USCG Academy
SAR . . . . .	Search & Rescue	USCGAUX . . . . .	USCG Auxiliary
SEC . . . . .	Secondary	VIS . . . . .	Visibility
SPEC . . . . .	Specify, Specification		
SUBJ . . . . .	Subject		
TRF . . . . .	Transfer		
TVL . . . . .	Travel		
UNCLAS . . . . .	Unclassified		
USCG . . . . .	United States Coast Guard		
USCGC . . . . .	USCG Cutter		
Z . . . . .	Flash		

5. Authorized punctuation are written as symbols.

<u>NAME</u>	<u>SYMBOL</u>	<u>NAME</u>	<u>SYMBOL</u>
Colon . . . . .	:	Period . . . . .	.
Comma . . . . .	,	Question Mark . . . . .	?
Hyphen . . . . .	-	Quotation Marks " "	" "
Parenthesis . . . . .	( )	Slant Sign . . . . .	/

## 6. Month Abbreviations

- a. The abbreviations for the months of the year are as follows:

January . . .	JAN	July . . . . .	JUL
February . .	FEB	August . . . .	AUG
March . . . .	MAR	September . .	SEP
April . . . .	APR	October . . .	OCT
May . . . . .	MAY	November . .	NOV
June . . . . .	JUN	December . .	DEC

## 7. State Abbreviations

- a. Following are the authorized two letter abbreviations for the states, District of Columbia, Guam, Puerto Rico, and Virgin Islands which are to be used by all members in the handling of message traffic:

ALABAMA . . . . .	AL	MONTANA. . . . .	MT
ALASKA . . . . .	AK	NEBRASKA . . . . .	NB
ARIZONA . . . . .	AZ	NEVADA . . . . .	NV
ARKANSAS. . . . .	AR	NEW HAMPSHIRE . . . .	NH
CALIFORNIA . . . .	CA	NEW JERSEY . . . . .	NJ
COLORADO . . . . .	CO	NEW MEXICO . . . . .	NM
CONNECTICUT . . . .	CT	NEW YORK . . . . .	NY
DELAWARE . . . . .	DE	NORTH CAROLINA . . . .	NC
DISTRICT OF			
COLUMBIA . . .	DC	NORTH DAKOTA . . . . .	ND
FLORIDA . . . . .	FL	OHIO . . . . .	OH
GEORGIA . . . . .	GA	OKLAHOMA . . . . .	OK
GUAM . . . . .	GU	OREGON . . . . .	OR
HAWAII . . . . .	HI	PENNSYLVANIA . . . . .	PA
IDAHO . . . . .	ID	PUERTO RICO . . . . .	PR
ILLINOIS . . . . .	IL	RHODE ISLAND . . . . .	RI
INDIANA . . . . .	IN	SOUTH CAROLINA . . . .	SC
IOWA . . . . .	IA	SOUTH DAKOTA . . . . .	SD
KANSAS . . . . .	KS	TENNESSEE . . . . .	TN
KENTUCKY . . . . .	KY	TEXAS . . . . .	TX
LOUISIANA . . . . .	LA	UTAH . . . . .	UT
MAINE . . . . .	ME	VERMONT . . . . .	VT
MARYLAND . . . . .	MD	VIRGINIA . . . . .	VA
MASSACHUSETTS . .	MA	VIRGIN ISLANDS . . . .	VI
MICHIGAN . . . . .	MI	WASHINGTON . . . . .	WA
MINNESOTA . . . . .	MN	WEST VIRGINIA . . . . .	WV
MISSISSIPPI . . . .	MS	WISCONSIN . . . . .	WI
MISSOURI . . . . .	MO	WYOMING . . . . .	WY

# RADIOTELEPHONE MESSAGE FORMAT

ADMIN	FREQ. _____ MSG FILE NR. _____	STATION CALLSIGN _____
C A L L  H E A D I N G  S E P A R A T I O N  T  E  X  T	Station(s) called: _____	
	<b><u>THIS IS</u></b>	
	Station calling: _____	
	<b><u>MESSAGE FOLLOWS</u></b>	
	Precedence: <b><u>ROUTINE</u></b> <b><u>PRIORITY</u></b> Date-Time-Group _____ <b><u>Z</u></b> <b><u>IMMEDIATE</u></b>	
	FROM _____	
	TO _____	
	INFO _____	
	ACCT _____	
	SEPARATION	<b><u>BREAK</u></b>
T  E  X  T	<b><u>UNCLAS</u></b> *SAR Phase: <b><u>UNCERTAINTY</u></b> <b><u>ALERT</u></b> <b><u>DISTRESS</u></b> *SITREP NR. _____ * <b><u>AND FINAL</u></b>	
	Subj. or *case ident. _____	
	Ref: A. _____	
	B. _____	
	Body: 1. _____	
	_____	
	_____	
	_____	
	_____	
	_____	
SEPARATION	<b><u>BREAK</u></b>	
END	Final insts: <b><u>WAIT</u></b> <b><u>CORRECTION</u></b> <b><u>DISREGARD THIS TRANSMISSION</u></b> Ending sign: <b><u>OVER</u></b> <b><u>OUT</u></b>	
ADMIN	TOR/TOD _____ BY _____	

\* Used for SITREPS only

FIGURE 6-2 SAMPLE MESSAGE FORM



## 8. Sample Message Format

- a. The use of the sample Message Format as presented in Fig 6-2, is suggested to make message copying faster and easier for the Auxiliarist.

## E. SAMPLE MESSAGES

### 1. Introduction

- a. This section summarizes the elements and provides examples of messages which an Auxiliarist could originate, draft, and transmit. Message formats may differ slightly from District to District. Contact Flotilla, Division or District communication officers to determine if there are any district peculiarities in message format or desired textual content.

### 2. General Outgoing Message Format

- a. The basic elements of the text of an outgoing message are explained as follows: (Whenever any of the elements listed are not required, they should be omitted.)
  - (1) UNCLAS. Always the first word in a message text since all Auxiliary Messages are Unclassified.
  - (2) Subject Line. Must be brief and concise. (e.g. SITREP for Situation Report, MOVEREP for Movement Report, Overdue Vessel, Flare Sighting, etc.)
  - (3) Reference Line. Identifies reference material relative to the textual content. References listed should normally be available to all addressees. All references in the text to these shall be referred to as "REF A," "REF B," etc.
  - (4) Body of Text. Contains the message information.
    - (a) Paragraphs are numbered.
    - (b) Sub-paragraphs are indented and lettered.
  - (5) A radio operator may receive case information directly from the reporting source (R/S). Sample check sheets for SAR, Overdue and Flare Sighting reports can be found in paragraph G.

### 3. Pleasure Cruise - Available for SAR

- a. This type of message may be sent when departing on a pleasure cruise or other outing to advise the Coast Guard of your availability for deployment.

- b. The suggested text for this type of message is:

BT  
UNCLAS  
AVAILABILITY FOR SAR  
(1) Time and place departing  
(2) Operating Area  
(3) Planned time and place of return  
(4) Total no. of persons onboard and no. of  
Auxiliarists onboard  
BT

An example follows:

R 011105Z APR 96  
FM COGARDAUX 25894  
TO COMCOGARDGRU NEW ORLEANS LA  
BT  
UNCLAS  
AVAILABILITY FOR SAR  
1. 0500S DEPARTED EMPIRE, LA  
2. OPERATING GULF OF MEXICO SW PASS TO GRAND  
ISLE  
3. ETR EMPIRE 1700S  
4. 4POB INCL 2AUX  
BT

- c. If you send an Availability message, you must also send a message before securing your radio watch.
- d. The suggested text for this type of message is:

BT  
UNCLAS  
A. MY(Date-Time-Group of your U/W message)  
(1) Time Secured

An example follows:

R 012135Z APR 96  
FM COGARDAUX 25894  
TO COMCOGARDGRU NEW ORLEANS LA  
BT  
UNCLAS  
A. MY 011105Z APR 96  
(1) 1525S SECURED  
BT

#### 4. Patrols

- a. Patrols, whether Safety, Regatta, ATON, etc.) usually require a minimum of two messages, one stating the time the patrol commences, and the other stating the time the patrol secures. Both of these messages

should be addressed to the Group Commander or other Coast Guard unit authorizing the patrol. If there is a significant time difference between the time underway and the time on station, separate "underway" and "on station" messages may be required.

