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FM 11-20

DEPARTMENT OF THE ARMY FIELD MANUAL

SIGNAL OPERATIONS, THEATER OF OPERATIONS

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HEADQUARTERS, DEPARTMENT OF THE ARMY
APRIL 1962

FIELD MANUAL

SIGNAL OPERATIONS, THEATER OF OPERATIONS

FM 11-20

CHANGES No. 1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 28 March 1963

FM 11-20, 19 April 1962, is changed as follows:

Substitute the term "combat area signal battalion" for the term "signal combat area battalion" wherever it appears in this manual.

1. Purpose and Scope

* * * * *

b. Information explaining the * * * attached signal units. It is emphasized that a theater commander has wide latitude in organizing his command and staff in the manner best suited to accomplish his mission. The signal staff of a headquarters of this level is designed as a flexible organization capable of being tailored to assist in accomplishing a wide variety of missions.

* * * * *

d. (Added) Developments in tactical and technological fields, new concepts of operation, and organizational changes in the Army will make modifications of this manual necessary. Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments should be forwarded direct to the Fort Monmouth Office, U. S. Army Communications-Electronics Combat Developments Agency, ATTN: Doctrine Division, Fort Monmouth, N.J. Recommendations should be based on the anticipated wartime missions and should not be peculiar to a single theater of operations.

3. Definition of Military Communications-Electronics

Military communications-electronics (COMMEL) is defined as the direction and systematic employment of devices and techniques designed to acquire or transmit information essential to the command control of friendly military forces, and to counteract the effectiveness of similar operations conducted by the enemy.

7. Planning Considerations

In general, the * * * signal officer are—

- * * * * *
- b. Assuring that signal troops and equipment needed to provide entry into the Defense Communication System (DCS) are included in operations plans. Detailed arrangements must * * * and continuing contact.

15. Command and Staff Relationships of the Theater Signal Officer

* * * * *

d. *Staff Relationships.* Signal officers confer * * * and sections are—

- * * * * *
- Supply and maintenance matters G4
- Radio Frequency Management.....USASA, G2, G3, artillery, Army aviation, and air defense
- Rail, highway, waterway, and port communications requirementsTransportation

17. The Theater Area Communication System

The theater area * * * maximum extent practical. In addition, it provides terminals for interconnecting with the Defense Communications System. The system utilizes * * * by higher headquarters.

18. Signal Operations Command

a. The operating element of theater army responsible for installation and operation of the TACS is the signal operations command (formerly called the signal long lines command). The signal operations command operates under the control of the theater army signal section and is organized on a functional basis with TOE groups and units. Elements of this * * * ADLOG and BALOG.

b. The signal operations command consists of a headquarters and headquarters company (TOE 11-302 (#)) plus construction and operating units as required, depending upon the mission and organization of the theater of operations, area of operations,

Figure 5. Type signal operations command.
(Formerly called "Type signal long lines command")

(Located in back of manual)

theater plan of operations, theater troop composition and disposition, indigenous facilities, and enemy capabilities. A type organization of the signal operations command is depicted in figure 5.

Substitute the term "signal operations command" for the term "signal long lines command" where it appears in figure 5 of this manual.

26. Communications Support Group

a. The mission of * * * army logistical command.

- (1) A communications support group is assigned on the basis of one to each ADLOG, BALOG, or other area command in a COMMZ.

* * * * *

32. Field Army Area Communication System

a. The field army area communication system (fig. 7) is engineered and designed to support the field army commander's tactical plan with a high-quality, high-capacity, multimeans, multiaxis signal communication system which meets the requirements for responsiveness, flexibility, mobility, and dispersion.

* * * * *

37. Headquarters and Headquarters Detachment (TOE 11-122(#))

* * * * *

44. Signal Cable Construction Battalion

a. The signal cable construction battalion is assigned on the basis of one per combat area signal group. The battalion is * * * meaning of AR 320-5.

* * * * *

Correct Note 1 of figure 11 by pen and ink deletion of "1 each Lt. 2210 for administrative branch."

60. Division Signal Section

The division signal section is included in the TOE of the headquarters and headquarters detachment of the appropriate division signal battalion. The assistant DSO, * * * the DSO's section. In addition to these staff members, the DSO normally appoints a division photographic officer from the photographic section in the signal support operations company.

63. Airborne Division Signal Battalion

a. The airborne division * * * per airborne division. It is 90 percent mobile and 100 per cent air transportable, and is a category II unit within the meaning of AR 320-5 with the excep-

tion of the forward communication company which is a category I unit.

b. The mission of * * * is to provide—

* * * * *

(3) **Trunk line communication service to brigade headquarters, support command headquarters, and to other units operating directly under division headquarters.**

* * * * *

67. General

The actual organization and control of a theater logistic system providing signal supply support cannot be predetermined. Centralized control and decentralized operations are essential for effective signal supply support whether it is branch oriented or functionalized. Its operation will * * * orderly supply procedures.

Add the following references to the appendix.

FM 11-85 Signal Base Maintenance Company
(TOE 11-587(#)).

FM 24-16 Signal Orders, Records, and Reports

FM 54-2 Division Logistics and the Support Command

FM 61-100 The Division

Delete FM 11-16 Signal Orders, Records, and Reports

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

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| USADEG (5) | Units org under fol TOE: |
| USACSSG (5) | 11-15 (2) |
| ARADCOM (10) | 11-22 (2) |
| ARADCOM Rgn (5) | 11-32 (2) |
| OS Maj Comd (10) | 11-35 (2) |
| OS Base Comd (5) | 11-45 (2) |
| MDW (2) | 11-66 (2) |
| Armies (2) | 11-85 (2) |
| Corps (2) | 11-95 (2) |
| Div (2) | 11-155 (2) |
| Bde (2) | 11-215 (2) |
| USMA (5) | 11-302 (2) |
| USACGSC (10) | 11-500 (AA-AE) (2) |
| USAWC (5) | 51-1 (2) |
| Br Svc Sch (5) except | 52-1 (2) |
| USASCS (300), | |

NG: State AG (3); Units—Div (1); Corps Arty (1); Div Arty (1);
 Bde (1); Regt/Gp/Bg (1); Bn (1) except Armor Bn (4);
 TOE 17-22 (1).

USAR: Units—same as Active Army except allowance is one copy to
 each unit.

For explanation of abbreviations used, see AR 320-50.

FIELD MANUAL }
 No. 11-20 }

HEADQUARTERS,
 DEPARTMENT OF THE ARMY:
 WASHINGTON 25, D.C., 19 April 1962

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* This manual supersedes FM 11-20, 11 November 1940, including C1, 12 June 1941, and FM 11-22, 15 January 1945.

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CHAPTER 1 INTRODUCTION

1. Purpose and Scope

a. This manual provides information on the responsibilities and organization of the signal staff at all echelons of command in a type theater of operations.

b. Information explaining the duties and responsibilities of the communications-electronics (COMMEL) officer or signal officer of major commands, and the organization and duties of his signal staff officers is included. Also included are the staff relationships between signal staff officers and other staff officers of the command and commanders of assigned and attached signal units.

c. The material presented herein is applicable without modification to both nuclear and nonnuclear warfare.

2. References

Publications that provide detailed information on subjects related to the material contained herein are listed in the appendix. Use of these publications will assist the reader in understanding the principles involved in the signal operations of a theater of operations.

3. Definition of Military Communications-Electronics

Military communications-electronics is defined as the management and systematic employment of devices and techniques designed to acquire or transmit information essential to the command control of friendly military forces, and to counteract the effectiveness of similar operations conducted by the enemy.

