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# Communication Instructions

## 1929

### Part II: RADIO

COMMANDANT  
9th NAVAL DISTRICT  
GREAT LAKES, ILLINOIS

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*E. H. Heppert*

NAVY DEPARTMENT  
OFFICE OF NAVAL COMMUNICATIONS

This copy issued to  
*E. H. Heppert RMC*

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UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1929

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**NAVY DEPARTMENT,  
OFFICE OF NAVAL OPERATIONS,  
Washington, D. C., July 1, 1929.**

The Communication Instructions, 1929, are issued by the Chief of Naval Operations in accordance with article 423 (2), United States Navy Regulations, for the guidance of the personnel of the Navy in handling communications. They have the same force and effect as orders issued by the Chief of Naval Operations, but in no way alter or amend any provision of the Navy Regulations or any Navy Department general order.

**C. F. HUGHES,**  
*Chief of Naval Operations.*

Approved.

**C. F. ADAMS,**  
*Secretary of the Navy.*

Communication Instructions, 1929, is issued in loose-leaf binder form, and consists of Part I, General; Part II, Radio; Part III, Visual; Part IV, Radio and Visual Procedure.

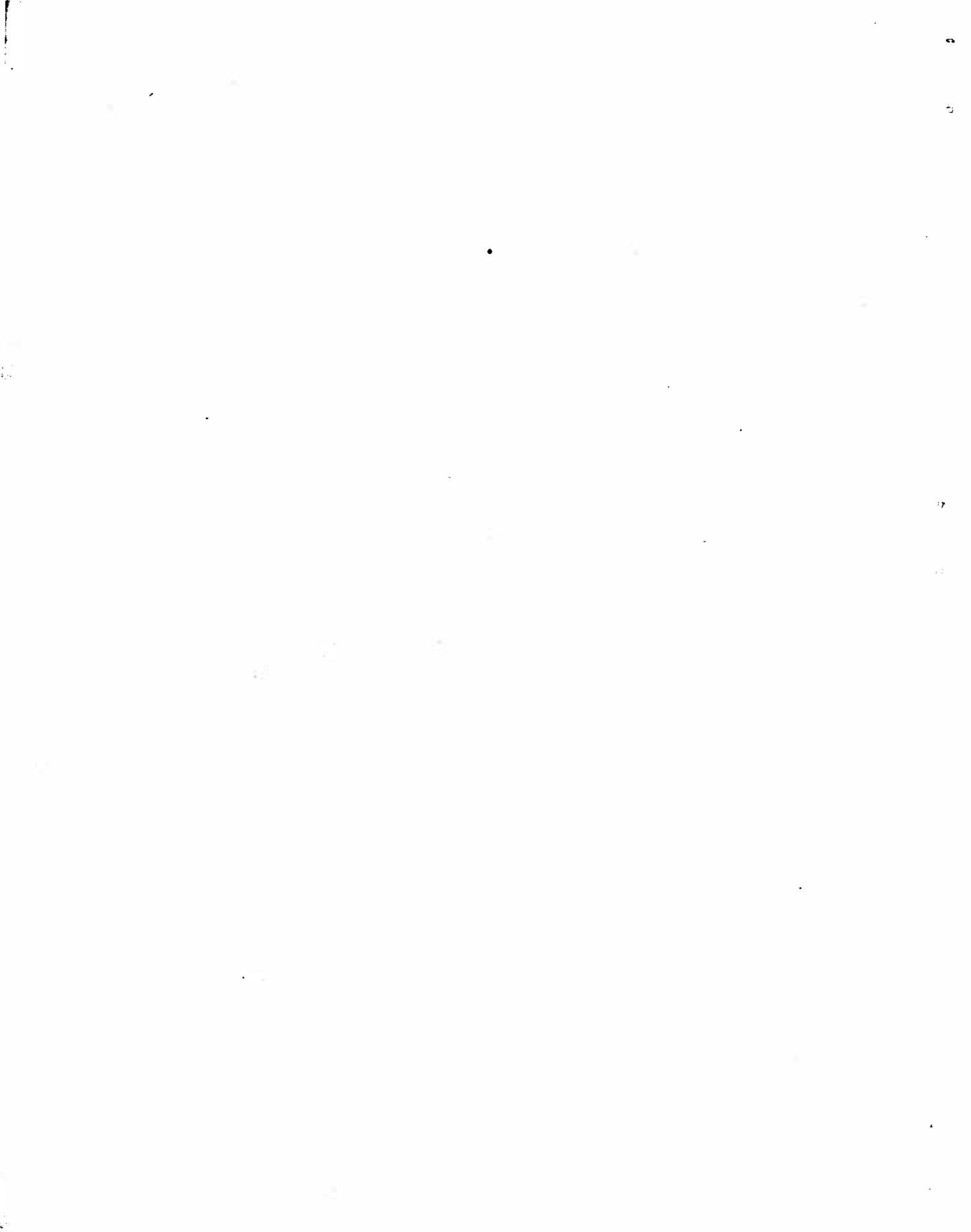
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## CONTENTS

	Page		Page
CHAPTER 10		CHAPTER 14	
General notes concerning procedure.....	1	Radio compasses and radiobeacons.....	25
CHAPTER 11		CHAPTER 15	
General notes for radiomen.....	8	Method of handling messages in naval form over nonnaval systems.....	29
CHAPTER 12		CHAPTER 16	
Abbreviated procedure.....	17	Commercial procedure.....	33
CHAPTER 13			
The "F" and "I" methods.....	21		











<b>SIGNALS—Continued.</b>	<b>Paragraph</b>	<b>TRANSMITTING—Continued.</b>	<b>Paragraph</b>
Transmitting numerals in signals .....	1215	"F" method .....	1301-1304
When signals can not be annulled .....	1225	For radio-compass bearings .....	1410
When text contains call signs .....	1217	Forms of messages .....	1141
Use of "TACK" .....	1216	"I" method .....	1320, 1321
<b>SOUND SIGNALING: Defined.</b> .....	1000	Precedence .....	1146
<b>SOUND TELEGRAPHY: Defined.</b> .....	1000	Procedure for sending signals .....	1212-1217
<b>SPEED OF TRANSMISSION</b> .....	1143, 1145	Short concise despatches .....	1211
"I" method .....	1330	Speed of transmission .....	1143-1145
<b>STATION SERIAL NUMBERS</b> .....	1121-1123	When receiving conditions bad .....	1142
Commercial procedure .....	1606	<b>TRANSMITTING STATION: Defined.</b> .....	1000
When used .....	1122, 1123		
<b>STRENGTH OF SIGNALS</b> .....	1152-1154	<b>U</b>	
Static or interference .....	1153	<b>UNAUTHORIZED TRANSMISSIONS: Be-</b>	
<b>T</b>		tween radiomen .....	1051
<b>TACTICAL SIGNALS:</b>		<b>URGENT SIGNALS:</b>	
Defined .....	1000	Contact and tactical reports to employ .....	1208
Transmission of .....	1223	Operation in vicinity of enemy .....	1210
<b>TACTICAL REPORT: Defined.</b> .....	1204	<b>V</b>	
<b>TELEGRAMS. (See DOMESTIC MESSAGES.)</b>		<b>VISITORS: In radio stations.</b> .....	1163
<b>TEXT:</b>		<b>W</b>	
May include call signs and procedure signs		<b>WATCH KEEPING.</b> .....	1124-1132
by land wire .....	1149	Radio supervisors .....	1140
To be sent as written .....	1148	Turning over the radio watch .....	1139, 1140
<b>TIME: Clocks in communication stations.</b> .....	1161	Vessels at navy yards .....	1130
<b>TRANSMITTERS: To be adjusted to assigned</b>		<b>WEATHER REPORTS.</b> .....	1163
frequencies .....	1159, 1160, 1410	<b>Y</b>	
<b>TRANSMITTING:</b>		<b>"Y": PROCEDURE SIGN.</b> .....	1006
Abbreviated procedure .....	1201-1229		
Commercial messages .....	1602		

## PART II

### RADIO

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#### CHAPTER 10

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### GENERAL NOTES CONCERNING PROCEDURE

#### DEFINITIONS

1000. The following terms used throughout these instructions are defined as follows:

**MESSAGE.**—Any communication (other than letter) sent by a rapid method; it embraces dispatches, signals, and procedure signals.

**DISPATCH.**—Any message (other than a signal or procedure signal), regardless of the method of transmission. It may be either in plain language or code.

**SIGNAL.**—An arbitrary combination of letters, numbers, and special signs, the meaning of which is to be found in a signal book or a signal vocabulary.

**TACTICAL SIGNALS.**—Signals that prescribe a course, speed, or formation, or effect changes in any or all of these.

**PROCEDURE.**—The rules for the conduct of the transmission and reception of rapid communications, embracing the form and manner in which messages are handled.

**PROCEDURE SIGN.**—A letter, figure, or combination of letters and figures, or both, designed to facilitate the conduct of rapid communication.

**PROCEDURE SIGNAL.**—Any message (other than a dispatch or signal) between operators to verify and insure the accurate reception of messages, and to facilitate the conduct of rapid communications. It may be composed of procedure signs and/or radio operators' signals.

**RADIO OPERATORS' SIGNAL.**—A 3-letter procedure signal commencing with "Z," the meaning of which is available to all radiomen.

**ORIGINATOR (ORIGIN).**—The authority who orders a message to be sent.

**ADDRESSEE.**—The authority to whom a message is directed by the originator. This term includes both action and information addressees.

**ACTION ADDRESSEE.**—The authority (authorities) required to take such action as is necessary to carry out the purport of the message.

**INFORMATION ADDRESSEE.**—The authority (authorities) to whom the originator directs the message for information only.

**ANSWER.**—A procedure signal made by the receiving station indicating receipt of a call or message.

**REPLY.**—A message originating out of, referring to, or replying to a question asked in, a prior message.

**ACKNOWLEDGE.**—An order or request conveyed in a procedure sign directing the addressee to inform the originator that a specified message has been received and is understood.

**ACKNOWLEDGMENT.**—A separate message from the addressee informing the originator that his message has been received and is understood.

**DETACHED SHIP.**—A ship which is not conforming to the movements of the naval unit of which it is a part, and is operating at such a distance from the commander in chief or responsible senior officer as not to be in easy radio touch by radio with him on usual fleet frequencies.

**DIRECT COMMUNICATION.**—Communication without the assistance of relay points.

**GROUP CONTROL.**—Term applied to a radio-compass station which coordinates and controls the operation of a group of radio-compass stations.

**GUARDSHIP.**—Ship designated to listen and handle traffic on a designated frequency.

**NAVAL COMMUNICATION OFFICE.**—An office especially organized to route, encode, decode, and otherwise handle messages. (Corresponds to the "message center" of the Army.)

**POINT-TO-POINT TRAFFIC.**—Applies to messages being passed between shore radio stations irrespective of origin and destination of such messages or system of transmission. Exception: "I" method messages are not "point-to-point" traffic.

**RADIO ORGANIZATION.**—Comprises the arrangements made for the use of the various frequencies and methods of passing radio messages.

**RECEIVING STATION.**—A station capable of receiving a message, regardless if on shore, in the sea, or in the air.

**RELAY STATION.**—A station through which a message is relayed from the originator to the addressee.

**SHIP STATION OR SHIP.**—For communication purposes, a visual, sound, or radio station on board a ship or aircraft not permanently moored.

**SHORE (OR LAND) STATION.**—Term embracing all naval visual or radio stations, sound stations, land-wire stations, and ground stations for aircraft, on shore. Included in this category are vessels permanently moored, such as light vessels.

**SOUND SIGNALING.**—Any method of passing Morse code by means of siren, whistle, foghorn, or bell in air, etc., which may be heard at comparatively short distances without the aid of receiving apparatus.

**SOUND TELEGRAPHY.**—Any method of passing international Morse code through the water by means of sound waves.

**TRANSMITTING STATION.**—A station (whether ship or shore) which is capable of sending a message.

#### **OBSERVANCE OF PROCEDURE**

1001. The instructions for procedure must be strictly observed to preclude confusion, errors, delays, and superfluous transmission. Inaccurate procedure tends to throw doubt on the authenticity of messages. Correct procedure is the best radio "challenge" and "reply."

1002. The primary purpose of naval procedure is to eliminate the use of plain language in radio operation. The use of plain language would disclose information to the enemy. Naval radiomen, trained *during peace* to the use of a definite procedure, are placed, during war, in as favorable an initial position as possible.

1003. In affording, by means of naval procedure, the security necessary for Navy radio, it has been found possible also to reduce greatly the amount of transmission necessary in effecting delivery of messages. This affords a measure of security by reducing the chances of successful radio direction finding by the enemy.

#### **REPORTS OF VIOLATIONS OF COMMUNICATION INSTRUCTIONS**

1004. All violations of these instructions shall be reported, as soon after occurrences as practicable, to the officer responsible for the proper conduct of communications of the unit or organization within which the violation occurs. Such reports of violation shall be acted upon immediately in order that their effect will not be lessened. Ordinarily these reports shall be made on printed forms and no forwarding letter need accompany report.

1005. The primary purpose of discrepancy reports is to improve communications—generally by educating the operators concerned who have not yet mastered the details of communication instructions. Where, however, it is obvious that the violation was intentional or due to carelessness, disciplinary action should be taken.

#### ACKNOWLEDGMENTS

1006. Messages shall not be acknowledged until understood by the addressee. The authority of the addressee or his authorized representative is required before acknowledgment can be made. The originator only has authority to require acknowledgment of a message. The procedure sign "Y" shall be placed in the prefix of a message when the originator requires an acknowledgment for that message. No message need be acknowledged to the originator unless the prefix contains the sign "Y," or unless acknowledgment is requested subsequently by the originator. However, any senior may by separate message require an acknowledgment from a junior of a message sent by another senior. The acknowledgment in this case shall be addressed only to the senior requesting it.

#### IDENTIFYING NAVAL MESSAGES

1007. There is often need for identifying naval messages; as when requesting verification and repetition, and when making a correction to a message previously transmitted. Messages are identified by reference or serial numbers, and if necessary, by the address employed in the original message. The data to be used shall be determined by the circumstances in each case, but whenever possible the reference numbers and address should be given. Identification data shall be employed in the following order:

First. The main procedure sign or radio operating signal.

Second. Identification of the message by numbers (normally either reference or serial, but both if considered advisable), followed in case of a serial number by the character "slant," followed by the date of the month in figures if necessary, and the month spelled out, or month and year, if not in the current month or year. In case reference numbers are used, the date is not needed but the month may be needed. For example:

(a) ZRW<sup>1</sup> 16/18 (meaning "Repeat message serial sixteen of the eighteenth of current month").

(b) ZRW 16/18 MARCH (meaning "Repeat message serial sixteen of eighteen March").

(c) ZRW 1016 1600 MARCH (meaning "Repeat your 1016 1600 of March").

(d) ZRW M5N 0116 1503 (meaning "Repeat C in C Batfl't's 0116 1503").

Third. If necessary, the address of the message in question (in case the address is used it should be given in full commencing with Z).

Last. The specific information desired (designation of the groups to which reference applies, request for word after, etc.), unless the desired action as indicated by the main procedure sign or radio operators' signal deals with the whole message, in which case the last item is unnecessary.

#### CANCELING OR ANNULING MESSAGES

1008. When any message which has been made is to be canceled or annulled, the only authorized method is to make a further message which annuls or cancels the first message. The message conveying the annulment or cancellation is to be made by dispatch or signal. Radio operators' signals or procedure signs are *never* to be employed for this purpose. The message conveying the annulment or cancellation is to be handled in exactly the same manner as any other message.

<sup>1</sup> ZRW assumed to mean "Repeat message ....."

1009. It must be understood that the cancellation or annulment of a message is a function of the *originator*. The cancellation or annulment of messages has nothing to do with the retransmission of messages. For instance, the radio operators' signal meaning "Take no further action with regard to forwarding message -----" does not cancel or annul the message referred to.

1010. A distinction is also to be drawn between *annulling* or *canceling* messages and *correcting* messages. When a correction to be made is large, it is often advisable to annul or cancel the first message and then send a new message.

