US ARMY
SIGNAL CENTER AND SCHOOL
FORT MONMOUTH, N.J.

SSTS 56005C
INFORMATION SHEET

TAPE RELAY OPERATIONS

Section I. GENERAL

1. OBJECTIVES

a. To describe tape relay procedures and message formats.

b. To explain supervisory responsibilities for tape relay operation.

2. INTRODUCTORY INFORMATION

a. For more than 2,000 years after the Greeks first relayed intelligence from city to city by means of visual signals, no significant improvement was made in methods and instruments for exchanging military information. But in one century after the invention of the telegraph, and while speed of locomotion was accelerating from that of the horse to that of the jet plane, speed of communications accelerated at an even faster rate. In 1862 a vital message to the President of the United States from the commander of an army in the field (General McClellan to President Lincoln) was relayed by visual signal and telegraph from Frederick, Maryland, to Washington, D.C. The distance was about 40 miles, and the time of transmission was 12 hours. In our own day, a message has been transmitted around the world, by means of relay stations, in less than 10 seconds.

b. Technical improvements alone have not wrought this revolutionary improvement in time of transmission. They have provided the means. But new methods of employing the means -- improved systems of traffic handling, integration of means, simplified operating procedures -- have vitally influenced speed of service. An automobile geared to a speed of 120 miles per hour is slowed to a crawl if the network of roads over which it must travel is inadequate to carry the traffic, if a poorly engineered traffic light system interferes with its progress, or if the rules of the road are different in each hamlet through which it must pass. Tape relay networks are to communications what express highways are to motor transport. Local traffic is led

This information sheet supersedes SSTS 56005B, Tape Relay Operations.

into and out of the tape relay network at scheduled points, clearing the main traffic lanes for fast-moving, long distance traffic. With the perfecting of automatic and semi-automatic tape-punching and transmitting equipment, tape relay has virtually replaced point-to-point communication. Army tape-relay networks have been integrated with those of the Navy, Air Force, and our allied nations; thus, by means of the same procedures, official messages can be sent to all parts of the world in a matter of minutes.

c. Efficient operation of such a complex system demands disciplined use of streamlined procedures. The purpose of this information sheet is to familiarize you with the structure of this vast network and with the procedures that make possible its rapid and efficient employment.

3. DEFENSE COMMUNICATIONS AGENCY (DCA)

a. The Defense Communications Agency (DCA) has been established as an agency of the Department of Defense under the direction, authority, and control of the Secretary of Defense.

b. The mission of the DCA is to achieve, in an efficient and economical manner, a modernized compatible Defense Communications System (DCS) so operated as to meet the long-haul, point-to-point, telecommunications requirements of the Department of Defense and other governmental agencies as directed.

4. DEFENSE COMMUNICATIONS SYSTEM (DCS)

a. The Defense Communications System (DCS) is the integrated global military communications system of the Department of Defense.

b. The DCS consists of the combined global communications networks of the U. S. Army (STARCOM), U. S. Navy (NAVCOM), and U. S. Air Force (AIRCOM).

5. THE STRATEGIC ARMY COMMUNICATIONS SYSTEM (STARCOM)

a. The STARCOM is the army-operated element of DCS. It consists of fixed radio, wire, cable, and associated facilities used to provide communications for the Department of the Army.

b. The STARCOM is organized and operated to transmit and receive official messages and other traffic for the Department of Defense, the Department of the Army, and other military departments. Other agencies of the government may be authorized to use STARCOM facilities within prescribed limits. Although other means of communication are also provided (such as radio, voice, facsimile, and teletypewriter conferences), 90 percent of the traffic handled by STARCOM is via tape relay.

Section II. TAPE RELAY NETWORKS

6. WHAT IS TAPE RELAY?

Sending a message by tape relay consists essentially of the following processes:

a. Introducing the message into a tape relay network at the originating communications center. This is normally done by preparing a tape at the station of origin.

b. Receiving the message in tape form at a relay station and forwarding the message in tape form toward its destination.

c. Receiving the message at the final communications center in page form suitable for delivery to the addressee.

7. COMPOSITION OF TAPE RELAY NETWORKS

a. Tape relay networks are composed basically of three types of stations: tape relay stations, tributary stations, and terminal stations.

(1) Tape relay stations receive messages in tape form and forward them, still in tape form, to other stations in the network. Tape relay stations process no page copies. They originate and terminate no messages except procedure messages incidental to traffic handling.

(2) Terminal stations receive and process originating and terminating messages for transmission, delivery, or refile, from commands and units located in the general vicinity of the relay stations. Each relay station has one terminal station.

(3) Tributary stations receive and process originating and terminating messages for transmission, delivery, or refile, from commands and units not otherwise served by a terminal station.

b. A terminal station has the minimum function of supporting its relay station in handling refile traffic, even where there are no nearby commands to be served by originating and terminating traffic. A tributary station, however, must always serve a command.

c. Tape relay stations, strategically located, are the hubs of communications within their specific assigned areas. The spokes radiating from the hubs are the channels to the terminal and tributary stations in the area, to relay stations in other areas, and to other networks of other services or nations in the same area.

8. TERMINAL FACILITIES

Wherever a tape relay station exists, it must be served by a terminal facility capable of receiving and processing originating or terminating messages for transmission, delivery or refile. The terminal is responsible for the functions of the message center subsection, the manual teletypewriter subsection, the service and files subsection, and the commercial refile subsection. Each of these subsections or facilities may be served with its own room circuit from the relay station, or they may all be served by room circuits to one of the subsections. Terminal facilities are identified in paragraph 14.

9. TYPES OF TAPE RELAY STATIONS

Tape relay stations are designated according to their functions in the tape relay network. A station is designated a major tape relay station when it is connected to two or more other relays, providing an alternate routing capability. A station is designated a minor tape relay station when it has tape relay responsibilities and is connected to only one other relay station, thus having no alternate tape relay route.

10. ROUTING INDICATORS

a. A routing indicator is a group of letters assigned to identify a station within a communications network to facilitate the routing of traffic.

b. Routing indicators are assigned by the appropriate national authority in accordance with the Routing Indicator Formulation Plan.

c. Routing indicators are the only tape relay network station designations authorized for use in lines 1, 2, and 3 of the prescribed message format (see appendix II).

11. COMBINED ROUTING INDICATOR FORMULATION PLAN

The Combined Routing Indicator Formulation Plan described in ACP 121-( ) is the doctrine controlling the establishment and operation of military tape relay systems. The Routing Indicator Area Delineation Table and the Routing Indicator Delineation Map shown in figures 1 and 2 are elements of this plan. Two systems are developed from the plan -- one worldwide, the other theaterwide in scope. These two systems are discussed in following paragraphs.

12. COMBINED ROUTING INDICATOR PLAN (STRATEGIC/WORLDWIDE)

a. The plan is designed to meet requirements of both intra-network and inter-network operation of military communications systems. It provides for expansion, both in intra-network facilities and in the number of inter-related networks. Strategic/worldwide routing indicators should not be used within tactical/theater networks for routing purposes or to indicate delivery responsibility. To facilitate refile of messages, however, it is permissible to transfer messages into tactical/theater networks without deleting strategic/worldwide routing indicators from the message heading.

b. The following factors are reflected in routing indicator assignment:

National or International affiliation and service (when required) of the station.

The geographical area in which the station is located, or area from which it is served.

Network status of the station, i. e., major or minor relay, tributary, or terminal station.

c. The first three letters are pre-allocated as shown in the Routing Indicator Delineation Table (figure 1). The fourth and subsequent letters are assigned by the cognizant national or international authority.

d. The intent of allocated letters and of letter positions is as follows:

First Letter - The letter "R" or the letter "Q" appears as the first letter and distinguishes strategic/worldwide routing indicators from call signs, address groups and theater routing indicators. The letter "Q" will be used as a first letter when the identification capabilities of "R" have been exhausted, that is, when 26 nations and international alliances have been allotted second letters in conjunction with "R".

Second Letter - This letter, in conjunction with the first letter, identifies the nation or international alliance to which allotted.

Third Letter - This letter position identifies the geographical area in which a station is located, or from which it is served. (Figure 1 names the geographical letters, and Figure 2 outlines the exact geographical limits of the letter.)

Fourth Letter - This letter position indicates major relay stations and may identify the service or other national/international entity. The United States uses the letters W, X, Y, and Z in this position to identify AIROPNET major relay stations.

Fifth and Following Letters - These letters and positions, when added to the four letters of a major relay routing indicator, designate the minor relay or tributary stations of that major relay station.

ROUTING INDICATOR AREA DELINEATION TABLE

LTR.	1ST POSITION TYPE OF NETWORK	2D POSITION NATION, SERVICE, AND/OR FACILITY	3D POSITION GEOGRAPHICAL AREA
A		AUSTRALIA	EASTERN ASIA
B		BRITISH COMMONWEALTH (Less Canada)	
C		CANADA	CENTRAL NORTH AMERICA
D			GREAT BRITAIN AND ICELAND
E			EASTERN NORTH AMERICA
F			EUROPE
G			
H			CENTRAL PACIFIC
I			
J			
K			ALASKA--ALEUTIANS
L			CARIBBEAN AND SOUTH AMERICA
M			MALAYA, EAST INDIES, PHILIPPINES,AND SOUTH PACIFIC
N			
O			
P			
Q	RESERVED WORLD-WIDE ROUTING INDICATOR		MIDDLE EAST
R	WORLD-WIDE ROUTING INDICATOR		
S			WESTERN ASIA
T			NORTHWESTERN AFRICA
U	THEATER ROUTING INDICATOR	UNITED STATES	
V			SOUTH AFRICA
W			WESTERN NORTH AMERICA
X		N.A.T.O.	
Y			AUSTRALIA AND NEW ZEALAND
Z			

Notes. *1. Geographical areas listed in the third column are delineated in the routing indicator delination map (fig.2).*

2. Second position letters for other nations or alliances will be published on or after 1 January 1963.

Figure 1. Routing Indicator Area Delineation Table.

