

RESTRICTED

FM 24-6

WAR DEPARTMENT

BASIC FIELD MANUAL



RADIO PROCEDURE

March 6, 1941

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**Prepared under direction of the
Chief Signal Officer**



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SECTION I

GENERAL

■ 1. **PURPOSE AND REFERENCES.**—The purpose of this field manual is to provide the trained radio operator with such reference data as may be useful in field radio operation. Detailed information on establishing communication, net operation, and message handling, for radio communication within the Army, is contained in TM 11-454. Detailed instructions for intercommunication between the Army and the Navy are found in FM 24-10.

■ 2. **SCOPE.**—The information contained in this manual includes adequate procedure data for radio operation both within the Army and for intercommunication with the Navy. Complete lists are given of all authorized procedure abbreviations, both for radiotelegraph and for radiotelephone operation. Forms of messages are illustrated. One chapter is devoted to items of particular interest to aircraft, including special signal procedures for communication with airport control towers, direction finding procedure, and panel signals.

SECTION II

PROCEDURE SIGNALS

■ 3. **METHOD OF EMPLOYMENT.**—*a. Usage.*—The procedure signals listed in paragraph 4 are used both in communication within the Army and in intercommunication with the Navy.

b. Interrogation.— $\overline{\text{IMI}}$ may be used following a signal to indicate an interrogatory sense when a signal with the desired interrogatory meaning is not listed.

c. Negation.—ZZB may be used preceding a signal to give a negative sense in case a signal with the desired negative meaning is not listed.

d. Completion of blanks.—All blanks, except those in parentheses, must be completed (ZSB is an exception). Data for blanks will appear in the same order as the blanks in the signal. Words rather than numerals are used to complete the meanings of procedure signals, exceptions being frequencies and scales for readability and for interference and signal strengths.

e. Station identification.—Stations, addresses, and locations will normally be identified by call signs.

f. Separator sign.—The separator sign (/) may be inserted wherever its use will clarify the intended meaning of a message or other transmission.

g. Time.—For Army-Navy intercommunication, 24 hour (Navy) time is used. Within the Army, 12 hour (Army) time is used.

h. Temporary signals.—The ZY-group is reserved for temporary signals which may be authorized from time to time. As temporary signals are assigned, their meanings should be entered by the operator in this manual in the blanks provided after the corresponding signals.

■ 4. LIST OF PROCEDURE SIGNALS.

(A) ANSWERING—AIRCRAFT—AUTHENTICATION

- Z A A** Your are causing delay by slowness in answering.
- Z A B** You are causing confusion by answering out of order.
- Z A C** Answer in alphabetical order of call signs.
- Z A D** Answer me (or -----) on ----- kc.
- Z A E** Am reeling in antenna ----- (1. Before landing; 2. To rejoin formation).
- Z A F** Am forced to land (at or near -----) because of ----- (1. Fire; 2. Collision; 3. Engine failure; 4. Out of gas).
- Z A G**
- Z A H**
- Z A I**
- Z A J**
- Z A K**
- Z A L**
- Z A M** I am using this transmitter to answer calls on two or more frequencies. Answer to calls may be delayed.
- Z A N** Delay in answering was due to fault of my ----- (1. Receiver; 2. Transmitter; 3. Blinker lamp; 4. Signal searchlight).
- Z A O** Last transmission on this circuit (or transmission with date-time group -----) was ----- (1. Authentic; 2. Not authentic).
- Z A P** Authenticate transmissions (-----) (1. On all circuits; 2. On this circuit; 3. On ----- kc.).
- Z A Q** You are using authenticator incorrectly ----- (1. Verify cipher set-up; 2. Place authenticator in proper part of transmission).
- Z A R**
- Z A S**
- Z A T**
- Z A U**
- Z A V**
- Z A W**
- Z A X**
- Z A Y**
- Z A Z**

(B) CALL SIGNS

Z B A

Z B B

Z B C

Z B D

Z B E

Z B F

Z B G

Z B H

Z B I

Z B J What is call sign of ship which is acting as flagship
for -----?

Z B K Call sign of ship acting as flagship for ----- is -----.

Z B L Your circuit call sign for use on this circuit only is
-----.

Z B M What is my circuit call sign for use on this circuit
only?

Z B N Use ----- (1. Circuit call signs; 2. Cryptographed
call signs).

Z B O What are call signs of ships in company with you?

Z B P Call signs of ships in company with me are -----, etc.

Z B Q Call sign of incoming vessel is -----.

Z B R I will relay your call sign to Senior Officer Present
Afloat, whose call sign is -----.

Z B S

Z B T

Z B U

Z B V

Z B W

Z B X

Z B Y

Z B Z

(C) CALLING—COMMUNICATIONS

- Z C A** Are you (or is -----) in communication with -----
(by -----) (1. Radio; 2. Wire; 3. Visual)?
- Z C B** I am (or ----- is) in communication with ----- (by
-----) (1. Radio; 2. Wire; 3. Visual).
- Z C C** Call me again at ----- (on ----- kc.).
- Z C D** Following is what I (or -----) sent (at -----).
- Z C E** I have (or ----- has) been calling you (on ----- kc.).
- Z C F** I (or -----) will call you again as soon as I (he) can
(or at -----) (on ----- kc.).
- Z C G** Inform ----- that I have (or ----- has) been calling
him (on ----- kc.).
- Z C H** Cease listening for messages from -----.
- Z C I** Listen in for messages from ----- (on ----- kc.).
- Z C J** You were (or ----- was) sending at the same time as
-----.
- Z C K** Transmit message(s) without preliminary call-up.
- Z C L** Make (or direct ----- to make) preliminary call-up
before transmitting traffic.
- Z C M** Collective (or net) call sign ----- for the present
includes -----.
- Z C N**
- Z C O**
- Z C P**
- Z C Q** Establish radio communication with ----- on -----
kc. now (or at -----).
- Z C R** Report when you are (or ----- is) in communication
with ----- (by -----). (1. Radio; 2. Visual).
- Z C S** Did you (or -----) hear ----- (at -----)?
- Z C T** I have (or ----- has) been unable to communicate
with ----- (since -----).
- Z C U** I (or -----) last heard ----- at -----.
- Z C V** General call; all stations copy.
- Z C W**
- Z C X**
- Z C Y**
- Z C Z**

(D) DIRECTION FINDER

- Z D A** Transmit "MO's" and call signs (on ----- kc.).
- Z D B** Report bearings by direction finder in plain English.
- Z D C** What is my bearing (code understood if not followed by ZDB)?
- Z D D** Your bearing in code was ----- at -----.
- Z D E** Your bearing in plain English was ----- at -----.
- Z D F** Your bearing from ----- was ----- (and distance from ----- was -----) at -----.
- Z D G** Bearing furnished you is ----- (1. Bilateral; 2. Unilateral).
- Z D H** I am unable to furnish you (or -----) bearing now. Call again in ----- minutes.
- Z D I** I am (or ----- is) now ready to furnish you (or -----) with radio direction-finder bearings.
- Z D J** I am (or ----- is) unable to furnish reliable bearings due to (1. Night effect; 2. Poor minimum; 3. Uncalibrated sector; 4. Weak signals; 5. Poor note; 6. Interference; 7. Uncalibrated frequency; 8. Poor cross).
- Z D K** What is my bearing and distance from you (or -----)?
- Z D L** What is reciprocal of bearing just furnished me by you (or -----)?
- Z D M** Reciprocal of bearing just furnished you by me (or -----) is -----.
- Z D N** Bearings appear to be reliable.
- Z D O**
- Z D P**
- Z D Q**
- Z D R**
- Z D S** Ship bears ----- degrees true; ship's course ----- degrees true; ship's speed ----- knots.
- Z D T** I (or -----) request(s) authority to use ----- kc. for DF calibration.
- Z D U** Use of frequency(ies) (or ----- kc.) as requested for DF calibration is authorized.
- Z D V**
- Z D W**
- Z D X**
- Z D Y**
- Z D Z**

(E) EQUIPMENT, ADJUSTMENTS OF EQUIPMENT

- Z E A** I am (or ----- is) going to use -----.
- Z E B** Use -----.
- Z E C** I am (or ----- is) unable to use -----.
- Z E D** My ----- (on ----- kc.) is out of commission.
- Z E E** Repairs completed. Am in commission now.
- Z E F** I have adjusted my ----- (1. Radiating system; 2. Power).
- Z E G** Cease using -----.
- Z E H** I am (or ----- is) using -----.
- Z E I** Your ----- appears to be defective (on ----- kc.).
- Z E J** Your key or relay appears to be sticking.
- Z E K** Your speed key is improperly adjusted.
- Z E L**
- Z E M**
- Z E N**
- Z E O**
- Z E P**
- Z E Q** How is my note?
- Z E R** Your note is ----- (1. Good; 2. Poor; 3. Rising and falling; 4. Over-modulated; 5. Under-modulated).
- Z E S** Your dots are ----- (1. Too heavy; 2. Too light).
- Z E T** Your (or -----) transmitter is not keying properly.
- Z E U**
- Z E V**
- Z E W**
- Z E X**
- Z E Y**
- Z E Z**