CHAPTER 2

COMMUNICATIONS-ELECTRONICS FACILITIES FOR A THEATER

4. General

a. In order to provide effective communications-electronics facilities for command control by the theater commander, consideration must be given to the variations in the types of forces used in situations short of war, in limited war, or in general war. Although cold war is usually considered economic and political, United States military forces may be employed in a show of force in situations which remain short of war. The methods of application and integration of forces used in each situation will vary because of the many differing operational environments of each locale and form of war. The range and destructive power of modern weapons, the speed of maneuver, and the problem of collecting, collating, and evaluating information increase the complexity of tactical and administrative support operations. Effective signal communication facilities for command control are a necessity.

b. Situations that involve limited war require recognition of the peculiar command situations that dictate COMMEL requirements for such operations. A wide variety of possible roles and missions requiring command control is associated with United States involvement in such wars. Many potential trouble areas are relatively underdeveloped, with difficult terrain, limited civil communications, and limited base facilities. Nuclear weapons may or may not be employed. These operations usually will involve relatively small forces (for example, strategic mobile ground forces) in joint or combined operations, with hastily established lines of logistical support. A considerable portion of transportation support for operations of this type may be furnished by air transport if available. COMMEL systems to establish command control for these operations require individual development based on plans for such operations.

5. Command Responsibility for Communications-Electronics

The commander at every echelon of command is responsible for all COMMEL facilities employed by any force or unit of his com-

mand. A signal communication system is part of the overall communications-electronics requirement. The form and extent of the signal communication system are determined by the type of command and the specific functional requirements. Normally, communications-electronics functions are delegated by the commander to, and implemented by, the command signal or communications-electronics officer.

6. Standardization of Communications-Electronics Operations

Maximum standardization of methods, procedures, and doctrine are essential for the efficient operation of the COMMEL systems. This is particularly true in joint or combined operations. When not provided by higher authority, standardization will be prescribed by the theater commander and promulgated by the theater COMMEL officer and signal officers at each subordinate command.

7. Planning Considerations

In general, the principles applied to planning signal communications systems for ground forces in a limited war or situations short of war are the same as for a general war. Factors to be taken into consideration by the force COMMEL officer or signal officer are—

a. Obtaining, in advance, information of the area in which the operation will take place. Particular attention should be devoted to the local communication facilities, terrain characteristics, significant political situation, and the availability of locally produced supplies to maintain the indigenous communication facilities.

b. Assuring that signal troops and equipment needed to provide entry into the worldwide U.S. military communication system are included in operations plans. Detailed arrangements must be made with the entry station for initial and continuing contact.

c. Ascertaining the source and availability of logistical support.

d. Ascertaining the compatibility of the local communication system with U.S. signal communication equipment. In many foreign countries the domestic communication system may not be compatible with U.S. signal equipment; in such cases, the commander must be prepared to rely entirely on military communications facilities installed and operated by his own troops.

e. Developing recommendations for the degree and extent of military control desired over local communications-electronics facilities. In the event that the U.S. is supporting or assisting a sovereign government, arrangements for the use of any local

communication facilities, including use of radio frequencies, which would aid the military COMMEL mission should be made at the earliest opportunity. These arrangements should be made through proper channels, military or diplomatic, prior to the arrival of the force in the area of operations. If a language barrier exists, the COMMEL officer must have interpreters and translators to assist in incorporating any portion of the local communication system into the overall military system.

f. Arranging necessary communications-electronics facilities for the following:

(1) Force headquarters.

(2) Within the force and between the force and any U.S. or allied force in or near the area of operations.

(3) Service echelons.

g. Assuring that sufficient signal units, personnel, supplies, and equipment are programed for phased arrival into the area to meet requirements.

h. Assuring that sufficient ADP equipment and trained personnel are available for the operational, logistical, and administrative requirements.

i. Assuring that the COMMEL system is capable of expansion in the event that the limited war or situation short of war develops into a general war.

CHAPTER 3

COMMUNICATIONS-ELECTRONICS STAFF ORGANIZATION FOR A THEATER HEADQUARTERS

8. Theater Headquarters Organization

The staff organization for the headquarters of a theater of operations may be either a combined staff or a joint staff depending upon whether the headquarters represents a coalition of nations forming a combined command, or a unified command of two or more U.S. services. Either staff may be formed as a general or director type staff.

9. Theater Headquarters COMMEL Organization

a. A theater COMMEL staff organization will follow the structure of the theater headquarters. The chief of the COMMEL organization may be designated Assistant Chief of Staff, J6 (ACS J6), Director of Communications-Electronics, or Theater Signal Officer. He is assisted by a technical staff composed of personnel from the U.S. and allied nations in the case of a combined staff, and by personnel of the U.S. services in the case of a unified command.

b. A type combined COMMEL staff organization (fig. 1) and its functions are as follows:

- (1) *The theater communications-electronics officer.* The theater communications-electronics officer is the advisor to the theater commander and his staff on all COMMEL matters. His responsibilities parallel those of the staff signal officer as cited in FM 101-5. However, at this level of command, his operations will be of the broadest scope and nature. The theater COMMEL officer is chairman of the combined communications-electronics board (CCEB) which he utilizes to coordinate COMMEL matters among the allied nations of the command.

Figure 1. Type combined communications-electronics staff organization for a theater headquarters.

(Located in back of manual)

- (2) *Deputy communications-electronics officer.* The deputy communications-electronics officer performs those duties assigned by the theater COMMEL officer and acts for him in his absence.
- (3) *Administration section.* The personnel in the administration section are responsible for office administration and procedure, office security, authentication of office orders and instructions, and the performance of secretarial duties for the CCEB.
- (4) *Headquarters COMMEL officer.* The headquarters COMMEL officer is responsible for the planning for and the supervision of the installation and operation of the COMMEL facilities serving the theater headquarters.
- (5) *Plans and operations division.* The personnel of the plans and operations division are responsible for the preparation of detailed COMMEL plans for current and projected theater operations; signal instructions and orders; review of COMMEL plans and operating instructions of lower commands; formulation of policies for the use of automatic data processing within the theater; and liaison with COMMEL staffs of lateral and subordinate commands, and nonmilitary communication agencies of occupied areas.
- (6) *Communications division.* The personnel of the communications division plan, engineer, and exercise staff supervision over the installation, operation, and maintenance of the integrated theater communication system within policies established by the theater COMMEL officer; and implement the policies established by the theater COMMEL officer on communications procedures, frequency management, and allocation of circuits.
- (7) *Pictorial division.* The personnel of the pictorial division are responsible for the coordination of all photographic activities in the theater including television and film and equipment exchange services; for the preparation of broad policies and plans for general pictorial support; and for supervising the selection and forwarding of still and motion picture photographic record material.
- (8) *Communications security and EW division.* The personnel of this division are responsible for supervising communication security, cryptologistics, technical signal intelligence, and EW operations under policies established by the theater COMMEL officer.

- (9) *Requirements division.* The personnel of this division are responsible for determining requirements and distribution for COMMEL equipment, units and special personnel, and the policy on priority of issue of equipments.

10. Combined Communications-Electronics Board

a. A combined communications-electronics board is established at theater level to assist the theater COMMEL officer in determining broad COMMEL policies. In addition, this board coordinates COMMEL matters among the various nations represented.

b. The board, under the chairmanship of the theater COMMEL officer, or his designated representative, is composed of senior COMMEL delegates from the allied nations and from major subordinate commands in the theater.

c. To assist the board, subordinate committees are established. These committees are assigned such tasks as radio frequency management, radar coverage, electronic countermeasures, circuit allocation, logistical requirements, and communication procedures.

11. U.S. Joint COMMEL Staff, Theater Headquarters

a. A U.S. joint COMMEL staff for a theater headquarters will follow the same general organization as the type combined staff organization shown in figure 1. However, the composition of the joint staff varies from the combined staff in that all members are from the U.S. services.

b. The staff will be reasonably balanced with regard to the composition of the theater forces and the character of the operations, so as to assure an understanding by the theater COMMEL officer of the tactics, techniques, capabilities, needs, and limitations of each component part of the force.