1011. The signal "negat" sent alone annuls all outstanding unexecuted *signals*. In case it is desired to annul one or more of a number of unexecuted signals, the signal "negat" preceding the specific signal(s) annuls only those repeated after the "negat." After having been executed, or transmission completed in the case of nonexecutive signals, a signal can not be annulled but a new signal must be sent.

1012. *Before transmission is completed*, if the transmission is in error and it is desired that transmission be disregarded, the "erase" sign followed by the radio operators' signal meaning, "This transmission is in error—disregard it," should be made.

#### PARALLELING RADIO AND VISUAL SIGNALS

1013. At sea, in times of peace, signals pertaining to fleet operations shall normally be sent by radio and visual methods simultaneously. In order that this may be practicable, the signal with address and special instructions must be given at the same time to both radio and visual personnel for transmission. The respective supervisors are responsible for determining and hoisting the proper call (in the case of visual-flag hoists), and for determining and transmitting the proper heading (in the case of radio). The order to transmit the signal of execution must also be given to the radio and visual personnel simultaneously.

1014. When a considerable period has elapsed since the transmission of the signal, or when another signal has been sent prior to executing the first signal, the signal to be executed shall be retransmitted with the signal of execution.

#### RELAYING RADIO MESSAGES BY VISUAL

1015. The heading of a radio message differs from that of a visual message in minor details only. Radio headings may contain one or more radio operators' signals (3-letter signals invariably beginning with the letter "Z"). In passing a radio message by visual, the call and the preamble (all that precedes the address), shall be sent in visual procedure. The address and the prefix shall be sent as in radio procedure, and shall not be altered without permission from the originator.

#### RELAYING VISUAL MESSAGES BY RADIO

1016. In passing a visual message by radio, the call and the preamble shall be sent in radio procedure. The address and the prefix shall be sent as in visual procedure, and shall not be altered without permission from the originator.

#### RADIO CALL SIGNS

1017. Radio call signs are assigned by the Chief of Naval Operations for Navy use. The instructions for using these call signs are contained in the pamphlet in which they are published.

1018. The international radio call signs of ships and stations appear in the Berne list. Ships normally use these call signs in peace time.

1019. A complete list (with calls) of commercial and Government radio stations of the United States is published each year as of June 30, by the Department of Commerce, Radio

Division. A monthly bulletin, entitled "Radio Service Bulletin," contains additions, deletions, and changes to the Commercial and Government Radio Stations of the United States.

1020. Shore radio stations can not be concealed; hence they normally use only their international call signs.

1021. *Call signs shall be transmitted slowly and distinctly.* This is especially important where messages are to be relayed. The receiving operator must be impressed with the importance of the accurate reception of call signs.

#### PRELIMINARY CALL

1022. The call sign of the station or stations called, separated from that of the station calling by the procedure sign "V," and ending with the procedure sign  $\overline{AR}$ , is the usual preliminary call to establish communication.

Example: AB calling CD makes: CD V AB  $\overline{AR}$ . In calling, the call sign of the station or stations called will normally be made once only.

1023. When communication is difficult owing to extreme range, static, or interference, or other difficulties, or when messages are sent by "F" method, call signs may be used as prescribed below:

- (a) The call sign of the station called will never be made more than four times.
- (b) The call sign of the station calling will never be made more than two times.
- (c) After communication has once been established, the call signs shall usually be made once only.
- (d) These rules govern preliminary calling only.

1024. When two or more stations are called together, the call signs of the stations called will be made in alphabetical order. When calls begin with numerals, they shall be placed after the calls that begin with letters and shall be arranged in numerical sequence.

Example: AB calling 72C, DA, FG, and AN, makes: AN DA FG 72C V AB  $\overline{AR}$ .

1025. When communicating stations are known to be in easy touch with one another, all messages will be transmitted *without preliminary call*.

1026. If there is doubt about the communicating stations being in easy touch with each other, the following rules shall be observed:

- (a) If the station called fails to answer the first call, the call may be repeated immediately.
- (b) If the station called fails to answer the second call, the station calling shall consider the existing conditions carefully. One of the following courses shall be taken:
  - (1) The station calling may call again and transmit the message. If the station called fails to receipt for a message which has been transmitted, the procedure sign B will be used at intervals of not less than five minutes.
  - (2) The station calling may continue to call at intervals of not less than every five minutes, gradually increasing power.

#### DISPENSING WITH THE CALL

1027. After communication between two stations has been well established the call may be omitted when transmitting messages without interruption one after the other; i. e., strings of messages. This, and when stations are engaged in duplex operation or are working as prescribed in article 1112, are the only instances where the radio call may be dispensed with. However, in no case shall messages be sent in strings of more than five unbroken by a call.

## ANSWERING

1028. The call sign of the station which has made the call or has transmitted a message, separated from that of the station answering by the sign "V" (from), and followed by appropriate procedure sign(s) is the normal method of answering.

Example: AB having called CD, CD might answer: AB V CD K.

1029. If the call sign of the station which has made the call is not clearly received, the "unknown ship" sign  $\overline{AA}$  shall be employed to clarify the situation.

Example: AB having heard some one call him but not being sure who called makes:  $\overline{AA}$   $\overline{AA}$  V AB  $\overline{AR}$ . The "unknown ship" sign is always made twice.

1030. In the absence of other instructions, a call clearly received will be answered at once. In case instructions are in force permitting no calls to be answered, all calls received will be reported at once to the responsible officer and instructions requested.

1031. When two or more ships or stations are addressed by their *individual* call signs, ships or stations so addressed shall answer at once in the order called, unless ordered to wait—"AS."

1032. When two or more ships are called by a *collective* call sign, ships called are not to answer until directed to do so. When a division or smaller unit is so directed to answer, ships of that division or smaller unit are to answer in alphabetical order of call signs. When two or more divisions are directed to answer, they are to answer in alphabetical order of their division call signs, the ships of each division answering in alphabetical order of their own call signs.

1033. When single ships or stations are called at the same time as one or more divisions, they are to answer in alphabetical order of call signs after all the divisions addressed have answered.

1034. If a ship whose turn it is to answer fails to do so promptly, the next in the proper order is to do so. (See art. 1220 (a).)

1035. Any ships which fail to answer in proper turn must wait until all other ships called have had time to answer, and the ships which have missed their turns will then answer in alphabetical order of call signs.

1036. In all cases, the stations required to answer are to finish answering before a requested repetition or verification is made.

1037. If a correction is found to be necessary, it should normally be transmitted to the same addresses as the original message.

## RECEIPTING FOR MESSAGES

1038. When certain of the complete and accurate reception of a message or transmission, the receiving station, if included in the call, must receipt for the message or transmission, unless radio silence is in effect.

1039. When the message carries a station serial number, the R is to be followed by the NR sign and the station serial number of the message being "received for."

Example (a): AB having received a message carrying station number 7 from BC, AB makes: BC V AB R NR7.

(NOTE—"Station numbers" are described in art. 1122.)

1040. When necessary in order to avoid confusion, a message may be receipted for by employing the sign R followed by appropriate identification data.

## DIRECT COMMUNICATION

1041. When the origin and addressees are in direct communication with each other the address is used as the call; i. e., the call serves also as the address, and there is no preamble.

1042. In cases of direct communication, if there are any information addressees, or any exempted addressees, these will be included in the call. All stations called are to understand

that the message is for their action unless the sign Q followed by call sign(s), or N followed by call sign(s) appears later to specifically indicate the information and exempted addressees respectively. (See art. 3233.)

#### INDIRECT COMMUNICATION

1043. In cases of indirect communication, no specific routing instructions are ordinarily necessary in the preamble. However, if it is desirable or necessary that a message be sent via a special route, or that the location of the addressee be indicated, routing instructions may be included in the heading, and are usually included in the preamble. (See Pt. IV, concerning the uses of M, L, and T.)

1044. The procedure signs Z and Q indicate the action and information addressees, respectively. Neither sign requires that the message be retransmitted. There are many cases, however, where delivery of messages is effected without the use of the sign T or L in the preamble. For example, a message addressed to the *New Mexico* may be delivered to that ship by transmitting same to the division commander in the flagship *New Mexico* without the sign L or T in the preamble. This division commander is not responsible for the delivery of the same message to another ship in the same division (the *Idaho*), which ship is included in the address, unless the use of sign L or T directs him to transmit same to the *Idaho*. Similarly, a message addressed to the commandant, twelfth naval district, will be delivered by naval radio San Francisco without being so directed by instructions in the preamble. In case *where there is any doubt* about delivery being effected without specific instructions, such *instructions should appear* in the preamble.

#### RADIO OPERATORS' SIGNALS

1045. Radio operators' signals are procedure signals. However, they cover a wider field than is possible when using procedure signs only. They provide convenient code for use in connection with operating. Radio operators' signals shall be kept posted or otherwise available in convenient form near the radio operator.

1046. Radio operators' signals are never in any circumstances to be mixed with groups from other codes in the text.

1047. Messages expressed by radio operators' signals are to be logged in the usual manner. Use of station serial numbers is optional on such messages. (See art. 1123 (c).)

1048. Messages expressed by radio operators' signals carry no "office reference and date" group, but may carry a time of origin. They may be passed through any number of linking stations.

1049. Radio operators' signals are made or changed only by the Chief of Naval Operations.

#### SERVICING OF MESSAGES

1050. In the servicing of messages, there is need for certain inquiries, instructions, and other information. This need is met by the use of procedure signals, including appropriate procedure signs and/or radio operators' signals.

1051. The transmission of operators' notes or conversation or of obscure abbreviations is prohibited. The greatest vigilance in this respect shall be impressed upon all concerned.

1052. When, while transmitting messages, it is impossible to convey the desired meaning by means of procedure signs and radio operators' signals, a regularly framed dispatch shall be employed. Such dispatches, like all other dispatches, must be released by competent authority.



## CHAPTER 11

### GENERAL NOTES FOR RADIO PERSONNEL

#### CONTROL OF RADIO

1101. In general, the control of naval radio communication is exercised in accordance with the Navy Regulations relative to rank and command.

1102. The commander in chief will control the radio communication of the fleet at all times and under all circumstances. Communication traffic within the fleet ordinarily follows the chain of command. The fact that the shore communication system exists primarily for the service of the fleet should be kept in mind by personnel afloat and ashore, and the fleets should make use of the shore system whenever an advantage will result.

1103. For purposes of radio control, among themselves and with naval vessels and units, naval shore radio stations take rank with the district commandant except the Washington radio system, which takes rank with the Secretary of the Navy.

1104. Guard ships take the rank and have the control authority of the officer by whom they are detailed on the frequencies which they are assigned to guard.

1105. Except during silent periods, or when told to "wait" (AS), or when interference with authorized communications already in progress will result, stations will assume that permission is granted to transmit.

Example: AB is senior station. BC has a message for CD. Without requesting permission from AB to transmit, BC will call or transmit his message to CD. If AB desires to break the communication, AB makes long dashes until BC stops transmitting. Then AB makes: BC V AB AS.

1106. When a ship or shore station is directed to "wait" by a ship or shore station controlling communication on a frequency, the ship or shore station so directed remains on the frequency and waits for the direction "transmit" (K). The direction to "wait" is not a direction to shift to another frequency to pass the message.

1107. A ship or shore station having been ordered to "wait" makes no further transmission until directed "transmit" (K), except when such ship or shore station has a "priority" message to transmit, in which case the ship or shore station will make a "priority" call and then wait for permission to "go ahead" before transmitting the message.

Example: AB having been told to wait by BC, later received a priority (P) message for BC. AB makes: BC V AB P AR and awaits instructions from BC.

1108. A junior station having been told "AS", will wait until told "K" before proceeding, but should it appear that he has been overlooked, he may call the senior station and ask permission to transmit (INT K AR).

1109. Ships may be directed to cease communication by radio except for certain specific purposes (i. e., report of enemy, tactical messages, answering the commander in chief, or messages between guard ships and commander in chief, etc.). Under these conditions, messages will always be transmitted without preliminary call. Decision as to answering messages will be left to the discretion of the receiving ship. If no receipt is received, the message shall be repeated *once*, after which no further transmission is to be made in connection with that message until normal communication is again permitted.

1110. The procedure signals  $\overline{HM}$  (silence), and  $\overline{UO}$  (negative silence), shall be used to prescribe the beginning and ending of silent periods, respectively. These procedure signals may be originated only by the officer in supreme command in the vicinity affected by those procedure signals. They may be relayed as may be necessary. When the procedure signal for *silence* is made, all radio stations, ship, shore, or aircraft, to which it is addressed, will cease all transmission by radio on *all* frequencies or on frequencies designated. Receipts for the "silence" signal  $\overline{HM}$  and "negative silence" signal  $\overline{UO}$  will not usually be required. When the silence signal has been made, no station to which it is addressed will recommence transmission except to transmit an urgent message or to make an answer or reply to a message which has been received from the officer who has made the silence signal. (See radio example 15, Pt. IV.)

#### LISTENING-THROUGH

1111. If an operator while receiving has available a transmitter on the frequency in use, and the operator transmitting has a receiver on that frequency, it is then possible to employ the listening-through or break-in feature; that is, the transmitting operator can hear the receiving operator if the latter uses his transmitter. The receiving operator under certain conditions may use his transmitter to break in on the operator transmitting messages. The listening-through feature is available for the following purposes:

- (a) To permit control of communication by senior officers;
- (b) To permit the transmitting operator to know when transmission occurs which will probably interfere with reception of his own transmission;
- (c) To permit the receiving station to break the transmitting station and tell him to "wait," "shift frequency," etc.; and,
- (d) To permit "duplexing"; i. e., simultaneous transmission by both stations, while both receive.

1112. When working with a single station only, the listening-through feature may be used by receiving stations to break in and request immediate repetition of parts missed during the course of the transmission. This practice shall not be used by ships or aircraft, or by shore stations when working with ships or aircraft or by shore stations when transmitting simultaneously to two or more receiving stations. However, if the traffic is unusually heavy, the listening-through feature may be employed between a shore station and a major unit commander afloat. The procedure for "breaking" is to close the key and make long dashes until the transmitting station stops sending. The breaking station then usually makes " $\overline{IMI}$  AA— $\overline{AR}$ ", the dash indicating the last word correctly received. The transmitting station retransmits beginning with the last word correctly received, or repeats doubtful words as required by the procedure signal made. Instead of " $\overline{IMI}$  AA—" other appropriate procedure signals may be made if necessary after breaking in, each ending with " $\overline{AR}$ ."

1113. (a) A ship having a signal or dispatch in abbreviated form to transmit may "break in" on a ship transmitting a routine or priority dispatch, and transmit such signal or dispatch in abbreviated form.

(b) A ship having a priority or routine dispatch to transmit shall not "break in" on the transmission of a priority or routine dispatch to transmit such dispatch, but shall wait until transmission has been completed, or has ceased temporarily. An exception to this rule is permissible when a ship has a priority dispatch to transmit while a lengthy routine dispatch is being transmitted, or when the routine communication then in progress is so slow as to indicate a delay of more than three minutes in commencing transmission of the priority dispatch.

1114. Example of "breaking in":

A ship, A, is transmitting a message. Another ship, B, desires to "break in" on A's transmission. B makes long dashes until A stops transmission. B then proceeds with its transmission, commencing always with a call. When B has completed the transmission which necessitated the "breaking in," A may proceed with its transmission.

#### DUPLIX WORKING

1115. (a) The procedure sign "DX" used after a call or answer means, "Let us work duplex." It may be used only when necessary and practicable and only between two shore stations, or between a shore station and a major unit commander afloat.

Example: AB having 60 messages for CD calls: CD V AB ZOY 60 AR. CD having 55 messages for AB, answers: AB V CD ZOY 55-DX AR. AB answers CD V AB K DX, if ready to work; or CD V AB ZZA DX, if it is not practicable to work duplex; or CD V AB AS DX, if not ready to work duplex immediately.

AB and CD transmit their messages simultaneously to each other if they have agreed to work duplex. The receiving operator may use the listening-through feature and break in to request immediate repetition of parts missed. The procedure for breaking in is to make long dashes (—) preceded if necessary by the call sign of the station it is desired to break. When the latter ceases transmitting, the breaking station makes: "IMI AA—AR," the dash indicating the last work correctly received.