(F) FREQUENCY, FREQUENCY ADJUSTMENTS

- Z F A** I must shift to work another station (or -----).
- Z F B** Frequency ----- mc.
- Z F C** Frequency ----- kc.
- Z F D** Send V's on this frequency (or ----- kc.).
- Z F E** I am (or ----- is) shifting to transmit on ----- kc.
(at -----).
- Z F F** I am (or ----- is) shifting to receive on ----- kc.
(at -----).
- Z F G** I am (or ----- is) able to receive on ----- kc.
- Z F H** I am (or ----- is) able to transmit on ----- kc.
- Z F I** Shift (or direct -----) to receive on ----- kc.
- Z F J** Shift (or direct -----) to transmit on ----- kc.
- Z F K** Shift (or direct -----) to transmit and receive on
----- kc.
- Z F L** What frequency are you (or is -----) using (to work
-----)?
- Z F M** How does my frequency check?
- Z F N** Your frequency is correct.
- Z F O** Your frequency is too high (or is ----- kc. too high).
- Z F P** Your frequency is too low (or is ----- kc. too low).
- Z F Q** Your frequency is ----- kc.
- Z F R** Adjust your transmitter frequency to zero beat with
mine (or with -----).
- Z F S** Adjust transmitter to proper frequency (or to -----
kc.).
- Z F T** Transmit on ----- kc. If I do not hear you within 20
minutes I will shift back to present frequency.
- Z F U** I am going to transmit on ----- kc. If you do not
answer within 20 minutes I will shift back to present
frequency.
- Z F V** Measure your (or -----) frequency on this circuit
(or on ----- kc.).
- Z F W**
- Z F X**
- Z F Y**
- Z F Z**

(G) NET CONTROL (ARMY), GUARDS (NAVY)

- Z G A** Indicate ships or stations for which you are radio guard or net control station (----- kc.).
- Z G B** Take over radio guard or net control for ----- (until -----).
- Z G C** Are you (or is -----) radio guard or net control station for ----- (on ----- kc.)?
- Z G D** I am (or ----- is) radio guard or net control station for ----- (on -----kc.).
- Z G E**
- Z G F**
- Z G G**
- Z G H**
- Z G I**
- Z G J** Guard (or direct ----- to guard) intercept schedules for ----- until further orders.
- Z G K** I am controlling (or ----- will control) this frequency (or ----- kc.).
- Z G L**
- Z G M**
- Z G N**
- Z G O**
- Z G P**
- Z G Q** Station reports into net.
- Z G R** Station leaves net temporarily (or for ----- hours) (to communicate with -----) (will be on ----- kc.).
- Z G S** Is net directed or free?
- Z G T** Net is ----- (1. Directed; 2. Free).
- Z G U**
- Z G V**
- Z G W**
- Z G X**
- Z G Y**
- Z G Z**

(L) LIST OF TYPES AND MEANS OF
COMMUNICATION

- Z L A** CW.
Z L B ICW.
Z L C Type or model ----- transmitter.
Z L D Type or model ----- receiver.
Z L E Landline or cable ----- (1. Telegraph; 2. Telephone).
Z L F Visual.
Z L G Radio ----- (1. Radio beacon; 2. Aircraft radio;
 3. Field radio; 4. Radiotelegraph; 5. Radiotele-
 phone; 6. Direction finder).
Z L H
Z L I
Z L J
Z L K
Z L L
Z L M Supersonics.
Z L N Automatic ----- (1. Recorder; 2. Perforator; 3. Key-
 ing head).
Z L O Sound.
Z L P
Z L Q Use visual method ----- (1. Semaphore; 2. Large
 searchlight; 3. Small searchlight; 4. Blinker; 5.
 Blinker tube; 6. Flag hoist).
Z L R Hoist the following signal -----
Z L S
Z L T
Z L U
Z L V
Z L W
Z L X
Z L Y
Z L Z

(M) MESSAGES, TRAFFIC

- ZMA** I have (or ----- has) ----- messages (numeral indicating number of messages may be followed by O, P, or D to indicate precedence other than routine) for you (or -----).
- ZMB** Nothing received from ----- (at -----).
- ZMC** Fragments only received (from -----).
- ZMD** Have you received SOS just made (or made by ----- at -----)?
- ZME** The following is heading of message ----- as received
Check station of origin if necessary and repeat.
- ZMF** Unable to locate message(s) ----- Give better identification data.
- ZMG** This message is in error—disregard it.
- ZMH** How do you count following text group(s) -----
-----? Word (or words -----) should be counted as ----- group(s).
- ZMI** Hold my message number ----- until correctness is confirmed.
- ZMJ** Following received from ----- (at -----).
- ZMK**
- ZML**
- ZMM**
- ZMN** I have (or ----- has) ----- class ----- messages to transmit on this frequency (or ----- kc.).
- ZMO** Inform me at what time and through what station message ----- was passed.
- ZMP** Pass this message (or message -----) to ships for which you are responsible (or to -----).
- ZMQ** Repeat message ----- (or portion indicated -----).
Check to station of origin if necessary.
- ZMR** Following is the answer to request for repetition.
- ZMS** Retransmit message indicated to ----- for -----
(1. Action; 2. Information).
- ZMT** Message indicated, which is in your files, is invited to your attention for ----- (1. Action; 2. Information).

Z M U Message indicated has been (or will be) retransmitted to ----- for ----- (1. Action; 2. Information).

Z M V

Z M W Of what precedence and to whom are your messages?

Z M X Verify the message or portion thereof indicated with your message center (communication office) and transmit correct version.

Z M Y

Z M Z

(N) STATION SERIAL NUMBERS

- Z N A** What was station serial number of last message received from this station (or from -----)?
- Z N B** Station serial number of last message received from you (or from -----) was -----.
- Z N C** What was station serial number of last message you transmitted to me (or to -----)?
- Z N D** Station serial number of last message transmitted to you (or to -----) was -----.
- Z N E** Number ----- from ----- is blank.
- Z N F** Repeat all before group 1 of message number ----- to number ----- transmitted (or transmitted by -----) to straighten out confusion in serial numbers.
- Z N G** Two messages, reference numbers ----- and ----- (or group counts and time of origin ----- and -----), both received as serial number ----- Designate correct serial number.
- Z N H** Change serial number of message with reference numbers ----- (or group count and time of origin -----) to serial number -----.
- Z N I** Prior to closing station records, last message transmitted to you (or to -----) was message number -----; last message received from you (or him) was message number -----.

NOTE.—Repeat for as many stations as necessary to complete check.

Z N J

Z N K

Z N L

Z N M

Z N N

Z N O Your number ----- not received; repeat or make blank.

Z N P My (or -----) number ----- had following heading and reference numbers.

Z N Q Last ----- "F" schedule serial NR received was -----.

Z N R Was there any traffic addressed to me on ----- "F" schedules between serial NRS ----- and -----?

Z N S

Z N T
Z N U
Z N V
Z N W
Z N X
Z N Y
Z N Z

(O) OPERATING

- Z O A** Send at speed of ----- words per minute.
- Z O B** Your ----- (1. Characters are indistinct; 2. Words are poorly spaced; 3. Transmitter or key missing dots).
- Z O C** Has executive sign (signal of execution) for last message (or for message following -----) been made?
- Z O D** Transmit your message in strings of -----.
- Z O E** I am going to transmit my messages in strings of -----.
- Z O F** Cease using speed key.
- Z O G**
- Z O H**
- Z O I**
- Z O J**
- Z O K**
- Z O L**
- Z O M** Use speed key if qualified to do so.
- Z O N** Last message did not require a signal of execution.
- Z O O** There is (are) ----- message(s) on this circuit awaiting signal of execution.
- Z O P** Following is text of message addressed for action to ----- which was executed at -----

- Z O Q** Receipt through ----- for traffic sent blind to you.
- Z O R** You are (or ----- is) causing interference by -----
(1. Excessive testing; 2. Improper frequency adjustment).
- Z O S** Who is interfering with you (or with -----)?
- Z O T**
- Z O U**
- Z O V**
- Z O W**
- Z O X**
- Z O Y**
- Z O Z**

(P) FACSIMILE (JOINT); OPERATING (NAVY)