12. Initial Planning Considerations for a Theater COMMEL Officer

The theater COMMEL officer immediately upon appointment, or when advised of his imminent appointment, should—

a. Gather all available information on the theater of operations; on the command organization and the command responsibilities that may exist within the theater; on all ministries, departments, and headquarters that may be of assistance in COMMEL matters; on all policy agreements and prior technical and operational COMMEL agreements among the prospective allies; on U.S. and allied forces and their COMMEL equipments; and on prospective flow of COMMEL units and equipments into the theater.

b. Study the COMMEL aspects of the operation and prepare, as soon as possible, a tentative checklist of essential major tasks and matters to be coordinated.

c. Ascertain any additional COMMEL requirements and institute early requests for fulfillment.

d. Prepare a schedule of completion dates of the major tasks.

e. Plan his COMMEL staff organization.

f. Obtain qualified technical personnel for the COMMEL staff.

CHAPTER 4

COMMUNICATIONS-ELECTRONICS FOR THEATER ARMY

13. General

Theater army organization (fig. 2) consists of theater army headquarters, army group or field armies, the theater army air defense command (TAADC), the theater army civil affairs command (TACAC), the theater army logistical command (TALOG), and the theater army replacement and training command (TARTC). For further information on the organization of theater army, see FM 100-15.

14. The Theater Army Signal Officer

The theater army signal officer plans and supervises the formulation and implementation of signal plans, policies and procedures for the installation, operation, maintenance, and management of army COMMEL operations within the theater. He exercises operational control when authorized by the theater army commander over the signal units not assigned or attached to subordinate commands. In general, he has the following responsibilities:

a. Advises on signal matters including communication and electronic security, signal communication, location of headquarters, location of area signal centers, and the use of signal activities for deception.

b. Supervises the determination of requirements for, and the requisitioning, procurement, storage, distribution, and documentation of, signal equipment and supplies.

c. Plans and recommends requirements for and employment of signal troops.

d. Prepares and supervises training programs of signal units under his operational control and exercises technical supervision over signal training of the command.

e. Exercises technical supervision over signal and communication activities throughout the command.

f. Allocates frequencies and controls the use thereof.

g. Takes the following action on electronic warfare:

- (1) Advises the commander and staff on matters pertaining to electronic warfare support.

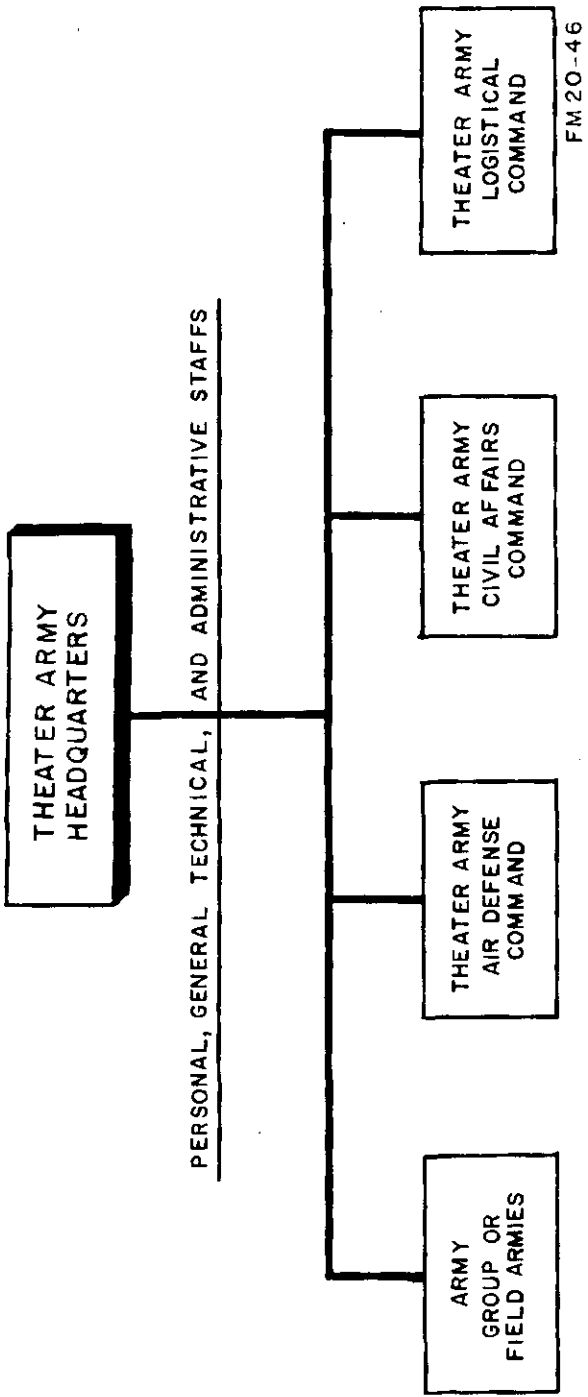


Figure 2. Organization of theater army.

- (2) Prepares the electronic warfare plan (including EW annex to the operations order), and supervises electronic warfare operations to include communication transmission security, coordination of frequency allocation, control of electromagnetic radiation, and provision of positive procedures for control of jamming.
 - (3) Coordinates electronic warfare plans and operations with G2, G3, artillery, air defense, army aviation, army security agency, higher, lower, and adjacent headquarters, and supporting services.
- h.* Plans and supervises the following signal operations:
- (1) Installation, operation, and maintenance of the theater army signal communication system and the installation and maintenance of special purpose communication systems.
 - (2) Communication systems, including army aviation electronics and communications, to assure compliance with established communication security regulations.
 - (3) Still and motion picture photographic services pertaining to operations and training.
 - (4) Reproduction of aerial photos made for army use, and operation of film libraries and film equipment exchanges.
 - (5) Operation of signal supply, maintenance, and repair facilities conducted by signal units.
 - (6) Examination and processing of captured signal supplies.
 - (7) Technical intelligence pertaining to signal activities, except those signal communication activities which are the responsibility of the U.S. Army Security Agency.
 - (8) Technical inspection of signal corps equipment and supplies to include organizational maintenance.
 - (9) Recovery, evacuation, maintenance, and reclamation of signal corps material beyond the capabilities of using units.
 - (10) Signal aspects of electronic warfare operations.
 - (11) The equipment status reporting system within his area of responsibility.
 - (12) Signal aspects of combat surveillance systems.
 - (13) Cryptographic and cryptologistics support.
- i.* Operation of the tactical data processing system.

15. Command and Staff Relationships of the Theater Army Signal Officer

a. *Higher Commands.* The theater army signal officer receives

broad plans, directives, and instructions from the theater COMMEL officer through command and technical channels. The theater army signal officer also receives administrative and technical advice from the Office of the Chief Signal Officer, Department of the Army.

b. Lateral Commands. The theater army signal officer coordinates communications-electronics operations and long-range plans with the COMMEL officers at theater navy headquarters and theater air force headquarters. These officers maintain close liaison with each other. Within the policies of the theater commander, coordination is accomplished with allied military and government controlled COMMEL agencies. Theater army may provide to, or receive COMMEL support from adjacent commands.

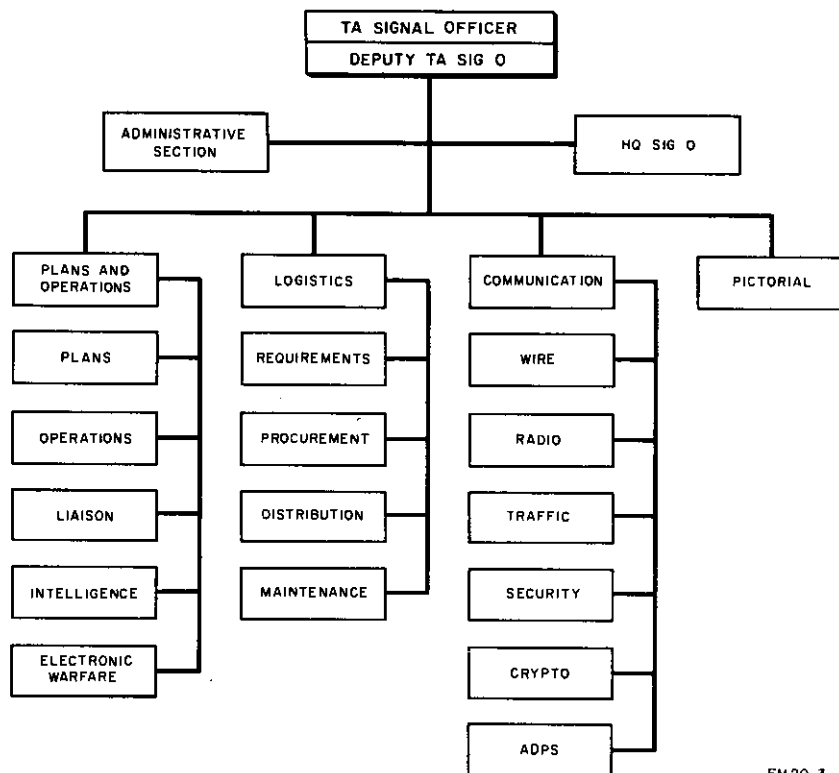
c. Subordinate Commands. Army groups, field army, and TALOG are discussed in later chapters. Detailed information concerning theater army air defense command, theater army replacement and training command and theater army civil affairs command are contained in FM's 100-10 and 100-15. The staff signal officers of these last three commands perform duties as outlined in FM 101-5 and paragraph 14 of this manual.