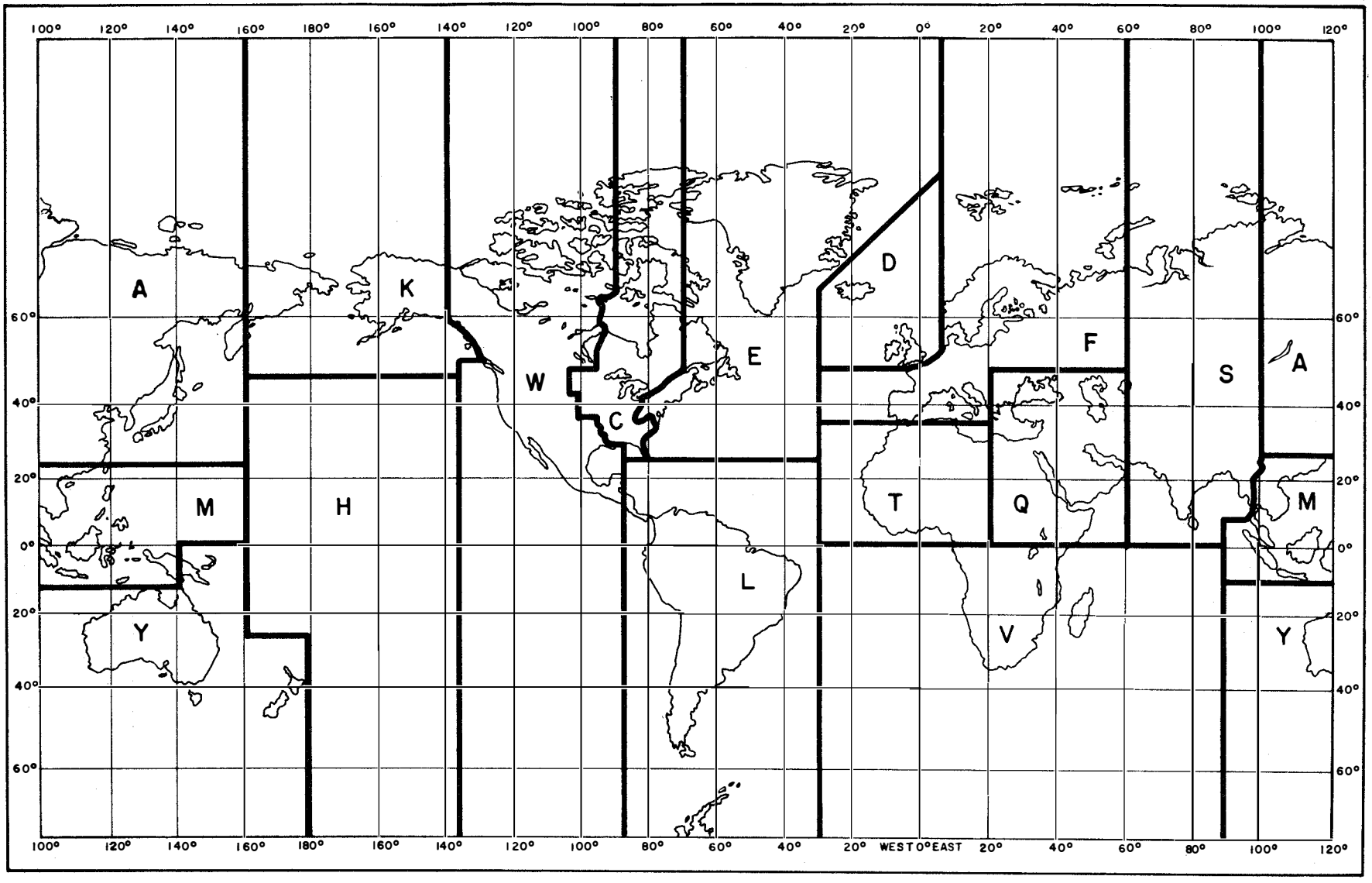

Figure 2. Routing Indicator Delineation Map.

13. COMBINED ROUTING INDICATOR PLAN (TACTICAL/THEATER)

a. The plan is designed to meet requirements of military communications systems self-contained within a command/theater, or which support a homogeneous purpose or activity. Except for the differences outlined below, this plan is identical with the strategic/worldwide plan.

b. Tactical/theater routing indicators are restricted to use within the individual system. These routing indicators shall not be used in the heading of messages transmitted over the facilities of strategic/worldwide communications systems.

c. The letter "U" always appears as the first letter and distinguishes tactical/theater routing indicators from call signs, address groups, and strategic/worldwide routing indicators.

d. As in strategic/worldwide networks, the first three letters are pre-allocated. The fourth and subsequent letters are assigned by the cognizant authority, either the theater command, or national authority.

14. SUFFIXES TO RELAY STATION ROUTING INDICATORS

a. The letter "C" and all two-letter combinations "CA" through "CZ" are reserved for suffixes to relay station routing indicators. A meaning is prescribed for each authorized suffix. Suffixes are intended to aid the routing of messages for processing purposes or localized action by the relay station or any of its supplementary sections and facilities. The use of these suffixes for intra-network messages is optional but they are not authorized for use on Joint or Combined messages unless shown in the routing columns of the encode sections of the ACP 117 Series, Allied Routing Indicator Book.

b. The meanings of authorized suffixes are as follows:

C - Local Delivery or refile in page form is required. (Used to designate the entire terminal section of a relay station.)

CA - Traffic Control Supervisory Unit and Retransmission Section of US Air Force AIROPNET major relay stations.

CF - Section which accomplishes delivery of traffic by broadcast methods.

CI - Section which coordinates routing information.

CM - Section which prepares tape copies for retransmission.

CN - Electrical conference facility or section.

CP - Circuit/facility control point.

CR - Cryptocenter.

CS - Section dealing with service messages.

CT - Section which accomplishes delivery of traffic by telephone.

CU - Section which accomplishes delivery of traffic to commercial carriers.

CW - Section which relays traffic by radio telegraph (CW).

CX - Section which uses tape relay methods for delivery of traffic to activities served by a Military or Commercial teletypewriter exchange system.

15. EXAMPLES OF ROUTING INDICATORS

RXFD: Major Relay Station, Allied Forces Central Europe, Avon, France.

RUMS: Major Relay Station, U. S. Army, Saigon, Vietnam.

RUCB: Major Relay Station, U. S. Army, Fort Bragg, N. C.

RUCBC: Terminal Station of Major Relay RUCB.

RUCBCS: Service section of Major Relay RUCB.

RUCBCR: Cryptocenter of Major Relay RUCB.

RUEPV: Minor Relay Station, U. S. Army, Redstone Arsenal, Alabama (connected to Major Relay Station RUEP).

RUEPVT: Tributary Station, NASA, Redstone Arsenal, Alabama (connected to Minor Rely Station RUEPV).

RUEPFM: Tributary Station, Fort Monmouth, N. J. (connected to Major Relay Station RUEP).

UUTA: U. S. Major Relay Station, Mediterranean Theater (simulated for training purposes).

UUTAB: U. S. Minor Relay Station, Mediterranean Theater (simulated for training purposes).

Section III. OPERATING PROCEDURES

16. GENERAL

Operating procedures for tape relay networks relate to the use of prosigns and operating signals, machine functions, identification numbers, and the prescribed message format. Authorized prosigns and operating signals are listed in appendix I. Teletypewriter machine functions are keys that perform operations an ordinary typewriter does not perform -- such as a letters (LTRS) key, a figures (FIGS) key, a carriage return (CR) key, a line feed (LF) key, and a blank key. Appendix II shows a schematic diagram of the prescribed tape relay message format. Application of this diagram to various types of messages is discussed in detail in section IV. Identification numbers are explained in the following paragraphs.

17. PROTECTING THE CONTINUITY OF TRAFFIC

a. In tape relay we do not normally use station-to-station receipts for individual messages. It is necessary, therefore, to have some method of protecting against loss or mishandling of messages. This purpose is served by the use of identification numbers in the headings of messages. These numbers are used to maintain continuity of traffic and for reference between communication activities.

b. An identification number in a message heading may be either a station serial number, a transmission identification, or both.

18. STATION SERIAL NUMBER

a. This is a message identification number assigned by the originating station. Station serial numbers are assigned to messages in consecutive order at the point of entry into a tape relay network, regardless of destination, starting with number one (1) at ØØØ1Z daily. Such

numbers must be recorded on the message file copy, and will appear as format line 3 (see appendix II), e. g., DE RUEPFM 1. Numbers with prefix zeroes, i. e., Ø1, are not normally used.

b. When there is more than one perforating position or on-line transmitting channel, a separate numerical series followed by a letter designation for each position is used, e. g., DE RUEPFM 1A, DE RUEPFM 1B.

c. The station serial number may identify transmissions from some tributary stations to a relay station. This applies to a tributary station which has the same number of perforating positions as transmitting channels, or to a station using on-line keyboard transmissions. At such stations, the station serial numbers always follow in consecutive order. Tributary stations having more perforating positions than transmitting channels use channel numbers.

19. TRANSMISSION IDENTIFICATION (TI) (CHANNEL NUMBERS)

a. Transmission identification is employed between stations to protect the continuity of traffic. TI sequences may begin with number ØØ1, commencing at ØØØ1Z daily, and will appear as format line 1 (see appendix II), e. g., CMBØ91 (para. 35b). They may also run to 1ØØØ, represented by ØØØ, then start over (continuous numbering).

b. TI consists of three letters and three digits. The first two letters signify the station designator. The third letter identifies the transmission channel (A, B, C, D, etc.). Since the Major Relay Station RUCM is assigned the station designator CM, the above TI example, CMBØ91, tells the following story: this is the 91st transmission over Channel B, from station CM (RUCM).

c. Every transmission from a tape relay station must be identified by a TI. It is the direct responsibility of the receiving operator to insure that a tape is received under each number and that numbers are not duplicated or omitted. Discrepancies in numbers are promptly reported to the supervisor. Open numbers are reported as they occur and so noted on in-station logs.

d. A TI in numerical sequence is always used by stations operating into fully automatic switching centers. A start of message indicator precedes the transmission identification/channel number of each transmission from a station operating directly into a fully automatic switching center. This indicator is four characters in direct sequence: ZCZC. This complete sequence of four characters should not reappear in any one transmission.

e. When prepared by other than automatic numbering devices, the TI is transmitted ahead of each transmission.