- Z P A**
Z P B
Z P C
Z P D
Z P E
Z P F Station(s) called (or station(s) whose call sign(s) precede this signal) repeat back this transmission to station from which received before retransmitting it.
Z P G Repeat back this message (or message -----) to station from which received.
Z P H Place qualified speed key operator, if available, on watch on this or on frequency indicated.
Z P I Encipher procedure signals.
Z P J You are enciphering ----- incorrectly (1. Procedure signals; 2. Radio call signs).
Z P K You are not observing proper circuit discipline.
Z P L Your (or -----'s) attention is invited to ----- (1. Communication Instructions; 2. US Fleet -----; 3. Fleet Communication Letter -----; 4. Fleet Communication Memo -----; 5. ----- message -----). (Article or paragraph may be indicated.)
Z P M Send group count and first letter or numeral of each group of message (or message -----) for checking group count.
Z P N Give this transmission the precedence indicated ----- (1. Deferred; 2. Routine; 3. Priority; 4. Urgent).
Z P O Spelling of group ----- in message ----- apparently is incorrect, but message is being forwarded exactly as received.
Z P P Have ----- groups to transmit to you (or to -----).
Z P Q Do not transmit this message by radio.
Z P R Last word received from you (or -----) was -----.
Z P S Following is what I received from ----- at -----.
Z P T Continue efforts to effect relay (or delivery) of message ----- to -----.
Z P U
Z P V

Z P W
Z P X
Z P Y
Z P Z

(R) RETRANSMISSION, ROUTING, RELAYING AND DELIVERY

- Z R A** Forward this message (or message -----) by visual to -----
- Z R B** Deliver (or direct ----- deliver) message(s) ----- via ----- (to -----).
- Z R C** Act as relay between me (or -----) and -----
- Z R D** Give me your message(s) for -----; I will forward.
- Z R E** Forward this message by wire ----- (1. Collect; 2. Paid).
- Z R F** Take no further action with regard to forwarding message ----- (to -----).
- Z R G** Transmit this message now (or at -----) by ----- (1. "I" method; 2. "F" method).
- Z R H** Inform me when this message (or message -----) has been received by addressee(s) (or by -----).
- Z R I** Message ----- has been received by the addressee (or by -----) at -----.
- Z R J** Pass following message to destination by ----- (1. Hand; 2. U. S. Postal Service; 3. Fast mail).
- Z R K** Distribute this message by dispatch where no charges are involved and to all others by mail.
- Z R L** How route traffic for -----?
- Z R M** Route traffic for ----- through ----- (on ----- kc.).
- Z R N** Have been unable to relay (or deliver) message ----- to ----- (1. Will continue efforts to effect relay (or delivery); 2. Advise disposition).
- Z R O**
- Z R P**
- Z R Q**
- Z R R**
- Z R S** Station called (or station whose call sign precedes this signal) pass this message (or message -----) by mail to destination (or to station(s) whose call sign(s) follow(s) this signal) (or via ----- 1. U. S. mail; 2. Air-mail; 3. Guard mail; 4. Messenger).
- Z R T** Route traffic for me (or for -----) via shore station "F" or "I" method (shore station may be indicated).

Z R U Station called or station(s) whose call sign(s) precede(s) this signal route this message via station(s) whose call sign(s) follow(s) this signal.

Z R V This message (or message -----) has been passed by mail to station(s) whose call sign(s) follow(s) this signal.

Z R W

Z R X

Z R Y

Z R Z

(S) SIGNALS, SIGNAL STRENGTH, READABILITY

- Z S A** Can you receive.....? If so, what is his readability?
Z S B I can receive Readability
Z S C Your signals fade (from strength to).
Z S D Decrease strength of signals.
Z S E Increase strength of signals.
Z S F What is my signal strength?
Z S G What is my readability?
Z S H
Z S I
Z S J
Z S K
Z S L
Z S M
Z S N
Z S O Reception.....(1. Poor; 2. Fair; 3. Good; 4. Ex-
 cellent; 5. Impossible; 6. Impossible due to echo).
Z S P
Z S Q
Z S R
Z S S
Z S T
Z S U
Z S V
Z S W
Z S X
Z S Y
Z S Z

(T) TIME AND TRANSMISSIONS

- Z T A** I am (or-----is) going to make a timing signal for correcting clocks. The numerals indicating the time (and zone-----plus or minus understood) will be followed by the executive sign—the 5-second dash—terminating exactly as the time indicated.
- Z T B** What is your time and time zone?
- Z T C** My time is-----zone-----time (plus or minus understood).
- Z T D** From-----to-----.
- Z T E** Until further orders (or until-----).
- Z T F** Established at----- (by-----).
- Z T G** At-----.
- Z T H** Did you (or-----) transmit anything for me? If so, please repeat.
- Z T I** Transmit traffic blind (or broadcast traffic) to me (or to-----on-----kc.). I (or-----) will receipt for traffic later (on-----kc.).
- Z T J** Transmit only urgent or priority messages.
- Z T K** Routine messages may be transmitted now.
- Z T L**
- Z T M**
- Z T N**
- Z T O**
- Z T P**
- Z T Q** Transmit only class-----traffic on this frequency (or-----kc.) until further orders.
- Z T R** Transmit by simultaneous keying on----- (-----, -----) and-----kc.
- Z T S** I will transmit by simultaneous keying on----- (-----, -----) and-----kc.
- Z T T**
- Z T U**
- Z T V**
- Z T W**
- Z T X**
- Z T Y**
- Z T Z**

(V) MISCELLANEOUS AIRCRAFT

Z V A

Z V B

Z V C

Z V D

Z V E

Z V F

Z V G

Z V H

Z V I

Z V J

Z V K I am (or ----- is) in the air.

Z V L I am (or ----- is) landing.

Z V M I have (or ----- has) landed.

Z V N I am (or ----- is) on the ramp, or water.

Z V O I am (or ----- is) unable to take off.

Z V P I am (or ----- is) unable to reel out, due to -----
(1. Loss of trailing wire; 2. Towing target; 3. Flying too low; 4. Close formation).

Z V Q I am (or ----- is) using auxiliary power.

Z V R Request weather conditions at base (your vicinity),
(or at -----).

Z V S

Z V T

Z V U

Z V V

Z V W

Z V X

Z V Y

Z V Z

(W) WATCHES AND SCHEDULES

- ZWA** Close or secure (or direct ----- to close or secure) your (his) station or watch (on ----- kc.).
- ZWB** Are you (or is -----) maintaining continuous watch on ----- kc.?
- ZWC** I am (or ----- is) maintaining a continuous watch on ----- kc.
- ZWD** Request (or ----- requests) permission to secure watch (or close station) on ----- kc.
- ZWE** I am (or ----- is) securing watch (or closing station) on ----- kc.
- ZWF** What stations are keeping watch on ----- kc. (or are in net)?
- ZWG** Following stations are keeping watch on ----- kc. (or are in net).
- ZWH**
- ZWI**
- ZWJ**
- ZWK**
- ZWL** Set (or direct ----- to set) a continuous watch on ----- kc.
- ZWM** Set (or direct ----- to set) an intercept watch(es) on ----- kc. (and ----- kc.).
- ZWN** I am (or ----- is) standing a split-phone watch on ----- and ----- kc.
- ZWO** Did you (or -----) observe schedule with ----- at -----?
- ZWP** I (or -----) observe schedule with ----- at -----.
- ZWQ** Observe (or direct ----- to observe) ----- schedule with ----- on ----- kc.
- ZWR** This message (or message -----) has been (or will be) put on the ----- "F" schedules (serial NR -----).
- ZWS** On what frequency(ies) are you maintaining watch?
- ZWT** Your traffic will be discontinued on the ----- "F" schedules commencing at (date)/(time).
- ZWU** Your traffic will be placed on the ----- "F" schedule commencing (date)/(time).
- ZWV**
- ZWW**
- ZWX**
- ZWY**
- ZWZ**

(X) AUTOMATICS

- Z X A**
Z X B
Z X C
Z X D
Z X E Your tape is reversed.
Z X F I am unable to record due to ----- (1. Weak signals;
 2. Noise level; 3. Echo; 4. Interference).
Z X G Use hand key.
Z X H Your relays appear to be ----- (1. Too light; 2. Too
 heavy; 3. Sticking).
Z X I
Z X J Rerun number -----.
Z X K Automatic keying (machine transmission).
Z X L Your perforator is making letter combinations.
Z X M Cut me through to ----- in ----- minutes.
Z X N Unable to cut you through for ----- minutes.
Z X O I am going to transmit to ----- (via you or -----).
 Will run call tape; cut me through to him: Using
 automatic transmission.
Z X P Increase speed ----- W.P.M.
Z X Q Decrease speed ----- W.P.M.
Z X R Transmit at ----- W.P.M.
Z X S
Z X T
Z X U
Z X V
Z X W
Z X X
Z X Y
Z X Z

(Y) TEMPORARY SIGNALS

FOR NAVY AND COAST GUARD USE

ZYA
ZYB
ZYC
ZYD
ZYE
ZYF
ZYG
ZYH
ZYI
ZYJ
ZYK
ZYL
ZYM
ZYN
ZYO
ZYP

FOR ARMY USE ONLY

ZYQ
ZYR
ZYS
ZYT
ZYU
Zyv
ZYW
ZYX
ZYY
ZYZ

(Z) MISCELLANEOUS

- Z Z A** Stand by.
Z Z B Negative, no, not.
Z Z C Affirmative, yes.
Z Z D Meaning of your (or -----'s) procedure signal (or procedure sign) is not understood.
Z Z E
Z Z F
Z Z G
Z Z H
Z Z I
Z Z J
Z Z K Via.
Z Z L Number of speed-key certificate held by operator on this circuit (or on ----- kc.) is -----.
Z Z M
Z Z N What are charges on this message (or my message -----)?
Z Z O Charges on your message ----- are ----- cents.
Z Z P This is a test message. Mail copy as received to office of origin.
Z Z Q Forward to me (or to -----) on ----- kc. ----- (1. Late press news; 2. Orders to officers).
Z Z R ----- is (are) in company with -----.
Z Z S Ship (or aircraft) whose call sign follows will be available for direction-finder tracking at -----.
Z Z T Commence direction-finder tracking exercise for this district (at -----).
Z Z U
Z Z V
Z Z W
Z Z X
Z Z Y
Z Z Z

■ 6. DIFFERENCES BETWEEN ARMY AND JOINT ARMY-NAVY USE.—

Except insofar as is indicated below, the procedure signs listed in paragraph 5 are employed in identical meanings in both Army and joint Army-Navy communication. Comments indicated below are indicative of differences only and do not encompass the entire usage of any listed procedure sign.