(b) The procedure signal "INT DX" is an inquiry, "Is it practicable for you to work duplex with me?" It is not to be considered as a request to so work. The reply to "INT DX" shall be either "ZZA" or "ZZB." The request to so work, "DX," may follow.

(c) The "duplex" method shall not be employed for transmitting messages on "I" method schedules.

#### METHODS OF HANDLING RADIO MESSAGES

1116. There are four principal methods by which a message may be sent by radio:

- (I) The "receipt" (R) method, in which the transmitting station obtains a receipt for his transmission.
- (II) The "no answer" (F) method, in which the transmitting station addresses the receiving station but does not obtain a receipt.
- (III) The "intercept" (I) method, in which the transmitting station sends the message to a second station, the latter answering or repeating back as directed. The message itself, however, is intended for a third station which is required to read the message but not to answer.
- (IV) The "repeat back" (G) method, in which the transmitting station obtains a "repeat back" of his transmission.

1117. The "no answer" (F) and "intercept" (I) methods possess the great advantage that the station addressed does not have to transmit—thus position of station addressed can not be determined by direction-finding apparatus. These methods likewise lend themselves to the employment of an indefinite address—the call sign of the individual addressed need not appear in the heading but may be concealed in the encoded text. The enemy may therefore be kept in ignorance of the call signs of the ships which are at sea.

#### CONCEALING THE IDENTITY OF THE ADDRESSEE AND ORIGINATOR

1118. (a) When, as in the "receipt" and "repeat back" methods, both the transmitting and receiving ships use their transmitters and employ ordinary call signs, they give the enemy a guide to the composition of the forces at sea.

(b) Similarly, in the "I" and "F" methods, if the addressee's ship is indicated by its international call sign in the address, the enemy, although he does not hear the ship answer, will possibly be correct in concluding that the ship having that call sign is at sea, and his previous knowledge of the call sign may enable him to estimate the class of ship concerned.

(c) Hence, it will at times be necessary in encoded and enciphered messages to conceal the address and origin somewhere within the text. In this connection, use may be made of vague or indefinite call signs—such as "Any U. S. man-of-war."

#### SCHEDULE TIMES

1119. It is essential that all stations which are scheduled to transmit at definite times should commence their transmissions exactly on time. In this connection see Part IV, use of "EEEEEEEE."

#### BROADCASTING

1120. The term "broadcasting" is applied to the process of transmitting messages without definite address for unrestricted reception. Messages broadcast by the Naval Communication Service are time signals, hydrographic notices, meteorological reports, weather forecasts, storm warnings, obstruction reports, and radiotelephone "broadcasting" conducted from the Navy Department radiotelephone broadcasting station. Contrary to popular belief, all press material transmitted by the Navy is specifically addressed and is not "broadcast." Therefore, it can legally be used only by those addressed.

#### NUMBERING

1121. There are two kinds of serial numbers which may appear in the heading.

(a) Station serial numbers, which appear as the first item in the preamble, and

(b) "I" method serial numbers, which appear as the first item in the preamble (the station serial number is dropped when the "I" method serial number is used).

#### STATION SERIAL NUMBERS

1122. The station serial number is *never to be used* between ship stations or between aircraft or between ships and aircraft.

The station serial number is used on messages for the purpose of assisting the receiving station in ascertaining that it has received all the messages sent to it by any transmitting station.

1123. Station serial numbers shall be used as follows:

(a) By ship stations and aircraft, as a separate series with each shore station communicated with during a 24-hour period from midnight of each day, the first message to each shore station being numbered one; the succeeding messages are numbered consecutively until the following midnight, when a new series commences for each shore station communicated with. (Time mentioned is local zone time.)

(b) By shore stations, as a separate series, with each ship station and aircraft, and with each shore station communicated with during a 24-hour period as described in (a) above.

(c) With reference to rules (a) and (b) above, the station serial number is not necessary and is not to be used on messages consisting of procedure signs and radio operators' signals exchanged between stations in connection with the conduct and the conclusion of the communication immediately in progress. For instance, a ship calling or answering a shore station would not number the call or receipts or other answers or information connected with the immediate operation, such as the procedure signs  $\overline{AS}$ , W, R, etc., nor would a radio operators' signal affecting the immediate use of frequencies, speed of transmission,

etc., be numbered. The station serial number should be used: In the case of inquiries, instructions, and information regarding messages which have already been transmitted; or in the case of requests for verifications after having receipted for a message; or in the case of any procedure signs or radio operators' signals which must be relayed.

(d) The numbering of "I" and "F" transmissions is explained in articles 1317 and 1310, respectively.

#### RADIO WATCH KEEPING

1124. Attention is invited to the regulations annexed to the International Radiotelegraph Convention, Washington, 1927, which governs vessels and shore stations as to watches on the distress frequency, silent periods, and the general precautions to be taken regarding safety of life at sea.

1125. Except when engaged in tracking exercises or when aiding in distress work shore radio-compass stations shall keep continuous watch on the radio-compass frequency (375 kilocycles).

1126. Detached and single ships shall keep watch on the Navy intermediate calling frequency (355 kilocycles), except when guarding the distress frequency, in accordance with the provisions of article 1124. In addition, watches shall be placed on the routine "no answer" and "intercept" schedules which are in force for transmitting to vessels in the vicinity. When necessary, split-fone watches may be maintained.

1127. Vessels under way or at anchor not in port, and shore stations having three or more operators shall keep continuous watch.

1128. Vessels under way or at anchor not in port, and shore stations having one or two operators shall stand watch in accordance with the table given in Appendix 9 of the regulations annexed to the International Radiotelegraph Convention, Washington, 1927.

1129. The senior officer of ships in company shall prescribe the radio watch-keeping arrangements for ships in company with him. However, in the absence of other instructions, the following standard plan for keeping radio watches in *ships anchored in port* shall govern:

(1) Four or more operators for each frequency—continuous on each frequency.

(2) Three operators for each frequency—continuous on each frequency except between 0000 and 0800 local zone time.

(3) Two operators for each frequency—continuous on each frequency from 0800 to 1800 local zone time, except 1200 to 1230.

(4) One operator for each frequency—first 30 minutes of each hour on each frequency from 0800 to 1630 local zone time, except after 1330 on Saturdays, Sundays, and holidays

(5) "Intercept" and "no answer" schedules shall be copied as provided for in Naval Shore Communication Facilities.

1130. Vessels at navy yards may suspend radio watches at the discretion of the commanding officer provided adequate arrangements are completed to handle the vessels' communications. The suspension of radio watch shall not relieve any commanding officer of his responsibility for his communications.

1131. The senior officer of vessels in company shall arrange to guard the distress frequency continuously and for watch on the "no answer" and "intercept" schedules in force for transmitting to vessels in the vicinity, and for such other watches as may be required or desirable.

1132. Subject to the foregoing general rules, the commander in chief, United States Fleet, will prescribe the watches for vessels of the fleet.

## RADIO LOGS

1133. Every transmission heard will be recorded, whether addressed to the receiving station or not. This is done as follows:

- (1) Written in full on a message form—sufficient details being inserted in the radio log to identify the message, or
- (2) Written in full in the radio log.

1134. It is important that all messages and portions of messages which may be heard should be recorded. Even a few groups may suffice to give valuable information.

1135. The instructions of the officer or petty officer in charge are to be requested when the radioman on watch—

- (a) Does not comprehend meaning of a procedure sign or radio operator's signal.
- (b) If uncertain whether or not a transmission recorded in radio log should be written on a message form for delivery out of radio-receiving room.

1136. The following illustration shows the proper method of keeping a radio log. The station's call is AB. (The detailed entries in sample radio log will be readily understood after Part IV, Procedure, has been read.)

Receiver No. 6. Frequency, 355 kilocycles Page 1.  
Smith, C. W., on watch. 0001-29 Dec. 1928. Receiver and controls O. K

TOR or TOD	Transmission
0002	XY V QX <u>AR</u>
0002	QX V XY K7
0003	XY V QX - NR5 - Z - XY V NM - GR27 <u>BT</u> 2330 <u>AR</u> (See files.)
0005	QX V XY R NR5
0008	AB V QX <u>AR</u>
0008	QX V AB K4
0009	AB V QX - NR7 - T - Z - CD V FK - GR57 <u>BT</u> 0001 <u>AR</u> (See files.)
0011	QX V AB R NR7
0011	CD V AB <u>AR</u> (No answer.)
0012	LX LX V ZW - F - GR17 <u>BT</u> - 0010 <u>AR</u> (See files.)
0013	CD CD V AB <u>AR</u> (No answer.)
0015	CD CD V AB - Z - CD V FK - GR57 <u>BT</u> - 0001 <u>AR</u> (See files.)
0017	AB V CD R
0022	No signals.
0027	No signals.
etc.	etc.
0400	Relieved by F. J. Brown. C. W. Smith, R. M. 1c.

1137. An entry shall be made in the radio log at least every five minutes.

1138. Radio logs for each frequency guarded shall be kept by the operators on watch. The logs should be filed each day with the radio file copies of messages for the day.

## TURNING OVER THE WATCH

1139. Before turning over his watch the radioman shall be sure that his relief is ready in every respect to receive messages; he may then disconnect his own telephones. He shall turn over to his relief any special orders and necessary information. He shall be careful to inform his relief of any alteration in the radio organization and of any messages awaiting transmission,

answer, execution, or acknowledgment. Before leaving the radio room he is to see that the radio log is written up to time of relief and that he has signed the log. The relieving radioman is to determine before his predecessor leaves the radio room that the receiver is in efficient operating condition and properly adjusted to the prescribed frequency and that the control circuit of the transmitter is satisfactory. The radioman who has been relieved shall report being relieved to the supervisor.

#### RADIO SUPERVISORS

1140. Before being relieved, the radio supervisor shall be sure that his relief is in every respect ready to perform the duties assigned. He shall turn over to his relief any special orders or information. He shall be careful to inform his relief of any alteration in the radio organization, of the status of traffic, and of the condition of receivers, transmitters, and controls. As the specific duties of radio supervisors vary greatly because of the size, location, and work of the numerous stations, it will be necessary for those responsible at all stations to issue specific instructions for the guidance of their radio supervisors. In general, however, supervisors should be required to devote as much time as practicable to listening in on frequencies in use, in order to improve communications by correcting own operators who violate instructions and reporting the discrepancies of other operators.

#### TRANSMITTING

1141. The forms in which messages are transmitted are shown in Part IV, chapter 32.

1142. In case of bad receiving conditions and when otherwise directed by these instructions, the message, or parts thereof, may be transmitted more than once. (See Pt. IV, radio example 23.)

#### SPEED OF TRANSMISSION

1143. It is far more important to get a message through accurately than rapidly. The difference in time required to send a message at 17 words per minute and that required to transmit it at 25 words per minute is small when compared with the time that may be required for repetitions due to too fast sending.

1144. Messages must be sent at a speed which will allow all stations called to receive them on the first transmission. Repetitions are the principal cause of delay and when required are usually the fault of the transmitting operator.

1145. When press messages are sent by "no answer" method from shore to ship stations, the speed of transmission will not exceed 20 words per minute.

#### PRECEDENCE

1146. In the absence of other instructions, messages in normal form which carry no indication of precedence will be transmitted within their respective classes in the order of receipt. Messages in abbreviated form and messages in normal form which carry an indication of precedence will be transmitted in the order specified in Part I, chapter 5.

#### COUNTING GROUPS

1147. Groups in the text of commercial dispatches are counted in accordance with the rules given in Part II, chapter 16. Normally when counting groups in noncommercial dispatches, or in signals encoded from the Signal Vocabulary, each word or group after the "break" (or "IM"), sign counts as one group. The "office reference and date" and the "time of origin" when used, each count as one group.

1148. Care must be exercised that the sense of the message is not altered by joining words which have been written separately by the originator, or vice versa. Thus if the originator

were to write "twenty five quire packets," these words must be sent accordingly and not as "twentyfive quire packets."

1149. When a message is to be transmitted by land wire, where it is subject to commercial rules and land-wire count, the necessary call signs and procedure signs, as well as the text, may be transmitted in the text of the message as transmitted by land wire.

1150. When the number of groups or words received does not correspond with the number of groups or words indicated after the GR sign, the station receiving will immediately challenge the transmitting station by making "INT GR —," indicating after the GR the number of groups which seem to be correct. If, after rechecking the message, the transmitting station finds that the receiving station is correct, the transmitting station will call and make C; otherwise, without further delay, the transmitting station will verify the number of groups by repeating the first character of each group in succession. Subject to this "challenge," the count of the transmitting station is final.

#### READABILITY

1151. Readability of signal is indicated after the procedure signs R and K, by means of the readability table, as follows:

1. Unreadable.
2. Poor but readable—send each character twice.
3. Fair—readable at slow speed, send code twice.
4. Good—readable at moderate speed.
5. Easily readable.

Example:

AB V BC R4 or  
AB V BC K5 (or as appropriate).

#### STRENGTH OF SIGNALS

1152. Signal strength may be indicated when necessary after the procedure sign S, by means of the signal-strength table, as follows:

1. Very weak—hardly audible.
2. Moderately weak.
3. Medium strength.
4. Moderately strong.
5. Strong.

Example: AB V BC S4 K

1153. The need for using the signal-strength table should be infrequent. These numerals may also be used, if necessary, to indicate strength of static or other interference, following procedure signs "X" and "W," but "X" and "W" without numerals should ordinarily suffice.

1154. Ordinarily radiomen when operating will use only the readability table to indicate receiving conditions. The signal-strength table numerals are intended primarily for test purposes.

#### FREQUENCIES

1155. The international classification and allocation of frequencies to services is contained in the regulations annexed to the International Radiotelegraph Convention, Washington, 1927. This allocation is the basis for all United States frequency assignments.

1156. By Executive order the Navy is authorized to use certain frequencies for specific purposes. The Chief of Naval Operations issues the necessary general instructions to the naval service for the use of naval frequencies.

1157. Detailed instructions for the use of frequencies allocated to the fleet will be issued by the commander in chief, United States Fleet; for naval shore stations and unattached vessels,



by the commandant of the district concerned. Permanent changes in Fleet Radio Frequency Operating Plan are made only after approval by Chief of Naval Operations.

1158. Instructions for the use of frequencies by shore stations are prescribed in Naval Shore Communication Facilities.

1159. Transmitters shall be checked frequently during each day when in use to insure that they are tuned accurately. Receiving instruments will be kept calibrated accurately and so adjusted as to be selective on the particular frequency which it is desired to receive. The Chief of Naval Operations will publish to the naval service from time to time the standards to be maintained in transmitter frequency adjustment.

1160. Tuning may be carried out provided the permission of the senior officer has been obtained and local regulations are observed. While tuning, the key will be kept open while messages are being sent on the frequency on which the tuning vessel or station is transmitting. Vessels or stations will cease tuning, without further orders, in the event of fog or communication emergency. Ships and stations should make suitable arrangements with others for reception and handling of traffic addressed to them while tuning. An efficient listening watch shall always be maintained by the station tuning on the frequency being adjusted. Tuning shall be stopped for at least 30 seconds out of every 3 minutes. The station tuning shall make her call frequently while tuning.

#### CLOCKS

1161. Particular care shall be exercised that clocks in the radio-receiving room and communication offices indicate the correct time.

#### WEATHER REPORTS

1162. (a) Routine weather reports and storm warnings are broadcast from certain United States naval radio stations at routine times. These reports and warnings should be read on the routine transmissions but, if not, they can be asked for by means of radio operators' signals.

(b) In addition to the above-mentioned routine reports, naval stations can be called upon to furnish reports of existing weather conditions in their immediate vicinity at any time. The radio operators' signal meaning "Send report of weather conditions your vicinity" should be employed for this purpose. The reply to such requests will include in the order given:

- (1) The force of the wind, spelled out.
- (2) The direction of the wind.
- (3) The character of the weather.
- (4) The visibility, in thousands of yards.
- (5) The state of the sea.
- (6) The "time of origin" of the report.

The words "force," "wind," "weather," "visibility," and "sea" may be omitted.

#### VISITORS

1163. Radio officer personnel are particularly charged with safeguarding the secrecy of radio apparatus and stations. No persons other than naval officers, men engaged in communication work, or authorized civilian personnel shall be permitted to enter any radio station on board ship. No pictures of radio stations or apparatus may be made without special authority of the Secretary of the Navy. Persons authorized to enter radio stations for a specified purpose should not be allowed to enter other radio stations or to inspect other apparatus than that covered in the authorization. No call lists, organization sheets, orders, etc., shall be posted so as to be visible from outside the station.