20. TRANSMISSION IDENTIFICATION CONSTRUCTION

TI's are prepared as shown in the following examples:

a. Stations connected to fully automatic switching centers using --

(1) Automatic numbering devices or automatic number rolls:

(V) (START OF MESSAGE INDICATOR ZCZC)
(2 STATION DESIGNATION LETTERS) (1 CHANNEL LETTER)
(FIGS) (3 NUMERICAL CHARACTERS) (1 LTRS)

(2) Tab number rolls:

(V) (START OF MESSAGE INDICATOR ZCZC)
(2 STATION DESIGNATION LETTERS) (1 CHANNEL LETTER)
(FIGS) (3 NUMERICAL CHARACTERS) (8 LTRS)

b. Stations connected to semi-automatic relay stations using --

(1) Automatic numbering devices, automatic number rolls or, where authorized, manual keyboard numbering:

(VV) (3 SPACES) (2 STATION DESIGNATION LETTERS)
(1 CHANNEL LETTER) (FIGS) (3 NUMERICAL CHARACTERS)
(1 LTRS)

(2) Tab number rolls:

(VV) (3 SPACES) (2 STATION DESIGNATION LETTERS)
(1 CHANNEL LETTER) (FIGS) (3 NUMERICAL CHARACTERS)
(8 LTRS)

c. On the tab number rolls, the 8 Ltrs following the channel serial provide the means of detaching a single number tab from the roll without damaging it or the remaining numbers.

21. ERROR CORRECTION

a. Errors made in preparing chad (totally perforated) tapes should be corrected by either back-spacing the tape and "rubbing out" or "lettering out" the error by means of the LTRS key, or by use of the correction line (format line 15 -- prosign C). Errors made in format lines 1 through 4 may NOT be corrected in this manner. The End-Of-Transmission functions (2 CR) (8LF) (NNNN) (12 LTRS) also may NOT be corrected in this manner. Both (format lines 1 through 4, and EOT functions) must be perfect. If other than perfect, the tape must be discarded and a new tape prepared. In addition, the error prosign E E E E E E E E should not be used, except in keyboard transmissions. Errors made in the security classification shall be corrected by back-spacing and obliterating the entire classification.

b. A completed transmission can be cancelled only by means of a separate service message, quoting the TI (if applicable) and the station serial number of the transmission to be cancelled.

c. Transmissions in progress may be cancelled between stations in a tape relay network by sending a cancellation tab, prepared as follows: (LTRS) E E E E E E E E E AR RUTM (2 CR 8 LF NNNN 12 LTRS). The station making the cancellation identifies itself in the cancellation, as shown.

NOTE: Messages may be cancelled only by the ORIGINATOR. However, transmissions may be cancelled by the transmitting station. IT IS THE RESPONSIBILITY OF THE STATION CANCELLING A TRANSMISSION TO ENSURE FURTHER HANDLING OF THE MESSAGE.

d. If the transmitting operator discovers that an error has been made in the textual portion, the error may be corrected at the end of the message by the use of the "C" procedure line. When corrections to multiple page messages cannot be made by the rub-out method, the "C" procedure line is used at the end of the page in which the error appears. In those instances where the error was not noted before starting another page, the error is corrected at the end of the message.

Section IV. MESSAGE FORMAT

22. GENERAL

a. Tape relay transmissions must conform to prescribed message format. The format varies in accordance with the type of message to be transmitted -- whether plaindress or codress, single, book, or multiple address, long or short, service or procedure message. Plaindress, abbreviated plaindress, and codress messages are divided into three parts -- heading, text, and ending. Message parts contain components. Components are broken down into elements and contents (see appendix II). All message parts and most components and elements follow a prescribed order, as indicated by the number of the format line in the schematic diagram. All format lines in the diagram do not necessarily appear in every message. Those which do appear, however, must follow the indicated order.

b. In this section, basic rules that apply to all transmissions, and variations for different types of messages, are described, with examples.

23. BASIC RULES

The following basic rules apply to all tape relay transmissions.

a. Transmit messages exactly as written. Do not substitute abbreviations for plain language or plain language for abbreviations in the message text.

b. Use authorized routing indicators to accomplish calling and routing in tape relay networks.

c. For messages to be transmitted over worldwide tape relay networks, select routing indicators from ACP 117-( ).

d. Plain language designations, call signs, or address groups may be used in the address portion of messages to indicate originators and addressees. If call signs or other address designations employed in the message heading do not identify the actual addressees, indicate those addressees in the text.

e. Routing indicators may be used in lieu of address designations in service messages (except cryptoservices) addressed to activities within tape relay networks. When such messages are refiled commercially, the address must be complete.

f. Do not use plain language in conjunction with other address designations in the address component of a message.

g. When address indicating groups are used in codress messages, they are employed as transmission instructions (format line 4).

h. In a codress message, when a station called in line 2 is responsible for both refile and decryption, the designation of that station must also appear in the transmission instruction.

24. MESSAGE ALIGNMENT

Specific teletypewriter machine functions are necessary to facilitate the handling of messages and to align receiving page teletypewriters.

a. All transmissions must be preceded by five spaces, two carriage returns (2CR), and one line feed (LF).

b. The end of line functions are two carriage returns and one line feed.

c. The separative functions between pages of long messages are two carriage returns and four line feeds.

d. The end of message transmission functions are two carriage returns, eight line feeds, the letter N four times, and twelve LTRS.

e. No line may exceed 69 characters, including spaces.

f. The bell signal is employed to attract the attention of the receiving operator where required and will be transmitted as a series of ten characters, upper case "J" and "S" as follows:

FIGS JJJJJSSSSS LTRS

Such a signal will be a part of the routing line (format line 2) of all FLASH messages (the upper case J prints an apostrophe, and the upper case S causes an audible bell signal). The page copy of a message would appear as follows:

' ' ' ' 'ZZ RUEPFM
DE RUEPDA 27B 25/1346Z

25. SECURITY

A portion of the DCS Tape Relay Network is provided with security (cryptographic) equipment. To prevent security violations, the operating signal ZNR is entered in format line 4 by the originating station for UNCLASSIFIED transmissions, including off-line cryptograms. If the message is UNCLAS EFTO or classified, the signal ZNR will be omitted from format line 4. Since the literal meaning of ZNR is, "This message may be transmitted over unencrypted channels", the accidental use of this operating signal in a CLASSIFIED or UNCLAS EFTO transmission could be disastrous.

26. MULTIPLE PAGE MESSAGES

Messages containing more than 12 lines of text are divided into pages for transmission as follows:

a. The first page contains the heading and the first 10 lines of text.

b. All succeeding pages contain 20 lines of text, except the last page which may contain less.

c. A line is a textual line as it appears on the original typewritten message (or equivalent if written in free hand) or in the encrypted version submitted to the tape-poking position.

d. The prosigns CFN and C are used at the end of each page as necessary. See appendix I for prosigns and their meanings.

e. The first page is identified only by the heading. For example:

PP RUWFAH	(5 SP) (2CR) (LF)
DE RUCMAF 11A 25/Ø945Z	(2CR) (LF)
ZNR	(2CR) (LF)
P 25Ø9ØØZ	(2CR) (LF)
FM CG USARFIVE CHGO ILL	(2CR) (LF)
TO CG USARFOUR FT SAM HOUSTON TEX	(2CR) (LF)
BT	(2CR) (LF)
UNCLAS REF. NO., ETC.	
TEN LINES OF TEXT (TOTAL)	(2CR, 8LF)

f. The second and succeeding pages must be identified. For example:

PAGE 2 RUCMAF 11A UNCLAS	(2CR) (LF)
Twenty lines of TEXT	(2CR) (8LF)
PAGE 3 RUCMAF 11A UNCLAS	(2CR) (LF)
Twenty lines or less of TEXT	(2CR) (LF)
BT (2CR) (8LF) (NNNN)	(12 LTRS)

NOTE: Between pages, the functions are (2CR) (4LF).

27. LONG MESSAGES

a. Messages that exceed five teletypewriter pages are considered to be long messages. Divide such messages into transmission sections. A transmission section may not exceed five teletypewriter pages.

(1) Exceptions may be made where non-group cipher is employed.

(2) In order not to monopolize circuit time, messages may be divided into transmission sections even though they are less than the prescribed length.

(3) Do not confuse transmission sections with cryptoparts.

b. Divide messages that are to be forwarded in transmission sections at a convenient point, but not beyond the number of pages prescribed. Separate the text at the end of a sentence or cryptopart.

(1) Unencrypted messages. Ahead of the text or following the security classification, if any, insert the plain language "SECTION 1 OF. . ." Each additional transmission section is preceded by an identical message heading except that it contains a different station serial number and group count, if any. At the beginning of the text insert the security classification, if any, and in plain language, "SECTION. . .OF. . ." Repeat the process as required. The final transmission section is identified: "FINAL SECTION OF. . ."

(2) Encrypted messages. Ahead of the text, insert the plain language "SECTION 1 OF. . .PART ONE OF. . ." A transmission section may contain more than one cryptopart. For example, the second transmission may read "SECTION 2 OF. . .PART FOUR OF. . ."

28. SINGLE ADDRESS PLAINDRESS MESSAGES

A single address message is a message destined for only one addressee. A plaindress message is one in which the originator and addressee are indicated externally of the text; it contains all the components shown in the schematic diagram in appendix II unless the call serves as the address. The prefix may be omitted at the discretion of a service network. It may NOT be omitted from messages originating within the STARCOM. The group count designation must be included when an accounting symbol is used.

Example:

		(5 SP) (2CR) (LF)
(Line 2)	RR RUEPDA	(2CR) (LF)
(Line 3)	DE RUCMAF 11A 25/0842	(2CR) (LF)
(Line 4)	ZNR	(2CR) (LF)
(Line 5)	R 250830Z	(2CR) (LF)
(Line 6)	FM CG USARFIVE CHGO ILL	(2CR) (LF)
(Line 7)	TO DA	(2CR) (LF)
(Line 11)	BT	(2CR) (LF)
(LINE 12)	UNCLAS ALSIG-12345	(2CR) (LF)
	THIS IS AN EXAMPLE OF A PLAINDRESS	(2CR) (LF)
	SINGLE ADDRESS MESSAGE PREPARED FOR	(2CR) (LF)
	TRANSMISSION OVER WORLDWIDE TAPE	(2CR) (LF)
	RELAY NETWORKS AS PRESCRIBED IN	(2CR) (LF)
	CURRENT EDITION OF ACP 127	(2CR) (LF)
(Line 13)	BT	(2CR) (LF)
(Line 15)	C WB SINGLE PLAINDRESS (2CR) (8LF) (NNNN) (12 LTRS)	

29. CODRESS MESSAGES

A codress message is a message that carries the entire address (that is, the originator and all addressees) in the encrypted text. A single precedence (which normally applies to the ACTION addressees) will appear in the heading. Exceptions to this policy are described in classified publications.