d. Staff Relationships. Signal officers confer, consult, and coordinate with practically all other staff officers of the command. In addition to their communication requirements, a few of the major items coordinated with various staff officers and sections are—

| | |
|--|--|
| Actions affecting COMMEL personnel | ___G1 |
| Communication security and intelligence | ..G2 |
| Plans, operations, and orders | -----G3 |
| Supply and maintenance matters | -----G4 |
| Rail, highway, waterway, and port communications requirements. | Transportation |
| POL pipeline communication requirements. | QM Officer |
| Photography | -----All |
| Electronic warfare | -----USASA, G2, G3, artillery, army aviation, and air defense |

16. Theater Army Signal Section

a. The theater army signal officer is assisted by a signal staff composed of a deputy signal officer, an executive officer, and other personnel with various communications-electronics specialties. The



FM 20-3

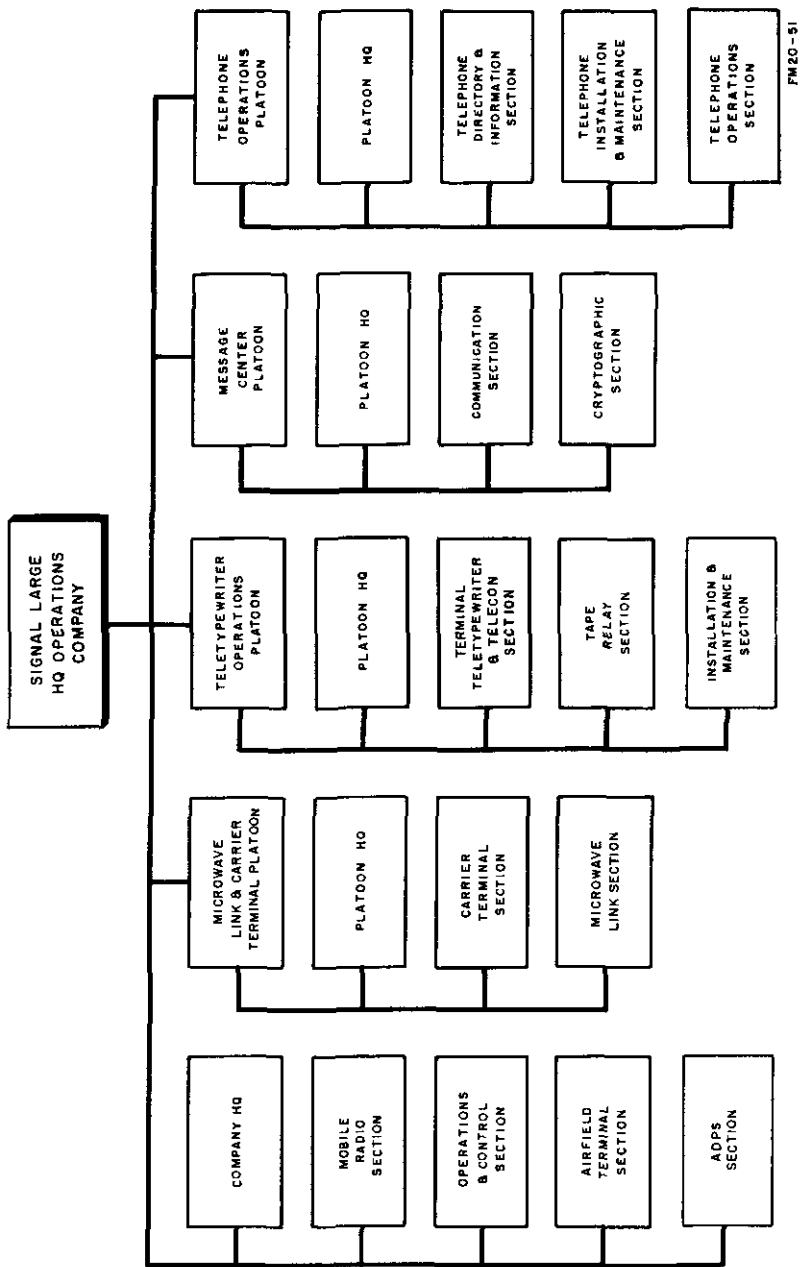
Figure 3. Type theater army signal section.

composition of the signal staff is tailored to fit the demands of a particular theater. A type staff is shown in figure 3.

b. Communications-electronics facilities and operating personnel to include automatic data processing (ADP) for the headquarters are provided by a signal large headquarters operations company. The theater army commander normally delegates operational control of the signal large headquarters operations company (fig. 4) to his signal officer. This type unit may also be assigned to a theater headquarters and to TALOG.

17. The Theater Area Communication System

The theater area communication system (TACS) is a high-capacity, high-quality, multimeans, multiaxis, integrated signal communications network. The circuits comprising the system extend forward from the theater rear boundary into the field army



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Figure 4. Signal large headquarters operations company.

areas where they interconnect with the field army area communications systems. Indigenous communication facilities are utilized to the maximum extent practical. In addition, it provides terminals for interconnecting with the Defense Communications Agency Network. The system utilizes radio, radio relay, and field cable together with associated terminal equipment in a combination of control centers, control subcenters, and switching centers in conjunction with command and area signal centers. Facilities are provided on a common-user basis with the provision of limited sole-user circuits when authorized by the theater army commander. The air force, navy, allied forces, and other designated components including civil authorities are furnished signal communications facilities through this system when directed or authorized by higher headquarters.

18. Signal Long Lines Command

a. The operating element of theater army responsible for installation and operation of the TACS is the signal long lines command. The signal long lines command is organized on a functional basis with TOE groups and units. Elements of this command are deployed throughout the theater of operations as required. Supply and maintenance support for these elements is provided by the logistical command in whose area the elements are located, principally ADLOG and BALOG.

b. The signal long lines command consists of a headquarters and headquarters company plus construction and operating units as required, depending upon the mission and organization of the theater of operations, area of operations, theater plan of operations, theater troop composition and disposition, indigenous facilities, and enemy capabilities. A type organization of the signal long lines command is depicted in figure 5.

Figure 5. Type signal long lines command.
(Located in back of manual)

CHAPTER 5

COMMUNICATIONS-ELECTRONICS FACILITIES FOR THE COMMUNICATION ZONE

Section I. THEATER ARMY LOGISTICAL COMMAND HEADQUARTERS

19. General

The theater army logistical command provides administrative support other than personnel replacement and civil affairs, to all U.S. Army forces in the theater of operations, and to such theater navy, theater air force, allied, and other forces as directed.

20. TALOG Signal Officer

In general, the responsibilities of the TALOG signal officer will be similar to those of the theater army signal officer indicated in paragraph 14. He is responsible for the signal communications required to operate the intersectional pipelines, railways, inland waterways, and the military highway system. This is accomplished by coordinating with the advance logistical command (ADLOG) and base logistical command (BALOG) to provide necessary signal communications within their respective areas of responsibility for the intersectional services indicated above, and with theater army for long distance circuits. Supplemental signal installation and maintenance units of theater army may be attached to TALOG to provide the facilities for essential signal communications of those technical service operations. Using services will provide operating personnel for TOE communications-electronics-equipment or class IV equipment installed on a project basis.