## CHAPTER 12

### USE OF ABBREVIATED PROCEDURE

#### GENERAL

1201. The abbreviated form of naval procedure, which may be instantly recognized by the omission of the sign "GR" in the prefix, has a twofold purpose:

- (a) To indicate high precedence.
- (b) To expedite delivery by shortening the transmission.

NOTE.—See articles 3002, 3003.

1202. When using the abbreviated form of procedure, messages are always made without preliminary call up.

#### CONTACT AND TACTICAL REPORTS

1203. *Contact reports* are messages to convey as rapidly as possible the first intelligence that vessels or objects apparently hostile have been sighted. An original contact report may contain a complete tactical report of the enemy that has been sighted.

1204. A *tactical report* is an amplifying report giving complete information of the type of enemy sighted; number, position, course, and speed and changes in his formation or movements.

1205. Contact and amplifying tactical reports shall be made with ample power commensurate with the distance to be covered. They shall be sent as soon as practicable to the commander in chief via the channel prescribed in the Fleet Radio Frequency Operating Plan for the particular formation in use.

1206. In cases where a large number of reports covering the same contact are received by a subordinate commander for retransmission to the commander in chief via the prescribed channel, they should ordinarily be combined and summarized before retransmission. Effort should be made to prevent duplication of contact reports.

1207. It is essential that every effort be made to avoid overloading communication channels during contact and approach.

1208. Contact and tactical reports are always made in abbreviated form and are prefixed (O), urgent. They shall always be made twice, the second transmission following immediately after the first and separated from the first by the "repeat" (IMI) sign. These reports shall not be receipted for on any transmission except when the commander in chief specifically orders receipts by radio operators to be made in special cases. The following is an example of the usual transmission when no receipt is required:

AB V CD - O - IM Code Groups 1015

IMI AB V CD - O - IM Code Groups 1015 VA

1209. Further information regarding this subject is contained in confidential publications.

#### OPERATIONS IN VICINITY OF ENEMY

1210. Signals or dispatches of primary importance referring to operations in the vicinity of the enemy or conveying information regarding imminent danger of mines or reporting serious damage or distress will be sent in abbreviated procedure and shall be prefixed (O), urgent.

**SHORT, CONCISE DISPATCHES OF GREAT IMMEDIATE IMPORTANCE**

1211. There is frequent need (usually in the fleet) for a class of dispatch which, while having no connection with the enemy, is yet of great importance to the operations in progress at the time—operations such as target practice. Such dispatches may be sent in abbreviated form. The omission of the sign “GR” is an immediate and positive indication of high precedence.

Example: AB V BC BT RAFT CARRIED AWAY REQUEST INSTRUCTIONS 1607 AR

**PROCEDURE FOR SENDING SIGNALS**

1212. All signals, except signals coded from the Signal Vocabulary, will be sent in abbreviated procedure. Signals coded from the Signal Vocabulary may be sent in *either* normal or abbreviated procedure and may be either spelled out or sent as 4-letter code groups at the discretion of the sender. (See art. 3225 (b) and (c).)

1213. The following abbreviations are used in the text, when text is composed of signals, to indicate the special flags and pennants used in the signal books:

Name of character	Written and transmitted	Name of character	Written and transmitted
Affirmative (flag) .....	Afirm	Negative (flag) .....	Negat
Answering (pennant) .....	Ans	Optional (flag) .....	Option
Course (pennant) .....	Corpen	Preparatory (flag) .....	Prep
Deploy (pennant) .....	Deploy	Position (pennant) .....	Posit
Designating (pennant) .....	Desig	Section (flag) .....	Sect
Division (flag) .....	Div	Speed (pennant) .....	Speed
Emergency (pennant) .....	Emerg	Squadron (flag) .....	Squad
Formation (pennant) .....	Form	Tackline .....	Tack
Interrogatory (flag) .....	Int <sup>1</sup>	Turn (pennant) .....	Turn

<sup>1</sup> There is no danger of confusion with the procedure signal INT since INT (as in the above table), only occurs after IM.

1214. Alphabetical letters are transmitted by the names given below. The five alphabetical letters given above have special meanings, and in signals they occur only with such meanings and are to be written and transmitted by the abbreviations of their names, as indicated.

A Afirm	G George	M Mike	S Sail	Y Yoke
B Baker	H Hypo	N Negat	T Tare	Z Zed
C Cast	I Int	O Option	U Unit	
D Dog	J Jig	P Prep	V Vice	
E Easy	K King	Q Quack	W William	
F Fox	L Love	R Roger	X Xray	

1215. Numeral flags and pennants are transmitted spelled out; e. g., “6” is written and sent “six.” Confusion between numeral flags and numeral pennants is avoided by the construction of the signal and no special means of differentiating in transmission is required.

1216. Separate “signals” in the same text shall be separated by “Tack.”

1217. When a call sign is transmitted by radio as a part of a signal (in the text after IM), it should be preceded by the designating pennant, and the letters and numerals of the call sign are spelled out. The visual call sign is usually employed, although a radio call may likewise be employed.

**REPETITIONS, VERIFICATIONS, AND CORRECTIONS—ABBREVIATED PROCEDURE**

1218. The procedure signal INT is never to be employed in abbreviated procedure.

1219. When the whole or *any portion* of a message which has been made in abbreviated form is required to be repeated or verified, the station requiring such repetition or verification

is to ask for a repetition or verification of *the whole message* and, if the message carries reference numbers, the correct version is made in the same manner as for messages in normal form. The *whole message* is invariably to be retransmitted. If the message carries no reference numbers, correct versions are to be transmitted by making the sign "C" four times in succession followed by a retransmission in full of the correct version.

#### ABBREVIATED PROCEDURE WHEN THERE ARE A NUMBER OF STATIONS REQUIRED TO ANSWER

1220. (a) If a ship whose turn it is to answer fails to do so in five seconds, the next in proper order is to do so.

(b) Any ships which fail to answer in proper turn must wait until all ships called up have had time to answer, and the ships which have missed their turns will then answer in alphabetical order of call signs.

(c) The stations required to answer are to finish answering before a requested repetition or verification is made.

(d) If a *correction* is found necessary, it must usually be transmitted to all addressees who received the original message.

#### ACKNOWLEDGMENTS—ABBREVIATED PROCEDURE

1221. Methods of making acknowledgments to messages which carry no reference numbers, and methods of causing acknowledgments to be expedited and of calling for acknowledgments of messages not originally prefixed "Y" are shown by radio example 29, Part IV.

#### THE EXECUTIVE METHOD

1222. (a) Messages which require the executive sign to indicate the instant of execution are sent with the "executive to follow" sign ( $\overline{IX}$ ) after the heading and immediately preceding the sign " $\overline{IM}$ " or " $\overline{BT}$ ," and when thus sent are said to be sent by executive method.

Example: AB V BC  $\overline{IX}$   $\left\{ \begin{array}{l} \overline{IM} \\ \overline{BT} \end{array} \right\}$  etc.

(b) All messages transmitted by executive method will be sent in abbreviated procedure. The executive method is usually associated with signals, but it may be used for dispatches or even certain radio operators' signals—for instance, the radio operators' signal for correcting clocks.

(c) Every message which contains the "executive to follow" sign ( $\overline{IX}$ ) in the prefix will be followed by a further message containing the signal of execution. The instant of execution is indicated by the end of the 5-second dash. The executive sign is *always* preceded by a call. The signal of execution can not be annulled after it has once been made. The signal of execution is *not* to be answered. (See Pt. IV, radio examples 26–31.)

#### TACTICAL SIGNALS—ABBREVIATED PROCEDURE

1223. The transmission of tactical signals is illustrated by radio examples 26–31, Part IV.

#### ANNULLING SIGNALS

1224. To annul all outstanding unexecuted signals, the negative signal (NEGAT) is made alone.

Example: TU V SO  $\overline{IM}$  NEGAT

1225. (a) To annul a particular signal or one of several outstanding unexecuted signals, the negative (NEGAT) is followed by the signal which it is desired to annul.

(b) After a signal has been executed, or in case an " $\overline{IM}$ " signal has been made, it can not be annulled without a further signal.

## SALVO MARKS AND FIRE OBSERVATIONS

1226. Salvo marks and fire observations are made as follows:

(a) No heading or call sign, or time of origin or  $\overline{IM}$  or  $\overline{AR}$  is ordinarily used.

(b) Messages are transmitted without preliminary call and are not followed by an "executive" sign, nor is any answer to be made.

1227. A *fire observation* consists of a 2-second dash made at the instant the observation occurs, followed by data from the Fire Observation Code.

1228. When necessary for identification purposes, identification data, being preceded by the space sign, may follow the salvo mark or fire observation. Identification data will ordinarily consist of the call sign of the transmitting station, or a letter indicating the transmitting station.

Example: (2 seconds) 012 L4—G

1229. A *salvo mark* consists of a 2-second dash made at the instant of firing followed by figures indicating the time of flight in seconds.

Example: (2 seconds) 35

## CHAPTER 13

### THE "F" AND "I" METHODS

#### THE "F" METHOD

1301. The term "F" method is applied to the transmission of messages which are not to be answered. It takes its name from the sign "F" in the heading, which means, "Do not answer." Receiving ships or stations are not to answer or ask for repetitions or verifications. If necessary, a coded dispatch conveying a request for repetition or verification may be transmitted except that in peace time this request need not be coded.

1302. Messages transmitted by "F" method are to be made "words twice" unless the text consists of plain language, in which case it may be made "words once." Since the station transmitting is not always in a position to know the receiving conditions at the receiving station and there is no subsequent answer by which the matter can be checked up, the call signs of the stations called and of the addressees and originator shall always be made twice.

1303. The sign  $\overline{VA}$  is invariably to be made at the end of a message or messages made by "F" method, to indicate completion of all scheduled transmissions.

1304. The placing of "F" in the preamble of messages may be a function of the originator or of the officer in charge of the linking station.

#### USE OF "F" METHOD BY SHORE STATIONS

1305. When shore stations transmit messages on "F" method schedules, the sign "F" shall be placed in the preamble. Such messages shall be transmitted again on one subsequent schedule, making two transmissions of all messages. All the general rules given in preceding articles of this chapter apply to the transmission of messages by "F" method by shore stations.

1306. In exceptional cases it may be necessary for a shore station, which does not normally transmit on "F" method schedules, to send a message on a frequency other than that on which ships are listening. The station shall then first send by the "F" method on the calling frequency, the radio operators' signal for "Am going to transmit on ----- kilocycles." The message itself shall be transmitted by "F" method on the new frequency *two* minutes later.

1307. The termination of each successive message is indicated by the time of origin. The sign  $\overline{VA}$  is made at the end of all scheduled transmissions. The sign "B" is *not* to be used at the end of each individual message, but the sign  $\overline{AS}$  may be used as necessary, provided ships are not kept waiting more than three minutes.

1308. Every ship required to guard scheduled "F" method transmissions shall copy all messages transmitted.

1309. In making a long series of messages on a frequency used by ships, the shore station shall break-off (using  $\overline{AS}$ ) at intervals of 15 minutes and listen 1 minute so as to give time for a ship to make an urgent or priority call if necessary.

#### "F" METHOD SERIAL NUMBERS

1310. When shore stations regularly deliver messages to vessels by "F" method, in order to enable those vessels to discover and ask for missing numbers, each message will carry an "F" method serial number. At each shore station "F" method serial numbers shall run consecu-

tively from 1 to 999, after which a new series commences. Only a single series is to be kept for "F" method messages, irrespective of the actual addressees.

1311. The following examples illustrate the proper employment of the "F method" by shore stations.

Example (a): A shore station AB has messages to transmit to the ships CD and EF, and to a squadron GH at schedule time. The serial number of the last "F method" message made was 57. The order of transmission of the messages, determined by rules for precedence, is GH, CD, EF. At the correct time, AB makes—

NERK NERK V AB II NR58 II F II Z II GH GH V XY XY  
 II P II GR17 BT (plain language text) II NR59 II Z II CD CD V  
 PG PG II GR45 BT (plain language text) II NR60 II Z II EF EF  
 V QX QX II GR21 BT (plain language text) II VA<sup>1</sup>

It will be noted that AB has indicated by VA when communication is finished. The series of messages made on the above transmission is to be repeated on *one* subsequent schedule, the messages being made in the order of, and carrying the serial numbers already assigned, *after* any *new* messages that may be awaiting transmission have been made.

Example (b): A shore station XY has, at a certain schedule time, no messages awaiting transmission. The serial number of the last "F" method message transmitted was 27. XY employs the call sign for "All or any United States naval vessels" (NERK), thus: At the correct time, AB makes: NERK NERK V XY II NR27 NR27 II VA. In this manner the ships which copy the transmission are enabled to ascertain that they have missed no messages.

#### THE "I" METHOD

1312. The term "I" method is applied to the transmission of messages between two stations other than stations addressed. Addressees "intercept" the messages so transmitted. Ordinarily two shore stations transmit and receive messages addressed to and intercepted by ships. Intercepting ships are never to answer or ask for repetitions or verifications of messages sent by the "I" method; i. e., the rule is the same as if all messages sent by this method contained "F" in the heading. If necessary to request repetition or verification, a coded dispatch shall be transmitted, but this is not necessary if messages can be obtained from another ship in company.

1313. It will be noted that the "I" method presents a great advantage over the "F" method in that the second station asks for repetitions of any portions of the message which may be faulty owing to bad transmission, static, or interference. Further, to increase the likelihood of correct reception by the intercepting ship, the receiving station may be ordered to "repeat back," (G). This is particularly useful when the intercepting ship is known to be distant from the transmitting station and near to the receiving station.

1314. Another advantage of the "I" method over the "F" method is that necessary verifications can be pointed out and corrected. The receiving station (i. e., the station indicated in the call) decodes the message, if in possession of the code or cipher employed, and asks the transmitting station to "Verify and repeat" (J), as may be necessary. Thus the intercepting ship is given the correct version without having to use her transmitting set, use of which might result in disclosing position of intercepting ship.

#### USE OF THE "I" METHOD BY SHORE STATIONS

1315. Shore stations can communicate by the "I" method either at schedule times on predetermined frequencies or at any moment, provided it is known that the actual addressee,

<sup>1</sup> See art. 1302.

i. e., the intercepting ship is listening on the frequency employed. Messages which have to be transmitted by intercept method to effect delivery to some of the addressees can be relayed for further delivery to other addressees without the necessity of additional transmission, by the insertion of appropriate instructions in the heading.

1316. Shore stations using the "I" method habitually employ the sign "G" in the preamble, and the receiving station (not the intercepting ship) repeats back the messages. This "repeating back" is standard practice and will always be done by shore stations unless instructions to the contrary are received.

#### "I" METHOD SERIAL NUMBERS

1317. When shore stations regularly deliver messages to vessels by the "I" method, in order to enable those vessels to discover and ask for missing numbers, each message will carry an "I" method serial number and *station distinguishing letter*. "I" method numbers shall run consecutively from 1 to 999, after which a new series commences. Station distinguishing letters are designated by the Chief of Naval Operations and are listed in Naval Shore Communication Facilities.

1318. The introducing "I" method station places the "I" method number and station distinguishing letter as the first item in the preamble. It is not changed on any subsequent retransmission nor does the retransmitting station assign any additional "I" method number and distinguishing letter. When the "I" method serial number is used, no station serial number is to be carried.

1319. When an "I" method station has no messages for transmission, the "I" method serial number of the last message transmitted should be indicated. An "I" method schedule is concluded by the sign  $\overline{VA}$ .

#### TRANSMISSION OF "I" METHOD MESSAGES BY SHORE STATIONS

1320. Shore stations will transmit intercept schedules in the systematic manner described below. This is very necessary because the schedules are for the ships of the fleets and if shore stations are permitted to break each other, when they miss a part of a message, or do not transmit in fixed rotation, ships may not be able to shift receiver settings fast enough to keep up, and therefore may miss parts of the schedules. The spacing and speed of transmission are particularly important features of successful intercept working. Automatic transmitters with carefully prepared tape should be used whenever practicable.