30. SERVICE MESSAGES

A service message is one between communications personnel pertaining to any phase of traffic handling, communications facilities, or circuit conditions. Service messages must be handled promptly. They should be as brief as possible without obscuring the meaning, and should make use of operating signals and prosigns.

a. An encrypted service message (cryptoservice) consisting of countable groups must carry a numerical group count. Such a service will be identified as a service message only within the encrypted text.

b. Service messages are prepared and transmitted in plaindress, abbreviated plaindress, or codress procedure. They generally concern messages originated at, destined to, or refiled by the station that prepares them. They are normally assigned a precedence equal to that of the message to which they refer.

c. Example of unclassified service message --

```
RR RUWFBH
DE RUWFCS 17C 25/0935Z
ZNR
R 250930Z
BT
    UNCLAS SVC RUWFBH 12 250235Z INT ZDK WA POSSIBLE ZDL2
BT
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31. TRACER ACTION PROCEDURE

When only DCS common-user teletype network (tape relay) stations are involved, the following procedure shall be used in lieu of that contained in ACP-127(B) or Intra-Service supplementary instructions thereto.

a. Delayed Message. The communications center serving the addressee will originate the tracer. This station will carefully examine records and the message heading to determine if the cause of delay can be ascertained and adequately explained prior to commencing tracer action. Cognizance must be taken of any adverse circuit or traffic conditions previously known or reported by intermediate relay stations which would have caused delay, format line 1 pilots (retransmission, suspected duplicate, corrected copy, misroute, etc.) and the elapsed time between the DTG and filing time (TOF), indicating possible cause of delay. If the cause of delay cannot be locally established, the addressee communications center will normally transmit a deferred message tracer to the preceding station from which the delayed message was received, citing all available channel numbers, station serial number of the delayed message, DTG, and other amplifying data as required.

(1) Example -- Excessive delay tracer to last relay by addressee station.

RR RUEASU
DE RUEAHQ 17 25/ØØ3ØZ
ZNR
UNCLAS SVC ZUI HQA123 PJA441 DE RUTOAK 114C 241615Z
TOR 242320Z SEVEN HOUR DELAY. ZDN URSTA WITH ANY
REASON FOR DELAY

The tracer action will be continued on a station-to-station basis in inverse order to that in which the traced message was transmitted to determine the cause(s) of delay. Upon receipt of an excessive delay tracer, each station will examine its records for time of receipt (TOR) and time of transmission (TOT) of the message being traced. This information will be compiled and transmitted with the tracer action to the preceding station and to the station which originated the tracer. If any station(s) which handled the traced message caused delay, the reasons for the delay and resume of corrective action will be stated in the report.

(2) Example -- Relay station's report on an excessive delay tracer.

RR RUFHSU RUEAHQ
DE RUEASU 12 25/Ø115Z
ZNR
TO RUFHSU
INFO RUEAHQ
UNCLAS SVC ZUI PJA441 QPB829 RUTOAK 114C SEVEN HOUR DELAY TO
RUEAHQ. TOR 242103Z ZDQ RUEAHQ 242315Z DELAYED TWO HOURS
DUE SWITCHING DIRECTOR FAILURE. ZDN URSTA WITH ANY REASONS
FOR DELAY.

b. Lost Message. When a message is believed to have been lost, the communications center serving the originator will accomplish tracer action if required by the originator or the addressee or any other source interested in why the message was not received.

(1) When the originating communications center receives a tracer request which indicates nonreceipt of a message, it will retransmit the message as a duplicate unless the originator prefers to cancel it. If a duplicate retransmission is made, the operating signal ZFG will be transmitted in format line 5. (Any message which bears the operating signal ZFG in format line 5 will be delivered to the addressee.) Tracer action will be initiated immediately in accordance with the procedures outlined in paragraphs (2) and (3) below.

(2) If the originator is not certain, but suspects that a message has been lost, he may request a duplicate retransmission as specified in paragraph (1) above. In addition, the communications center must transmit to the addressee a service message (normally of the same precedence as the message believed lost), properly identifying the "lost" message and requesting verification of receipt or nonreceipt. When the addressee station advises that the "lost" message was not received, tracer action may be initiated.

(3) If the communications center which serves the originator receives verification of the apparent loss, it will transmit a service message tracer to the first station that relayed the "lost" message. When this station determines that mishandling was not involved, it will relay the tracer to the next relay station and inform the originating station of the action taken. This action will be continued on a station-to-station basis until the message is located and the reason for the loss is determined and reported to the originating station.

(4) Example -- As reported to the first relay by the originating station.

RR RUEASU
DE RUEAHQ 25A 25/15ØØZ
ZNR
UNCLAS SVC RUEAHQ 1Ø4C 24Ø8ØØZ ZDE2 RUFPBW/HQ USAFE ZDQ RUEA
HQB115 24Ø9ØØZ

(5) Tracer action as continued by RUEA.

RR RUFPSU RUEAHQ
DE RUEASU 75A 25/1625Z
ZNR
TO RUFPSU
INFO RUEAHQ
UNCLAS SVC RUEAHQ 1Ø4C/25Ø8ØØZ ZDE2 RUFPBW/HQ USAFE ZDQ
RUFP JNB185 24Ø955Z

(6) Tracer action as continued by RUFP.

RR RUFPBW RUEAHQ
DE RUFPSU 1Ø9A 25/175ØZ
ZNR
TO RUFPBW
INFO RUEAHQ
UNCLAS SVC RUEAHQ 1Ø4C/24Ø8ØØZ ZDE2 RUFPBW/HQ USAFE ZDQ
RUFPBW 241ØØØZ BWA234

(7) Report made by RUFPBW.

RR RUEAHQ RUFPSU
DE RUFPBW 223B 25/1915Z
ZNR
TO RUEAHQ
INFO RUFPSU
UNCLAS SVC ZUI RUEAHQ 1Ø4C/24Ø8ØØZ ZDE2 RUFPBW/HQ
USAFE RECEIVED ZBK2. THIS STA FAILED TO INITIATE ZDK REQUEST.
CORRECTIVE ACTION TAKEN.

32. MULTIPLE ADDRESS AND BOOK MESSAGES

a. A multiple address message is one destined for two or more addressees, each of whom is informed of all the addressees who are to receive the message. A book message is one that is destined for two or more addressees and is of such nature that the originator considers no addressee need be informed of any other addressees. In both multiple address and book messages, the addressees are indicated as ACTION, INFORMATION, or a combination of both.

b. These two types of messages are prepared in the same manner, except that in book messages the operating signal "ZEX" appears in the message instructions (format line 5).

c. In order to reduce transmission time, address designations not required in transmitting a book message may be segregated at originating and relay stations; thus, address designations not pertaining to a given transmission can be deleted from the address component.

d. Book messages listing more than nine addressees may not be introduced by STARCOM stations in one transmission.

33. SINGLE-CALL AND MULTIPLE-CALL MESSAGES

a. Not all multiple address and book messages are multiple-call messages. Since one station may effect delivery and/or refile to many addressees, a multiple address message might well be a single-call message.

b. Single-call messages do not require line 1 pilots within or between networks except when other than normal handling is involved -- such as misroutes, suspected duplicate transmissions, etc.

c. There is only one method of routing multiple-call tapes: routing line segregation. This is routing by including in the basic routing line (format line 2) only those routing indicators applicable to a transmission. This procedure permits deletion of routing indicators from the basic routing line at the convenience of the using service.

d. As multiple call tapes flow through a network, the basic routing line is altered to include only those routing indicators that are pertinent to each transmission. Transmission instructions not pertinent to a particular transmission, as well as all previous channel numbers EXCEPT LAST RECEIVED CHANNEL NUMBER, are also deleted. All channel numbers are retained, however, on tapes relayed without multiple-call processing.

34. EXAMPLES OF ROUTING LINE SEGREGATION

The portion of the STARCOM routing diagram that applies to the examples of routing line segregation used here is shown in figure 3.

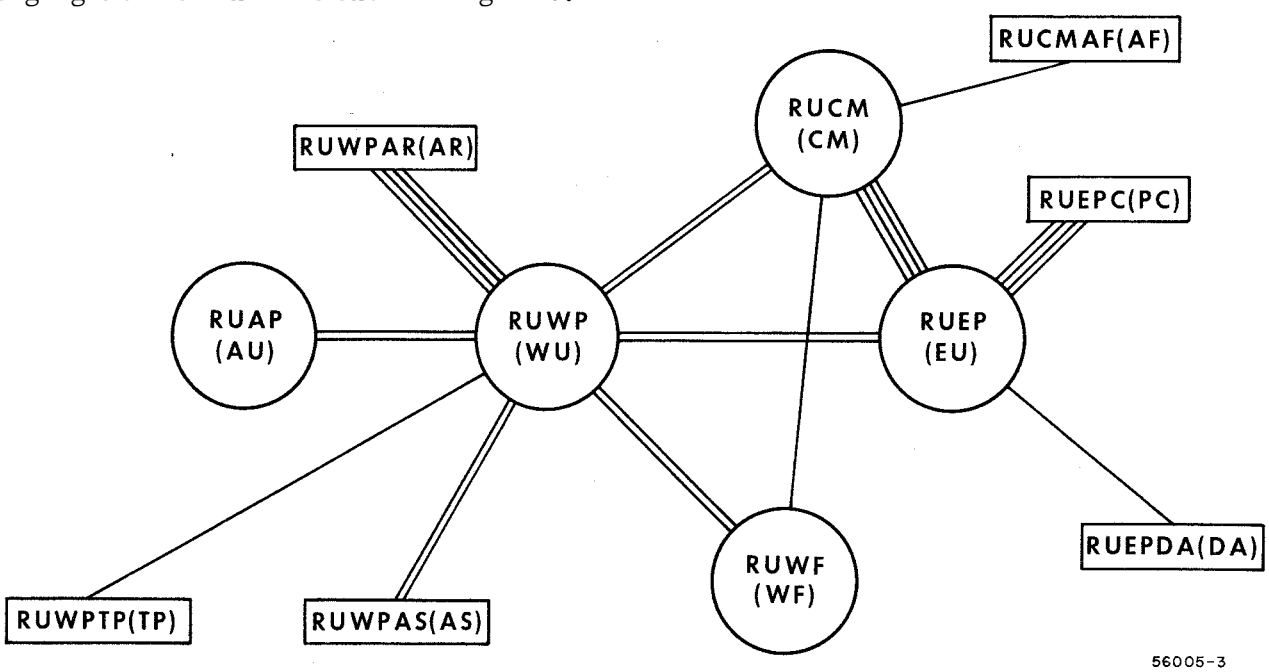


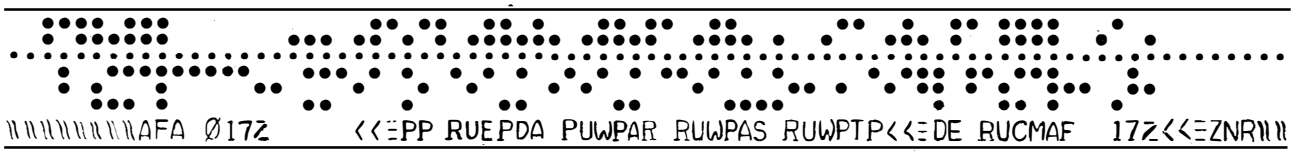
Figure 3. Portion of STARCOM routing diagram.

a. Message as prepared by the originating station (RUCMAF).

(Line 2) PP RUEPDA RUWPAR RUWPAS RUWPTP
(Line 3) DE RUCMAF 17 25/Ø945Z
(Line 4) ZNR
(Line 5) P R 25Ø93ØZ
(Line 6) FM CG USARFIVE CHGO ILL
(Line 7) TO RUEPDA/DA
(Line 8) INFO RUWPAS/CG USARSIX SFRAN CALIF
RUWPAR/CO LETTERMAN GENHOSP SFRAN CALIF
RUWPTP/CG USARTTCP FTMASON CALIF
(Line 11) BT
(Line 12) T - E - X - T
(Line 13) BT

NOTE: Delivery responsibility is indicated in format lines 7 and 8

b. Tape received by relay station (RUCM).



c. Tapes transmitted by RUCM:

(1) To RUWP:

VZCZCCMBØ91AFAØ17
RR RUWPAR RUWPAS RUWPTP
DE RUCMAF 17 25/Ø945Z
ZNR
P R 25Ø93ØZ
etc. . . . . .

(2) To RUEP:

VZCZCCMDØ31AFAØ17
PP RUEPDA
DE RUCMAF 17 25/Ø945Z
ZNR
P R 25Ø93ØZ
etc. . . . . .

d. Tapes transmitted by RUWP:

(1) To RUWPAR:

VV WUDØ18CMBØ91
RR RUWPAR
DE RUCMAF 17 25/Ø945Z
ZNR
P R 25Ø93ØZ
etc. . . . .

(2) To RUWPAS:

VV WUAØ14CMBØ91
RR RUWPAS
DE RUCMAF 17 25/Ø945Z
ZNR
P R 25Ø93ØZ
etc. . . . .

(3) To RUWPTP:

VV WUAØØCMBØ91
RR RUWPTP
DE RUCMAF 25/Ø945Z
ZNR
P R 25Ø93ØZ
etc. . . . .

e. Tape transmitted by RUEP:

VV EUBØ89CMDØ31
PP RUEPDA
DE RUCMAF 17 25/Ø945Z
ZNR
P R 25Ø93ØZ
etc. . . . .

NOTE: It will be noted that none of the tapes released from RUWP or RUEP retained the channel number AFAØ17 (from RUCMAF to RUCM). RUWP and RUEP are automatic tape relay stations, and as such can only transmit a maximum of two channel numbers per transmission.

35. REFILING MESSAGES IN BASIC FORMAT

a. Doctrine. Reprocessing messages into appropriate procedure for forwarding to another communications system is known as refile. When a message is received in the basic format employing a procedure other than that required for forwarding, the message must be reprocessed before it is forwarded. Typical examples of refile would be from worldwide tape relay to theater tape relay networks or vice versa, from manual teletypewriter to radiotelegraph (CW) or vice versa, and all other combinations thereof. The mechanics of refiling are discussed in the following paragraphs.

b. Heading. Basically, refiling requires the deletion of that portion of the heading which appears above the precedence and date-time group line (format line 5) and the replacement with appropriate procedure lines required for forwarding the message. Delivery responsibility of multiple address messages, when deemed necessary, may be shown either by routing indicators in the address portion, or by adequate transmission instructions. Routing indicators may be eliminated when there is no possibility that the omission will result in non-deliveries.