Procedure sign	Remarks on Army usage	Remarks on joint Army-Navy usage
C.....	CCCC restricted to Army use only. Indicates "Herewith a correct portion of a message originated at..... at..... (Blanks for station and time.)"	CC means "Following is correct version of <i>abbreviated normal form</i> message or portions thereof indicated."
DUPE.....	Not used.....	Used just preceding BT to mean "This is <i>exact</i> duplicate of message previously transmitted."
F.....	Appears only in special operating instructions in heading of a message.	Having its normal meaning, may appear either in the prefix or the suffix of a message.
G.....	Used in Army only.....	Not used. Procedure signal ZPG replaces it.
GR.....	Is omitted when designating particular numbered group of text.
	Always used in conjunction with numerals to indicate a particular group or the group count of a message.	Used alone to designate "group count."
	When used in a message, appears only in the heading.	Having its normal meaning, it may appear in either the prefix or the suffix of a message.
<u>HM</u>	Used in Army only.....	Not used.
<u>IX</u> and.....	Joint use permits transmissions other than those pertaining to the executive message prior to the transmission of the signal of execution. Messages transmitted by the executive method are always urgent messages.
<u>IX</u> (5-second dash).	

Procedure sign	Remarks on Army usage	Remarks on joint Army-Navy usage
L.....	Not used.....	Used in operating instructions in message preamble to mean "Relay this message to addressees for whom you are responsible." It may be followed by call signs to indicate "specific addressees for whom you are responsible."
N.....		Used subsequent to a collective call to exempt stations whose call signs follow N.
NR.....		NR <u>IMI</u> to mean "What is the date-time group." NR NR <u>IMI</u> or WA NR <u>IMI</u> means "What is the station serial number."
Q.....	Not used.....	Used in the address preceding the call sign for any station addressed for information rather than action.
R.....		May be transmitted to indicate routine classification when the same message has different classifications to different addressees. When so used, the routine classification applies to stations whose call signs follow immediately.
T.....		When used alone in the preamble, T means "Station called transmit this message to all addressees." When used preceding a call sign, T means "Station called transmit this message to stations whose call signs follow T." When used between call signs, T means "Stations whose call signs precede T transmit this message to stations whose call signs follow T."
U.....	Used in Army only.....	Not used.
<u>UO</u>	do.....	Do.
Z.....	Not used.....	The station whose call sign follows Z is the originator of the message.

SECTION IV

PROCEDURE WORDS

■ 7. GENERAL.—When procedure signs are to be used in radio-telephone communication, phonetic equivalents are used. Following are the standardized forms for the commonly used signs. Except where indicated, these are employed in identical manner in both Army and joint Army-Navy communication.

Procedure sign	Transmitted by radiotelephone as—
<u>AR</u> -----	"Answer" (applies only when establishing communication).
<u>AS</u> -----	"Wait."
C-----	"That is correct."
EEEEEEEE-----	"Erase. Erase. Erase."
GR-----	"Group count."
<u>IX</u> -----	"Execute to follow."
<u>IX</u> -----	"Stand by—Execute" (in artillery operations, the single word "Fire" is used instead).
J-----	"Verify and repeat."
K-----	"Go ahead."
R-----	"Roger" or "Wilco." (NOTE.—The word "Roger," which is the phonetic equivalent of the letter R, is used as a general signal of receipt. "Wilco," which is a coined word meaning "will carry out orders" or "will comply," is used when the operator receipts for a message which contains an order or a request which he can carry out directly. When an operator handles messages which he gives to his message center, he can properly use only "Roger" in receipting for them, regardless of their contents. However, the pilot of an airplane, the commander of a tank or other vehicles, or any commander who uses radio-telephone equipment, is the direct recipient of messages containing orders or requests, and he therefore acknowledges them directly by using "Wilco." If the messages contain information only, and not orders or requests requiring execution, he uses "Roger.")
T-----	"Transmit" or "Transmit to."
V-----	{(In complete call) "From." {(In partial call) "This is."
Y-----	"Acknowledge."
<u>IMI</u> -----	"Repeat" or "Is this correct?"
<u>VA</u> -----	"That is all" (finish of communication).

■ 8. PROCEDURE SIGNALS.—The exact words in the meanings of procedure signals are spoken. Thus, where the signal ZMW would be used in radiotelegraphy, the words "Of what precedence and to whom are your messages?" are employed in radiotelephony.

■ 9. INTERROGATORY MEANINGS.—It is necessary to change the wording of certain "Z" signals to give them interrogatory meanings when signals with the exact intended meaning are not available. Thus, ZCE 2980 $\overline{\text{IMI}}$ is spoken as "Have you been calling me on 2980 kilocycles?"

SECTION V

PHONETIC ALPHABET AND PRONUNCIATION OF NUMERALS

■ 10. PHONETIC ALPHABET.

Letter	Spoken as—	Letter	Spoken as—	Letter	Spoken as—
A	Afirm.	J	Jig.	S	Sail.
B	Baker.	K	King.	T	Tare.
C	Cast.	L	Love.	U	Unit.
D	Dog.	M	Mike.	V	Victor.
E	Easy.	N	Negat.	W	William.
F	Fox.	O	Option.	X	X-ray.
G	George.	P	Prep.	Y	Yoke.
H	Hypo.	Q	Queen.	Z	Zed.
I	Inter.*	R	Roger.		

*Interrogatory is used in place of Inter in joint Army-Navy operations.

■ 11. PRONUNCIATION OF NUMERALS.

Numeral	Spoken as—	Numeral	Spoken as—
0	Ze-ro.	5	Fi-yiv.
1	Wun.	6	Siks.
2	Too.	7	Sev-ven.
3	Thuh-ree.	8	Ate.
4	Fo-wer.	9	Ni-yen.

Number	Spoken as—
44	Fo-wer fo-wer.
80	Ate ze-ro.
136	Wun thuh-ree siks.
500	Fi-yiv hun-dred.
1478	Wun fo-wer sev-ven ate.
7000	Sev-ven thow-zand.
16000	Wun siks thow-zand.

SECTION VI

MESSAGES

■ 12. EXAMPLES OF NORMAL FORM MESSAGES, ARMY USE (table I).—*a. Example No. 1.*—This is simplest normal form message heading. The text here indicates a writer's number group (first group of the text) and a code indicator group (second group of the text). As no precedence is indicated, precedence is "routine."

TABLE I.—Various examples of normal

Example number	Call	Heading			
		Station-to-station serial number	Retransmission instructions	Special operating instructions	Classification
1.....	E02 V BC3	NR5			
2.....	E02 V BC3	NR6	T 8LH V BC3		D
3.....	4BT V BC3	NR14	T 5LG V I92	G	O
4.....	CD8 V 3RX	NR7		G Y	D
5.....	5GH V 3RX	NR4		F	P
6.....	XX7 V 8NU	NR3			O
7.....	5WD V SL2	NR2	T 5LG V SL2		

NOTE.—A message is always terminated by an appropriate procedure sign (\overline{AR}).

b. Example No. 2.—Retransmission instructions indicate that the message originated at BC3 and is to be forwarded to

8LH. Precedence is "deferred." The text proper is "in the clear."

c. *Example No. 3.*—Retransmission instructions indicate that the message did not originate at BC3 but with I92. 4BT is directed to relay it to 5LG. "G" instructs 4BT to repeat the message back to BC3. The retransmitted message will also carry the special operating instructions "G." Precedence is "urgent." Writer's number and code indicator are optional. Neither is included in this text.

d. *Example No. 4.*—3RX directs CD8 to repeat the message back to 3RX and to transmit an acknowledgment indicating receipt by the addressee. Classification is "deferred." The classification of the acknowledgment message to follow from CD8 will also be "deferred." Word NOON is used in time of origin to designate midday.

e. *Example No. 5.*—"F" directs that 5GH not answer by radio. All calls, groups, and procedure signs (with the exception of V), are sent twice. Terminating sign \overline{VA} is used and is also sent twice. Precedence is "priority."