- b. The suggested text for reporting your facility on station for a Patrol is:

BT  
UNCLAS  
AUXILIARY SAFETY PATROL  
(1) Time UNDERWAY/ON STATION Patrol Area  
(2) No. of Auxiliarists onboard  
BT

An example follows:

R 152205Z JUN 96  
FM COGARDAUX 25894  
TO COMCOGARDGRU NEW ORLEANS LA  
BT  
UNCLAS  
AUXILIARY SAFETY PATROL  
1. 1700R UNDERWAY/ON STATION SOUTH BAY  
2. 4 AUX POB  
BT

- c. The suggested format for securing from a Patrol is:

BT  
UNCLAS  
A. MY (Date-Time-Group of your U/W message)  
(1) Time OFF STATION/MOORED (Often the same time)  
(2) (District policy may require additional information such as total time underway, number of assists and whether any damage occurred during the patrol.)  
An example follows:

R 160322Z JUN 96  
FM COGARDAUX 25894  
TO COMCOGARDGRU NEW ORLEANS LA  
BT  
UNCLAS  
AUXILIARY SAFETY PATROL  
A. MY 152205Z JUN 96  
1. 2215R MOORED NEW CANAL PATROL SECURED  
2. TIME U/W 5 HRS  
3. ASSISTS 2  
A. C/C SANDY DISABLED  
B. F/V BIG ROCK AGROUND  
4. NO DAMAGE THIS UNIT  
BT

- d. Any damage incurred to the patrol unit should be reported by separate message as directed by the district Director of Auxiliary. Assists are reported in SITREP format.

5. Situation Report (SITREP)

- a. The situation report message, commonly referred to as a "SITREP", is addressed and transmitted as per instructions contained in the District OPLAN and/or COMPLAN. A PRIORITY (P) or IMMEDIATE (O) precedence is used for all SITREPs except the final SITREP which may be sent ROUTINE (R) if the nature of the situation so dictates.
- b. All SITREP messages relative to any one situation sent by any unit are serially numbered. The last SITREP message concerning the situation states the last serial number and the words, "AND FINAL", in the subject line of the text, following the word, "UNCLAS". When the entire case is completely reported in one SITREP, it shall state, "SITREP ONE AND FINAL". All SITREP messages, having the word, "FINAL", at the beginning of the text, must conclude with the words, "CASE CLOSED THIS UNIT".
- c. Consecutive SITREP messages relative to the same case should not repeat information stated in a prior SITREP.
- d. The emergency phase is identified in the SITREP message as: UNCERTAINTY, ALERT, OR DISTRESS, as appropriate. Omit the emergency phase in the final SITREP.
- e. SITREP messages should follow a standard format. It is intended to furnish enough data so that the addressee need not refer to the standard format to understand the message. Be brief but clear. Paragraphs and sub-paragraphs of the format pertinent to the case are numbered, lettered, and indented as appropriate.
- f. The suggested format of the SITREP is:

BT  
UNCLAS  
SITREP Number (AND FINAL on the last SITREP)  
(Phase) uncertainty, alert, distress (delete  
if FINAL SITREP)

(Case identification) Vessel name and/or number and  
problem (i.e. sinking, aground, adrift, taking on  
water, etc)

- A. (References to previous messages when
- B. applicable)
- C.

#### Paragraph 1. Situation

- sub para: A. Description of distress and position.  
(Include source of report of incident.)
- B. Description of vessel.
  - C. POB, name, address and phone number of  
o/o, names and ages of crew.
  - D. Survival, signaling and communications  
equipment including radio frequencies  
board distressed vessel.
  - E. Weather on scene (wind, visibility, sea  
conditions, precipitation).
  - F. Additional information on situation not  
already covered by the above.
  - G. Your position (initial SITREP).

#### Paragraph 2. Action Taken

- sub para: A. Local time of each action followed by  
the action you have taken. (Underway,  
enroute scene, speed, course, estimated  
time of arrival, commenced attempt to  
dewater, evacuate personnel, extinguish  
fire, took subject in tow, etc.)

#### Paragraph 3. Future Plans and Recommendations

- sub para: A. Your intentions when on scene, etc.
- B. What assistance, in your opinion, would  
be beneficial to the proper prosecution  
of the case. (Helicopter for search,  
C.G. units with pumps, etc.)

Paragraph 4. Amplifying information such as damage to  
ATON's, pollution or anything not  
covered in previous paragraphs. (USE  
ONLY AS NEEDED.)

Paragraph 5. Case Closed This Unit (USE ONLY ON FINAL  
SITREP, DO NOT USE PARA 5 ON CASE STILL  
IN PROGRESS)

BT (Break)

Sample SITREPs follow:

Sample SITREP #1:

**O 241435Z JAN 96**  
**FM COGARDAUX 42122**  
**TO COMCOGARDGRU NEW ORLEANS LA**

INFO COGARDSTA NEW CANAL LA  
COGARDAIRSTA NEW ORLEANS LA  
BT

UNCLAS

DISTRESS SITREP ONE C/C SHADY LADY LA 231 FA  
SINKING

1. SITUATION
  - A. 0815S RECD DISTRESS CALL FM SUBJ ON VHF CH 16 SUBJ LOC 5 MI WEST OF NORTH DRAW OF LAKE PONTCHARTRAIN CAUSEWAY. SUBJ RPTD STRIKING SUBMERGED OBJECT HOLING HULL STBD SIDE FWD BELOW WATERLINE. EST CAN STAY AFLOAT 1 HR.
  - B. DESC 42 FT C/C WHITE HULL AND DECK WITH BLUE CABIN
  - C. 2 POB
  - D. PFD UNK
  - E. WX, WIND NE 5 KTS, SEA CALM, VIS 8 MI
  - F. 0815S SHY BELLE POS 8 MI NORTH OF NEW CANAL STATION
2. ACTION TAKEN
  - A. 0815S U/W ENR SCENE SOA 32 KTS, ETA 0850S.
3. FUTURE PLANS AND RECOMMENDATIONS
  - A. REQUEST UTB FM NEW CANAL BE DISPATCHED WITH ADDL DEWATERING EQUIP
  - B. REQUEST ACFT BE LAUNCHED FOR POSITION CONFIRMATION

BT

Sample SITREP #2:

P 241615Z JAN 96  
FM COGARDAUX 42122  
TO COMCOGARDGRU NEW ORLEANS LA  
INFO COGARDSTA NEW CANAL LA  
COGARDAUX ACFT 3156B  
BT

UNCLAS

DISTRESS SITREP TWO C/C SHADY LADY LA 231 FA  
SINKING

1. SITUATION
  - A. O/O JOHN A HANCOCK, 117 NORTH RAMPART ST, APT 307, NEW ORLEANS, PHONE 524-9116, CREW; BELLE STARR, 415 BOURBON ST, NEW ORLEANS
2. ACTION TAKEN
  - A. 0830S CGAUX ACFT 3165B LOCATED SUBJ IN RPTD POS AND VECTORED UNITS TO SCENE.
  - B. 0850S ARRIVED ON SCENE AND COMMENCED DEWATERING
  - C. 0900S SECURED TARPAULIN OVER DAMAGED SECTION OF HULL USING LINES FROM DECK