(a) Station A, beginning exactly at the time set, will transmit, for a period not exceeding 16 minutes at a rate not to exceed 20 words per minute, the regular "fleet" traffic on hand.

(b) Upon completion of station A's transmission station B will repeat back the traffic which station A has sent, at not to exceed 20 words per minute, indicating repetitions required because of parts missed, by inserting the blank sign  $\overline{AAA}$ , in the *places* in which these parts would have been repeated back had they been received completely. Station B will then add its regular "fleet" traffic, using such time as is required up to, but not exceeding, 40 minutes after the beginning of the schedule.

(c) Station A then retransmits any messages or parts of messages which station B requires to have repeated, then corrects any error made by station B in the "repeat back" of station A's traffic and then repeats back *all* traffic which station B has placed on the schedule. If station A has missed a part of station B's original transmission the missing part will be indicated in the *same position* it would have occupied had it been successfully received, by the use of  $\overline{AAA}$ .



(d) Station B then repeats back corrections to station A's traffic and corrects any errors made in station A's repeat back of station B's added traffic.

(e) Station A then repeats back station B's corrections.

1321. The following examples will illustrate the proper employment of the "I" method by shore stations.

Example (a): Two shore stations WX and YZ constitute an intercept circuit for a large number of ships, AB, CD, EF, GH, JK, IM, etc., the transmission being made at schedule times and WX transmitting first. Messages introduced into the circuit through WX carry an "AFIRM" series and the last message transmitted was 55 AFIRM. Messages introduced into the circuit through YZ carry a "BAKER" series and the last message transmitted was 32 BAKER.

(1) When the schedule time arrives, neither WX nor YZ has any messages for transmission.

WX makes: YZ V WX II G II NR55 AFIRM  $\overline{AR}$ .

YZ makes: WX V YZ II YZ V WX II G II NR55 AFIRM  
II WX V YZ II G II NR32 BAKER  $\overline{AR}$ .

WX makes: YZ V WX C II WX V YZ II G II NR32 BAKER  
 $\overline{AR}$ .

YZ makes: WX V YZ C II  $\overline{VA}$ . WX does *not* answer.

(2) When the schedule time arrives, WX has two messages for transmission and YZ has none.

WX makes: YZ V WX II NR56 AFIRM II G II Z II AB V  
PQ II GR17  $\overline{BT}$  (text of message) II NR57 AFIRM II G II Z II  
EF V MX II GR37  $\overline{BT}$  (text of message)  $\overline{AR}$ .

YZ makes: WX V YZ II YZ V WX II NR56 AFIRM II G II  
Z II AB V PQ II GR17  $\overline{BT}$  (text of message) II NR57 AFIRM II G  
II Z II EF V MX II GR37  $\overline{BT}$  (text of message) II WX V YZ II  
G II NR32 BAKER  $\overline{AR}$ .

Assuming that YZ has repeated back correctly, WX makes: YZ V WX C II WX  
V YZ II G II NR32 BAKER  $\overline{AR}$ . YZ makes: WX V YZ C II  $\overline{VA}$ . WX does  
*not* answer.

1322. Ships should make full use of the shore "I" method system for passing messages to other ships. The message should be passed via the nearest shore station to one of the "I" method stations for introduction into the "I" method system.

#### COMPLETING FILES OF "F" METHOD AND "I" METHOD MESSAGES

1323. Vessels acting singly shall maintain complete files of "F" method and "I" method messages made by stations they are required to copy by orders in effect at the time. Only in this way can they tell whether or not they have missed a message which may concern them.

1324. The senior officer present of vessels in company may prescribe which ships are to maintain complete files of the "F" method and "I" method messages made by stations serving the group or unit.

1325. In case it is necessary for a vessel to request an "F" method or "I" method message which has been missed or which has been received incompletely, every effort should be made to obtain such message from vessels in company or in the vicinity, before requesting a repetition from shore. When repetition from shore is necessary, request for such repetition shall be encoded except as provided in articles 1301 and 1312.

## CHAPTER 14

### RADIO COMPASSES AND RADIOBEACONS

#### GENERAL

1401. Bearings obtained by radio compasses are great circle arcs and can be plotted on great circle charts without correction. Except for short distances, they should be corrected before plotting them on mercator charts.

1402. Most radio compasses used in the United States Navy are bilateral; i. e., every observation will yield two possible bearings which are approximate, but not exact, reciprocals. Which of the two bearings to use can generally be readily determined from a knowledge of the existing situation.

1403. District commandants are responsible for the performance of shore radio compasses located in their districts.

1404. The use of radio compasses in the fleet is prescribed by the commander in chief.

1405. The first 10 minutes of each hour, in clear weather, are set aside during peace for tracking exercises. Compass stations should be relieved from furnishing regular compass service if actually engaged in tracking exercises during that time. In case of thick weather, all radio-compass stations concerned shall resume normal service immediately.

1406. Except during tracking exercises, when handling distress messages or bearings, or when handling authorized traffic, radio-compass stations shall guard the radio-compass frequency continuously during their hours of watch. Traffic handled by radio-compass stations should be restricted, in so far as practicable, to the radio-compass service.

1407. Radio-compass stations do not listen ordinarily on the distress frequency (500 kilocycles). Any radio-compass station hearing, or being informed of distress, will shift to the distress frequency immediately and commence taking bearings and reporting observations. Any station hearing a distress call will report the fact immediately to the district center and radio-compass stations near by. The district tracking organization should keep authorities, who are in a position to aid, informed of the location and drift of the vessel in distress.

1408. Radiobeacons are fitted to make, on a prearranged beacon frequency, a prescribed radio signal at specified intervals which is used for taking bearings with the ship or aircraft radio compass. Radiobeacons are listed in Light Lists and other navigation publications of the Hydrographic Office.

1409. Radio-compass stations are authorized to transmit upon request for a vessel wishing to obtain bearings with her own radio compass, but this service is not to interfere with furnishing bearings to vessels requesting same.

1410. When transmitting for bearings, signals should be kept steady, fairly strong, and clear.

1411. When bearings are desired from a regularly organized group of radio-compass stations, the master station of the group should be called. The master station will answer and when bearings are obtained will forward the bearings from each station of the group.

1412. Vessels may call a combination of single stations and groups as necessary to afford the desired assistance in navigation.

1413. Ships are furnished with bearings only. These will usually be furnished naval vessels by means of the radio-compass code. The detailed instructions for the use of the radio-compass code are contained in that publication.

1414. Aircraft which have navigational facilities for plotting their own bearings should call for bearings only. Bearings will ordinarily be furnished to aircraft in plain language. Aircraft which have no facilities for plotting may call for bearings or positions, as desired. Positions will be furnished aircraft in plain language and will usually take the form of the bearing and distance of the aircraft *from* some prominent landmark or landing field.

#### BEARINGS TO SHIPS

1415. A ship desiring bearings calls on compass frequency making the radio operators' signal "What is my bearing per RC code?"

Example (a): A ship, AB, wishes to obtain bearings from a single station, RP, and a group, BC. AB makes: BC RP V AB II ZKM  $\overline{AR}$ . The answer by the radio-compass stations varies according to the state of readiness to take the bearing. Thus, assuming that RP is ready to give the bearing at once and that BC must warn the group stations, the answers would be made, on compass frequency: AB V BC R4 II  $\overline{AS}$  and AB V RP K4. When BC is ready for AB to send, BC makes: AB V BC K. AB does *not* answer but calls and makes the letters MO followed by her own call sign for 45 seconds, thus: BC RP V AB MO AB MO AB (45 seconds)  $\overline{AR}$ .

Unless they require AB to send again in order to get an accurate reading, BC and RP do not answer, but give the result as soon as possible, as shown later. Should RP require AB to send again, RP makes: AB V RP  $\overline{IMI}$   $\overline{AR}$ . AB complies by making: RP V AB MO AB MO AB, etc., (45 seconds), as above,  $\overline{AR}$ . AB then waits on compass frequency for the results to be signaled by the radio-compass stations.

1416. The message giving the bearing to *ships* is made as follows:

(a) The procedure signal meaning "Your bearing per RC code was ----- at -----" (ZKN)

(b) Bearings (uncorrected for mercator distortion) are picked out of the radio-compass code and give the TRUE bearing in degrees ( $0^{\circ}$  to  $360^{\circ}$ ) of the ship *from the station*. This information will be given:

(1) By single stations in the form of a separate message from each station which took a bearing.

(2) By group stations in the form of a single message made by the master station stating in turn the names of the stations forming the group, followed by the bearings taken by them.

(c) When single stations transmit a bearing, the code group designating the name of the station is to be omitted, since the call sign used is sufficient identification.

(d) The time group used represents the local zone time of the radio-compass station at which the observation was taken.

Example: The true bearings of a ship, AB, taken at 1032 by a single station, RP, and by the stations of a group (code groups ABCD, EFGH, IJKL), and call sign master station BC are assumed to be represented by the groups MNOP and QRST, WXYZ, ZZVV.

The messages are made thus:

BC makes: AB V BC II ZKN II ABCD II QRST II EFGH II WXYZ II IJKL II ZZVV II 1032  $\overline{AR}$

AB answers: BC V AB R

BC does *not* answer.

RP makes: AB V RP II ZKN II MNOP 1032  $\overline{AR}$

AB answers: RP V AB R

RP does *not* answer.

## BEARINGS TO AIRCRAFT

1417. An aircraft desiring a bearing or bearings calls the radio compass station or stations in the same manner as a ship but ordinarily uses the procedure signal meaning "What is my bearing in plain English?" (ZKK). This procedure signal is not ordinarily to be employed by ships. Bearings transmitted in plain English will always consist of a 3-numeral group.

Example: An aircraft, XY, wishes to obtain a set of bearings from a group station BC. XY makes: BC V XY II ZKK  $\overline{AR}$ .

1418. Bearings are furnished to aircraft in accordance with the following procedure. The procedure signal meaning "Your bearing in plain English was ----- at -----" is employed (ZKO).

Example (a): The true bearings of an aircraft 66D taken by two single stations RP and WX at 1035 are  $45^\circ$  and  $274^\circ$ , respectively, from the two stations.

The messages are made thus:

RP makes: 66D V RP II ZKO II 045 1035  $\overline{AR}$

(NOTE.— $45^\circ$  is transmitted "045.")

66D answers: RP V 66D R

Likewise, WX makes: 66D V WX II ZKO II 274 1035  $\overline{AR}$

66D answers: WX V 66D R

Example (b): The true bearings of an aircraft 69Q taken at 0930 by a group station BC are as follows: Bearing from substation CD was  $53^\circ$ ; from substation LF was  $230^\circ$ ; and from master station BC was  $300^\circ$ . BC combines the information into one message and makes:

69Q V BC II ZKO II BC 300 CD 053 LF 230 0930  $\overline{AR}$

69Q answers: BC V 69Q R

BC does *not* answer.

## POSITIONS FURNISHED AIRCRAFT

1419. In furnishing *positions* to aircraft, unless the aircraft asks for its bearing and distance from a specified point, the master station will give the aircraft its bearing and distance from the master station.

1420. An aircraft desiring a position calls up a group on compass frequency making the procedure signal "What is my bearing and distance from you (or from -----)?" (ZKX.)

Example (a): An aircraft XY desires to obtain its bearing and distance from the master station (BC) of a group.

XY makes: BC V XY II ZKX II  $\overline{AR}$

BC makes: XY V BC K4

Example (b): An aircraft XY desires to obtain its bearing and distance from Langley Field through the use of a group of radio-compass stations whose master station is BC.

XY makes: BC V XY II ZKX LANGLEY FIELD  $\overline{AR}$

1421. The numeral group indicating distance in nautical miles will always be followed by the word "miles." The procedure signal meaning, "Your bearing from me (or from -----) was -----; your distance was -----; time -----" (ZLB) is used in furnishing positions to aircraft.

Example (a): BC having determined that an aircraft XY bore  $65^\circ$  distance 77 nautical miles from him (BC) at 1357 makes:

XY V BC II ZLB II 065 77 miles 1357  $\overline{AR}$

Example (b): BC having determined that aircraft XY bore  $283^\circ$  distance 105 nautical miles from Langley Field at 2019 makes:

XY V BC II ZLB II LANGLEY FIELD 283 105 miles 2019  $\overline{AR}$

In either case XY makes: BC V XY R and BC does *not* answer.

**DOUBTFUL BEARINGS**

1422. If a bearing or distance is doubtful for any reason whatever, the radio-compass station shall employ the appropriate procedure signal after each doubtful bearing or distance whether code or clear.

**SHIP AND AIRCRAFT RADIO COMPASSES**

1423. A ship or aircraft desiring to use her own radio compass for obtaining bearings of a shore station, or another ship or aircraft, indicates that desire by means of the operators' signal meaning, "Transmit MO's and call sign on ----- kcs."

1424. The shore station or ship addressed complies by transmitting for 45 seconds.

**INTERNATIONAL RADIO-COMPASS PROCEDURE**

1425. The foregoing procedure applies only to the obtaining of bearings from or on United States naval shore stations, ships, and aircraft in naval procedure. The international procedure for obtaining bearings is contained in Appendix 15 of the regulations annexed to the International Radiotelegraph Convention of Washington, 1927. Naval vessels and aircraft shall employ United States naval procedure exclusively for obtaining bearings from or on naval radio-compass stations and transmitters.

## CHAPTER 15

### METHOD OF HANDLING MESSAGES IN NAVAL FORM OVER NONNAVAL SYSTEMS

1501. The following instructions show the method which may be used when necessary in transmitting messages in naval form via nonnaval systems. The method consists of embodying the complete naval message in the text of a message in commercial form. In commercial form the message is then passed between naval communication offices via commercial stations. The real address and origin are thus concealed. The most economical system should be employed, other considerations being equal.

1502. The following table indicates how letters and procedure signs may be spelled out:

A.....	Afirm	II.....	Space <sup>1</sup>	R (letter).....	Roger
AA.....	All after	IM.....	Signal	R (sign).....	Received
AB.....	All before	IMI.....	Repeat	S.....	Sail
B (letter).....	Baker	J (letter).....	Jig	SOS.....	Distress
B (sign).....	Beaign	J (sign).....	Verify	T (letter).....	Tare
BT.....	Break	K (letter).....	King	T (sign).....	Transmit
C (letter).....	Cast	L (letter).....	Love	TOR.....	TOR
C (sign).....	Correct	L (sign).....	Sinel	U.....	Unit
D.....	Dog	M (letter).....	Mike	V (letter).....	Vice
E.....	Easy	M (sign).....	Relvia	V (sign).....	From
F (letter).....	Fox	N (letter).....	Negat	W.....	William
F (sign).....	Efsign	N (sign).....	Less	WA.....	Word after
G (letter).....	George	O (letter).....	Option	X.....	X ray
G (sign).....	Reback	O (sign).....	Urgent	Y (letter).....	Yoke
GR.....	Group	P (letter).....	Prep	Y (sign).....	Acknowledge
H.....	Hypo	P (sign).....	Priority	Z (letter).....	Zed
I.....	Inter	Q (letter).....	Quack	Z (sign).....	Action
		Q (sign).....	Info		

**NOTE.**—Where call signs in the naval heading of messages consist of pronounceable 4-letter groups from the general radio calls, they should be transmitted as groups; i. e., individual letters will not be given by name, as is the case for ordinary arbitrary and nonpronounceable call signs.

1503. Naval dispatches in naval form between naval communication offices are sent over domestic wires as follows:

Example (a): The message which it is desired be transmitted over domestic land line from New York to Washington:

T II M5N II Z II M5N V HORN II Q II NEGAT II GR4 BT  
OO2O ABCD EFGH 1013

This would be transmitted over land line as follows:

Telegraph address: U. S. Naval Communication Office, Navy Department, Washington, D. C.

Telegraph text: TRANSMIT MIKE FIVE NEGAT ACTION MIKE FIVE  
NEGAT FROM HORN INFO NEGAT EASY GEORGE TARE GROUP FOUR  
OO2O ABCD EFGH 1013

Telegraph signature: U. S. Naval Communication Office, New York.

<sup>1</sup> May usually be omitted.

Example (b): The message given in the foregoing example might be relayed to the west coast by radio or by wire.