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Group count	Date of origin	Break	Text	
			Text proper	Time of origin
GR5	Tenth.....	\overline{BT}	NR7 CD ALPOQ NDZZN.....	751A
GR4	Tenth.....	\overline{BT}	Proceed to Oakville.....	830A
GR2	First.....	\overline{BT}	NRST.....	609A
GR4	Twenty-first.....	\overline{BT}	DFC4 LOUX MREH.....	Noon
GR7	Third.....	\overline{BT}	NR2 arrive destination in two hours.	442P
GR2	Fifth.....	\overline{BT}	NR7.....	630A
GR3	Second.....	\overline{BT}	5LG 1155P.....	1220A

K, \overline{AS} , B, or \overline{VA}).

f. *Example No. 6.*—This message is an acknowledgment of a previously received "urgent" message, NR7 from XX7 to

8NU. The time of acknowledgment is 6:30 A. M. Precedence "urgent."

g. Example No. 7.—This message is an acknowledgment of a previously received "routine" message which originated at 5LG at 11:55 P. M. The time of acknowledgment is 12:20 A. M.

■ 13. EXAMPLES OF ABBREVIATED FORM MESSAGES, ARMY USE. (table II).—*a. Example No. 1.*—This is the simplest form of abbreviated form message. As no classification is indicated, precedence is "routine." Writer's number and code indicator are optional and both are omitted in this example.

b. Example No. 2.—The message was originated at station DH4. ZP8 is directed to relay the message to C43. As no classification is indicated, precedence is "routine."

c. Example No. 3.—Retransmission instructions are similar to those of example No. 2. SL2 is directed to repeat back the

TABLE II.—Various examples of abbreviated

Example number	Call	Heading		
		Retransmission instructions	Special operating instructions	Classification
1.....	ZP8 V DH4.....			
2.....	ZP8 V DH4.....	T C43 V DH4.....		
3.....	SL2 V EO2.....	T C43 V EO2.....	G	
4.....	XX7 V 8NU.....		F	O
5.....	5GH V 4BT.....		Y	
6.....	4BT V BC3.....			O
7.....	EO2 V 8NU.....			O

NOTE.—A message is always terminated by an appropriate procedure sign (AR).

message to EO2. The retransmitted message will also carry the special operating instructions "G." As no classification is indicated, precedence is "routine." The text carries a writer's number and a code indicator in proper order.

d. Example No. 4.—8NU directs XX7 not to answer by radio. Precedence is "urgent" and text is in the clear.

e. Example No. 5.—4BT directs 5GH to acknowledge. Since this message is "routine," the acknowledgment message will also be "routine."

f. Example No. 6.—This is an acknowledgment message of "urgent" precedence. It acknowledges receipt by the addressee at BC3 at 3:20 P. M. of an "urgent" message which originated at 4BT at 3:07 P. M.

g. Example No. 7.—This is an "urgent" message of execution and carries the "execute to follow" sign, \overline{IX} , just preceding BT. When execution of the order contained in the message is desired, the signal to execute (\overline{IX} 5-second dash) is transmitted.

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Heading		Text	
Executes to follow	Break	Text proper	Time of origin
	\overline{BT}	ALPX DRQY.....	Midnight
	\overline{BT}	DFC4 ROZO NIQP.....	412A
	\overline{BT}	NR65 DFC6 6738 4213.....	407A
	\overline{BT}	Attack at once.....	102P
	\overline{BT}	CD DNOPX RNZEA OALTJ.....	441A
	\overline{BT}	4BT 307P.....	330P
\overline{IX}	\overline{BT}	Attack.....	635A

K, \overline{AS} , B, or \overline{VA}).

■ 14. **EXAMPLES OF NORMAL FORM MESSAGES, JOINT ARMY-NAVY USE** (table III).—*a. Example No. 1.*—This is the most simple normal form message heading. The call becomes part of the address. The originator is NAV. The action addressee is ARM. The date-time group is 311516 and it, together with the call, completes the address. The prefix consists of the group count "GR 9" and break sign "BT." As no precedence is indicated, precedence is "routine."

b. Example No. 2.—This example is similar to example No. 1 except that two addressees are called simultaneously. Both are action addressees. Station serial numbers are indicated for each addressee. The call serves as part of the address, which is completed by the date-time group. A receipt is required by NAV from CON and GEN as indicated by the procedure sign "K."

c. Example No. 3.—NAV had previously transmitted this message to ARM for relaying by ARM to MAR. By procedure sign "F," MAR is instructed by ARM not to transmit for any purpose in response to this transmission. ARM and MAR are information addressees. The ending of message is AR as no receipt is permitted by this "F" method message.

d. Example No. 4.—NAV had previously transmitted this message to SKY as indicated by the omission of SKY from call. NAV transmits it to MEX and, by procedure signal ZPG, instructs MEX to "Repeat back this message to station from which received." Precedence is "priority" to all addressees. All addressees are instructed to "acknowledge" the message by use of "Y."

e. Example No. 5.—NAV originates message for action by CON and for information to FOL. NAV transmits message to CON and by "ZRA" instructs CON to "Forward this message by visual to FOL," which is call sign assumed to include AIR, BAT, CRU, DES, and SUB. Precedence is "deferred" to all addressees.

f. Example No. 6.—This message heading is similar to example No. 5 except when relaying to FOL, CON is not restricted to using visual means; SUB is exempted from inclusion in call sign FOL. By "L", CON is instructed to "Re-

lay this message to addressees for whom you are responsible", which, in this case, means "Relay to FOL less SUB."

g. Example No. 7.—CON relays to FOL less SUB, the message whose heading was shown in example No. 6. The call may be shortened in this case by using collective call sign FOL and exempting SUB from the call by use of "N."

h. Example No. 8.—CON originates and transmits a message of "routine" precedence for action to BAT, CRU, DES, and SUB and for information AIR. As CON is in direct communication with all addressees, the call serves as part of the address. All call signs included in FOL are action addressees except AIR, which is specially designated by "Q AIR" as an information addressee.

i. Example No. 9.—GEN originates and transmits to ARM a message addressed for action to ARM, MEX, and SKY, and for information to NAV. The message is priority to all addressees, GEN instructs ARM to "Transmit this message to all addressees", by use of "T".

j. Example No. 10.—ARM relays to MEX and SKY the message whose heading was shown in example No. 9. By "MEX T NAV", ARM instructs MEX to transmit this message to NAV.

k. Example No. 11.—MEX relays to NAV, the message whose heading was shown in example No. 10.

l. Example No. 12.—NAV originates a message addressed to FUL, which is assumed to be the call sign for the "Fleet." FOL is collective call sign for several units of the "Fleet." By use of "L", each unit included in call sign FOL is required to relay this message to addressees for whom responsible. All addressees are to receive the message for action. By use of "ZRA", NAV instructs all stations which may be required to relay this message, too "Forward this message by visual" to the "Fleet."

m. Example No. 13.—This is an alternate version of the heading in example No. 1. It may sometimes be used advantageously even in direct communication—if the call can be omitted (or abbreviated). NAV omits call completely when transmitting to ARM.

TABLE III.—Various examples of normal form

Example number	Call Discretion is permitted usually, as to abbreviating or omitting the call	Preamble		Address			
		Station serial numbers	Instructions for next receiving station(s)	Originator sign	Originator(s) call sign	Date-time group	Action addressee(s) call sign
1	ARM V NAV					311516	
2	CON GEN V NAV.	CON NR2 GEN NR5 NR8				162231	
3	MAR V ARM		F	Z	NAV	261627	
4	MEX V NAV		ZPG	Z	NAV	121759	MEX
5	CON V NAV	NR6	ZRA FOL	Z	NAV	271545	CON
6	CON V NAV	NR2	L	Z	NAV	280125	CON
7	FOL V CON N SUB or AIR BAT CRU DES V CON.			Z	NAV	280125	CON
8	FOL V CON					301615	
9	ARM V GEN		T	Z	GEN	142359	ARM MEX SKY
10	MEX SKY V ARM.		MEX T NAV	Z	GEN	142359	ARM MEX SKY
11	NAV V MEX			Z	GEN	142359	ARM MEX SKY
12	FOL V NAV	NR 18	L	Z	NAV	162106	FUL
13				Z	NAV	311516	ARM
14	ARM			Z	NAV	231415	ARM CAP
15	V NAV			Z	CON	630012	ARM

NOTE.— \overline{AR} is used when no receipt is required. K is used when receipt is required. transmission to you for the present."

n. Example No. 14.—This is a message heading similar to that shown in example No. 13 except that there are two action addressees—ARM and CAP. NAV transmits this message to ARM omitting "V NAV" from the call.