D. 1000S CG 41330 ARRIVED ON SCENE AND  
TRFD ADDL DEWATERING PUMP TO SUBJ  
E. 1010S CG 41330 TOOK SUBJ IN TOW ENR  
NEW CANAL, SOA 5 KTS, ETA 1400S  
F. 1012S CGAUX ACFT 3165B DEP SCENE

3. FUTURE PLANS AND RECOMMENDATIONS
  - A. O/O REQUESTS GRUCOM CONTACT SCARIANO SHIPYARD AND ARRANGE FOR HAUL OUT UPON ARRIVAL
  - B. THIS UNIT WILL ESCORT UNLESS OTHERWISE DIRECTED

BT

Sample SITREP #3 AND FINAL

R 242050Z JAN 96  
FM COGARDAUX 42122  
TO COMCOGARDGRU NEW ORLEANS LA  
INFO COGARDSTA NEW CANAL LA  
BT  
UNCLAS  
SITREP THREE AND FINAL C/C SHADY LADY  
LA 231 FA SINKING

1. ACTION TAKEN
    - A. 1410S MOORED SUBJ SCARIANO SHIPYARD
    - B. 1415S SUBJ HAULED
    - C. 1430S CG 41330 SECURED FROM CASE
    - D. 1445S 42122 SECURED FROM CASE
  2. NO DAMAGES THIS UNIT
  3. CASE CLOSED THIS UNIT
- BT

- g. If you are involved in an uncomplicated and short case, a SITREP ONE AND FINAL may be all that is indicated. This special SITREP is used when the case is completed before any messages are sent. The SAME basic format is used as follows:

Sample SITREP #1 AND FINAL

P 232015Z AUG 96  
FM COGARDAUX 34013  
TO COMCOGARDGRU NEW ORLEANS LA  
INFO CGC PT ESTERO  
BT  
UNCLAS  
SITREP ONE AND FINAL F/V PAM BAY TAKING ON WATER

1. SITUATION
  - A. 1350R SUBJ ADVISED CGC PT ESTERO ON THE VHF CH 16 THAT HE WAS TAKING ON WATER AT THE NORTH END OF FREEMASON ISLAND
  - B. DESC 65 FT F/V WHITE HULL AND CABIN,

**GRAY DECK**

- C. 2 POB, MASTER J B HARRIS, 2205 SMITH DR,  
PENSACOLA, FL, PHONE 305-887-6187**
- D. OWNER, AJAX SEAFOOD CO, 203 WEST DR,  
PANAMA CITY, FL**
- E. WX: WIND NE 5 KTS, SEAS CALM, VIS 8 MI**
- F. 1305R F/V PAM BAY LOC 5 MI EAST OF  
FREEMASON ISLAND IN BRETON SOUND**

**2. ACTION TAKEN**

- A. 1310R U/W ENR SCENE**
- B. 1320R LOC SUBJ IN POS 30-49.7 N,  
88-58.4 W**
- C. 1340R TRFD PUMP TO SUBJ AND COMMENCED  
DEWATERING**
- D. 1405R DEWATERING COMPLETE. LEAK DUE  
BROKEN WATER HOSE REPAIRED**
- E. 1408R SUBJ U/W UNDER OWN POWER. NO  
FURTHER COGARD ASSISTANCE REQUIRED**

**3. NO DAMAGE THIS UNIT**

**4. CASE CLOSED THIS UNIT**

**BT**

**6. Medico SITREP**

- a. This special form of the SITREP is used in a situation requiring medical advice from the Coast Guard and/or evacuation of the patient as a result of that advice. IMMEDIATE (O) precedence is normally used for MEDICO messages.**
- b. The suggested format for a MEDICO message is:**

**BT**

**UNCLAS**

**MEDICO SITREP (Number)  
(Case Identification)**

**1. SITUATION**

- A. (Source of information, what has happened to patient)**
- B. (Patient's name, address, phone, age)**
- C. (Patient is/is not conscious, pulse rate, breathing, temperature, additional information describing vital signs)**
- D. (Location of patient, destination, course, speed)**
- E. (Radio frequencies available)**
- F. (Weather on scene, wind, visibility, sea state, fog, precipitation)**
- G. (Name of vessel's owner)**
- H. (Medication administered)**
- I. (Skipper does/does not request evacuation of patient)**



2. FUTURE PLANS AND RECOMMENDATIONS
    - A. (Comm Schedule)
    - b. (Additional plans and recommendations)
- BT

An example follows:

O 170241Z DEC 95  
 FM COGARDAUX 39300  
 TO CCGD EIGHT NEW ORLEANS LA  
 INFO COMCOGARDGRU NEW ORLEANS LA  
 COGARDAIRSTA NEW ORLEANS LA  
 BT  
 UNCLAS  
 MEDICO SITREP ONE M/V EXPLORER  
 1. SITUATION  
   A. 2020S SUBJ ADVISED ON VHF CH 16 THAT  
      AT 2000S A CREW MEMBER SUFFERED  
      COMPOUND FRACTURE OF UPPER LEFT ARM  
   B. VICTIM J E JONES, MALE, AGE 24, OF  
      GOLDEN MEADOW, LA ZIP 70003  
   C. VICTIM CONSCIOUS, PULSE RAPID,  
      BREATHING SHALLOW, NORMAL TEMP,  
      BLEEDING SLIGHTLY WHERE BONE  
      PROTRUDING THRU SIDE OF ARM  
   D. 2000S SUBJ POS 25 MI SSE GRAND ISLE,  
      LA. CSE 020T, SOA 8 KTS  
   E. COMMS VHF CH 6, 16, 18, AND 22. 30  
      MIN COMM SKED ON CH 22  
   F. WX: WIND ENE 10 KTS, SEAS 2 FT, VIS 4-  
      6 MI, OCC FOG  
   G. OWNER, GULF EXPLORATION INC., GRAND  
      ISLE, LA. PHONE 504-894-7653  
   H. MEDICATION ON BOARD ASPIRIN, IODINE,  
      GAUZE AND TAPE, THREE ASPIRIN  
      ADMINISTERED AND PRESSURE BANDAGE  
      APPLIED OVER WOUND. NO ONE ON BOARD  
      ABLE TO RESET BONE  
   I. MASTER REQUESTS EVACUATION OF VICTIM  
 2. FUTURE PLANS AND RECOMMENDATIONS  
   A. CONTINUE COMM SKED  
   B. REQUEST CONTACT OWNER AND ADVISE  
      SITUATION  
 BT

## 7. Aid-to-Navigation Discrepancy

- a. The malfunction of an aid-to-navigation is a hazard to safe navigation. Such a discrepancy should be promptly reported by message with PRIORITY (P) precedence to the local Coast Guard station or group.
- b. The suggested text for such a message is:

BT  
UNCLAS  
(Name of Aid and number as stated in the  
current Light List)  
(1) (Time) SUBJ AID OBSERVED (State the type of  
discrepancy noted)

A sample follows:

P 040330Z JUN 96  
FM COGARDAUX 24895  
TO COMCOGARDGRU NEW ORLEANS LA  
BT  
UNCLAS  
SOUTH PASS LB3 LLNR 803  
1. 2215R SUBJ AID OBSERVED EXTINGUISHED  
BT

F. SIGNALLING

1. There are occasions when radio equipment may fail or there is no common language between the stations involved and it is necessary to communicate by flag or morse signals. It is recommended that Auxiliarists keep on board a copy of the International Code of Signals (United States Edition) H.O. No. 102, published by the U.S. Naval Oceanographic Office and available from the U.S. Government Printing Office, Washington DC 20402. This book, which is printed in most countries in their language, contains common instructions on signalling methods and an extensive list of typical messages.