c. Ending. Any pertinent information for the ending may be inserted as appropriate. The time of receipt of the message at the communications center reprocessing the message is used as the time of filing (TOF).

36. EXAMPLE OF MESSAGE REFILED FROM MANUAL TELETYPEWRITER PROCEDURE TO TAPE RELAY PROCEDURE

Parts of a theater and worldwide tape relay network and the theater manual teletypewriter network which apply to the following examples are shown in figure 4.

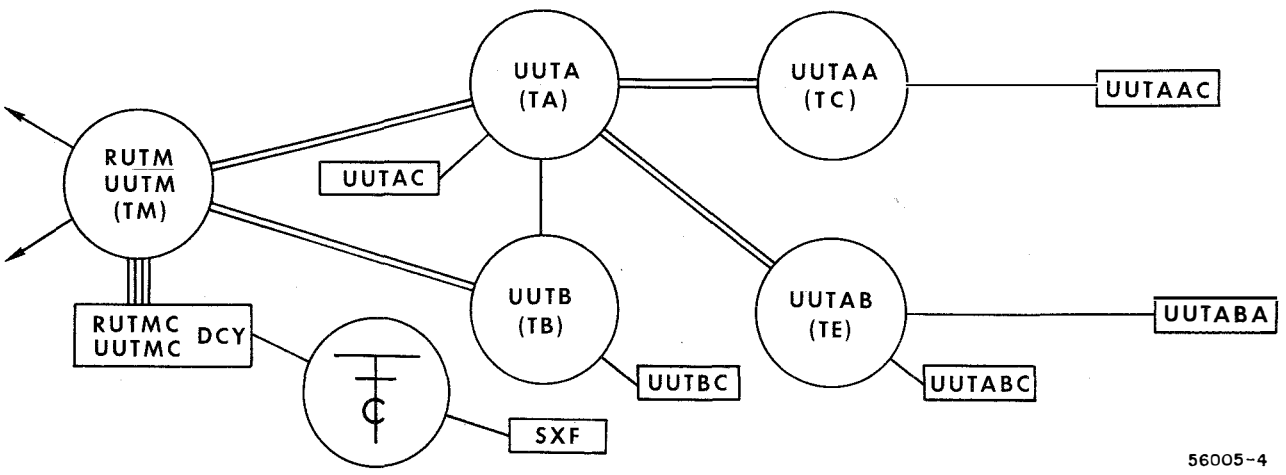


Figure 4. Portion of theater and worldwide tape relay network and theater manual teletypewriter network.

a. Message as received in manual teletypewriter procedure.

TOR
Ø945Z
CH

DCY DE SXF NR5
P 25Ø93ØZ
FM CO ALGIERS GENHOSP
TO CG 1ST US CORPS
BT
T - E - X - T
BT
K
DE DCY R Ø945Z AR

b. Message as refiled in theater tape relay procedure.

PP UUTABC
DE UUTMC 23A 25/Ø945Z
ZNR
P 25Ø93ØZ
FM CO ALGIERS GENHOSP
TO CG 1ST US CORPS
BT
T - E - X - T
BT

37. EXAMPLE OF REFILE OF MESSAGE FROM THE THEATER TAPE RELAY NETWORK INTO THE WORLDWIDE TAPE RELAY NETWORK (FIGURE 4)

a. Message as received at the refile point.

CH
25Ø955Z
REF

VV TMBØ35VV TAAØ27VV TEBØ19
PP UUTMC
DE UUTABC 31 25/Ø935Z
ZNR
P 25Ø93ØZ
FM CG 1ST US CORPS
TO DA
BT
T - E - X - T
BT

b. Message as prepared for the STARCOM.

PP RUEPDA
DE RUTMC 34C 25/Ø955Z
ZNR
P 25Ø93ØZ
FM CG 1ST US CORPS
TO DA
BT
T - E - X - T
BT

38. RULES FOR READDRESSING MESSAGES

a. On occasion, an addressee may wish to readdress a message to others not included in the original address. This can be done by forwarding a copy of the message and a request for readdressal, in duplicate, to the communications center. Messages are readdressed in accordance with the following rules.

(1) A supplementary heading is inserted ahead of the original preamble. The supplementary heading includes all elements of a normal heading, except the prefix.

(2) All that part of the original message preceding the preamble is omitted.

(3) The precedence assigned in the supplementary heading applies only to supplementary addressees.

(4) For subsequent identification of the message, the station or stations called in the supplementary heading make reference to the station serial number of the new station of origin.

(5) The designation of the originator appearing in the supplementary heading identifies the authority for readdressing the message.

(6) The originator's date-time group appearing in the supplementary heading is the date and time of readdressal.

(7) A message cannot be readdressed if ANY alteration is made to its original preamble, address, prefix, or text.

(8) The filing time of the readdressed message is the time the readdressal request is received in the communications center.

b. Sometimes a message originated by a station in a theater teletypewriter network is readdressed to points outside the theater and within a worldwide tape relay network. This is done by deleting the theater routing indicators in the address portion and in the page identifications, if any, and substituting worldwide equivalents where possible. For multiple address messages, if worldwide equivalents do not exist, the operating signal "ZEN" is used to replace the theater routing indicators in the original heading. If a worldwide equivalent does not exist, the routing indicator appearing in page identifications need not be changed. No substitution for or deletion of worldwide routing indicators is necessary on messages originated by stations in the worldwide network and readdressed to stations in theater networks.

39. EXAMPLE OF READDRESSED MESSAGE (FIGURE 4)

a. Original message to be readdressed.

BH
251Ø1ØZ
DLVR

VV TEAØ21VV TABØ36VV TMAØ28
PP UUTABC
DE UUTMC 14C 25/0946Z
ZNR
P 25Ø93ØZ
FM CGUSARMED
TO CG 1ST US CORPS
BT
T - E - X - T
BT

b. Readdressed message showing supplementary heading.

PP UUTABA
DE UUTABC 22 25/1158Z
ZNR
P 251145Z
FM CG 1ST US CORPS
TO CG 2ØTH INF DIV
P 25Ø93ØZ
FM CGUSARMED
TO CG 1ST US CORPS
BT
T - E - X - T
BT

Section V. SUPERVISORY RESPONSIBILITIES

40. GENERAL

Supervisory personnel in a communications center on each working shift normally include duty officers, trick chiefs, and supervisors.

41. DUTY OFFICER

The shift duty officer is responsible to the OIC for the efficient operation of the communications center during his specified tour of duty. Examples of the duties performed by the shift duty officer are as follows:

a. Disseminating and enforcing all directives and procedures that apply to shift personnel.

b. Periodically spot-checking all logs, number sheets, filed messages, confirmation copies, and multi-address processing to insure correct handling and compliance with current procedures.

c. Insuring that trick chiefs utilize personnel in the most efficient manner consistent with the pattern of traffic.

d. Insuring that trick chiefs use alternate routing in the event of circuit outage or excessive backlogs.

e. Instructing personnel, conducting on-the-job training, and correcting deficiencies in traffic handling in the interest of accuracy and efficiency; and recommending to the officer in charge (OIC) required additional training which cannot be accomplished on shift.

f. Insuring that all personnel work their scheduled tours of duty.

g. Controlling meal and break periods.

h. Inspecting the communications center periodically and taking action to maintain cleanliness and proper physical appearance.

i. Preparing and submitting at the end of his tour a Duty Officer's Report (DA Form 11-164) containing such information as procedure changes, excessive delay in traffic handling, matters pending (including reruns and outstanding services), excessive circuit outages and backlogs, and any unusual occurrences which affect the flow of traffic.

42. TRICK CHIEF

The trick chiefs are responsible to the duty officer for the supervision of personnel and the operation of their respective stations. In a large communications center, the terminal station and the relay station are each assigned a trick chief. Example of the duties performed by the trick chief are as follows:

a. Insuring adherence to current policies and procedures.

b. Checking continuously on all phases of operation under his jurisdiction.

c. Insuring that all positions are operated accurately and efficiently.

d. Assigning operating and supervisory personnel to cover all positions, and making such reassignments as are necessary to meet varying traffic conditions.

e. Insuring that all high-precedence and special handling messages are hand-carried and processed rapidly through the station.

f. Notifying the duty officer of any undue delay in processing or clearing messages.

g. Assisting the operators and supervisors in overcoming operational difficulties.

h. Informing the relieving trick chief of recent changes in procedures, matters pending, and unusual occurrences that may affect operations of the relieving shift.

43. SUPERVISORS

a. Supervisors are responsible to their trick chiefs for direct supervision of operating personnel and for accurate and expeditious processing of messages by personnel under their supervision, in accordance with prescribed ACP procedures and "in-station" practices contained in the local communications center SOP.

b. During his tour of duty, a supervisor specifically concerns himself with correction requests and replies which are handled as service messages.

44. CORRECTION REQUESTS AND REPLIES

a. Corrections may be required for errored groups, incorrect group counts, omitted portions of messages, non-mechanical errors, and similar errors or discrepancies. Such corrections are obtained by addressing service messages to the stations that originated the message tapes. When sending a correction request to a station regarding a message originating at that station, reference must always be made to the station serial number and to further identifying and explanatory data as required.

b. Corrections for discrepancies in channel numbers, unintelligible station serial numbers, incompleted messages, or mutilations and garbles caused by mechanical difficulties are obtained by sending a service message to the station from which the transmission was received. If the relay station cannot supply the correction, a request may be sent to the originating station. When sending a correction request to a relay station regarding a transmission that was relayed through that station, reference must always be made to the channel number and to further identifying and explanatory data as required.

c. If both channel number and station serial number are in error, the message must be identified by quoting the message heading and, if necessary, a portion of the text.

d. If a message contains more than one error, all questions concerning this message are normally incorporated in one service message.

e. In all instances, the station initiating a correction request is responsible for following up the original request until an answer is received. When a second or succeeding request or reply is originated, it must be so identified by use of the operating signal "ZAR" and the suffix 2, or 3, as appropriate. Each request must be answered even though a previous reply has been made.

45. CHANNEL CHECKS

a. Within DCS, channel checks will be made when there has been no traffic received over a channel for a period of 30 minutes. These will carry a priority precedence.

b. See SSTS 56006, Communications Center Tape Relay Supervisors' Guide, for examples of channel checks and channel check acknowledgements.

APPENDIX I

TAPE RELAY PROSIGNS AND OPERATING SIGNALS

1. AUTHORIZED PROSIGNS

Prosign	Meaning
AA	All After.
AB	All Before.
AR	End of transmission - This is the end of my transmission to you, and no response is required or expected.
AS	Wait. (1) AS made during a transmission and without an ending sign indicates a pause for a few seconds. (2) AS followed by AR indicates - You are to wait or I am obliged to wait, as applicable.
BT	Break - Indicates the separation of the text from other portions of the message or portions indicated.
C	Correction - The following is the correct version of the message or portion indicated.
CFN	Confirmation - The following confirms a portion of the text.
DE	This transmission is from the station whose designation follows.
E E E E E E E E	Error - A succession of eight spaced E's indicates that an error in transmission has been made. The error sign will be followed by the last word, group, or prosign which was incorrectly transmitted.
E E E E E E E E AR	Cancel transmission - This is a combination of the error prosign and the end of transmission prosign. An incorrect transmission will be cancelled by this combination prosign followed by (2CR) (8LF) (NNNN) (12LTRS). (See Para. 21c for an example)