(1) If by radio—

NPG V NSS II NR157 II T II M5N II Z II M5N V  
HORN II Q II NEG T II GR4 BT 0020 ABCD  
EFGH 1013 AR

(2) If by wire—

U. S. Naval Communication Office, San Francisco.

TRANSMIT MIKE FIVE NEGAT ACTION MIKE FIVE  
NEGAT FROM HORN INFO NEGAT EASY GEORGE  
TARE GROUP FOUR BREAK 0020 ABCD EFGH  
1013

U. S. Naval Communication Office, Washington, D. C.

1504. When naval vessels transmit a naval message in naval form through a radio station which does not employ naval procedure, the origin given in the commercial preamble will be "U. S. S. (name of ship)." No signature is subscribed to the commercial message.

Example: Message to be transmitted from a naval ship through the (foreign) radio station at Cerrito, Montevideo, to Naval Radio Station, Balboa, Canal Zone:

T II Z II LARK V F7L II P II GR25 BT 0019 DCBA HGFE  
etc. 1319

This would be transmitted from the ship (NAGV) to Radio Cerrito, Montevideo (CWA), as follows:

(Commercial call):

CT CWA CWA CWA de NAGV NAGV NAGV AR

(Commercial preamble):

	(Explanation)
CT.....	Attention.
Radio.....	Radio message (prefix).
CLEVELAND (NAGV).....	U. S. S. <i>Cleveland</i> (origin).
1.....	No. 1 (station serial number).
42 Govt Navy.....	Commercial check and special prefix.
Twelfth 1600.....	Filed twelfth, 4 p. m.
BT.....	Break.

(Commercial address):

Govt. USNAVCOM Balboa, C. Z.

BT

(Commercial text):

TRANSMIT ACTION LARK FROM FOX SEVEN LOVE PRIORITY  
GROUP TWO FIVE BREAK 0019 DCBA HGFE etc. ....

1319

AR K

Balboa transmits by radio to Washington thus:

NSS V NBA II NR85 II Z II LARK V F7L II P II  
GR25 BT 0019 DCBA HGFE etc. 1319 AR

1505. Examples of a message sent over a cable.

Example: C in C (F8Z) is at Trinidad and has registered the cable address "USNAVCOM Trinidad." C in C has a message for Opnav (LARK). C in C files the message at the cable office, Trinidad, in the following form:

USNAVCOM San Juan

Transmit action LARK from fox eight zed group fiftyseven break 2002  
(text) 1732

USNAVCOM Trinidad

USNAVCOM San Juan would put this on the radio as follows:

NAA V NAU II NR38 II Z II LARK V F8Z II GR57 BT  
2002 (text) 1732 AR

1506. When vessels or stations are so far beyond the naval communication system as to involve large cable or land-wire tolls on messages, the commandants are allowed latitude in combining dispatches sent over nonnaval systems into a single message in order to save tolls. In such cases messages to and from naval units are usually cleared through a single naval communication office, through which contact is made with the nonnaval system. Such office may be authorized to combine two or more dispatches into a single message, taking care to preserve identity of individual dispatches and to avoid ambiguity. Similarly the outlying unit may combine two or more dispatches in a single message to the nearest United States naval communication office, which converts them into proper naval form and forwards them as individual messages.

1507. It frequently happens that messages may be transmitted direct to Washington, D. C., by cable at a lower rate than if they are transmitted by cable to a naval radio station at an intermediate point and thence by naval radio to Washington. This is due, in general, to the fact that cable companies will not allow Government rates, except on messages directly to and from the United States. Information as to rates should be ascertained from the local cable offices.

1508. As an example of the foregoing, assume that a division of four ships (battleship division 3, *Pennsylvania* (flag), *Oklahoma*, *Nevada*, and *Arizona*), is in port at Montevideo. The nearest United States naval communication office is Balboa, Canal Zone. That office having, say, three dispatches for units of that division might combine them in a cable message as follows:

To: USNAVCOM

MONTEVIDEO (URUGUAY)

OKLAHOMA FROM BUNAV 6328 BOWEN DISCHARGED FIFTEEN  
APRIL 1015 FLAG ACKNOWLEDGE FROM OPNAV 1028 AUTHOR-  
ITY GRANTED PROLONG VISIT TWO DAYS 1400 NEVADA FROM  
RECRUITING SALT LAKE 1028 UNABLE LOCATE JOHN SMITH  
ADDRESS GIVEN 1000

Since a cable shows the point of filing (Balboa, Canal Zone), no signature is required, and since a signature is charged for, it should be omitted. Since no ambiguity can arise, "Flag," instead of commander battleship division 3, is used to save words.



1509. The senior officer present of the unit at Montevideo might combine two messages into one cable message as follows:

To: USNAVCOM

BALBOA (CZ)

MOVEMENTS FROM FLAG 0506 BATTLESHIP DIVISION THREE  
DEPARTED MONTEVIDEO FOR RIOJANEIRO ARRIVE TWELVE  
HOURS EIGHTH 1000 BUENG ACKNOWLEDGE FROM OKLA-  
HOMA 1006 MY 1001 1030 PACKING URGENTLY REQUIRED 1408

No signature is appended, the place of filing (Montevideo) showing on the cable.

Balboa makes two regular naval messages of the cable shown above and transmits them as follows:

NSS V NBA II NR419 II Z II ROVE V F5N II GR13 BT  
0506 BATTLESHIP Division etc. 1000

and

NSS V NBA II NR420 II Z II BOND V NADN II Y II GR8  
BT 1006 MY 1001 1030 etc. 1408

## CHAPTER 16

### COMMERCIAL PROCEDURE

#### GENERAL

1600. Considerable information in connection with commercial practice is contained in Part I, chapter 7. (See also art. 1504.) Attention is especially called to the provisions of the International Radiotelegraph Convention and regulations attached thereto.

#### ESTABLISHING COMMUNICATION

1601. (a) A ship calls another ship or shore station by making:

“**CT**” (meaning “attention”).

The call sign of station desired not more than three times.

“**DE**” (meaning “from”).

Own call sign not more than three times.

(b) The ship or station called answers by making:

“**CT.**”

The call sign of calling station not more than three times.

“**DE.**”

Own call sign.

“**K**” (or other appropriate signal).

#### TRANSMISSION OF MESSAGES

1602. (a) The transmission of a message, or a series of messages, shall be preceded by the attention signal (**CT**).

(b) When transmitting long messages, the text shall be divided into portions of 50 words of plain language, or 20 groups of code. After each such portion the sending ship or station shall interrupt the transmission with the interrogation sign (**IMI**), and shall not continue until the receiving station repeats the last word received, followed by the go-ahead signal (**K**), or, if communication is very good, simply the go-ahead signal (**K**). If the receiving station has not correctly received the portion transmitted, corrections shall be asked for and given at this time before proceeding with the rest of the message.

(c) In case of transmission of messages in series, answer or receipt shall be made after each series of messages.

#### COMPONENT PARTS OF COMMERCIAL MESSAGE

1603. Every message in international (commercial) form consists of the following parts: Preamble, address, text, and signature. The *preamble* includes everything from the beginning of the message to the “break” signal (**BT**), by which it is separated from the address. The preamble contains the following items: Prefix; office of origin; station serial number; operator (sending or receiving not transmitted, but reported on message blank); check and special prefix; via,<sup>1</sup> (if any relay or routing necessary); date and hour of filing.

1604. The prefix for any commercial radiotelegram is the word “**RADIO.**” That for a paid-service message is “**RADIO ST.**” For regular service messages between ships, shore

<sup>1</sup> See art. 1614 (5).

stations, and between ships and shore stations "SVC" is used. In the case of a message whose text is framed in the international code of signals the letters "PRB" shall follow the word "RADIO."

1605. The office of origin designation shall be transmitted by name. Where ambiguity may be caused by the ship's name, it is permissible to add her call letters in parentheses to the name but ordinarily the name will suffice. By the office of origin is meant the station at which a message originates. It may be a ship station, a coastal station, or a land telegraph office. This name shall always be transmitted. Where there is any chance of confusion between the name of a vessel and the name of an office on shore, the name of the vessel shall be preceded by the letters "SS," "MS," or "USS," as the case may be. The names of offices on shore shall ordinarily be followed by the name of the State in which the office is located, in parentheses.

1606. (a) The station serial number (not SRS) is used on messages for the purpose of assisting the receiving station in ascertaining that it has received all the messages sent to it by any transmitting station. Station serial numbers are to be used on messages as follows:

(1) By each station as a separate series with each other station communicated with during a 24-hour period from midnight of each day, the first message to each other station being numbered "1." Succeeding messages are numbered consecutively until the following midnight, when a new series commences for each station communicated with.

(2) With reference to the rule above, the station serial number is not necessary and is not used on messages consisting entirely of international abbreviations and associated signals, but is used only on radiotelegrams.

(b) The station serial number applies only between the transmitting station and the station to which the message is transmitted. If the message is to be retransmitted by the station which received it, i. e., if it is to be relayed, a new station serial number is assigned to it. This new station serial number shall be the next number in sequence between the station which is relaying the message and the station to which it is transmitted by such relaying station.

(c) The station number shall be transmitted immediately after the name of the office of origin. Ordinarily, the indication "NR" precedes the station serial number, although on fast circuits with experienced operators the indication "NR" need not be transmitted, it being understood.

(d) Examples:

(1) The first 10 commercial messages received at a station NAR on a certain day are from the steamship *Amazon*. They are numbered 1 to 10, respectively, by the *Amazon*. The next two messages received by NAR are from the U. S. S. *Reid*. They are numbered 1 and 2, respectively, by the U. S. S. *Reid*.

(2) All 12 of the messages received by the station NAR (those from the steamship *Amazon* and the U. S. S. *Reid*) are placed on the land line or cable for further transmission, and are numbered 1 to 12 by NAR, being the first messages sent that date by that station to the land wire or cable.

(3) Following this, the U. S. S. *Reid* sends two messages to the steamship *Baltimore* direct. These two messages are numbered 1 and 2, respectively, by the *Reid*.

(4) The station NAR then sends three messages to the steamship *Amazon*. These messages are numbered 1 to 3, respectively, by the station NAR, being the first three messages for the day from NAR to the *Amazon*.

1607. The "sending operator's sign" shall be recorded on the message blank. No operator shall change his personal sign without the permission of the radioman in charge of the station or the radio or signal officer on board ship. No two operators at a station or on board a ship shall use the same sign. The sign of neither the sending nor the receiving operator shall be transmitted by radio, but shall be recorded on the message form. The receiving operator's

sign shall be transmitted on telegraph or telephone lines in addition to recording it on the message blank.

1608. (a) The check shall consist of the number of words included in the address, text, and signature, counted according to the rules hereafter given. In the case of supplementary instructions being sent those included in the address are included in the counting of words for the check. Where there is a choice of routes which the message may follow after reaching the coast, the sender may designate the one he prefers. In this case the route, in concise form, following the word "via" is transmitted in the preamble. The specification of route (after the check) in the preamble is not counted. All words between "to" and the end of the signature are counted in the check.

(b) Both the receiving and sending operators at stations shall carefully verify the check in accordance with existing instructions and the radioman in charge shall carefully supervise checks on all messages when necessary. The importance of this feature of commercial radiotelegrams shall be impressed on all operators.

(c) If the number of words received does not correspond with the check, it shall be immediately challenged and every effort made to have the office of origin correct an improper check. When necessary, inquiry concerning missing words shall immediately be made. In case the office of origin insists that the check is correct, the message shall be sent forward with a double check.

(d) If the number of words received does not correspond with the check and radio interference prevents getting a change of check or the missing words, the message shall be forwarded with the words "Subject to correction" immediately following the check which shall be a double one. These words shall also be used when it is found impossible to get a satisfactory repetition of one or more doubtful words. If at any time a doubt exists as to the count on a message, the question or questions involved shall be submitted to the office of the Chief of Naval Operations (Director Naval Communications) for decision.

1609. (a) The date and hour of filing shall always be transmitted, if transmission is to a coastal station, in the case of a commercial message filed on board. The date is expressed by the day of the month written out, thus, "tenth," followed by the hour (in four figures).

(b) A naval radio station shall forward the date and hour of filing. This applies to Government dispatches in international form as well as to commercial dispatches.

(c) Note shall be made on the sending blank of a coastal station, showing the date and hour of forwarding it as well as the date and hour of receiving it. This information is for the use of the office of the Chief of Naval Operations (Director Naval Communications).

1610. (a) The address of a commercial message for a destination ashore shall consist of at least two words—the name of the addressee and the name of the telegraph office of destination. Telegraph companies will register radio addresses at all offices at a nominal charge.

(b) The address of radiotelegrams intended for ships shall be as complete as possible. It shall embrace the following:

(1) The full name or title of the addressee with additional designations if any.

(2) The name of the vessel as it appears in the first column of the list of radio stations of the world.

(3) The name of the coast station as it appears in the list.

(c) In cases where there are two or more ships of the same name, the call letters in parentheses shall follow the name and are considered part of it, the name and call letters together being charged as one word in the address.

(d) Besides the address proper, there is also transmitted, when it occurs, with the address—

(1) Designation of the special type of radiotelegram. If the radiotelegram is one of the special types described in chapter 7 of the designation of the type, besides being transmitted as a special prefix in the preamble, shall be transmitted as the first item of the address.

1611. The text of the message, and the signature, if any, shall be sent exactly as received. Any marks of punctuation, abbreviation, etc., written by the sender, shall be sent just as written. As such marks of punctuation are counted as words, senders shall be advised that it is conducive to accuracy to write them as words.

1612. The signature, if any, follows the text and is separated therefrom by the break.

1613. (a) The end of message is indicated by the sign "AR" and in case an answer is desired followed by the "go-ahead signal" (K).

(b) In the case of a series of radiotelegrams, the "go-ahead signal" shall be given at the end of the series. The sending station then awaits receipt from the receiving station before transmitting the next series of messages.

1614. Examples of messages are given below. (Characters shown in parentheses are not necessarily transmitted. Communication is already established.)

1. A commercial ship *King William* sending to a naval station NAR a plain-language commercial message filed on board at 4 p. m. of the 12th:

CT	Attention signal.
RADIO	Prefix.
(SS) KING WILLIAM	Office of origin.
(NR) 2	Station serial number.
	Operator's sign. (See art. 1607.)
(CK) 8	Check.
TWELFTH 1600	Date and hour of filing.
BT	Break.
(TO) BROWN 175 KING STREET NEWORLEANS (LA)	Address.
BT	
ARRIVE THURSDAY	Text.
BT	
(SIG) JONES	Signature.
AR	Ending sign.
K	Go ahead.

2. A commercial ship, *Admiral Farragut*, sending to NAR a reply paid message to Omaha, Nebr.:

CT	Attention signal.
RADIO	Prefix.
(SS) ADMIRAL FARRAGUT	Office of origin.
(NR) 3	Station serial number.
	Operator's sign. (See art. 1607).
(CK) 13	Check.
RP ONE DOLLAR EIGHTY <sup>1</sup>	Special prefix.
TWELFTH 1600	Date and hour of filing.
BT	Break.
(TO) RP ONE DOLLAR EIGHTY <sup>1</sup> W P SHERMAN OMAHA (NEBR.)	Address and special prefix.
BT	Break.
CAN YOU MEET ME NEWORLEANS MONDAY TENTH	Text.
BT	Break.
(SIG) WILSON	Signature.
AR	Ending sign.
K	Go-ahead sign.

3. A paid service message relating to message in example (1) above. Sender desires to correct the address from the ship *King William* via station NAR:

<sup>1</sup> The special prefix counts as 1 word in the check.

CT.....	Attention.
RADIO ST.....	Prefix.
(SS KING WILLIAM).....	Office of origin.
(NR) 5.....	Station serial number.
.....	Operator's sign. (See art. 1607.)
(CK) 17.....	Check.
BT.....	Break.
(TO) NEW ORLEANS.....	Address.
BT.....	Break.
SEE OURS TWELFTH.....	Date.
BROWN.....	Address.
(SIG) JONES.....	Signature.
MAKE ADDRESS READ 179 INSTEAD OF 175 BT.....	Break.
(SIG) SS KING WILLIAM 11TH <sup>2</sup> .....	Signature and filing date of this message.
AR.....	Ending sign.
K.....	Go ahead.