- G. EXAMPLE OF COAST GUARD FORMS. The following six pages contain three forms used by the Coast Guard for gathering data on a SAR Report, an Overdue Report, and a Flare Sighting Report. These forms are presented to make recording data associated with those reports easier for the Auxiliarist.

# INITIAL SAR CHECKSHEET

Complete blocks 1 to 2 before shifting frequency

Unit: \_\_\_\_\_

Time: \_\_\_\_\_ Date: \_\_\_\_\_ UCN: \_\_\_\_\_ Initials: \_\_\_\_\_

## 1. NAME OF VESSEL REPORTING SOURCE

OR

Radio Call Sign \_\_\_\_\_

Telephone: \_\_\_\_\_

Frequency \_\_\_\_\_

[ ] Confirmed [ ] Cellular

DF Bearing \_\_\_\_\_

## 2. POSITION

Latitude: \_\_\_\_\_ N

Longitude: \_\_\_\_\_ W

TD1: \_\_\_\_\_

[ ] Anchored

TD2: \_\_\_\_\_

## 3. NATURE OF DISTRESS

POB: \_\_\_\_\_ Total

\_\_\_\_\_ Adult

\_\_\_\_\_ Children

Vessel Description: \_\_\_\_\_

[ ] Put on PFD's:

Length: \_\_\_\_\_

[ ] Health/Medical Prob

Color: \_\_\_\_\_

[ ] PIW

Type: \_\_\_\_\_

Number \_\_\_\_\_

[ ] Confirmed

PFD [ ]

On Scene Weather: \_\_\_\_\_

Time: EXP SUIT [ ]

LIGHT [ ]

Wind: \_\_\_\_\_ Seas: \_\_\_\_\_ Vis: \_\_\_\_\_

Description: \_\_\_\_\_

## EMERGENCY PHASE (Initial Severity)

[ ] UNCERTAINTY [ ] ALERT  
Additional information needed.

Complete one or more of the following:

- [ ] Supplement Checksheet (Reverse)
- [ ] Overdue Checksheet
- [ ] Flare Sighting Checksheet
- [ ] MEDEVAC/MEDICO Checksheet
- [ ] Grounding Checksheet

[ ] DISTRESS

- [ ] Contact SMC/OOD
- [ ] Issue UMIB
- [ ] Dispatch resources
- [ ] Provide emergency Instruct. to vessel
- [ ] Advise vessel of CG Stations
- [ ] Refer to SARPLAN

# S U P P L E M E N T A L   S A R   C H E C K S H E E T

V E S S E L	[ ] Document/Official [ ] State Reg.		Communication Equip. [ ] VHF-FM [ ] HF [ ] Other _____ [ ] Cel # _____ Frequencies: _____	
	Homeport	Flag		
	Usage	Hull Material	Navigation Equipment [ ] LORAN [ ] GPS [ ] OMEGA [ ] Radar [ ] Fathometer [ ] Other	
	Prominent Features			
	Cause of Incident	Survival Equipment [ ] EPIRB Class/Type [ ] VDS/Flares [ ] Flashlight [ ] Raft/Lifeboat [ ] Dinghy/Skiff [ ] Food/Water [ ] Foul Wx Gear		
	[ ] Owner [ ] Operator [ ] POB NAME Address  Phone  Age:    DOB:            MALE/FEMALE		[ ] Owner [ ] Operator [ ] POB NAME Address  Phone  Age:    DOB:            MALE/FEMALE	
	[ ] Owner [ ] Operator [ ] POB NAME Address  Phone  Age:    DOB:            MALE/FEMALE		[ ] Owner [ ] Operator [ ] POB NAME Address  Phone  Age:    DOB:            MALE/FEMALE	
Additional Comments				
A C T I O N	Communication Schedule		Set & Drift [ ] Not a factor	
	Start Time	Frequency	Set [ ] T [ ] M	Drift [ ] kts [ ] MPH
	Time Interval [ ] 15 min [ ] 30 min [ ] 60 min [ ] Other		[ ] DBM Type      Freq	
			DBM	Inserted      Relocated
	Remarks		Time	
			Posit.	N      N W      W

## OVERDUE CHECKLIST

COMPLETE BOTH SIDES OF THIS CHECKSHEET  
EVALUATE INFORMATION AND TAKE INITIAL ACTION

One of the following might be reason to immediately launch an asset:  
SIG HRS OVERDUE, MEDICAL CONCERNS, COMMITMENTS, WX HISTORY, AGE OF POB

VSL LPOC: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Did R/S confirm departure: \_\_\_\_\_ Y N

VSL NPOC: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Did R/S confirm non-arrival: \_\_\_\_\_ Y N

Intended route: \_\_\_\_\_

POB: Adults \_\_\_\_\_ Children \_\_\_\_\_ HRS OVERDUE: \_\_\_\_\_

Have they taken this trip before: Y N UNK  
Do they usually stop over anywhere: Y N UNK  
Do they have a habit of being late: Y N UNK

Last comms DTG: \_\_\_\_\_ Method: (VHF, L/L, etc.) \_\_\_\_\_  
Intentions at last comms: \_\_\_\_\_

### VESSEL DESCRIPTION:

Name: \_\_\_\_\_

Homeport: \_\_\_\_\_

Type VSL: PWR SPEED ROW SAIL

REG/DOC #:

Length: \_\_\_\_\_ FT/M Type: \_\_\_\_\_

Make: \_\_\_\_\_ Draft: \_\_\_\_\_ FT/M

Hull Clr: \_\_\_\_\_ Hull Mat: \_\_\_\_\_

S/S Clr: \_\_\_\_\_ Trim Clr: \_\_\_\_\_

Sail Clr: \_\_\_\_\_ Fuel O/B: \_\_\_\_\_

Propulsion: I/B O/B I/O SINGLE TRIM  
Prominent Features: \_\_\_\_\_

### OWNER:

Address: \_\_\_\_\_

Phone: ( ) \_\_\_\_\_

Is he/she on board: Y N

\*CONTACT OWNER IF NOT ON BOARD\*

### ELECTRONIC EQUIPMENT:

RADAR FATH GPS LORAN SATNAV

EPIRB (Type: \_\_\_\_\_ )

RADIOS: VHF HF SSB CB  
C/S: \_\_\_\_\_ FREQS: \_\_\_\_\_

Cellular Telephone: \_\_\_\_\_

Pager/Beeper: \_\_\_\_\_

### ADDITIONAL INFORMATION:

SURVIVAL EQUIPMENT:

PFD'S: Y N UNK  
Flares: Y N UNK  
Flashlight: Y N UNK  
Dye: Y N UNK  
Mirror: Y N UNK  
Smoke mkr: Y N UNK  
Smoker: Y N UNK  
Spotlight: Y N UNK  
AUX elec pwr: Y N UNK  
Radar ref: Y N UNK  
Drouge: Y N UNK  
Anchor: Y N UNK  
Anchor line: Y N UNK  
Food: Y N UNK  
Water: Y N UNK  
Raft: Y N UNK

Description:

Dinghy: Y N UNK  
Description:

VEHICLE:

Make: \_\_\_\_\_ Model: \_\_\_\_\_  
License NR: \_\_\_\_\_ Color: \_\_\_\_\_  
Trailer lic: \_\_\_\_\_ Color: \_\_\_\_\_

SECOND VEHICLE:

Make: \_\_\_\_\_ Model: \_\_\_\_\_  
License NR: \_\_\_\_\_ Color: \_\_\_\_\_  
Trailer lic: \_\_\_\_\_ Color: \_\_\_\_\_

ADDITIONAL NOTES:OPERATOR:

Address:

Phone: ( )

POC/NOK:

Phone: ( )

Experience w/boat: Y N UNK

Experience in area: Y N UNK

Swimmer: GOOD FAIR POOR NON

Clothing:

Desc: HT: WT: Eyes:

Hair: Race: AGE:

HEALTH: GOOD FAIR POOR UNKCOMMITMENTS:PASSENGER:

Address:

Phone: ( )

POC/NOK:

Phone: ( )

Experience w/boat: Y N UNK

Experience in area: Y N UNK

Swimmer: GOOD FAIR POOR NON

Clothing:

Desc: HT: WT: Eyes:

Hair: Race: AGE:

HEALTH: GOOD FAIR POOR UNKCOMMITMENTS:PASSENGER:

Address:

Phone: ( )

POC/NOK:

Phone: ( )

Experience w/boat: Y N UNK

Experience in area: Y N UNK

Swimmer: GOOD FAIR POOR NON

Clothing:

Desc: HT: WT: Eyes:

Hair: Race: AGE:

HEALTH:COMMITMENTS:

## A C T I O N T A K E N B Y C O A S T G U A R D

Confirm departure: Y N Confirm non-arrival: Y N UMIB: Y N

EVALUATE WX HISTORY ALONG INTENDED TRACK:

WIND: \_\_\_\_/\_\_\_\_ SEAS: \_\_\_\_/\_\_\_\_ VIS: \_\_\_\_ SEA TEMP: \_\_\_\_

Initial EMERGENCY PHASE: UNCERTAINTY ALERT DISTRESS

Initial action taken:

# FLARE SIGHTING CHECKSHEET

## OBTAIN A CLEAR MENTAL PICTURE OF WHAT THE R/S OBSERVED

Flare color: **RED AMBER WHITE GREEN OTHER** Number observed: \_\_\_\_\_

Type of flares: **PARACHUTE HANDHELD METEOR OTHER**

Time interval between flares: \_\_\_\_\_ Duration of burn: \_\_\_\_\_

Trajectory: **RISE FALL ARC STEADY OTHER**

Additional information:

R/S position

Position uncertainty: +/- \_\_\_\_\_ NM

## DETERMINING THE ANGLE OF ELEVATION

To determine the angle of elevation, particularly from the inexperienced R/S, ask the R/S to hold his/her arm at arm's length, make a fist, and place the bottom of the fist on the horizon. If the elevation of the flare is **ABOVE** the fist, the angle is greater than 8 DEGREES. Any elevation above 8 DEGREES can be approximated as the distance to the flare is within 1 NM. If the elevation is **BELOW** the top of the fist, ascertain how high up the fist, i.e. 1/4, 1/2, 3/4 or number of fingers. The distance to the source of the flare is much greater for any angle below 8 DEGREES. Refer to NSM CG Addendum Appendix I for conversion table.

Angle of elevation: \_\_\_\_\_ DEG NLT \_\_\_\_\_ DEG NMT \_\_\_\_\_ DEG

How determined: \_\_\_\_\_

Distance from R/S based on angle  
of elevation (as per NSM):

Bearing from R/S:

NLT \_\_\_\_\_ NM +/- \_\_\_\_\_ NM \_\_\_\_\_ DEG T/M +/- \_\_\_\_\_ DEG

NLT \_\_\_\_\_ NM +/- \_\_\_\_\_ NM

Apparent origin of flare: **SURFACE AIR OTHER**

Relation to the horizon: **ABOVE BELOW ON OTHER**

R/S height of eye \_\_\_\_\_ FT Any VLS/ACFT sighted in vic: \_\_\_\_\_

Obstruction in line of sight: **TREES BLDGS OTHER**

O/S Weather: Wind: \_\_\_\_/\_\_\_\_ Seas: \_\_\_\_/\_\_\_\_ Vis: \_\_\_\_\_ Sea temp: \_\_\_\_\_

Additional notes:

**REPORTING SOURCE RESPONSE/AMPLIFYING INFO****IF R/S IS ON A VESSEL**Will R/S respond to sighting:    **Y**    **N**                      ETA O/S: \_\_\_\_\_

Intended action by R/S:

**IF R/S IS ON LAND**Will R/S remain on the phone (or O/S) to vector SRU:    **Y**    **N**

Advise R/S of Coast Guard intentions:

Additional information:

**ACTION TO BE TAKEN BY CG**

Determine if flare sighting corresponds to:

Other flare sightings:	<b>Y</b>	<b>N</b>	Known SAR cases:	<b>Y</b>	<b>N</b>
Known Exercises in progress:	<b>Y</b>	<b>N</b>	Known Overdues:	<b>Y</b>	<b>N</b>

**ALWAYS treat RED and ORANGE flares as EMERGENCY SAR cases.**  
**GROUP OPCEN IS TO BE NOTIFIED IMMEDIATELY ON ALL F/S.**

Evaluate EMERGENCY SAR PHASE:    **DISTRESS**                      **ALERT**                      **UNCERTAINTY**Issue UMIB:    **Y**    **N**                      Time issued: \_\_\_\_\_**LAUNCH SORTIES**

UNIT	STATION	ETA	ACTION

Other Assistance:

Intentions:

First light search (required for RED/ORANGE flares):    **Y**    **N**  
Additional information:ACTSUS approved by (osr):    **Y**    **N**



H. CHAPTER SIX STUDY QUESTIONS

1. Why is the knowledge of message types and formats important for an Auxiliarist?
2. What are the three basic types of messages?
3. What is the key responsibility of a message originator?
4. What are the major parts of a message and their locations in the message format?
5. What separates the parts of a message?
6. What are the various message precedences and their corresponding abbreviations?
7. The entire Coast Guard communications organization operates on what time?

8. What techniques should be utilized when using a microphone?
9. How should the distance 5000 yards be spoken?
10. What is the proword to indicate that numerals follow?
11. What are the meanings of the prowords "ROGER" and "OUT"?
12. What is the proword that indicates a reply is necessary?
13. The proword "WILCO" signifies what?
14. You are transmitting a message by radiotelephone and before you have said "OVER" or "OUT" you discover that you have made an error. What is the proper procedure to correct it?

15. During the transmission of a message and prior to the transmission of the proword "OVER" or "OUT" the message may be canceled by the use of what proword?
16. What is the abbreviation for a Coast Guard Loran Station?
17. Safety patrols usually require a minimum of two messages; what are they?
18. Who determines the address of a message?
19. What publication will assist in communicating with foreign vessels?

THIS PAGE IS INTENTIONALLY BLANK

## CHAPTER SEVEN - THE RADIOTELEPHONE LOG

### A. REQUIREMENTS

#### 1. General

- a. Radio logs and formal message logs must be maintained on a current basis by the owner/operator of a radio facility. As outlined in Chapter FIVE, mobile stations in vehicles, vessels or aircraft do not have to make log entries when communicating with a fixed land Coast Guard or Auxiliary station. In these cases the fixed land station is keeping the required log for the mobile station. If, however, one mobile station is communicating with another mobile station the required log entries must be made by the mobile units. Chapter FIVE further outlines the requirements for log retention, availability and precautions to be taken in log keeping.

#### 2. Purpose

- a. The purpose of this Chapter is to explain how to fulfill the requirements of the USCG through the use of a standard log book format and organization.