FM	Originator's sign - The originator of this message is indicated by the designation immediately following.
GR	Groups - The prosign GR followed by numeral(s) means, "This message contains the number of groups indicated."
GRNC	The groups of this message have not been counted.
IMI	Repeat - Repeat, or I repeat, message or portions of a message as indicated.
INFO	Information addressee sign.
INT	Interrogatory - Preceding operating signals and prosigns indicate that the matter to follow is in the form of a question. INT preceding a portion of a message means, "Is my reception of this correct?"

Prosign	Meaning
J	Verify and repeat - Verify the message or portion indicated with the originator and send the correct version. (This prosign may be used only on the authority of the addressee.)
K	Invitation to transmit, or this is the end of my transmission to you and a response is necessary.
M	Deferred - Deferred message.
O	Operational Immediate - Operational Immediate message.
P	Priority - Priority message.
R	Received - I have received the last transmission (or transmission indicated).
R	Routine - Routine message.
T	Transmit to --
	(1) T alone - Station called (format line 2) transmit this message to all addressees.
	(2) T followed by plain language designations, address groups or international call signs - Station called transmit this message to station(s) or addressee(s) whose designation follows T.
	(3) T preceded by routing indicator, address group, or international call sign and followed by plain language designations, international call signs or address groups - Station whose designation preceded T transmit this message to station(s) or addressee(s) whose designation follows T.
TO	Action addressee - The addressee(s) immediately following is to take action on the message.
WA	Word After.
WB	Word Before.
XMT	Exempt - Addressees immediately following are exempted from the collective call or address designation.
Y	Emergency - Emergency message.
Z	Flash - Flash message.

2. OPERATING SIGNALS

Signal	Question	Answer, Advice, or Order
QRT	Shall I stop sending?	Stop sending.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.

Signal	Question	Answer, Advice, or Order
QTX	Will you keep your station open for further communication with me until further notice (or until . . . hours)?	I will keep my station open for further communication with you until further notice (or until. . . hours).
QUC	What is the number (or other indication) of the last message you received from me (or from. . . (call sign))?	The number (or other indication) of the last message I received from you (or from. . . (call sign)) is. . .
ZAD		Your operating signal (made at. . .) received as. . . (1. not understood; 2. not held).
ZAI		Run. . . (1. caller; 2. test tape; 3. synchronizing tape; 4. traffic tape; 5. marking signals; 6. spacing signals; 7. reversals).
ZAL		I am closing down (until. . .) due to. . .
ZAR		This is my. . . request (or reply). (1. first; 2. second; 3. third; etc.)
ZBK	Are you receiving my traffic clear?	I am receiving your traffic. . . (1. clear; 2. garbled).
ZBO	Of what precedence(s) and for whom is (are) your message(s)?	I have (or. . . has). . . (numeral followed by precedence prosign for each precedence) message(s) for you (or for. . .).
ZDE		Message. . . undelivered. . . (1. Will continue efforts to affect disposal; 2. Advise disposition; 3. Will not continue further efforts. Request cancel and file; 4. Give more complete address.)
ZDF		Message. . . was received by. . . (addressee designation) at. . . Z or was (1. Received by action addressee(s) at. . . Z; 2. Received by information addressee(s) at. . . Z; 3. Received by all addressees at. . . Z; 4. Received by action addressee(s) message center at. . . Z; 5. Received by information addressee(s) message center at. . . Z; 6. Received by all addressees' message centers at. . . Z; 7. Delivered by broadcast at. . . Z; 8. Forwarded by commercial means at. . . Z; 9. Mailed at. . . Z).
ZDG		Accuracy of following message(s) or (message . . .) is doubtful. Correction or confirmation will be forthcoming.
ZDH		Request corrected copy of message. . . be forwarded to. . .

Signal	Question	Answer, Advice, or Order
ZDK	Will you repeat message. . . (or portion. . .)? OR: Rerun No. . .	Following repetition (of. . .) is made in accordance with your request.
ZDL		Confirmation. . .(1. was omitted; 2. differs from text).
ZDN		Report disposal of message.
ZDQ		Message. . .was relayed to. . .at. . .by . . .(on. . .kcs (or mcs)).
ZEC	Have you received message . . .?	Message. . .(1. not received; 2. unidentified, give better identification data).
ZEL	Is message. . .a correction to message. . .which was previously transmitted with doubtful or missing groups (words)?	This message is a correction to message . . .transmitted by. . .
ZEN		This message has been delivered by other means or by a separate transmission to the addressee(s) immediately following this operating signal.
ZEQ		Your message. . .has been missent to this station. (1. Request you cancel your transmission to me and retransmit to correct addressee; 2. I will retransmit to correct addressee.)
ZES		Your message. . .has been received (1. Incomplete; 2. Garbled.) Request retransmission.
ZEX		This is a book message and may be delivered as a single address message to addressees for whom you are responsible.
ZEZ		When this book message is delivered to addressee by commercial means, or when copy is forwarded to confirm message previously delivered by telephone, it is to be sent as a single address message. (May only be used in conjunction with ZEX.)
ZFD		This message is a suspected duplicate.
ZFF		Inform me when this message (or message . . .) has been received by. . .(addressee designation) or by. . .(1. action addressee(s); 2. information addressee(s); 3. all addressees; 4. action addressee's/addressees' message center; 5. information addressee's/addressees' message center; 6. all addressees' message centers).

Signal	Question	Answer, Advice, or Order
ZFG		This message is an exact duplicate of message previously transmitted.
ZFH		This message (or message. . .) is being (or has been) passed to you (or. . .) for. . . (1. action; 2. information; 3. comment) (at the request of. . .).
ZFQ		Two messages,. . .and . . . received under channel (or station serial number). . . Both released.
ZFR		Cancel transmission. . .(made under channel or station serial number. . .).
ZFS		Make message. . .same channel or station serial number as this procedure message.
ZFT		Message. . . received without channel (or station serial number) following message bearing channel (or station serial number) . . . Message released.
ZFU		Two messages, . . . and . . ., transmitted with channel number . . . . Both released.
ZFV		Message . . . containing channel number(s) . . . separated by portions of the message, released subject to correction. Take necessary action to provide corrected copy.
ZFW		BLANK channel number(s). . .Forward message . . .as channel number. . .
ZFX		Channel (or station serial number) is open.
ZHN	How do you receive my automatic transmissions?	Your automatic transmissions are. . .(1. good; 2. fair; 3. unreadable).
ZIB	Two messages. . . and. . . (or group counts and time of origin . . .and. . .); both received as serial number. . . What are correct serial numbers?	Change station serial number of message. . . to read number. . .OR: Assign to message . . .station serial number. . .
ZIC	What is (are) station serial number(s) or channel number(s) of last message(s) you transmitted to me (or to. . .)?	Station serial number(s) or channel number(s) of last message(s) transmitted to you (or to . . .) is (are). . .
ZID	What is (are) station serial number(s) or channel number(s) of last message(s) received from me (or from. . .)?	Station serial number(s) or channel number(s) of last message(s) received from you (or from. . .) is (are). . .

Signal	Question	Answer, Advice, or Order
ZIE		Station serial number(s), or channel number(s) . . . (from . . .) has (have) not been received. Repeat message(s) or cancel serial number(s).
ZIG	Is (are) number(s). . .(to. . .) blank?	Number(s). . .(to. . .) is (are) blank.
ZIJ		I am now changing my channel number (station serial number). Last number sent in this series is that of this message.
ZNR		This message may be transmitted on non-approved channels.
ZOC		Station(s) called relay this message to addressee(s) for whom you are responsible.
ZOE	Can you accept message(s) for . . .?	Give me your message(s). I will dispose of it (them).
ZOJ		Unable to relay message. . .in present form . . .(1. call signs not encrypted; 2. text not encrypted).
ZOK		Relay this message via. . .
ZON		Place this message (or message. . .) on. . . (1. continuous wave broadcast; 2. radiotele-type broadcast) indicated by following specific broadcast designator(s). . . NSS; NPG; NPM; NBA; NPN; NPO; NHY; NAM; NAP; NPL; NDT
ZOU	How should traffic for. . . be routed?	Route traffic for. . .through. . .(on. . . kcs (or mcs)).
ZOV		Station designation preceding this operating signal is the correct routing for this message rerouted by. . .
ZOY		Relay this message only to the station(s) whose designation(s) precede this operating signal.
ZUG		Negative (No).
ZUH		Unable to comply.
ZUI		Your attention is invited to. . .
ZVA		Station called is responsible for relay or delivery to all stations in line two (2) or to station(s) indicated.
ZWL		No forwarding action to the designation(s) immediately following is required.

APPENDIX II

SCHEMATIC DIAGRAM OF MESSAGE FORMAT

PARTS	COMPONENTS	FORMAT LINES	ELEMENTS	CONTENTS	EXPLANATION*
H E A D I N G	PROCEDURE	1	Handling Instructions	Transmission Identification; Security warning prosign (when used); Pilot - Pilots contain: Repeated precedence prosign**; Routing Indicator(s); Prosigns, operating signals and address designations*** as required.	Always contains transmission identification (which includes the "Start of Message Indicator" when necessary); also contains pilot(s) as required to convey specific message handling instructions.
		2	Called Station(s)	Repeated precedence prosign**; Routing indicator(s) of station(s) responsible for delivery or refile	Basic routing line. If message is dual precedence, only the higher precedence is shown in this line.
			Calling Station and Filing Time	Prosign DE; Routing indicator of station preparing message for transmission; Station serial number; Filing time: Date separated by slant from hour and minutes expressed in digits followed by zone suffix.	Filing time is the date and time the message was filed with the communication center.
		4	Transmission Instructions	Security Warning Operating Signal (when used); Prosign T; Other operating signals; Special operating group(s) (SOGs); Address designator(s); Routing Indicator(s)	Indicates specific transmission responsibility not apparent in other components of the message heading. Not to be used unless necessary. Plain language address designators are not permitted in codress messages.