21. Command and Staff Relationships of the TALOG Signal Officer

a. Higher Commands. The TALOG signal officer will receive instructions and technical advice and assistance from the theater army signal officer.

b. Lateral Commands. The TALOG signal officer coordinates communications-electronics operations and plans with the COMMEL officers of the field armies or army groups; theater army air defense command; theater army civil affairs command;

and theater army replacement and training command, if established. An efficient systems engineering effort will be required to satisfy the requests for, and allocation of, various types of communication circuits or channels between these lateral commands.

c. Subordinate Commands. The TALOG signal officer exercises technical control over the signal logistics, communications-electronics, and photographic activities of subordinate commands. He normally has operational control over signal units and personnel of theater army logistical command not assigned or attached to subordinate commands.

d. Staff Relationships. The TALOG signal officer confers, consults, and coordinates with other staff officers of the theater army logistical command headquarters. He coordinates all communications-electronics requirements of the TALOG staff and subordinate commands to assure adequate and reliable COMMEL support when required.

22. TALOG Signal Section

a. The TALOG signal section is included in the TOE of the logistical command headquarters.

b. Communications-electronics and ADPS facilities and operating personnel for the headquarters are provided by a signal large headquarters operations company. When required, the company will provide COMMEL facilities for the administrative support operations center (ADSOC). See figure 4.

c. The TALOG commander normally delegates operational control of the signal large headquarters operations company to his signal officer.

Section II. SUBORDINATE COMMANDS

23. General

The duties and functions of the signal officers of ADLOG, BALOG and area commands will in general be similar to those indicated in paragraph 14. They normally have operational control over signal units and personnel of the logistical or area commands not assigned or attached to a subordinate command. The communications support group is the major operating element.

24. Command and Staff Relationships of Subordinate Command Signal Officers

a. Higher Commands. The logistical or area command signal officers will receive technical instructions, advice, and assistance from the TALOG signal officer.

b. Lateral Commands. The logistical or area command signal officers are responsible for furnishing all necessary communication support in their area. Requirements for circuits that do not terminate within their area are considered as intersectional, and must be coordinated through the TACS.

c. Subordinate Commands. The logistical or area command signal officers exercise technical control over the signal logistics, communications-electronics, and photographic activities of subordinate commands.

d. Staff Relationships. The logistical or area command signal officers confer, consult, and coordinate with other staff officers of their command to obtain locations and communication requirements of troop units and installations.

25. Signal Section

A signal section is included in the appropriate TOE of the logistical command headquarters. In general, it will have the following subsections:

a. A headquarters section, consisting of the signal officer and an executive officer who performs the duties of the signal officer in his absence. The executive officer also supervises the administrative duties of the signal section.

b. A communications branch, consisting of telephone and teletypewriter officers, a field radio officer, a communication center officer, and necessary clerks.

c. A signal supply and maintenance branch, consisting of a supply and maintenance officer, a depot operations officer, a supply officer, and clerical assistants.

26. Communications Support Group

a. The mission of the communications support group is to provide communications-electronics facilities for units subordinate to the theater army logistical command.

- (1) One communications support group is assigned to each advance logistical command or base logistical command.
- (2) The group is capable of providing high-quality communications on a common-user basis as required and sole-user basis as authorized.
- (3) Logistical commands will make maximum use of data processing capabilities in the depot system and other appropriate activities.
- (4) Signal logistical capabilities of the command are provided by the group.

b. The signal communications support group directs and coordinates the training and operations, and the administrative and logistical support, of the units of its command. Units may be attached or detached, tailoring the group to accommodate the size, terrain features, and the strengths and disposition of troops of the command to which assigned. Type units which may compose a communications support group are shown in figure 6.

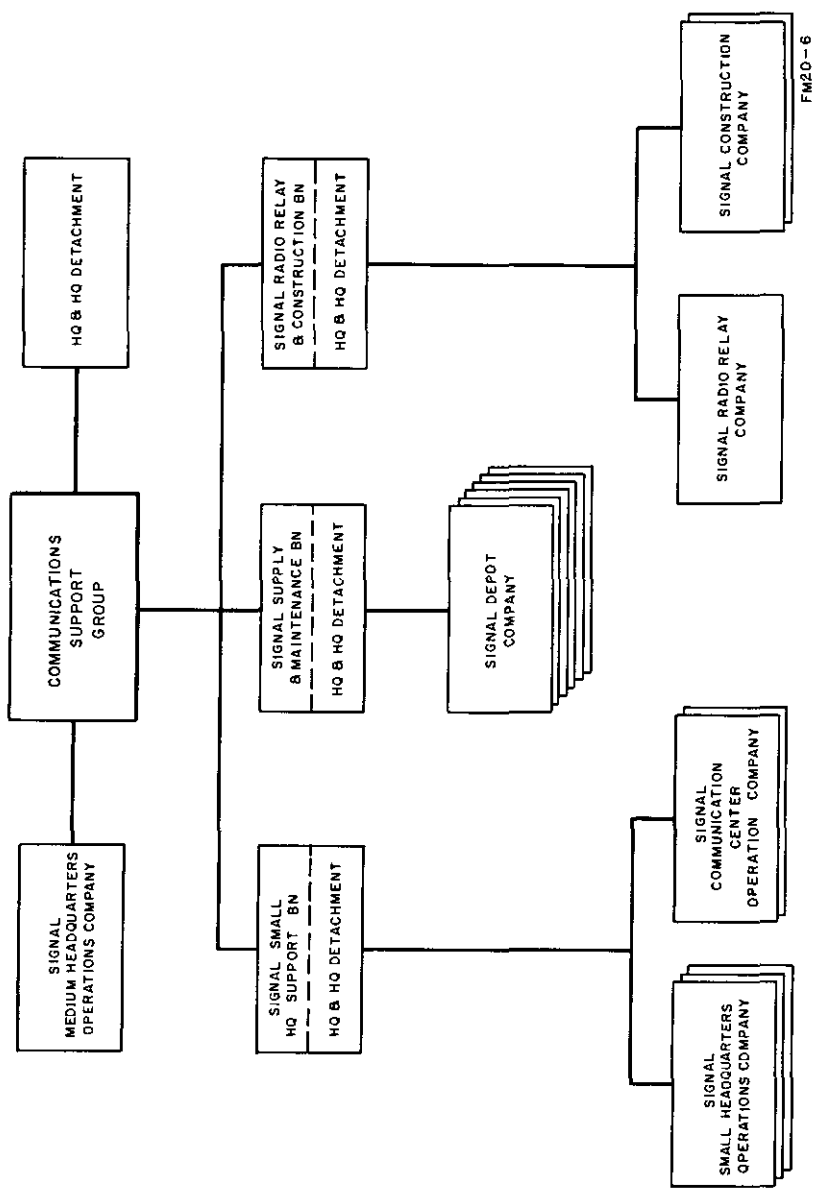


Figure 6. Type communications support group.

CHAPTER 6

COMMUNICATIONS-ELECTRONICS FACILITIES FOR ARMY GROUP

27. Army Group Signal Officer

In general, the duties and responsibilities of the army group signal officer will be similar to those of the staff signal officer indicated in paragraph 14. He will be responsible to the army group commander for internal headquarters communications, as well as signal communications to all subordinate units assigned or attached to army group headquarters. He is normally delegated operational control over all signal units not assigned or attached to subordinate commands.