#### 3. Minimum Coast Guard Requirements

- a. When an Auxiliary Communications Unit operates as a government station a record of the communications must be kept. This may be accomplished by recording in ink in a ledger or log book, tape recording communications, or by computer. All entries should be accurate, legible and readable and made in such a manner that another communicator can interpret the log. Recording tape logs and computer file disks must be retained the same as hand written logs. Most stations will make transcripts of tapes or print hard copies of computer logs and file these in a log book binder. The log book should be divided into the following three sections:

- (1) The **LOG SECTION** contains the record of the communications as outlined in paragraph A.4. below.
- (2) The **MESSAGE FILE SECTION** contains a file of all recorded messages transmitted or received.
- (3) The **REFERENCE SECTION** contains a file of all information which the Auxiliarist may require for rapid reference relative to communications.

FIGURE 7-1

## 5. Message File Section

- a. This section of the log book shall contain the file of all recorded messages transmitted and received by the station. The format for these messages is that suggested by Fig 6-2. The message pages shall be numbered in numerical sequence, and each such number entered on the Log Sheet in the message summary column along with the other necessary entries having to do with transmission or reception.

## 6. Reference File Section

- a. The contents of this section will vary with districts, divisions, flotillas, and operational areas. The reference material contained here should represent all data to assist the station operator to function in the expected and unexpected circumstances. The following suggested information is furnished only to serve as a guide to use in assembling the reference material which will best serve the local operational demands.

- (1) Phonetic alphabet.
- (2) Prowords.
- (3) International code flag chart.
- (4) International Morse code alphabet and numerals.
- (5) Body signal chart.
- (6) Local Coast Guard locations, call signs and telephone numbers.
- (7) List of Coast Guard frequencies.
- (8) List of district Auxiliary Communications Units.
- (9) District, division, and/or flotilla facility roster.
- (10) List of state, county or city patrol vessels.
- (11) Information list in order, as requested of distressed vessels.
- (12) SAR Incident report (CG4612).
- (13) Coast Guard Accident Report Form.
- (14) State Accident Report Form.
- (15) District communications, SAR, and regatta patrol instructions.
- (16) Local ambulance units locations and telephone numbers.
- (17) Sample messages forms.
- (18) Local weather information broadcast schedules.

7. The use of Operator Notes in a log is very helpful when referring to past log entries. OP NOTES such as "Safety Patrol", "Comm Drill", "Weather Alert", etc. will remind an operator of the situation which required the communications activity.

B. CHAPTER SEVEN STUDY QUESTIONS

1. When operating as a government station, what is the minimum log requirement?
2. What are the three sections of a log?
3. What are some suggested items to be kept in the reference file section?
4. When is an Auxiliary facility required to maintain a radio log?
5. What are OP NOTES?



## CHAPTER EIGHT - COAST GUARD COMMUNICATIONS

### A. INTRODUCTION

1. Coast Guard Communications is an extensive topic from an organizational, operational, and administrative standpoint. Reliable communications are essential to the Coast Guard's far flung operations in every field from search and rescue to port security. The great preponderance of communications carried on by Auxiliary communications facilities involves the use of Coast Guard radiotelephone procedures. These procedures are designed for simplicity and clarity in voice communications. Uniformity is important, and Auxiliarists should be familiar with and adhere to the common procedures outlined in this text.

### B. FREQUENCY ALLOCATION

#### 1. Frequency Management

- a. Radio frequencies are allocated internationally to the various radio services (fixed, broadcasting, radio navigation, maritime mobile, etc.) by Radio Regulations annexed to the International Telecommunication Union convention in force. Based on these allocations, frequencies are assigned to U. S. Government agencies by the National Telecommunications and Information Administration (NTIA) through the Inter-department Radio Advisory Committee (IRAC), acting for the President, and to all civil and non-federal government activities by the Federal Communications Commission. The Commandant (G-SCT) coordinates, procures, assigns and protects frequency assignments for all surface Agencies within the Transportation Department.

#### 2. Coast Guard Voice Frequencies

- a. COMDTINST M2400.1 is the basic U. S. Coast Guard Frequency Plan which contains all frequencies for U.S. Coast Guard and U. S. Coast Guard Auxiliary use. This publication contains information concerning frequency use, a frequency index and lists of circuits.

### C. COAST GUARD ALL-STATION BROADCASTS

#### 1. Introduction

- a. The Coast Guard makes urgency, safety and

scheduled marine information broadcasts at various radio stations in every district. The broadcasts include information vital to maritime interests in the vicinity of U. S. waters (including the Caribbean). Only voice broadcasts are considered here.

2. Urgency Broadcasts (PAN PAN)

- a. Urgency Broadcasts are transmitted on 2182 kHz and 156.8 MHz (CH 16) plus, if required, the district working frequency. Such broadcasts are preceded by the urgency signal. The Coast Guard broadcasts urgent information upon receipt, repeats it 15 minutes later, and thence repeats it again during the scheduled broadcasts. These messages are relative to the safety of ships, aircraft, persons, etc.

3. Safety Broadcasts (SECURITY)

- a. Safety broadcasts are transmitted on 2670 kHz and 157.1 MHz (CH 22). Such broadcasts are preceded by the Safety Signal. Times of broadcast are the same as for Urgency Broadcasts. These messages are relative to safety of navigation or important meteorological warnings. The call announcing these broadcasts is made on the calling channels in the area concerned.

4. Scheduled Broadcasts

- a. Scheduled marine information broadcasts are transmitted on 2670 kHz and 157.1 MHz (CH 22). These messages are relative to important notices to mariners, oceanographic information, storm warnings, and all urgent and safety broadcasts in which the information has remained unchanged. (Urgency and Safety Signals are not re-broadcast in the latter case.) The times of the scheduled broadcasts are different among the various districts.

D. COAST GUARD COMMUNICATIONS ORGANIZATION - DISTRICT

1. General

- a. All district-wide communications instructions and procedures are published by the district commander in the district operations plan (OPLAN). In each Coast Guard district, the

chief, telecommunications branch (dt), under the district commander, is responsible for the proper planning, organization, operation, inspection, supervision and coordination of all communications activities within the district.

- b. The foremost communications facilities are Communication Area Master Stations (CAMS). Below this level, group commands and individual radio-equipped units each have a communications responsibility. As in the case of the communications station, guidance is obtained from the area commander, but the commanding officers and officers-in-charge of individual units are responsible for maintaining a reliable communications capability. Any radio equipped unit, ashore or afloat, speaks with the authority of its commanding officer or officer-in-charge.
  - c. Group/Activity offices maintain discipline on radio telephone circuits in their areas of responsibility and speak with the authority of the commander.
  - d. Communications stations have overall control of all radio circuits and speak for and with the authority of the area commander. They maintain overall responsibility for circuit discipline on these circuits.
  - e. Controls may also be delegated by proper authority, as in the case of the on-scene-commander in a SAR operation.
  - f. Auxiliaries should be familiar with any applicable additional information published in the district OPLAN.
2. Communication equipment varies from facility to facility based on its specific mission and the type of vessels it must support. Most all have VHF FM equipment and many also have HF SSB equipment. Additionally, local landline data circuits are usually located in the telecommunications center spaces and are operated by the watchstander personnel. VHF FM is carried by all Coast Guard small boats. As the vessels get bigger the communications equipment increases. Buoy tenders usually carry HF SSB. Larger cutters may also carry satellite terminals, VHF and UHF AM equipment and terminal equipment for reception of data and

facsimile information pertaining to weather and navigation.