4. U. S. S. *Wyoming* relays a commercial message sent via station NAR to steamship

*Cronstadt*:

CT.....	Attention.
RADIO.....	Prefix.
NEW YORK (NY).....	Office of origin.
(NR) 1.....	U. S. S. <i>Wyoming</i> station serial number.
.....	Operator's sign. (See art. 1607.)
(CK) 10.....	Check.
TWELFTH 1600.....	Filing date and time.
VIA NAR NITR.....	Relay indication.
BT.....	Break.
(TO) KOSCI.....	Address.
(SS) CRONSTADT KEY WEST (FLA).....	Route.
BT.....	Break.
HERMINHO INEXCORUM KOEMELK PENNANDO CO- BALT GALIBANDO.....	Text.
(SIG) VASSILY.....	Signature.
AR.....	Ending sign.
K.....	Go ahead.

5. U. S. S. *Denver*, transmitting a Government State Department dispatch to a commercial shore station (UB) to be delivered to the United States minister to Panama via a naval shore station (NBA):

CT.....	Attention.
RADIO.....	Prefix.
USS DENVER.....	Office of origin.
(NR) 5.....	U. S. S. <i>Denver</i> station serial number.
.....	Operator's sign. (See art. 1607.)
(CK) 13.....	Check.
GOVT STATE.....	Special prefix.
(VIA) NBA.....	Routing instructions.
TWELFTH 1600.....	Filing date and time.
BT.....	Break.
(TO) GOVT STATE AMERICAN MINISTER REPUBLIC PANAMA (VIA) BALBOA.....	Address, (including routing instructions).
BT.....	Break.
ABCDE FGHIJ KLMNO PQRST UVWXY.....	Text.
BT.....	Break.
(SIG) SMITH.....	Signature.
AR.....	Ending sign.
K.....	Go-ahead signal.

<sup>2</sup> See also art. 1626 (j). This is a paid service message. An "SVC" also carries the filing date as indicated.

6. U. S. S. *Reno* (NAMD) transmitting a plain-language commercial message to the merchant ship, S. S. *Kelena* (KXYA) via U. S. S. *Texas* (NADV) and the fleet commercial guardship, U. S. S. *Florida* (NAMB). The message was filed on board the *Reno* at 5 p. m. on the 12th.

NADV V NAMD - M - NAMB - T - KXYA - CT RADIO (USS) RENO (CK)  
 11 TWELFTH 1700 BT (TO) BLANTON (SS) KELENA NORFOLK (VA)  
 BT CAN YOU MEET ME NORFOLK SUNDAY FOURTEENTH BT  
 (SIG) JORDAN AR

The *Texas* receipts to the *Reno* and transmits to the *Florida*:

NAMB V NADV - T - KXYA - CT RADIO ETC -----

The *Florida* is able to establish communication direct with the S. S. *Kelena* and transmits:

CT RADIO (USS) RENO (NR<sup>3</sup>) 1 (CK) 11 TWELFTH 1700 VIA NAMB BT  
 (TO) BLANTON (SS) KELENA NORFOLK (VA) BT CAN YOU -----  
 ETC ----- FOURTEENTH BT (SIG) JORDAN AR K

If the *Florida* passes the message to a commercial shore station, this same form would be used. But if passed to naval radio, Norfolk, the *Florida* transmits:

NAM V NAMB - NR7 - T - KXYA - CT RADIO (USS) RENO (CK) 11  
 TWELFTH 1700 BT (TO) ETC -----

#### THE RECEIPT

1615. To answer a single message or series of messages, affirming receipt, the receiving station makes:

- (1) The call letters of the station which sent the message.
- (2) "De."
- (3) Call letters of own; i. e., the receiving station.
- (4) The "received" signal "R."
- (5) The number of the message, or the number of the first and last messages of a series received.
- (6) The ending signal "AR," and
  - (a) If ready to receive another message, the go-ahead signal "K." Its use indicates that a station has stopped sending and is prepared to receive anything further which the other station has to transmit.
  - (b) If ready to send a message, the attention signal "CT" followed by the message.

#### INTERNATIONAL MORSE CODE

1616. (a) The signals to be employed are those of the International Morse Code. This precludes the employment of the "American Morse" for radio use by vessels licensed by the United States. The international code has likewise been adopted for use by naval vessels of the United States. Commanding officers shall report via official channels to the office of the Chief of Naval Operations (Director Naval Communications) all serious infractions of this code which come to their notice. Chief radiomen and radiomen, first-class, are required to be familiar with "American Morse" so as to be able to operate instruments on land lines when detailed to naval radio shore stations which are connected to land line.

(b) Operators must be familiar with the different signals used to represent characters in European languages so as to be able to transmit and receive messages in those languages.

(c) The International Morse Code is given in Part IV, Procedure.

(d) The American Morse Code is given at the end of this chapter. (See art. 1628.)

\* U. S. S. *Florida* station serial number.

## PUNCTUATION AND OTHER SIGNS—INTERNATIONAL MORSE CODE

1617.

Period.....	Invitation to transmit (go-ahead) - . . .
Semicolon.....	Warning-high power.....
Comma.....	Question (please repeat after
Colon.....	.....), interrupting long
Interrogation.....	messages.....
Exclamation point.....	Wait.....
Apostrophe.....	Break (double dash) (BT).....
Hyphen.....	Understand.....
Bar indicating fraction (/).....	Error.....
Parenthesis ( ).....	Received (O. K.).....
Quotation marks.....	Position report (to precede all
Underline.....	position messages) (TR).....
Distress call (SOS).....	End of each message (cross) (AR).....
Attention call (CT).....	Transmission finished (end of
General inquiry call (CQ).....	work), (conclusion of corre-
From (de).....	spondence) (VA).....

## SPECIAL SIGNS

ä (German).....	ñ (Spanish).....
å (Spanish, Scandinavian) (or å).....	ö (German).....
CH (German, Spanish).....	ü (German).....
é (French).....	

## SPECIAL SIGNALS

1618. Attention is invited to Appendix No. 3 of the International Radiotelegraph Convention, Washington, 1927, wherein the "Q" code and miscellaneous abbreviations are listed. Whenever in commercial practice, they serve the purpose, they shall be used in all communications with radio stations, coastal or ship, as the operators of all countries signatory to the convention are required to be familiar with them. The "Q" signals form complete messages in themselves and do not need to be embodied in service messages.

## LANGUAGE

1619. (a) A radiotelegram may be sent in plain language, code language, or cipher. These languages may be used alone or conjointly.

(b) Radiotelegrams in plain language are those composed of words, figures, and letters which offer an intelligible meaning in any of the European languages or Latin. The words and letters shall be written in Roman characters. In case of unfamiliarity with the language being sent the sending operator's statement that a message is in "plain language" shall be accepted. The presence of trade-marks or of abbreviated expressions current in the country, as fob, uss, cod, etc., does not alter the character of a plain-language radiotelegram, but the presence of code words in an otherwise plain-language message subjects all the words in the message to a 10-letter count.

(c) Code language is composed of real words not forming intelligible phrases or of artificial words consisting of groups of letters. If unpronounceable groups appear in code messages such groups shall be subject to the 5-letter cipher count. No code word, whether real or artificial, shall exceed 10 letters in length. The real words may be drawn from any of the following languages: English, French, German, Dutch, Italian, Spanish, Portuguese, and Latin. The artificial words shall be formed of syllables, which shall be pronounceable according to the current usages of one of those languages. Combinations formed by running together two or more real



words, whole or contracted, or a real word and some other expression, are prohibited; e. g., "atonce," "safternoon," etc.

(d) Cipher is composed of (1) Arabic figures or groups or series of Arabic figures having a secret meaning, or letters or groups, or a series of letters having a secret meaning; (2) combinations of letters not fulfilling the conditions applicable to plain language or code counted at five letters or figures to a word. Letter and figure cipher shall not be combined in one group.

(e) The mixture, in one group, of figures and letters having a secret meaning is permitted, but such groups subject the count to one word for each letter or numeral. This prohibition does not include trade terms such as "IP76," which are not considered as having a secret meaning. Such expressions as "21 dot 13," used to express latitude or longitude, are likewise admitted.

#### COUNTING OF WORDS—GENERAL

1620. (a) The word (cable) system of counting shall be observed and all words in the address, text, and signature shall be counted and charged for.

(b) No item in the preamble shall be counted; but the abbreviated supplementary instructions, transmitted as the first item of the address in the case of radiotelegrams of special classes, shall be counted and charged as one word. If a route is designated in the address, it shall be counted and charged for.

(c) A message may contain any number of words at the option of the sender. No text or signature is required.

(d) When a radio message is transferred to a wire line as a radiotelegram, it carries the cable count.

#### PLAIN LANGUAGE

1621. (a) In a message written entirely in plain language the maximum length of chargeable words is fixed at 15 characters. Words of more than 15 characters are charged for at the rate of 1 word for every 15 characters or fraction thereof. Numerals are counted in groups of five or less per word.

(b) Abbreviated and misspelled words, illegitimate compound words, or words combined in a manner contrary to the usage of a language are forbidden, but if they should accidentally appear in a radiotelegram they shall be counted and charged for at the rate of one word for every five letters or fraction thereof.

(c) Nevertheless, names of towns and countries, surnames belonging to one person, names of places, squares, boulevards, streets, and other public thoroughfares, and names of ships, may be written as one word and charged for at the rate of 15 characters to the word (in plain messages).

(d) Words joined by a hyphen or separated by an apostrophe are counted as so many separate words.

#### CODE LANGUAGE

1622. (a) In code messages the maximum length of the chargeable (pronounceable) word is fixed at 10 characters.

(b) Code words of more than 10 letters shall be counted and charged for at cipher rate—that is, five letters to a word—and noted in the check; but genuine words of more than 10 letters may be used in their original sense, and shall be counted at the rate of 10 letters to the word. Code may be made up of dictionary or artificial words, but artificial words must be pronounceable to obtain the 10-letter count—artificial words not pronounceable are counted at the rate of five letters to a word.

(c) Combinations or alterations of words concealed by reversing the order of the letters or syllables shall not be accepted as code words.

## CIPHER LANGUAGE

1623. In cipher, the letters or figures in each uninterrupted series shall be counted at the rate of five, or a fraction of five, as one word. Groups of letters are charged for at the same rate as groups of figures, but figures and letters shall be counted separately; thus A5C counts as three words. (See "trade-marks" below.)

## MIXED LANGUAGE

1624. (a) In messages written in code and plain language the maximum length of a chargeable word is 10 characters.

(b) In messages containing plain and cipher language the words in passages in plain language are charged for at the rate of one word for every 15 characters or fraction thereof and the groups in the passages in cipher language at the rate of one word for every five characters or fraction thereof.

(c) In messages written in plain language, code language, and cipher language, the words in the passages in plain language and code language are charged for as code language and the passages in cipher language as cipher language.

## MISCELLANEOUS

1625. (a) Numbers, whether whole or fractional, expressed in words and written so that each number or group of numbers forms one continuous word shall be counted and charged for at the rate of 15 letters to a word if the text is in plain language or cipher and 10 letters to a word if the text of the message is in code.

(b) Roman numbers can not be produced by the Morse code. Senders shall be requested to substitute Arabic figures or words.

(c) Quotation marks, the two signs of the parentheses, and each separate figure, letter, initial, or underline shall be counted as one word. Groups of figures shall be counted at the rate of five figures or fraction thereof as one word.

(d) Groups of letters forming commercial trade-marks or expressions in current use, such as "cod," "fob," "ok," "am," "pm," "rr," "uss," "ss," shall be counted at the rate of five letters or figures to a word. Periods, hyphens, or dashes, and bars of division used in the formation of fractional or other numbers, or in commercial marks or similar expressions, shall each be counted as a letter in the groups in which they occur. Letters and figures may also be combined in one group in commercial marks, otherwise letters shall be counted separately from figures.

(e) Groups of letters shall not be accepted in the address. All letters other than those forming names or words shall, in the address, be separated and charged for as one word each. They are then transmitted as separate words.

(f) Decimal points and commas used in the formation of numbers and letters added to figures to form ordinal numbers, or to represent the number of a house, shall each be counted as a figure and charged for at the rate of five figures or a fraction thereof as one word.

(g) In code words of trade-marks the letters ae, aa, ao, oe, ue, shall be counted as two letters each.

(h) When the letters ch come together in the spelling of the genuine word, they shall be counted as one letter. They shall be counted separately in artificial code words and cipher words.

(i) Code words or groups of letters or trade-marks shall not contain the accented letters ä, å, å, é, ñ, ö, ü.

(j) In the event the office of destination requests the office of origin by service message to duplicate any message the office of origin may forward such duplicate message in the same manner as used in forwarding the original message, but the word DUPLICATE shall be placed

immediately after the check. In such cases the duplicate carries no charges. Such messages, however, shall be abstracted without charges being entered and under the "remarks" column on the abstract the notation DUPLICATE shall be made.

#### SERVICE MESSAGES

1626. (a) There is need for certain inquiries, instructions, and information regarding commercial messages. In general this need is met adequately by the system of procedure signs, radio-operating signals, and the international radio abbreviations. Procedure signs and radio-operating signals can be and shall be used between naval radio stations, whether handling naval or commercial traffic. With radio stations other than naval the international abbreviations only can be used.

(b) When it is impossible to convey between naval radio stations the meaning desired by means of procedure signs or radio-operating signals, a regularly framed dispatch (code or plain) shall be used. When it is impossible to convey the meaning desired by means of the international radio abbreviations to a radio station other than naval, or whenever it is necessary to make inquiry, convey instructions or information regarding messages to a cable or land-wire office, a properly framed "service" message shall be used.

(c) The exchange of notes, conversation, unauthorized abbreviations, or any transmissions in other than the authorized forms is prohibited and shall be rigidly suppressed.

(d) From time to time complaints are received from connecting land-line companies that naval radio stations send irregular, unnecessary, and ambiguous service messages in regard to traffic. Since commercial companies must keep down unpaid traffic to a minimum, since service messages complained of carry no charge, and since it is not only necessary but proper that the Naval Communication Service cooperate in every reasonable way with connecting lines, it is essential that all concerned use care to handle and word service messages in accordance with standard practice.

(e) Service messages may be sent on any subject connected with the handling or routing of commercial messages, tariffs, charges, etc., and may be sent to any ship, coast station, or telegraph office with which a station has communicated in the transmission of messages.

(f) Such messages have the prefix "SVC" (foreign ships use "A"). They are used as a means of communicating between stations or offices ashore relative to traffic that has been forwarded. They shall be addressed to the office or station concerned and signed by the office originating the traffic, followed by the date filed. Such "SVC" messages may be forwarded via radio and land lines without charges, regardless of the route taken by the message referred to, provided both messages are forwarded over the same system.

(g) Service messages may be sent via any coastal station of the company or management operating the station through which the message to which the service message refers was forwarded. In exceptional cases ships (not coastal stations) of other administrations may be used to forward service messages.

(h) Since "SVC" messages are not charged for they do not enter into the accounts, but copies of all "SVC" messages relating to any commercial messages shall be forwarded with the copy of the commercial message to the office of the Chief of Naval Operations (Director Naval Communications), so as to present all facts bearing on the case and save further reference to the radio station concerned. The "SRS" number (not the station serial number) is the same as the message the service refers to, with the letter "a" for the first "SVC," "b" for the second, and so on. Operators shall be careful to distinguish between service ("SVC") messages and paid service ("RADIO ST") messages. The latter are treated in every way as regular commercial messages, but are sent to radio or telegraph offices only at the request of the sender of a regular commercial message and when paid for by the sender.

- (i) The text of a service message ("SVC") contains:
1. The name of the addressee and the signature of the message to which it refers.
  2. The date on which that message was sent (this date is written out thus, twelfth, and is not expressed in figures.
  3. In case of nondelivery, the full address.
  4. The text followed by signature and date of filing.
- (j) The following example shows the form of a service ("SVC") message:

CT	-----	Attention signal.
SVC	-----	Prefix.
(NR) 1	-----	Station serial number (not "SRS").
(Note)	-----	Operator's sign. (See art. 1607.)
(CK) 12 <sup>4</sup>	-----	Check.
SVC	-----	Special prefix.
(VIA) KSD	-----	If message had been relayed.
BT	-----	Break.
(TO) OMAHA (NEBR)	-----	Address.
BT	-----	Break.
YOURS TWELFTH TO WILLIAMS NOT ON BOARD	-----	Text.
(SIG) SS REGINA 15TH	-----	Signature and filing date of this "SVC".
AR	-----	Ending signal.
K	-----	Go ahead.