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Address				Prefix				Text	Suffix
Information sign	Information addressee(s) call sign(s)	Exempted sign	Exempted addressee(s)	Instructions to all receiving stations	Precedence and acknowledge instructions (if not placed in address)	Group count	Break sign	Text as appropriate	
						GR9	<u>BT</u>	Text	K
						GR11	<u>BT</u>	Text	K
Q	ARM MAR					GR16	<u>BT</u>	Text	<u>AR</u>
Q	SKY				PY	GR16	<u>BT</u>	Text	<u>AR</u>
Q	FOL				D	GR8	<u>BT</u>	Text	K
Q	FOL	N	SUB		D	GR17	<u>BT</u>	Text	K
Q	FOL	N	SUB		D	GR17	<u>BT</u>	Text	K
Q	AIR					GR6	<u>BT</u>	Text	B K
Q	NAV				P	GR9	<u>BT</u>	Text	K
Q	NAV				P	GR9	<u>BT</u>	Text	K
Q	NAV				P	GR9	<u>BT</u>	Text	K
				ZRA FUL	D	GR12	<u>BT</u>	Text	<u>VA</u>
						GR9	<u>PT</u>	Text	B K
						GR19	<u>BT</u>	Text	K
						GR29	<u>BT</u>	Text	<u>AR AS</u>

B is used when there is "more to follow." VA is used to mean "This is my last"

o. Example No. 15.—A message heading similar to that shown in example No. 13. When transmitting to ARM, NAV abbreviates the call by omitting "ARM" preceding "V NAV."

■ 15. EXAMPLES OF ABBREVIATED NORMAL FORM MESSAGES, JOINT ARMY-NAVY USE (table IV).—Any message which does not include one or more than one of the following three essential elements of a normal form message is called an *abbreviated normal form message*—date group, time of origin group, and group count.

a. *Example No. 1.*—Date group and group count are omitted. Message is addressed by DES to CON and SUB for action. Urgent precedence is indicated by procedure sign “O.” $\overline{\text{AR}}$ in suffix indicates no receipt is expected.

b. *Example No. 2.*—Date group, time of origin group, and group count are omitted. Message is addressed by DES to CON and SUB for action. Urgent precedence is indicated by procedure sign “O.”

c. *Example No. 3.*—An urgent cryptographed message to be acknowledged by all addressees is originated by NAV and transmitted by NAV to ARM. ARM is instructed to relay message to GEN. ARM and GEN are action addressees. Precedence is indicated by “O.” Date group is omitted. Group count is here included but may be omitted. By use of “ZPG,” all receiving stations are instructed to repeat back this message to station from which received.

d. *Example No. 4.*—CON calls FOL with an abbreviated call. FOL is collective call sign including AIR, BAT, CRU, DES, and SUB. By use of “N”, SUB is exempted from the address. AIR, BAT, CRU, and DES are action addressees. Date and time groups and the group count are omitted. (Text is a Navy type of signal.) By use of “F” in preamble, stations called are not to transmit in response to this transmission. “NR 6” was used because sent on a regular “F” method schedule. Precedence is indicated by “O.”

e. *Example No. 5.*—CON originates an urgent message addressed to FOL for action, and to AIR for information. When transmitting to all addressees in this case, CON omits the call completely. Date and time groups are omitted, as is also the group count. By use of “K” in suffix, all addressees are instructed to receipt for this message to CON. Precedence is indicated by “O.”

f. *Example No. 6.*—CON originates an urgent cryptographed message addressed to the “Fleet” for information, whose call

sign is assumed to be "FUL." CON transmits this message to FOL, and by "L" instructs FOL to transmit message to those for whom responsible—which in this case will result in delivery to FUL. By "ZRA FUL", all receiving stations are instructed to forward this message by visual. The date group and the group count are omitted. Precedence is indicated by "O."

g. Example No. 7.—GEN originates an executive method message (requiring a signal of execution to be sent later). GEN transmits message to ARM, the action addressee and instructs ARM (by use of K) to receipt for message. \overline{IX} \overline{BT} in prefix indicates that the instant of execution will be transmitted later. \overline{IX} always immediately precedes \overline{BT} in the executive method. The date group is omitted and there is no group count. Urgent procedure sign "O" is not required because all \overline{IX} method messages are urgent.

h. Example No. 8.—CON originates an executive method message addressed for action to the "Fleet" whose call sign is assumed to be FUL. Message is transmitted by CON to FOL (with abbreviated call). By use of "L", FOL is instructed to transmit this message to those for whom responsible—which in this case means to FUL, the "Fleet." The date-time group and the group count are omitted. The instant of execution will be transmitted later and will have to be relayed, as this message was. Urgent procedure sign "O" is not required (*g* above).

i. Example No. 9.—SUB originates an urgent message addressed for action to CON. SUB has previously transmitted this message to DES with instructions for DES to relay it to CON. In this example, DES abbreviates his call (from "CON V DES" to "V DES") since to do this is considered feasible under existing conditions. The date group and group count are omitted. Precedence is indicated by "O."

j. Example No. 10.—CAP originates an urgent message addressed for action to GEN. CAP omits the call completely in this case when transmitting to GEN. In the suffix, by use of "BK", CAP instructs GEN that he has more to transmit to GEN, and that CAP desires a receipt for this message. Precedence is indicated by "O."

TABLE IV.—Various examples of abbreviated normal

Example number	Call	Preamble		Address					
	Discretion is permitted usually, as to abbreviating or omitting the call	Station serial numbers	Instructions for next receiving station(s)	Originator sign	Originator's call sign	Date-time group	Action addressee(s) call sign	Information sign	Information addressee(s) call sign(s)
1	CON SUB V DES					2052			
2	CON SUB V DES								
3	ARM V NAV		T GEN	Z	NAV	1015	ARM GEN		
4	FOL	NR6	F	Z	CON		FOL		
5				Z	CON		FOL	Q	AIR
6	FOL V CON		L	Z	CON	1216		Q	FUL
7	ARM V GEN					1248			
8	FOL		L	Z	CON		FUL		
9	V DES			Z	SUB	1900	CON		
10				Z	CAP	1457	GEN		

*In the examples shown, all abbreviated normal form messages are URGENT in may have other precedence. Messages transmitted by the executive method are

*form messages for joint Army-Navy communication**

Address— Continued		Prefix					Text	Suf- fix
Exempted sign	Exempted addressee(s)	Instructions to all receiving stations	Precedence and acknowledge instructions (if not placed in address)	Group count	Execute to follow and break signs			
			O		<u>BT</u>	Expect arrive point ZED on time.	<u>AR</u>	
			O		<u>BT</u>	submarine torpedoed	<u>VA</u>	
		ZPG	OY	GR11	<u>BT</u>	ABCD EFGH IJKL MNOP QRST UVWX YZAB CDEF GHIJ KLMN OPQR.	K	
N	SUB		O		<u>BT</u>	LOVE ZED CAST FIVE.	<u>AR</u>	
			O		<u>BT</u>	fire green rocket when plane is sighted.	K	
		ZRA FUL	O		<u>BT</u>	NUMOX CAREF GUMAT.	<u>AR</u>	
					<u>IX BT</u> <u>IX BT</u>	assault hill thirteen	K	
			O		<u>BT</u>	sail baker tack dog love	<u>AR</u>	
			O		<u>BT</u>	sighted ten yellow 1042	K	
					<u>BT</u>	green task completed 0915.	B K	

precedence. However, for joint communication, abbreviated normal form messages always URGENT messages.

■ 16. DATA ON MESSAGE FORM FOR JOINT ARMY-NAVY COMMUNICATION.—*a. Call.*—(1) The call may or may not be the entire address of the message. See examples 1 and 13 of table III.

(2) The call (call-up) may be any of the following:

(a) ARM V NAV.

(b) V NAV.

(c) ARM.

b. Preamble.—(1) *Station serial number* same as station-to-station message serial number of Army messages. It is not an essential part of normal form message for joint Army-Navy communication.

(2) *Instructions for next receiving station correspond*, in general, to retransmission and special operating instructions of Army normal form message. Procedure signs and procedure signals may be included for administrative control of traffic. Instructions herein apply to the receiving station but not necessarily to subsequent receiving stations.

c. Address.—(1) *Originator sign.*—The procedure sign “Z.” Call sign which follows “Z” is the station of origin of the message. Use of “Z” and call sign of the station of origin is not essential. See example 1 of table III where NAV is obviously the station of origin. Most messages originated by Army stations will take the form shown in example 1. If message takes a form which includes the originator sign “Z,” whether originated at an Army station or merely being relayed in accordance with “instructions for next receiving station,” the Army station will make no change in the content or arrangement of those parts of the message which follow “Z.” Data in the call and preamble are inserted or removed in accordance with the requirements for routing and moving traffic.

(2) *Originator's call sign.*—See (1) above.

(3) *Date-time group.*—First two numerals of the six numeral group indicate the day of the month. Last four numerals of six numeral group or the numerals of a four numeral group indicate the time of day in the 24-hour system. This group must contain six numerals if date and time are indicated, and four if time, but not date, is indicated.

(4) *Action addressee(s) call sign.*—Call signs which follow the date-time group are the call signs of the stations to

whom the message is addressed for action. Inserted in the message by the station of origin, all such call signs are an integral part of the copy of the message delivered to each addressee, whether action or information.