28. Command and Staff Relationships of the Army Group Signal Officer

a. Higher Commands. The army group signal officer receives broad technical plans, directives, and instructions from the theater army signal officer.

b. Lateral Commands. The army group signal officer coordinates communications-electronics operations and plans with the COMMEL officers of theater army air defense command; theater army civil affairs command; and theater army logistical command.

c. Subordinate Commands. The army group signal officer exercises technical supervision over the signal logistics, communications-electronics, and photographic activities of subordinate commands.

d. Staff Relationships. The army group signal officer confers, consults, and coordinates with other staff officers of the army group headquarters. He coordinates all communications-electronics requirements of the army group staff and subordinate commands to assure adequate and reliable COMMEL support when required. See paragraph 15d.

29. Army Group Signal Section

The signal officer will select his staff, and in general, organize the signal section along the same lines as the theater army signal

section. A typical signal section at this level contains the signal officer, deputy signal officer, an administration division, a communications division, a plans and operations division, and a logistics division. The number of individuals assigned to the signal section of an army group headquarters will depend upon the mission of the army group, the number of armies assigned to the army group, and many other details including terrain over which the army group will exercise control.

30. Signal Units of the Army Group

a. In planning the signal communication support for army group headquarters, maximum use should be made of existing TOE signal units. Normally, one army signal battalion, TOE 11-95 (), will be capable of providing the necessary signal communications for an army group headquarters.

b. Army group headquarters may be located either in the COMMZ or in the combat zone. If located in the COMMZ, command circuits will be provided from army group to the command posts of its field armies through the TACS. If located in the combat zone, army group headquarters will be supported by the field army area communications system of the field army in whose zone it is located. The army group signal officer will direct the establishment of command circuits between field armies.

CHAPTER 7

COMMUNICATIONS-ELECTRONICS FACILITIES FOR FIELD ARMY

Section I. FIELD ARMY COMMUNICATIONS SYSTEM

31. General

Effective command control can be realized only through a well-planned and managed signal communication system. The field army communications system and organization fulfill this requirement. It is composed of the field army area communication system, the communication systems of the subordinate corps, the area communications systems of the divisions, and other communications facilities of units integral to the field army.

32. Field Army Area Communication System

a. The field army area communication system (fig. 7) is engineered and designed to support the field army commander's tactical plan with a high-quality, high-capacity, multimeans, multiaxis signal communication system which meets the requirements for flexibility, mobility, and dispersion.

b. The field army area communication system is installed by signal troops assigned to the field army. The field army signal officer normally is delegated operational control over all signal units not assigned or attached to subordinate commands.

c. Basically, the field army area communication system is composed of area signal centers interconnected by trunk circuits under centralized control. Each area signal center is assigned a geographical area for operations. The size of this area is determined by the location, disposition, and COMMEL requirements of the supported forces. Some army area signal centers may be located within division areas. Each signal center of the area system is interconnected with at least two other signal centers to provide alternate routing and to permit distribution of the traffic load.

d. Command signal centers are established to serve the echelons of field army headquarters. Each command signal center is

Figure 7. Type field army area communication system.
(Located in back of manual)

connected with two or more area signal centers to provide alternate routing of circuits and flexibility of operations. In addition, command signal centers may be directly interconnected when availability of facilities, distance, and other factors permit.

e. The field army area signal communication system varies in configuration, size, and composition according to the following factors:

- (1) Mission, composition, organization, and plan of operation of the field army.
- (2) Locations, COMMELE requirements, and disposition of the supported forces and installations, including echelons of corps headquarters.
- (3) Terrain characteristics of the area of operations.
- (4) Enemy capabilities.
- (5) Availability of indigenous facilities.
- (6) Number of signal centers available to the system.

f. To provide the field army access to the TACS, theater army signal control centers are located to interconnect readily with army area signal centers in the rear of the field army.

g. The field army messenger service is supervised and coordinated by the field army system control center for the systematic handling and expeditious delivery of messages, correspondence, and general distribution between the users of the field army area communication system. It consists of the messenger service provided by the army signal battalion and that provided by the signal combat area battalions. It is integrated with the signal messenger service provided by the corps and divisions.

Section II. SIGNAL SECTION

33. Field Army Signal Officer

The field army signal officer is a staff officer on the staff of the army commander. He performs those functions of the staff signal officer as indicated in paragraph 14. He normally exercises operational control, under authority delegated by the army commander, over signal units not assigned or attached to subordinate commands.

34. Command and Staff Relationships of the Field Army Signal Officer

a. Higher Commands. The field army signal officer will receive technical instructions, advice, and assistance from the theater

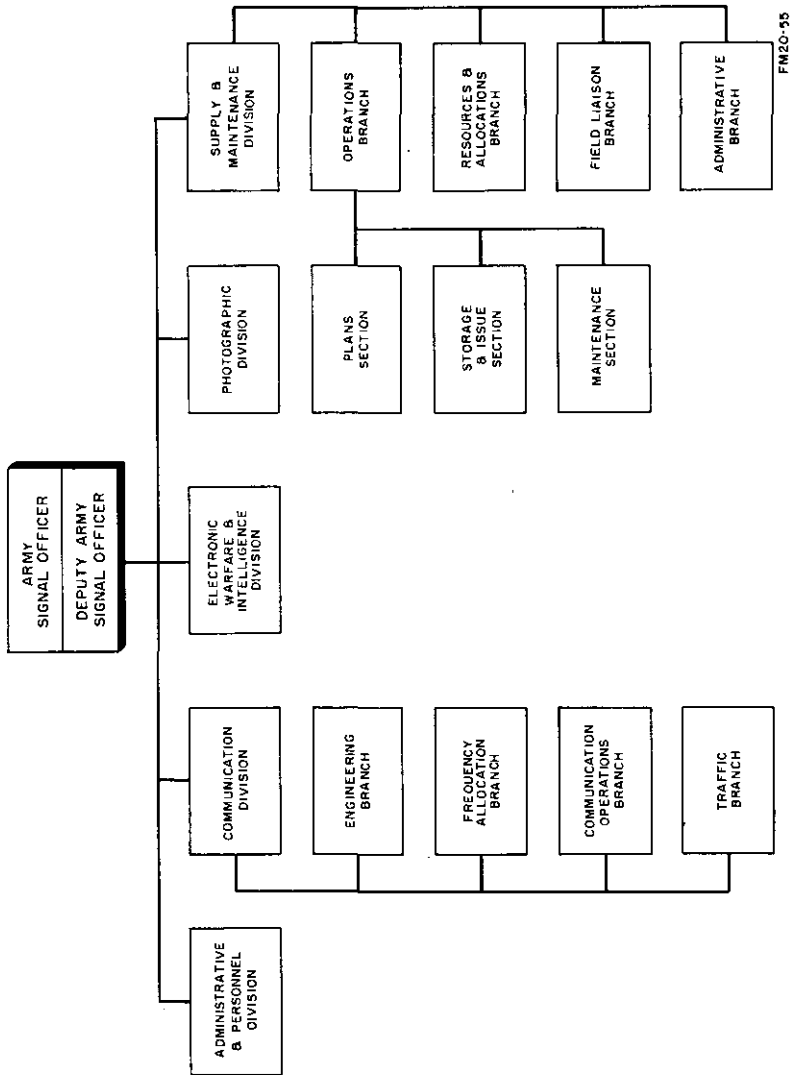


Figure 8. Type organization of a field army signal section.

army signal officer, or army group signal officer if an army group is formed.

b. Adjacent Commands. The field army signal officer coordinates communications-electronics operations and plans with the COMMEL officers of adjacent commands. Complete coordination and efficient systems engineering will be required to satisfy the requests for, and allocation of, various types of lateral communication circuits or channels.

c. Subordinate Commands. The field army signal officer exercises technical supervision over the signal logistics, communications-electronics, and photographic activities of subordinate commands.

d. Staff Relationships. The field army signal officer confers, consults, and coordinates with other staff officers of the army staff. See paragraph 15*d* for a partial list of items that must be coordinated with other staff sections.