3. Coast Guard unit call signs are very similar to those used by the Auxiliary. Land stations usually use a geographic call sign, such as COMMSTA PORTSMOUTH, STATION SAN DIEGO, ACTIVITIES BALTIMORE, and GROUP UPPER MISSISSIPPI RIVER. Small boats use a numerical call sign consisting of five or six numbers with the first two indicating the length of the vessel; 41471, 55105, 212001, etc. Larger vessels use the vessel name, such as RED BIRCH, RUSH, POLAR SEA, and EAGLE. All Coast Guard units, with the exception of small boats, also have an assigned international call sign usually beginning with the letter "N" and consisting of three or four letters which may be followed with several numbers. Aircraft use numerical call signs usually consisting of four numbers. Also, aircraft carry a variety of communications equipment, including VHF, UHF and HF, depending on their size and mission.

E. COAST GUARD COMMUNICATIONS WATCHSTANDING

1. All Coast Guard Groups and many stations maintain a full time communications watch on the local distress and calling frequencies. Auxiliary communicators are needed at many of these facilities to augment the assigned Coast Guard radio operators. Auxiliarists who are interested in becoming communication watchstanders should contact their local Coast Guard facility to determine how they can become qualified. Usually qualification will entail completing the Group and Stations Communications Watchstander Qualification Guide, COMDTINST M16120.7 (Series). This is the same criteria the Coast Guard uses to qualify their own watchstanders. Also, there may be additional qualifications required as well as local area knowledge.

F. CHAPTER EIGHT STUDY QUESTIONS

1. Since the Coast Guard is a government agency, the frequencies it uses are assigned by whom?
  
2. The Coast Guard makes three types of all station broadcasts. What are they?

3. Who is responsible for coordination and organization of communications within a district.
4. Radio operators speak with whose authority?
5. Watchstander qualification at a station will usually require completing what criteria?

THIS PAGE IS INTENTIONALLY BLANK

## CHAPTER NINE - RADIO DIRECTION FINDING

### A. INTRODUCTION

#### 1. GENERAL

- a. Radio Direction Finding (RDF) is a valuable adjunct to Auxiliary telecommunications. Members who are interested in establishing an RDF capability must first complete this course and have a working knowledge of piloting fundamentals; especially chart work, bearings, fixes and related subjects. This knowledge may be obtained from specialty courses or acquired during military or commercial operations. Those members who own radio facilities will have a practical appreciation of VHF RDF operations and may have some of the equipment required. Members who are also Amateur Radio operators or MARS members can usually provide technical guidance to assist in establishing an RDF capability.
- b. Many Auxiliarists express interest in establishing an RDF capability without appreciating the constraints imposed on its operation by both technical and legal considerations. There are two basic types of RDF units: manual and automatic. Both can be used fixed or mobile, including hand carried. While there is some off the shelf equipment available for automatic direction finding, it is expensive. The cheaper manual alternatives require a modest technical ability to assemble and operate. The casually interested member may be better off limiting their effort to a portable homing capability. This is not meant to discourage a committed Auxiliarist but rather to assure that those interested are aware of, and willing to expend, the necessary funds, effort and time to provide an RDF capability.

### B. APPLICATIONS

1. VHF RDF has five general applications. These are:
  - a. Location of distressed vessels equipped with operating VHF marine radios. Typically a vessel needing assistance with no accurate knowledge of its position.
  - b. Location of distress beacons. Many vessels now normally carry EPIRB's (Emergency Position Indicating Radio Beacons) which can be activated in distress situations and transmit a distress signal on 121.5, 243 and/or 406 MHz. Aircraft carry a similar unit called an ELT (Emergency Locator Transmitter). While these frequencies are not in the marine band, they

can usually be covered by commercially available scanners; especially 121.5 and 406 MHz.

- c. Vectoring of SAR units. If a SAR unit does not have an operational RDF or radar capability, several RDF stations coordinating bearings to obtain a fix can direct the SAR resource to merge with a distressed vessel.
- d. Hoax investigation and localization. More and more hoax situations are occurring. RDF is usually the only way to locate these illegal transmitters. The Auxiliary can assist the Coast Guard in these efforts but must not be involved in any actual law enforcement actions.
- e. Location of interfering signals. Open mikes, especially on a distress frequency, can render a channel useless in a local area. Mobile or portable RDF units are required to locate these, usually unintentional, transmissions. When pursuing and localizing these cases the Auxiliarist should use discretion, as with hoax situations, and take no action of questionable liability.

#### C. PRECAUTIONS

1. When engaged in RDF operations an Auxiliarist must always remember that the mission is in support of a Coast Guard operation. Bearing information is only given to Coast Guard approved recipients and no one else. Bearing information should not be exchanged on marine channels as these are open and easily monitored by the public. Land line communication is the most secure means available to the Auxiliarist.
2. When using mobile or portable RDF equipment to locate a transmitter, an Auxiliarist is not allowed to enter or pass through any private property without express permission of the owner. An Auxiliarist has no law enforcement authority. Discretion must be used in dealing with the public during RDF operations concerning unintentional transmissions. A boater may be informed their radio has an "open mike" but cannot be ordered to correct the problem.
3. An Auxiliarist learning of a situation where RDF assistance may be required should always contact cognizant Coast Guard authority prior to taking any action. Likewise, any action taken to stop a located offender should be left up to Coast Guard or law enforcement personnel.



#### D. THEORY OF OPERATION

1. Looking down at the earth's surface, radio waves appear to spread out radially from the transmitting antenna. As the distance from the transmitter increases, the wave fronts become nearly flat, as shown in Figure 9-1 below.



FIG 9-1

There are a number of receiving antenna systems which can determine the orientation of these wave fronts. If a line is then drawn perpendicular to these waves, it will point at the transmitting antenna. This is a single Line Of Position or LOP. The operator knows the transmitter is located along this line but not how distant.

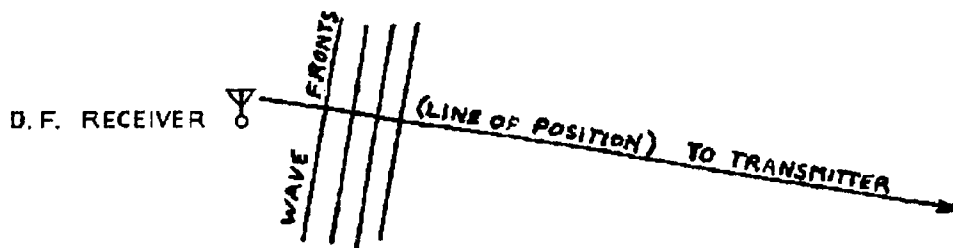


FIG 9-2

If the RDF unit is mobile it can be moved back and forth along the wave front and multiple LOP's taken which should show a convergence of bearings, called a fix, at the transmitter location. If the unit is stationary, other RDF units in the area, either fixed or mobile, could take the required cross bearings to obtain a fix. The greater the number and angle of the LOP's the more accurate the fix.

2. Determining the orientation of the wave front is usually accomplished by using two or more antennas located near each other and properly connected (phased) with a display unit. They are then be rotated until they both receive the same wave front at the same time with the display unit indicating when the wave front is in phase. This indication is usually either visual or audible. When the RDF unit is in phase, the transmitting station is at right angles to the RDF antennas.