(5) *Information sign.*—The procedure sign “Q.” Call signs which follow the procedure sign “Q” are the call signs of the stations to whom the message is addressed for information.

(6) *Information addressee(s) call signs.*—See (5) above. Inserted in the message following “Q” by the station of origin, all such call signs are an integral part of the copy of the message delivered to each addressee whether action or information.

(7) *Exempted sign.*—The procedure sign “N.” Used when it is desired to exempt (not deliver message to) a particular station which is included in a collective call which is one of the action or information addressees of the message.

(8) *Exempted addressee(s).*—Call signs of stations exempted.

d. Prefix.—Procedure signs or procedure signals placed in the prefix are an integral part of the message and apply to *all* stations handling the message. Usages of procedure signs are comparable to Army use.

e. Text.—Same as present Army form except that time of origin is not included in text but is placed in address. (See *c* (3) above.)

f. Suffix.—The suffix, for which there is no counterpart in Army messages, always includes a terminating procedure sign, and may include instructions for the next receiving station and infrequently the group count if it was not included in the prefix.

■ 17. **GROUP COUNT.**—Any connected group of transmitted characters in the text is counted as one group, each operator being careful to preserve the manner of separating groups as they are originally written. Thus, if an originator of a message chooses to write TWENTY ONE (two groups), this expression should reach the addressee as TWENTY ONE (two groups) and not as TWENTYONE (one group). Obviously, considerable care must be exercised in both transmission and

reception to maintain the separations between groups as they properly occur.

SECTION VII

MISCELLANEOUS PROCEDURES FOR AIRCRAFT

■ 18. SIGNALING PROCEDURE FOR AIRCRAFT.—*a.* When calling an airways radio station, pilots should include in the call sufficient identification to make it clear whether any Army, Navy, Coast Guard, Civil Aeronautics radio station, or municipal control tower is being called. Otherwise, normal procedure is employed.

b. The following is a list of special phrases employed between airport control towers and airplanes during joint operations.

Phrase	Meaning
Wilco ¹ ("Will carry out orders" or "Will comply").	Receipt of order or request.
Roger ¹	Receipt of message other than order or request.
Cleared to change frequency.....	Permission granted by tower for airplane to shift from the tower frequency.
Cleared.....	Permission granted by tower to airplane to land, taxi, or take off.

¹ See paragraph 7.

c. Tower operators will standardize on a series of three messages to inbound and outbound traffic (aircraft), namely—

In-bound traffic	Out-bound traffic
1. In-range acknowledgment.	1. Taxi clearance.
2. Landing clearance as pilot enters airport zone.	2. Airway clearance.
3. Taxi clearance.	3. Take-off clearance.

d. The number of items required in landing or take-off instructions is reduced to clearance and wind direction leav-

ing the use of all other items optional with the airport concerned.

e. Wind direction and force are expressed as "southwest four", or "northeast one five."

f. The following are special signals employed by the control tower:

Signal	Meaning
Blue and white checkered flag.....	Control tower is not manned.
Green light.....	Cleared to taxi to take-off position.
Green light.....	Cleared to take off.
Green light.....	Cleared to land.
Red light.....	Do not take off.
Red light.....	Do not land.
Red light.....	Stop taxiing.
Flashing red light.....	Return to operating line.

g. The following are special light signals employed by the airplane:

Signal	Meaning
Single flash of landing light.....	Acknowledgement of visual signal from control tower.
Series of flashes of landing light.....	Request that floodlights be turned on or off (as the case may be).
Series of short flashes of navigation lights..	About to make a forced landing.

■ 19. DIRECTION FINDER PROCEDURE.—a. The international direction-finder frequency is 375 kc. and is used to obtain bearings, unless special arrangements have been prescribed for the use of another frequency.

b. An aircraft requests a bearing by transmitting (in radiotelegraphy) either ZDC (Request bearing in code) or ZDB (Request bearing in plain language). The direction-finder station (BC), when ready, directs the aircraft (XY) to transmit. The aircraft transmits—

BC V XY MO XY MO XY (MO XY repeated for about 45 seconds) AR.

The bearing is taken by a group of stations and either transmitted by each station to the aircraft individually, or else forwarded by each station to the master bearing station which then transmits the findings of the group collectively. If BC is a master station of a group containing BC, CD, and LF, BC transmits bearings in reply to the request ZDC ZDB as follows:

XY V BC ZDE BC 300 CD 053 LF 230 0930 K

which means—"Your bearing in plain language was 300° from BC, 53° from CD, and 230° from LF at 9:30 A. M."

c. To request a position, the procedure is similar to that for requesting a bearing except that ZDK (Request position) is used instead of ZDC or ZDC ZDB. The position is transmitted—

XY V BC ZDF BC 065 77 MILES 1357 K

which means—"Your bearing from BC was 65° and distance from BC was 77 miles at 1:57 P. M."

d. To take its own bearing, an aircraft orders a ground station—ZDA (Transmit MO's and call signs) or ZDA 4200 (on 4200 kcs.).

■ 20. PANELS.—Panel numerals, with examples of usage and special panel signals, are shown in figures 1 to 4, inclusive.

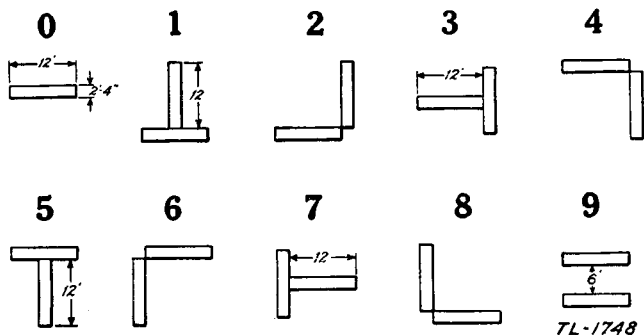


FIGURE 1.—Panel numerals.

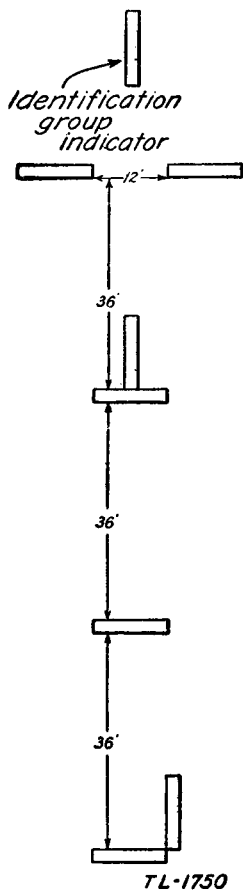


FIGURE 2.—Example of an identification group, 102.

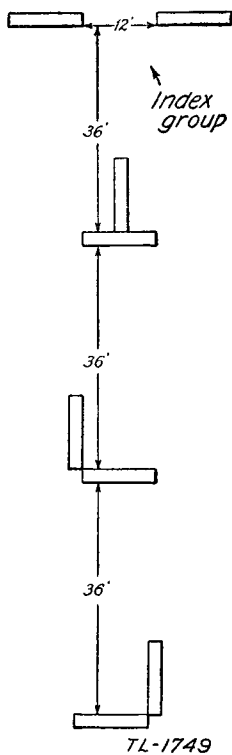
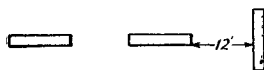
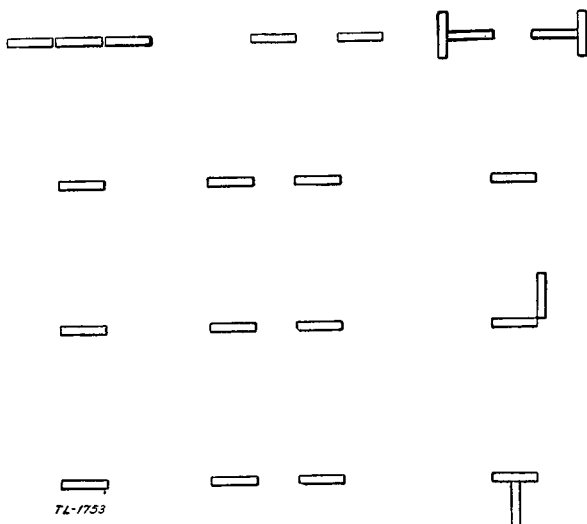


FIGURE 3.—Example of a code group, 182.

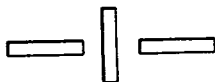


① Numerals are being displayed, 487.

② ^{TL-1752}Coordinates are being displayed, 895.



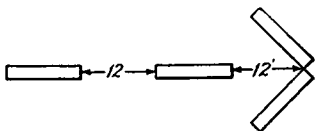
- ③ More to follow. ④ Error, cancel last display of panels. ⑤ Reconnoiter 25 miles in the direction to be indicated by next display.



- ⑥ Hostile airplane near you.



- ⑦ Wind direction.



TL-1751

- ⑧ In this direction.

FIGURE 4.—Special panel signals.