35. Field Army Signal Section

a. The field army signal section is included in TOE 51-1() as a part of field army headquarters. A typical organization of the signal section is depicted in figure 8.

b. The deputy signal officer performs duties as directed by the army signal officer. He will act for the signal officer in the latter's absence. He may serve as the signal officer at one of the echelons of field army headquarters.

c. The executive officer supervises the work of the signal staff in accordance with the policies of the army signal officer. He refers actions to staff divisions, reviews completed staff work for policy and form, and refers to the signal officer matters of policy or importance. He coordinates the work of the signal staff with other staff officers of the army headquarters, except when such coordination is a specific duty of some other staff officer. The executive officer may serve as chief of the administrative and personnel division.

d. The chief of the administrative and personnel division is charged with the general administration of the signal section. He has staff responsibility for matters within the province of the signal officer pertaining to training, procurement, classification, and assignment of signal personnel and replacements within the field army. He maintains close contact with the field army staff on actions affecting signal personnel within the command.

e. The communications division consists of four branches: engineering, frequency allocation, communications operations, and

traffic. The chief of the communications division is charged with the coordination of all matters pertaining to communications-electronics operations in the field army. Matters pertaining to more than one of the various branches are coordinated by the division chief or his assistants. The responsibilities of the division chief include—

- (1) Establishing and promulgating technical policies affecting communications within the field army and its subordinate units. This includes the preparation of signal operation instructions (SOI), standing signal instructions (SSI), and standing operating procedures (SOP).
- (2) Preparing signal and EW plans for the army signal officer to present to the staff planning groups, any subsequent signal and EW annexes, and appropriate portions of paragraphs 4 and 5 of the army operations order.
- (3) Coordinating the plans and operations of the field army signal system with—
 - (a) G2 and army security agency representatives on enemy capabilities, communication security, and communication requirements.
 - (b) G3 for tactical plans and operations.
 - (c) The commanders of the signal groups for the capabilities of their units.
 - (d) The chief of the supply and maintenance division of the army signal section for equipment and supplies.
 - (e) The communications-electronics officer of the supporting tactical air force for circuit requirements.
 - (f) The signal officer of higher headquarters for communication requirements placed upon the field army.
 - (g) Signal or communication officers of lower units on mutual assistance required in extending the field army area communication system.
 - (h) The staff officers at army headquarters on communication requirements to the headquarters of army service units.
 - (i) G5 for support by indigenous facilities.
 - (j) The chief of the electronic warfare and intelligence division of the army signal section for compatibility of plans and operations and technical policies with electronic warfare concepts, plans, and policies.
- (4) Directing the installation, operation, and maintenance of all signal communication facilities at army headquarters; between army headquarters and the next subordinate headquarters; between army headquarters and the army

area signal centers; within certain field army logistical complexes; and for the field army portion of any communication system established for interservice use.

- (5) Controlling the usage of the electromagnetic frequency spectrum within the field army and coordinating with allied military and civilian agencies within the field army area on frequency usage.
- (6) Conducting traffic studies to determine the efficiency of the existing communication system which will provide a basis for improvement of the system; preparing and publishing traffic diagrams and directories for the field army area communication system; and assigning directory names and call signs for the field army.

f. The chief of the electronic warfare and intelligence division coordinates and supervises in conjunction with G2, G3, and ASA the electronic warfare and signal intelligence activities within the field army.

g. The chief of the photographic division is responsible for—

- (1) Planning, coordination, and supervision of all photographic activities in the field army.
- (2) Planning the photographic coverage for army operations, intelligence activities, training, news, and historical record.
- (3) Coordinating photographic coverage provided by division, corps, and army photographers, and controlling the assignment of the army signal photographic teams.
- (4) Coordinating the army photographic plan with higher headquarters, adjacent headquarters, and other appropriate U.S. and allied forces.
- (5) Arranging for the production of still prints; and for the collection of exposed motion picture film, still prints, and negatives and their movement to higher headquarters by the fastest possible means.

h. The supply and maintenance division is organized into four branches: administrative, resources and allocation, operations, and field liaison. The chief of the supply and maintenance division is charged with the handling of all signal supply and signal maintenance matters within the province of the army signal officer. Specifically his responsibilities include—

- (1) Preparing estimates of signal supply requirements; recommending policies for procurement and distribution of signal supplies; and rendering advice on signal supply and maintenance matters.

- (2) Preparing an operating plan and directives concerning signal supply matters and the establishment of the army signal depot system.
- (3) Preparing plans, procedures, and directives for the maintenance, repair, and salvage of COMMEL equipment.
- (4) Coordinating with the assistant chief of staff, G4, the location of signal depots and supply points; the assignment, movement, and location of supply and repair units; the collection and utilization or disposition of captured enemy signal or communication equipment and supplies; supply estimates; and requests for transportation.

Section III. ARMY SIGNAL GROUP

36. General

Army signal groups are assigned on the basis of one per field army. The major units normally found in an army signal group (fig. 9) are—headquarters and headquarters detachment; army signal battalion; army signal supply and maintenance battalion; and a signal communication center operation company. Other units are assigned or attached as necessary.

37. Headquarters and Headquarters Detachment

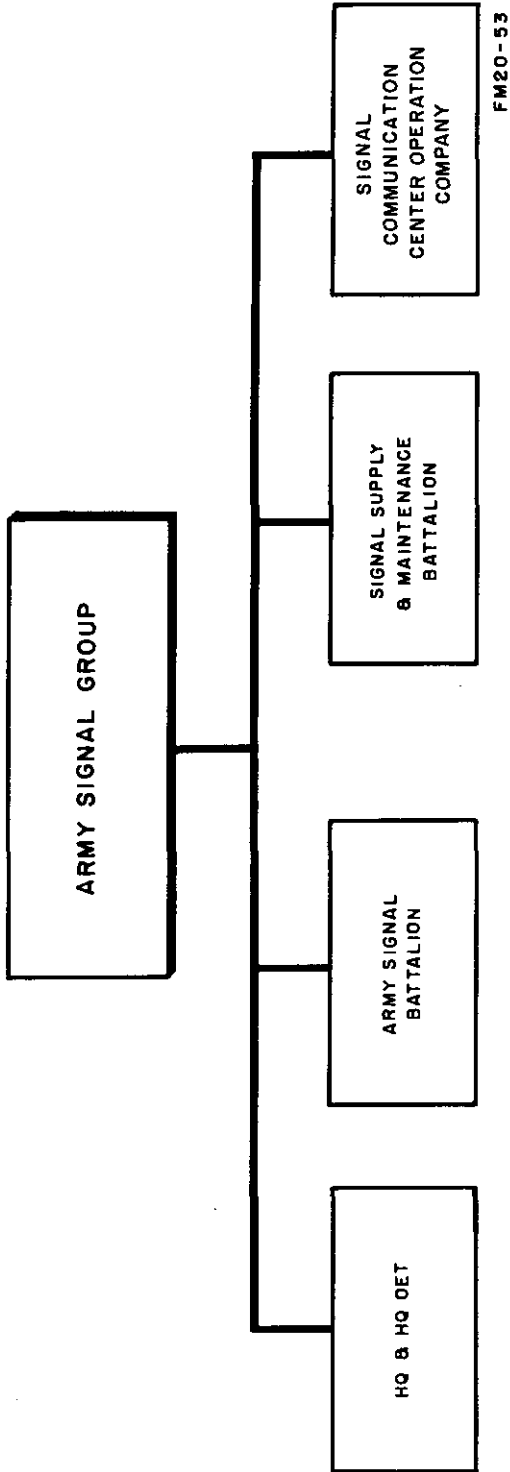
(TOE 11-22())

a. Mission. The mission of the headquarters and headquarters detachment of the army signal group is to—

- (1) Provide facilities with which the group commander controls the group.
- (2) Direct and coordinate the training, administration, and logistic support of assigned and attached units.

b. Employment. The elements of the army signal group normally are placed under the operational control of the army signal officer. Administrative control of the group is exercised by the army signal group commander.

- (1) Personnel of the group headquarters control and supervise group administration, training, and logistics.
- (2) Detachment headquarters personnel provide or obtain administrative support and internal communications for the group headquarters.
- (3) Personnel of the administration and supply section provide staff assistance to the group commander on personnel and logistic matters.
- (4) Personnel of the operations and intelligence section pro-



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Figure 9. Type organization of army signal group.

vide staff assistance to the group commander on training and intelligence matters.