	PREAMBLE	5	Precedence; Date-time group; Message instructions	Precedence prosign(s); Date-time group and zone suffix (Z indicating Greenwich Mean Time); Operating Signal(s).	In the case of dual precedence, both prosigns are shown separated by a space. Operating signal(s) are used only when required to convey message handling instructions.
	ADDRESS	6	Originator	Prosign FM; Originator's designation.	Message originator is indicated by plain language, routing indicator, address group or call sign.
		7	Action Addressee(s)	Prosign TO; Routing indicator(s); Operating signals; Address designation(s).	Action addressee(s) is indicated by plain language, routing indicator(s), address group(s) or call sign(s). In the case of multiple address messages, when addressees are listed individually, each address designation shall be on a separate line and may be preceded either by the operating signal ZEN (meaning delivered by other means) or by the routing indicator of the station responsible for delivery. Such use is mandatory on all joint and combined messages.
		8	Information Addressee(s)	Prosign INFO; Routing indicator(s); Operating signal(s); Address designator(s).	Same as for Line 7, except that Line 8 pertains to information addressee(s).
		9	Exempted Addressee(s)	Prosign XMT; Address designator(s).	Used only when a collective address designation is used in Line 7 or 8 and an indication of the addressee(s) exempted from the collective address is required.
	PREFIX	10	Accounting Information; Group Count	Accounting symbol (when required); Group count prosign GR; Group count.	The group count prosign and group count shall be used only when the text consists of countable encrypted groups.
S E P A R A T I O N		11		Prosign BT	
T E X T		12	Classification; Internal Instructions; Thought or Idea Expressed by Originator (In that order)		See ACP 121 series.
S E P A R A T I O N		13		Prosign BT	
E N D I N G	PROCEDURE	14	Confirmation		Not used in tape relay operation.
		15	Correction	Prosign C; Other prosigns, operating signals and plain language as required.	
			End of Message Functions	2 CR, 8 LF, 4 N's, 12 LTRS	The 4 N's in this sequence are the end of message indicator.

* Included only when required for clarity.
** If message is dual precedence, only the higher precedence is shown in this line.
*** Plain language designators are not permitted in codress messages.

APPENDIX III

GLOSSARY

Accounting symbol. A combination of letters used in the message heading to identify the agency, service or activity which is financially accountable for the message.

ACP. Allied Communication Publication.

Address, multiple. See Message, multiple address.

Address, single. See Message, single address.

Addressee. The activity or individual to whom a message is directed by the originator. Addressees are indicated as either ACTION or INFORMATION.

Addressee, exempted. An addressee included in the collective address designation of a message but for which the message is not intended for action or information.

Approved circuit. A circuit carrying classified information in plain text in which the maximum precautions have been taken against radiation, cross modulation, and electrical coupling. An approved circuit is designated by appropriate authority in accordance with the policy stated in ACP 122 ( ), which spells out who approves circuits, under what conditions, in what areas, and at what time.

Backlog. Messages or message tapes awaiting or being processed for delivery, refile, or transmission.

Book message. See Message, book.

Called station. A station to which a message is routed (in tape relay) or to which a transmission is directed.

Calling station. (1) General term: the station initiating a transmission. (2) Tape relay: the station preparing a tape for transmission.

Channel. A facility for telecommunications on a system or circuit (derived by frequency or time division). Is measured by the number of separate communication facilities that can be provided by it.

NOTE: The term channel is also used frequently in conjunction with a figure(s) or letter(s) to identify a particular facility existing between two stations.

Channel designation. One or more letters used to identify a station in conjunction with a channel number.

Circuit. (1) Communication term: An electronic path between two or more points capable of providing a number of channels. (2) Engineering term: A number of conductors connected together for the purpose of carrying an electrical current.

Classified tape relay area. An area, subject to protective measures designed to prevent unauthorized personnel from obtaining information of direct and indirect intelligence value, used for the installation of tape relay equipment handling classified clear text.

Codress. A type of message in which the complete address is contained only in the encrypted text.

Communication security (COMSEC). The protection resulting from all measures designed to deny to unauthorized persons information of value which might be derived from a study of communications. Cryptosecurity, physical security, and transmission security are the components of communication security.

Continuity of traffic. The means, by use of station serial numbers and transmission identifications, that insures that the receiving communications center receives all messages transmitted by the connected communications center.

Date-time group (DTG). The date and time a message is prepared for transmission. The date-time group normally is placed on the message by the originator, either the drafter or releasing authority, as determined by the local command.

Filing time (TOF). The date and time a message is received from an originator by a communications center for transmission.

Flash. See Precedence designations.

Function key. A term associated with specific keys on a teletypewriter (such as CR, LF, LTRS, FIGS, etc.) which, when operated, cause the teletypewriter to perform mechanical functions in order that a message may be received in proper form.

Garble. An error in transmission, reception, or encryption which renders the message or a portion thereof incorrect or undecryptable.

High precedence message. A term normally applied to messages of Priority or higher precedence.

Immediate. See precedence designations.

Indicator, routing. A routing indicator is a group of letters engineered and assigned to identify a station within a teletypewriter network.

Landline. A general term applied to metallic conductors used for conveyance of intelligence.

Log, station. A chronological record of station events; that is, entries relating to message handling, equipment difficulties, personnel, etc.

Manual teletypewriter section. That portion of a communications center where messages are transmitted by direct keyboard or tape means and are received in page copy form. This section is an integral part of terminal station operations.

Message. Any thought or idea expressed briefly in plain or secret language, prepared in a form suitable for transmission by any means of communication.

Message, book. A book message is one which is destined for two or more addressees and is of such nature that the originator considers that no addressee need be informed of any other addressee. Each addressee must be indicated as action or information.

Message center section. That portion of a communications center charged with the acceptance and routing of originating and refile messages and with preparing terminating messages for delivery (not including the staff function of duplication for distribution).

Message, misrouted. A message bearing an incorrect routing instruction.

Message, missent. A message which bears the correct routing instruction but has been transmitted to a station other than that indicated.

Message, multiple address. A multiple address message is one which is destined for two or more addressees, each of whom is informed of all the addressees. Each addressee must be indicated as action or information.

Message, multiple call. Any message addressed to two or more stations; this is a general term and indicates that the message may be either multiple address messages or book messages.

Message, service. A message between communications personnel pertaining to any phase of traffic handling, communication facilities or circuit conditions.

Message, single address. A single address message is one destined for only one addressee.

Message heading. That part of a message containing all components preceding the text.

Multiple-call section. That portion of a communications center, normally an integral part of the tape relay station, responsible for multiple reproduction of message tapes at stations of segregation.

Network. (1) Communication term: An organization of stations capable of intercommunication but not necessarily on the same channel. (2) Engineering term: Two or more interrelated circuits.

Number, open (tape relay). A sequential channel number on the received number sheet for which a transmission bearing a corresponding number has not been received.

Number, originator's reference. The number assigned to a message by an originator to provide a means of reference.

Number, station serial. A message reference number assigned within a communications center.

Number tab (tape relay). A sequential channel number perforated on tape.

Off-line cryptographic equipment. A cryptographic machine not connected electrically to a communication channel.

Off-line operation. A method of operation in which the processes of either encryption and transmission or reception and decryption are performed as separate steps, rather than automatically and simultaneously. There is no electrical connection between the cryptographic equipment and the communication equipment.

Off-line COMSEC equipment area. (Not to be confused with an off-line cryptocenter.) An area subject to protective measures designed to prevent unauthorized personnel from obtaining information of direct and indirect intelligence value. The area may be used for the installation of --

(1) On-line cryptographic equipment that must receive special consideration as to the effects of visual observation, radiation, cross modulation, electrical coupling, etc.

(2) Intermediate distribution frames, patchboards, etc., that may be necessary to create an effective on-line cryptographic equipment installation and which must have a certain degree of physical security.

On-line cryptographic equipment. A cryptographic machine connected electrically to a communications circuit, automatically encrypting or decrypting all transmissions passing through the equipment.

On-line operation. A method of operation whereby messages are encrypted and simultaneously transmitted from one station to one or more distant stations where reciprocal equipment is automatically operated to permit reception and simultaneous decryption of the messages. The cryptographic equipment and communication equipment are connected electrically.