SECTION VIII
FIRE-CONTROL CODE

■ 21. ENCODING SECTION.

Code group	Meaning
AF.....	Additional fire; request additional fire; you will receive additional fire.
AP.....	Aiming point.
JM.....	Ammunition dump.
AA.....	Antiaircraft guns.
JI.....	Antitank guns.
AT.....	At my command.
BD.....	Base deflection.
BP.....	Base point (is).
BN.....	Battalion; request battalion; battalion will fire.
BA.....	Battery.
JN.....	Battery in position.
BY.....	Battery ready; is battery ready?
BK.....	Bracket adjustment.
BG.....	Brigade; request brigade; brigade will fire.
BC.....	By piece.
JF.....	Cavalry.
CF.....	Cease firing; have ceased firing.
CI.....	Center of impact.
CT.....	Change target.
CG.....	Charge (numerals).
CK.....	Checking communications.
CL.....	Close (numerals).
CP.....	Command post.
CA.....	Compass.
CN.....	Concentration No. (numerals).
CV.....	Converge at (numerals).
KR.....	Corrector.
JP.....	Counterattack.
JQ.....	Crossroads.
DF.....	Deflection.
DV.....	Division; request division; division will fire.
DN.....	Down (numerals).
EL.....	Elevation.
EN.....	Enemy (located at) _____.
ER.....	Erratic.
FH.....	Fire concentration No. (numerals).
RZ.....	Fire effective; mission accomplished.
FE.....	Fire for effect; will fire for effect.
BQ.....	Fire (will fire) series of three (3) rounds.
FP.....	First (No. 1).

Code group	Meaning
FI.....	Follow instruction (No. ——).
LP.....	Fourth (No. 4).
FD.....	Fuze delay.
FQ.....	Fuze quick.
FR.....	Fuze range.
GO.....	Go (going) home; forced to land.
GP.....	Groupment; request groupment; groupment will fire.
HA.....	Has battery fired; battery fired.
ID.....	Identification group, display (ing) (ed).
JA.....	Infantry assembled (assembling).
JH.....	Infantry howitzers.
JC.....	Infantry in column.
JB.....	Infantry in open.
LA.....	Ladder.
LM.....	Lay on me; will lay on you.
LL.....	Left.
LS.....	Less.
LF.....	Lift (to) (from) (at) (No.)
LT.....	Lost.
JJ.....	Machine guns.
MK.....	Mark (identify by fire).
JV.....	Mechanized vehicles.
MM.....	More.
JD.....	Mortar.
MO.....	Move; moving.
AW.....	My altitude is —— feet; what is your altitude?
NF.....	No further need of you; movement completed; go to next assignment.
NC.....	Normal charge.
NO.....	No; will not fire.
OI.....	Observation impossible.
JO.....	Observation post.
OP.....	Open.
OO.....	Over.
PK.....	Percussion.
PA.....	Precision adjustment.
RN.....	Rangè.
CR.....	Range correct.
OB.....	Ready to observe; request observation.
RC.....	Reduced charge.
RP.....	Reference point.
RG.....	Regiment; request regiment; regiment will fire.
RA.....	Repeat range.
RQ.....	Request relief.
RR.....	Right.
RJ.....	Road junction.
RS.....	(Numerals) rounds.

Code group	Meaning
SP.....	Second (No. 2).
SN.....	Sheaf too narrow.
SW.....	Sheaf too wide.
SH.....	Shell.
SS.....	Short.
SI.....	Site.
SM.....	Smoke shell.
SC.....	Supercharge.
SV.....	Surveillance.
SE.....	Sweeping.
JT.....	Tanks.
TA.....	Target.
TP.....	Third (No. 3).
TI.....	Time.
JU.....	Trucks.
UP.....	Up (numerals).
VJ.....	Verify the adjustment.
AD.....	Will adjust; request adjustment on target just reported.
ZL.....	Zone (limiting ranges).
JW.....	
JX.....	
JY.....	

■ 22. DECODING SECTION.

Code group	Meaning
AA.....	Antiaircraft guns.
AD.....	Will adjust; request adjustment on target just reported.
AF.....	Additional fire; request additional fire; you will receive additional fire.
AP.....	Aiming point.
AT.....	At my command.
AW.....	My altitude is ——— feet; what is your altitude?
BA.....	Battery.
BC.....	By piece.
BD.....	Base deflection.
BG.....	Brigade; request brigade; brigade will fire.
BK.....	Bracket adjustment.
BN.....	Battalion; request battalion; battalion will fire.
BP.....	Base point (is).
BQ.....	Fire (will fire) series of three (3) rounds.
BY.....	Battery ready; is battery ready?
CA.....	Compass.
CF.....	Cease firing; have ceased firing.

Code group	Meaning
CG.....	Charge (numerals).
CI.....	Center of impact.
CK.....	Checking communications.
CL.....	Close (numerals).
CN.....	Concentration No. (numerals).
CP.....	Command post.
CR.....	Range correct.
CT.....	Change target.
CV.....	Converge at (numerals).
DF.....	Deflection.
DN.....	Down (numerals).
DV.....	Division; request division; division will fire.
EL.....	Elevation.
EN.....	Enemy (located at) _____.
ER.....	Erratic.
FD.....	Fuze delay.
FE.....	Fire for effect; will fire for effect.
FH.....	Fire concentration No. (numerals).
FI.....	Follow instructions No. (———).
FP.....	First (No. 1).
FQ.....	Fuze quick.
FR.....	Fuze range.
GO.....	Go (going) home; forced to land.
GP.....	Groupment, request groupment; groupment will fire.
HA.....	Has battery fired; battery fired.
ID.....	Identification group, display(ing)(ed).
JA.....	Infantry assembled (assembling).
JB.....	Infantry in open.
JC.....	Infantry in column.
JD.....	Mortar.
JF.....	Cavalry.
JH.....	Infantry howitzers.
JI.....	Antitank guns.
JJ.....	Machine guns.
JM.....	Ammunition dump.
JN.....	Battery in position.
JO.....	Observation post.
JP.....	Counterattack.
JQ.....	Crossroads.
JT.....	Tanks.
JU.....	Trucks.
JV.....	Mechanized vehicles.
JW.....	
JX.....	
JY.....	
KR.....	Corrector.
LA.....	Ladder.

Code group	Meaning
LF.....	Lift (to) (from) (at) (No.).
LL.....	Left.
LM.....	Lay on me; will lay on you.
LP.....	Fourth (No. 4).
LS.....	Less.
LT.....	Lost.
MK.....	Mark (identify by fire).
MM.....	More.
MO.....	Move; moving.
NC.....	Normal charge.
NF.....	No further need of you; movement completed; go to next assignment.
NO.....	No; will not fire.
OB.....	Ready to observe; request observation.
OI.....	Observation impossible.
OO.....	Over.
OP.....	Open.
PA.....	Precision adjustment.
PK.....	Percussion.
RA.....	Repeat range.
RC.....	Reduced charge.
RG.....	Regiment; request regiment; regiment will fire.
RJ.....	Road junction.
RN.....	Range.
RP.....	Reference point.
RQ.....	Request relief.
RR.....	Right.
RS.....	(Numerals) rounds.
RZ.....	Fire effective; mission accomplished.
SC.....	Supercharge.
SE.....	Sweeping.
SH.....	Shell.
SI.....	Site.
SM.....	Smoke shell.
SN.....	Sheaf too narrow.
SP.....	Second (No. 2).
SS.....	Short.
SV.....	Surveillance.
SW.....	Sheaf too wide.
TA.....	Target.
TI.....	Time.
TP.....	Third (No. 3).
UP.....	Up (numerals).
VJ.....	Verify the adjustment.
ZL.....	Zone (limiting ranges).

SECTION IX
INTERNATIONAL MORSE CODE

■ 23. INTERNATIONAL MORSE CODE.—The dot and dash equivalents for the International Morse Code are as follows:

a. Alphabet:

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

b. Numerals:

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

c. Special signs:

ä (German) . — . . —	ñ (Spanish) — — . . — —
á (Spanish, Scandinavian) or â . — . — . —	ö (German) — — — .
ch (German, Spanish) — — — — —	ü (German) . . . — —

d. Special characters:

Period (.) . — . . . —	Underline (—) . . — . . — —
Comma (,) — — . . . — —	Double dash (==) — —
Colon (:) — — — . . .	Understood . . . — .
Interrogation (?) or request to repeat . . . — . . .	Error
Apostrophe (') . — — — — .	Cross or end (+) . —
Hyphen or dash (—) — —	Invitation to transmit — . . —
Wait . —	End of work . . . — . —
Fraction bar (/) —	Separation between whole number and fraction
Brackets or parentheses () — . — . . — .	Is it correct . . . — . —
Starting signal — . — . . —	

e. Distress, urgent, and safety signals:

(See the General Radio Regulations annexed to the International Telecommunications Convention.)

Distress call $\overline{\text{SOS}}$. . . - - - . . .
Urgent signal XXX	- . . - - . . - - . . -
Safety signal TTT	- - -