(k) Should a ship receive a service indicating that an error had been made in transmitting the address, it shall send a service in reply correcting same.

(l) Coastal stations shall use the phrase "Ship out of range" in service messages sent inland to signify that a ship for which a message is received has already passed, and "Ship not signaled" to indicate a message has been held eight days for a ship and she has not yet been communicated with. The office of origin shall be advised of nondelivery within three hours after receipt of message and message filed if not delivered within eight days. If the message is delivered after the service is sent, the office of origin shall be so advised by "SVC" message.

#### PAID SERVICE MESSAGES

1627. (a) "Paid service messages" differ from "service messages" in the fact that they are transmitted at the request of a sender or recipient of a regular message, are paid for at the regular rates, carry a distinctive prefix, and follow the general form of a regular message. (See art. 1614, example 3.) They shall ordinarily be forwarded over the same system which handled the message referred to as in the case of service messages. However, as paid service messages are charged for at the regular rates the sender may choose his route as in the case of regular messages. Paid service messages are prefixed "RADIO ST." To promote uniformity the phraseology of the text of paid service messages should follow the examples given below when they will serve the purpose.

(b) When a sender wishes to correct or complete the address of a radiotelegram which has failed of delivery, a paid service message may be sent.

Example: DELIVER OURS FOURTEENTH JONES SIGNED SMITH TO 8 DEY STREET.

This means: Change address on my message of the 14th addressed Jones to 8 Dey Street.

(c) A sender may correct the text of a message by sending a paid service message.

Example: SEE OURS FOURTEENTH JONES SIGNED SMITH CHANGE SECOND WORD IN TEXT FROM DUPLEX TO SIMPLEX.

This means: In my message of the fourteenth change word "duplex" to "simplex."

<sup>4</sup> Check may be omitted from an "SVC."

(d) A sender may endeavor to cancel a message before it is delivered to the addressee by sending a paid service message, but no charges will be refunded.

Example: CANCEL OURS FOURTEENTH JONES SIGNED SMITH AT REQUEST OF SENDER CHARGES STAND.

(e) If the message has already been delivered, the addressee shall be notified of its cancellation. Should the sender wish to know whether his original message was delivered, he must send a paid service message with a prepaid reply.

Examples of replies: SYS <sup>5</sup> TENTH YOURS JONES SIGNED SMITH CANCELED CHARGES STAND.

SYS TENTH YOURS JONES SIGNED SMITH ALREADY DELIVERED.

(f) In accordance with the ruling of the Director, International Telegraph Bureau, paid service messages either with or without prepaid replies are excluded from accounts. Therefore the only paid service messages which shall be abstracted by the Naval Communication Service are those which originate at naval stations. All tolls in connection with such paid services, including prepaid replies, if any, shall be credited to "This station" on Form N. Eng. 200.

AMERICAN MORSE CODE \*

1628. (a) Letters—

A . —	G — — .	M — —	S . . .	Y . . . .
B — — . .	H . . . .	N — .	T -	Z . . . .
C . . .	I . .	O . .	U . —	
D — . .	J — . — .	P . . . .	V . . . —	
E .	K — — —	Q . . — .	W . — — —	
F . — .	L — —	R . . .	X . — . .	

(b) Numerals—

1 . — — .	3 . . . — .	5 — —	7 — — . .	9 — — — —
2 . . — . .	4 . . . . —	6 . . . . .	8 — . . . .	0 — —

(c) Punctuation and other signs—

Period . . . . .	Paranthesis—beginning . . . . .
Semicolon . . . . .	Paranthesis—ending . . . . .
Comma . . . . .	Dash . . . . .
Colon . . . . .	Dollar mark . . . . .
Interrogation . . . . .	Capital letter . . . . .
Exclamation point . . . . .	Decimal . . . . .
Apostrophe . . . . .	Paragraph . . . . .
Hyphen . . . . .	Slant . . . . .
Bar indicating fraction . . . . .	Break . . . . .

ERRORS—AMERICAN MORSE, SENDING

1629. (a) A sending operator shall indicate an error by sending eight dots or — . . . . followed by the word before that sent incorrectly or before a word omitted.

(b) Example: "Arrive ten tonight stay in waters . . . . . (or — . . . .) in these waters."

ERRORS—AMERICAN MORSE, RECEIVING

1630. A receiving operator shall indicate an error by breaking the transmission of the sending operator. The receiving operator makes — . . . . — (and last word correctly received).

\*"SYS" is an abbreviation for "See your service," i. e., "Referring to your service message."  
 \* The American Morse Code may be used by naval personnel on telegraph lines only.

## DOMESTIC MESSAGES—RULES OBSERVED BY TELEGRAPH COMPANIES

1631. The following pertinent rules of the United States telegraph companies must be observed for traffic passing over their lines.

## CLASSES OF SERVICE

1632. *Telegrams.*—Telegrams have no designating prefix. They are subject to expeditious handling for which full rates are charged.

1633. *Night messages.*—(Prefix "NITE.") They are accepted up to 2 a. m. at reduced rates to be sent during the night and delivered not earlier than the morning of the ensuing day. Night messages may at the option of the telegraph company be mailed at destination to the addressees, and the company shall be deemed to have discharged its obligation in such cases with respect to delivery by mailing such night messages at destination, postage prepaid.

1634. *Day letters.*—(Prefix DL.) They are subject to a deferred day service at rates lower than the standard telegram rates as follows: One and one-half times the standard night letter rate for the transmission of 50 words or less and one-fifth of the initial rate for each additional 10 words or less.

1635. *Special terms applying to day letters.*—In further consideration of the reduced rate for this special day-letter service, the following special terms in addition to those enumerated above are hereby agreed to:

(a) Day letters may be forwarded by the telegraph company as a deferred service and the transmission and delivery of such day letters is, in all respects, subordinate to the priority of transmission and delivery of regular telegrams.

(b) Day letters are received subject to the express understanding and agreement that the company does not undertake that any day letter shall be delivered on the day of its date absolutely and at all events; but that the company's obligation in this respect is subject to the conditions that there shall remain sufficient time for the transmission and delivery of such day letter on the day of its date during regular office hours, subject to the priority of the transmission of regular telegrams under the conditions named above.

(c) No employee of the company is authorized to vary the foregoing.

1636. *Night letters.*—(Prefix NL.) They are accepted up to 2 a. m. for delivery on the morning of the ensuing business day, at rates still lower than standard night-message rates, as follows: The standard telegram rate for 10 words shall be charged for the transmission of 50 words or less, and one-fifth of such standard telegram rate for 10 words shall be charged for each additional 10 words or less.

1637. *Special terms applying to night letters.*—In further consideration of the reduced rate for night-letter service, the following special terms in addition to those enumerated above are applicable:

(a) Night letters may at the option of the telegraph company be mailed at destination to the addressees, and the company shall be deemed to have discharged its obligation in such cases with respect to delivery by mailing such night letters at destination, postage prepaid.

(b) No employee of the company is authorized to vary the foregoing.

## HOW TO COUNT AND CHARGE FOR MESSAGES

1638. *Application of rule.*—(a) This rule applies to domestic messages; i. e., messages to points in United States, Canada, Newfoundland, Mexico, and Alaska.

(b) The necessary address and a signature are not counted or charged for.

1639. *The count.*—The body of the message and chargeable matter in the address and signature will be counted as follows, and the message charged for accordingly:

(a) Dictionary words taken from the English, German, French, Italian, Dutch, Portuguese, Spanish, or Latin languages will be counted as one word each, irrespective of length.

Examples:

	Words
Excursion (English dictionary).....	1
Herzlichen Glueckwunsch (German dictionary).....	2
Nous arriverons dimanche (French dictionary).....	3
Dolce far niente (Italian dictionary).....	3
Tudo esta perido (Portuguese dictionary).....	3
Un cabello haze sombra (Spanish dictionary).....	4
Errare est humanum (Latin dictionary).....	3

(b) Combinations of two or more dictionary words, or mutilated dictionary words, written together contrary to the usage of the language, will be counted according to the number of words of which they are composed.

Examples:

	Words
Firstclass (properly written "first class").....	2
Carlots (properly written "car lots").....	2
Warrisk (properly written "war risk").....	2
Billading (properly written "bill lading").....	2
Allright (or alright), (properly written "all right").....	2
Dothe (for "do the").....	2
Itis (for "it is").....	2
Havyu (for "have you").....	2

1640. The way in which combinations or apparent combinations of dictionary words should be counted in messages is determined by the way in which they are written in ordinary correspondence, or in printed matter or advertisements relating to the article, or on the boxes or containers in which it is packed.

For example, "Flakewhite" is the name of a brand of soap. It is always written as one word in ordinary correspondence and so printed in printed matter. It is therefore entitled to be counted as one word.

On the other hand, "Ben Davis," "sport coupe," and other similar combinations, are ordinarily written as separate words and should therefore be so counted in messages, even though written together as if they were one word.

1641. The following will be counted as indicated:

	Words		Words
Dayletter (or day letter).....	1	Cannot (or can't).....	1
Nightletter (or night letter).....	1	Can not.....	2
New Year (or newyear).....	2	Parcelpost (or parcel post).....	2
Per cent (or percent).....	1	Airmail (or air mail).....	2

1642. (a) All groups of letters, when such groups are not dictionary words of one of the eight languages enumerated in article 1639 (a), or combinations of such dictionary words, or proper names, will be counted at the rate of one word for every five letters or fraction of five letters.

(b) Examples:

	Words		Words		Words
Ababa.....	1	Hhgga.....	1	Dutimerodal.....	3
Bando.....	1	Egadol.....	2	Gghrccexqdr.....	3
Erix.....	1	Ceghxo.....	2		

1643. When a message contains any such combination or combinations of more than five letters and hence counted as more than one word each, the message will be given a double check, the first figure in the check showing the number of words counted and charged for and the second figure the number of words as written by the sender.

1644. Surnames of persons will be counted as one word each.

Examples:

	Words		Words
Van Dorne.....	1	O'Connor.....	1
McGregor.....	1	DeWitt.....	1

1645. (a) Initials will be counted as one word each.

Examples:

	Words		Words
G. W. E. A.....	4	C. P. R.....	3
W. H. Brown.....	3	B. & O.....	3
C. N. R.....	3		

(b) Exceptions:

	Words		Words
A. M.....	1	L. C. L. (or lcl).....	1
P. M.....	1	O. K.....	1
F. O. B. (or fob).....	1	S. S. (steamship).....	1
C. O. D. (or cod).....	1	U. S. A. T. (United States Army transport).....	1
C. I. F. or C. F. I. (or cif, or cfi).....	1	U. S. C. G. (United States Coast Guard).....	1
C. A. F. (or caf).....	1	U. S. S. (United States ship).....	1

1646. (a) Proper names will be counted according to the number of words and initials which they contain.

Examples:

	Words		Words		Words
John L. Sullivan.....	3	Puget Sound.....	2	Reuben James.....	2
Hudson Bay.....	2	S. S. Admiral Goodrich.....	3	James K. Paulding.....	3
Long Island.....	2	Nippon Maru (Nipponmaru).....	2	General Alava.....	2

(b) Exceptions: Names of countries, States, Territories, Provinces, counties, cities, towns, and villages and abbreviations of such names, and names of forts, barracks, Army posts, Army stations, and military camps listed in the tariff book will be counted as one word. When the word "city" is customarily used in connection with the name of a city, it will be considered as a part of the name.

Examples:

	Words		Words
United States.....	1	South Orange.....	1
New York.....	1	Fort Slocum.....	1
New York City.....	1	New York, New Haven & Hartford Railroad... ..	5
District of Columbia.....	1	N. Y.....	1
Nova Scotia.....	1	S. C.....	1
St. Louis.....	1	D. C.....	1
East St. Louis.....	1		

1647. Abbreviations of weights and measures and other abbreviations in common use will be counted as one word.

Examples:

	Words		Words		Words
Lbs.....	1	No.....	1	Ave.....	1
Cwt.....	1	St.....	1	Dr.....	1
Hhds.....	1				



1648. Figures, decimal points, and bars of division will be counted as one word each. In groups consisting of figures and letters each letter and figure will be counted as one word. In ordinal numbers the affixes st, d, nd, rd, and th will be counted as one word.

Examples:

	Words		Words
4442 (figures) .....	4	A3GHF (letters and figures) .....	5
44.42 (figures) and decimal point .....	5	GVC24 (letters and figures) .....	5
74 3/4 (figures and bar of division) .....	5	1st (ordinal number and affix) .....	2
A1 (letters and figures) .....	2	10th (ordinal number and affix) .....	3
42B618 (letters and figures) .....	6	No. 185 West 22d St. ....	9

When a message containing figures is presented, it should be pointed out to the customer that there is less liability to error, and in many cases greater economy in telegraph tolls if the amounts are written in words, but if he declines to substitute words for the figures, the message will be accepted as written.

#### ADDRESSES

1649. The address of a message, that is to say, whatever matter is required to afford the necessary information to enable the company to identify and locate the addressee, is carried free. All additional matter will be counted and charged for.

(a) In an address such as

John Brown,  
care E. C. Brown & Co.

or

Mr. Jones,  
E. C. Brown & Co.

the words "care E. C. Brown & Co.," or "E. C. Brown & Co.," are added to aid the telegraph company to find Mr. Brown or Mr. Jones, and hence are a part of the address proper and not extra words.

(b) In an address such as

James Brown, President.  
James Brown, President American Mfg. Co., etc.,

the words "President" or "President American Mfg. Co.," inasmuch as they serve to identify the addressee, will not be charged for.

(c) The designation of a department in an address, as for example:

Jones & Co., Dept. 15

will not be charged for as extra words.

(d) Matter added to the address to indicate the disposition or treatment of the message after delivery or for some other purpose not related to the delivery of the message, and not necessary to enable the telegraph company to deliver the message, will be counted and charged for.

Examples (extra words indicated by italics):

E. C. Brown & Co., *attention Mr. Harris.*  
E. C. Brown & Co., *Mr. Harris.*  
General Manufacturing Co., *E. W. Jones.*  
John H. Brown, *personal.*

## SIGNATURES

1650. (a) One signature will be carried without charge.

(b) Where there is more than one signature, all signatures except the last will be counted and charged for.

(c) This applies only to messages signed jointly by a number of individuals or concerns. It should not be confused with cases where there is really only one signature proper, and a name or other matter is added to the signature, as explained in paragraph 1650 (e).

Examples (extra words indicated by italics):

J. H. Jones, *Wm. C. Brown, Edw. W. Green.*

J. H. Jones *and Wm. C. Brown.*

No extra words will be counted and charged for where such a signature constitutes the firm name of a single concern.

(d) In the case of family messages signed by more than one member of a family, as for instance:

Mother and Father.

John and Emma.

John, Emma, James, and Henry.

Mother, Father, George, and Mary.

H. A. Brown and family,

the entire signature will be treated as a single signature and there will be no charge for extra words.

(e) Words added to the signature proper by way of description or identification of the sender or to indicate the status, capacity, or authority of the sender will be counted and charged for.

Examples (extra words indicated by italics):

	Extra words
John Brown, <i>President</i> .....	1
Geo. H. Wilson, <i>General Manager</i> .....	2
Thomas Green, <i>Agent</i> .....	1
Henry Jones, <i>Receiver</i> .....	1
Union Trust Company, <i>Trustee</i> .....	1
John Jones, <i>Receiver American Mfg. Co.</i> .....	4
John Jones, <i>President American Shoe Mfg. Co.</i> .....	5
Thomas S. Witherspoon <i>of Dallas</i> .....	2

(f) Titles or their abbreviations in their ordinary use, preceding the name of the sender, such as "Dr.," "Rev.," "Lieut.," etc., will not be counted or charged for, but count and charge for descriptive designation added after the signature, as for example:

John Jones, *Second Lieutenant* (2 extra words).