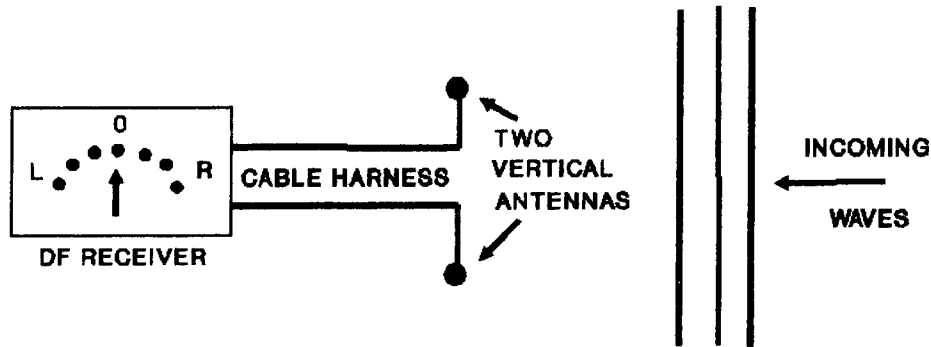


FIG 9-3

Simple RDF units using only two antennas may give bi-directional bearings; that is, the operator will not know if the transmitter is ahead or 180 degrees behind the RDF unit. Additional bearings, either along the wave front or by other RDF units are required to determine the true direction of the bearing. Automatic RDF units which use multiple antennas do not have the bi-directional characteristic.

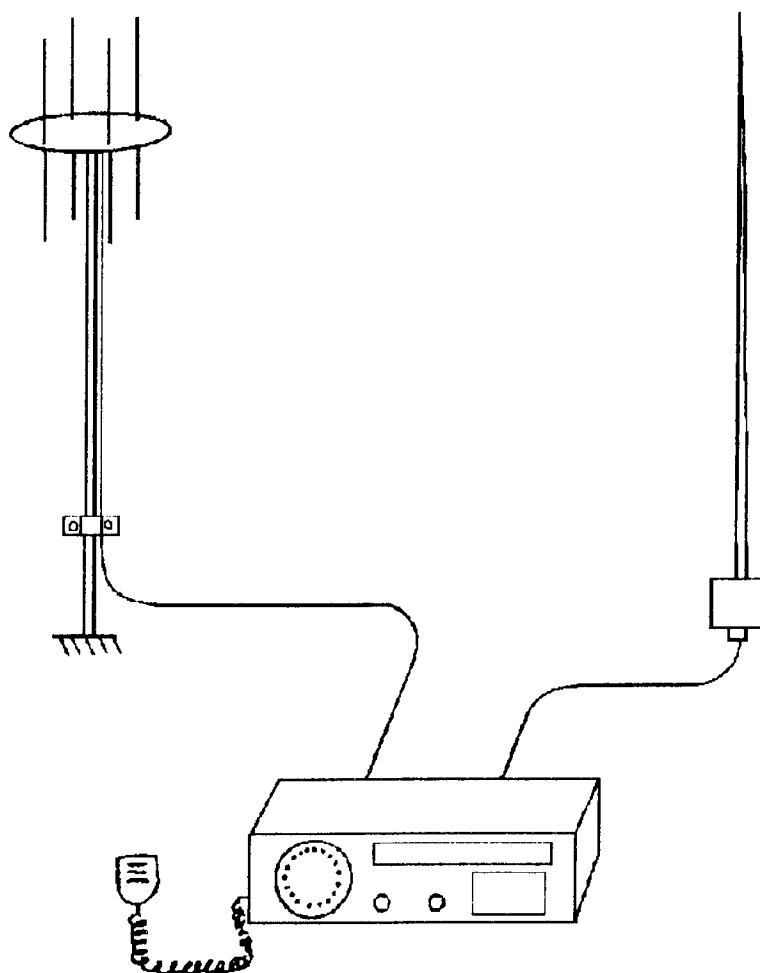
3. It is important to indicate to the Coast Guard whether your bearings are in True or Magnetic. Usually an RDF problem involving only small mobile or portable units is worked in Magnetic for convenience in navigational operations, while fixed stations are normally calibrated in True for direct plotting of the bearings. It is also equally important to know exactly where the RDF unit was located at the time the LOP is taken.

#### E. EQUIPMENT

1. Numerous commercial and home built RDF units have been used by the Auxiliary and regular Coast Guard. Among these are the Handi-Finder kit, the Little L-Per and the Regency Polaris 7200. The Handi-Finder kit is a manual RDF unit only that is designed to work with a radio receiver on any frequency between 45 and 470 MHz. The L-PER, also manual, incorporates a receiver and is designed to work from 121.5 to 243 MHz. The Regency Polaris is a marine transceiver with an automatic RDF capability.
2. Most RDF antennas do not have the gain factor of the antennas used for communication. Therefore, many of the RDF units, especially the automatic units, have a built-in capability for switching from the RDF antenna to the communication antenna. A typical installation is shown in FIG 9-4.

**NON-ROTATING DF  
RECEIVING ANTENNA**

**OMNI-DIRECTIONAL  
ANTENNA FOR TRANSMIT  
AND MAXIMUM GAIN RECEIVE**



**AUTOMATIC DF COMBINED WITH VHF TRANSCEIVER  
(TRANSCEIVER OPTIONAL)**

FIG 9-4

3. Once an RDF units equipment has been selected and installed, the antenna system must be calibrated. In vessels and mobile units this is usually done by rotating the antenna so that zero degree LOP's are directly ahead thereby making all the RDF bearings relative to the vessel or mobile heading. At fixed stations, the zero degree LOP is oriented to True North thereby making all the bearings True bearings.

F. OPERATOR TRAINING

1. The reliability of RDF operations is only as good as the skill of the operator. VHF RDF is frequently subject to false readings from reflected and weak signals. RDF operators should periodically check the condition of their units on known signals. They should also frequently test their own capabilities by taking LOP's on mobile and weak transmitters to see just how well both they and the equipment are performing.

G. CHAPTER NINE STUDY QUESTIONS

1. What type of bearings are usually taken by a mobile and a fixed RDF unit?
2. What are the two basic types of RDF units?
3. How does an RDF unit determine a LOP?
4. What law enforcement powers does an Auxiliarist have when locating an illegal transmitter?
5. Do automatic RDF units give bi-directional LOP's?
6. What are some of the uses for RDF units?
7. Several LOP's intersecting at a point is called what?
8. Bearing information should only be given to whom?



# Code Flags, Pennants, Phonetic Alphabet, and Morse Code

Letter	Alphabet Flags	Phonetic Alphabet	Pronunciation Guide	International Morse Code	Letter	Alphabet Flags	Phonetic Alphabet	Pronunciation Guide	International Morse Code
A		Alfa	al fah	..-	N		November	no vem ber	-..
B		Bravo	brah voh	-...-	O		Oscar	oss cah	- - - -
C		Charlie	char lee	- . - . -	P		Papa	pah pah	. - - - .
D		Delta	dell tah	- . .	Q		Quebec	keh bek	- - - . -
E		Echo	eck oh	.	R		Romeo	row me oh	. - . .
F		Foxtrot	foks trot	. . - . .	S		Sierra	see air rah	. . .
G		Golf	golf	- - - .	T		Tango	tang go	-
H		Hotel	hoh tell	. . . .	U		Uniform	you nee form	. . - -
I		India	in dee ah	. .	V		Victor	vik tah	. . . -
J		Juliett	jew lee ett	. - - - -	W		Whiskey	wiss key	. - - -
K		Kilo	key loh	- . - -	X		Xray	ecks ray	- . . . -
L		Lima	le mah	. - . . .	Y		Yankee	yang kee	- . . - -
M		Mike	mike	- - -	Z		Zulu	zoo loo	- - - . .

Number	Natural Pennants	Pronunciation Guide	International Morse Code	Number	Natural Pennants	Pronunciation Guide	International Morse Code
1		wun	. - - - -	6		six	- . . . .
2		too	. . - - -	7		seven	- - - . .
3		thuh ree	. . . - -	8		ate	- - - . . .
4		fo wer	. . . . -	9		niner	- - - - .
5		fi yiv	. . . . .	0		zero	- - - - -

## Substitutes