Operating signal. A three letter group used as necessary in connection with operations or communications to convey orders, instructions, requests, reports, and information to facilitate communications.

Originator. The command by whose authority a message is sent. The originator is responsible for the function of the drafter and releasing officer.

Page copy. A message in page form which is the result of a transmission.

Personal sign. Signs composed of one or more letters (normally initials) used when endorsing station records and messages to indicate responsibility of operating and supervisory personnel.

Pilot. Instructions appearing in line one relative to the transmission or handling of that message.

Plaindress. A type of message in which the originator and addressee designations are indicated externally of the text.

Preamble. One of the components contained in the heading of a message whose elements include the degree of precedence, the date-time group and message instructions.

Precedence. A designation assigned to a message by the originator to indicate to communication personnel the relative order of handling and to the addressee the order in which the message is to be noted.

Precedence designations. Precedence designations and definitions are as follows:

Precedence Designation, Prosign, Use, and Examples	Handling by Communications Personnel
FLASH (Z) Reserved for initial enemy contact messages or operational combat messages. Brevity is mandatory. Examples: (1) Initial enemy contact reports (2) Messages recalling or diverting friendly aircraft about to bomb targets unexpectedly occupied by friendly forces; or messages taking emergency action to prevent conflict between friendly forces. (3) Warning of imminent large-scale attacks. (4) Extremely urgent intelligence messages. (5) Messages containing major strategic decisions of great urgency.	(1) Will be hand-carried, processed, transmitted, and delivered in the order received and ahead of all other messages. (2) Messages of lower precedence will be interrupted on all circuits involved until handling of the FLASH message is completed. (3) In automatic systems, where automatic interruption of lower precedence messages is not provided, adequate procedures are to be prescribed to ensure that FLASH messages are not delayed.
IMMEDIATE (O) Reserved for messages relating to situations which gravely affect the security of national/allied forces or populace, and which require immediate delivery to the addressee. Examples: (1) Amplifying reports of initial enemy contact. (2) Reports of unusual major movements of military forces of foreign powers in time of peace or strained relations. (3) Messages which report enemy counterattack or which request or cancel additional support.	(1) Will be processed, transmitted, and delivered in the order received and ahead of lower precedence. (2) If possible, messages of lower precedence will be interrupted on all circuits involved until handling of the IMMEDIATE message is completed. (3) In automatic systems, where automatic interruption is not provided, adequate procedures are to be prescribed to ensure that IMMEDIATE messages are not delayed.

Precedence designations (contd)

Precedence Designation, Prosign, Use, and Examples	Handling by Communications Personnel
(4) Attack orders to commit a force in reserve without delay. (5) Messages concerning logistical support of special weapons when essential to sustain operations. (6) Reports of wide-spread civil disturbance. (7) Reports or warning of grave natural disaster (earthquake, flood, storm, etc.). (8) Request for, or directions concerning distress assistance. (9) Urgent intelligence messages.	
PRIORITY (P) Reserved for messages which require expeditious action by the addressee and/or furnish essential information for the conduct of operations in progress when routine precedence will not suffice. Examples: (1) Situation reports on position of front where attack is impending or where fire or air support will soon be placed. (2) Orders to aircraft formations or units to coincide with ground or naval operations. (3) Aircraft movement reports (e.g. messages relating to requests for news of aircraft in flight, flight plans, cancellation messages to prevent unnecessary search/rescue action). (4) Messages concerning immediate movement of naval, air, and ground forces.	(1) Processed, transmitted, and delivered in the order received and ahead of all messages of ROUTINE precedence. (2) ROUTINE messages being transmitted should not be interrupted unless they are extra long and a very substantial portion of the ROUTINE message remains to be transmitted. (3) PRIORITY messages should be delivered immediately upon receipt at the addressee designation. (4) When commercial refile is required, the commercial precedence that most nearly corresponds with PRIORITY will be used.
ROUTINE (R) Reserved for all types of messages which justify transmission by rapid means, unless of sufficient urgency to require a high precedence. Examples: (1) Messages concerning normal peacetime military operations, programs, and projects. (2) Messages concerning stabilized tactical operations. (3) Operational plans concerning projected operations. (4) Periodic or consolidated intelligence reports. (5) Troop movement messages, except when time factors dictate use of higher precedence. (6) Supply and equipment requisition and movement messages, except when time factors dictate use of higher precedence. (7) Administrative, logistic, and personnel matters.	(1) Processed, transmitted, and delivered in the order received and after all messages of a higher precedence, consistent with the following: (a) When commercial/civil refile is required, the lowest commercial precedence shall be used. (b) ROUTINE messages received during nonduty hours at the addressee destination may be held for morning delivery unless specifically prohibited by the command/formation concerned.

Prefix. One of the components, contained in the heading of a message, whose elements may include the accounting information, group count and SVC.

Priority. See Precedence designations.

Procedure sign (prosign). One or more letters or characters or combination thereof, used to facilitate communication by conveying, in a condensed standard form, certain frequently used orders, instructions, requests and information related to communications.

Pullback. The retransmission of the most recently transmitted message or series of messages.

Receipt. A transmission made by a receiving station to indicate that a message has been satisfactorily received.

Refile. The reprocessing of messages into appropriate procedure for transfer to another system.

Relay station. That portion of a communications center responsible for receiving and forwarding messages in tape form by the tape relay method of operation.

Relay station, major. A tape relay station is designated as a major tape relay station:
(1) When two or more trunk circuits connected thereto provide an alternate route; or
(2) to meet command requirements.

Relay station, minor. A tape relay station is designated as a minor relay station when it has tape relay responsibility but does not provide an alternate tape relay route.

Releasing officer. The person who may authorize the transmission of a message for, and in the name of, the originator.

Rerun. The retransmission of a message as a result of a request from a distant station.

Routine. See Precedence designations.

Routing. The process of determining and prescribing the path or method to be used in forwarding messages.

Routing indicator. See Indicator, routing.

Routine line. That procedure line which contains the routing indicators of the station to which a transmission is routed.

Service message. See Message, service.

Signal, operating. See Operating signal.

Station, tributary. See Tributary station and Terminal station.

System. An overall term used to describe communication facilities from an engineering aspect including all the associated equipment.

Tape, chad. A tape used in printing telegraphy/teletypewriter operation. The perforations are severed from the tape making holes representing the characters. The characters may or may not be printed on chad tape.

Tape, chadless. A tape used in printing telegraphy/teletypewriter operation. The perforations are not completely severed from the tape, thereby permitting the characters representing the perforations in the tape to be printed on the same tape.

Tape copy. A message in tape form which is the result of a transmission.

Tape relay. A method of receiving and retransmitting messages in tape form. (See also Relay station.)

Teleconference (TELECON). A conference between persons remote from one another but linked by a telecommunications system.

Teletypewriter exchange service (TWX). A commercial service permitting teletypewriter communication on the same basis as telephone service, operating through central switchboards, to stations within the same city or in other cities. This service is limited to subscribers, as in telephone service.

Terminal station. That portion of a communications center which performs the same functions as a tributary station; that is, receipt and processing of originating and terminating messages for transmission, delivery, or refile. This station is responsible for the functions of the message center section, manual teletypewriter section, service and files section, and refile section.

Time of availability (TOA). That time when an incoming message has been completely processed and edited and is now available for the AG section, at the message center desk.

Time of delivery (TOD). The date and time at which a message is delivered to an addressee.

Time of receipt (TOR). The date and time at which a communications center completes reception of a message transmitted to it by another communications center.

Time ready for transmission (TRT). That time when the poking operator has finished preparing the message in tape form, and has a completed page copy of the message.

Traffic (communication). All transmitted and received messages.

Traffic flow security. The transmission of an uninterrupted flow of random text on a wire or radio circuit between two stations with no indication to an interceptor of what portions comprise encrypted message text and what portions are merely random fillers.

Transmission identification. A combination of letters and figures used to identify a transmission on a channel between two stations.

Tributary station. A station electrically connected to a tape relay network but normally having no tape relay responsibilities.

Unclassified tape relay area. An area, not subject to protective security measures, used for the installation of tape relay equipment not electrically connected to on-line cryptographic equipment.

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