38. Army Signal Battalion

a. One army signal battalion normally is assigned to each army signal group. The army signal battalion is 90 percent mobile and is a category II unit within the meaning of AR 320-5.

b. The mission of the army signal battalion is to provide—

- (1) Signal communications for the field army main and rear command posts.
- (2) Signal personnel and equipment for the installation and operation of a field army alternate command post.
- (3) Signal communications and facilities for the field army tactical operation center (FATOC) and associated air support communications.
- (4) Ground photographic service for a field army headquarters.
- (5) Air courier and messenger service for a field army.

c. For further details of the organization, operations, and employment of the army signal battalion, refer to FM 11-95 and TOE 11-95 ().

39. Army Signal Supply and Maintenance Battalion

a. The army signal supply and maintenance battalion is assigned on the basis of one per army signal group. The unit is approximately 60 percent mobile and is a category II unit within the meaning of AR 320-5.

b. The mission of the army signal supply and maintenance battalion is to—

- (1) Operate the field army signal depots and signal supply and maintenance points.
- (2) Provide semifixed fourth echelon maintenance for signal equipment within a field army.
- (3) Provide mobile third and limited mobile fourth echelon maintenance for signal equipment within a field army.

c. For further details of the organization, operation, and employment of the army signal supply and maintenance battalion, refer to FM 11-14 and TOE 11-155 ().

40. Signal Communication Center Operation Company (TOE 11-137())

a. *General.* One signal communication center operation company is normally assigned to an army signal group. This company

is 90 percent mobile and is a category II unit within the meaning of AR 320-5.

b. Mission. The mission of the company is to provide internal communications for operational headquarters within the field army area as required.

c. Employment. Appropriate elements of the signal communication center operation company are employed to provide internal signal communication facilities for a maximum of five large operational organizations such as logistical complexes. It depends on the field army area communication system for trunking circuits and carrier termination facilities.

- (1) The company is directly subordinate to the army signal group for administrative control.
- (2) Maintenance and mess facilities and personnel are organic to the company. Operational elements normally will mess with the organizations they support.

Section IV. COMBAT AREA SIGNAL GROUP

41. General

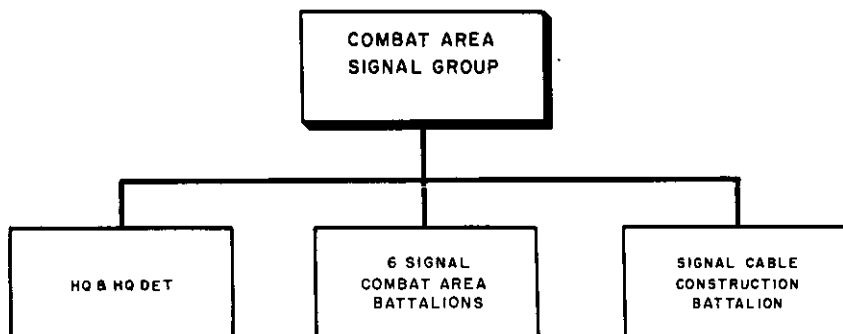
Combat area signal groups normally are assigned on the basis of one per field army. The units normally assigned to the combat area signal group (fig. 10) consist of a headquarters and headquarters detachment; six signal combat area battalions; and one signal cable construction battalion. The army signal officer exercises operational control over the combat area signal group through the group commander by issuance of written or verbal instructions. These orders cover the broad aspect of signal operations as they apply to the field army commander's plan. They include instructions as to the location of area signal centers, circuit requirements, communications center service and assignment, and usage of both radio and radio relay frequencies.

42. Headquarters and Headquarters Detachment

(TOE 11-32())

a. Mission. The mission of the headquarters and headquarters detachment of the combat area signal group is to—

- (1) Direct and coordinate the training, administration, and logistic support and to supervise the operations of assigned and attached units.
- (2) Coordinate and control the installation, operation, and maintenance of the field army area communication system in accordance with the army signal plan and instructions from the army signal officer.



FM20-54

Figure 10. Organization of combat area signal group.

b. *Employment.* The combat area signal group is employed to install, operate, and maintain a major portion of the field army area communication system.

- (1) Personnel of the group headquarters control and supervise group administration, training, and logistics.
- (2) Detachment headquarters personnel provide or obtain administrative support and internal communications for the group headquarters.
- (3) Personnel of the administration and supply section provide staff assistance to the group commander on personnel and logistic matters.
- (4) Personnel of the operations and intelligence section provide staff assistance to the group commander on training and intelligence matters.
- (5) Personnel of the system control and signal information section establish and operate the field army system control center.

43. Signal Combat Area Battalion

a. The signal combat area battalion is assigned on the basis of six per combat area signal group. It is 90 percent mobile and is category II unit within the meaning of AR 320-5.

b. The mission of each signal combat area battalion is to provide communications for a portion of the field army area communication system.

c. For further details of the organization, operations, and employment of the combat area signal battalion, refer to FM 11-86 and TOE 11-85 ().

44. Signal Cable Construction Battalion

a. The signal cable construction battalion is assigned on the basis of one per signal combat area group. The battalion is approximately 90 percent mobile and is a category II unit within the meaning of AR 320-5.

b. The mission of the signal cable construction battalion is to—

- (1) Install signal field cable circuits in the field army area.
- (2) Perform limited rehabilitation and maintenance of existing indigenous cable.
- (3) Perform limited field cable recovery and field cable repair in the field army area.

c. For further details of the organization, operation and employment of the signal cable construction battalion, refer to FM 11-15 and TOE 11-45 ().

CHAPTER 8
COMMUNICATIONS-ELECTRONICS FACILITIES
FOR ARMY CORPS

Section I. INTRODUCTION

45. General

To provide communications-electronics support for the corps, an understanding of the composition of the corps organization is necessary. The corps is not a fixed or permanent type of organization. It is essentially a tactical headquarters, and is organized primarily to execute tactical combat operations, normally as part of the field army.

a. It consists of a headquarters, a varied number of corps combat and combat support troops, and a variable number of divisions allocated in accordance with requirements of the situation.

b. When the mission of a corps requires it to operate as an independent unit in the field, it is known as an independent corps. Normally, the independent corps will operate directly under control of a headquarters higher than field army or as part of a joint force. The independent corps performs most of the combat and administrative functions normally performed by the field army for its components; therefore, it must be reinforced by the assignment or attachment of additional combat and service units, and by the augmentation of the corps staff.

46. Corps Communications-Electronics

a. The corps signal communication system is installed, operated, and maintained by the corps signal battalion.

b. The corps signal communication system provides direct communications from corps headquarters to its division and from corps artillery headquarters to each division artillery headquarters and to each artillery group attached to the corps. This system, integrated with the field army area communications system, provides the degree of flexibility required in signal communications.

c. An independent corps will require sufficient additional signal troops and equipment to provide area type communications, signal logistics, and augmentation to the corps photographic capability.

d. The EW capability for a corps is provided by the combat signal EW battalion which has infantry and armored EW companies attached in numbers to correspond to the number and types of divisions attached to the corps. See FM 24-150.

Section II. CORPS SIGNAL SECTION

47. Corps Signal Officer

The corps signal officer is a special staff officer on the staff of the corps commander. He normally exercises operational control, under authority delegated by the corps commander, over those signal units or personnel not assigned or attached to subordinate commands. In general, he performs the duties of the staff signal officer as indicated in paragraph 14.

48. Command and Staff Relationships of the Corps Signal Officer

a. *Higher Commands.* The corps signal officer coordinates plans and operations with, and receives technical advice and assistance from the field army signal officer or from the signal officer of the next higher echelon when the corps is operating independently.

b. *Adjacent Commands.* The corps signal officer coordinates communications-electronics operations and plans with the COM-MEL officers of adjacent commands. Complete coordination will be required to satisfy the requests for, and allocation of, various types of lateral communication circuits or channels.

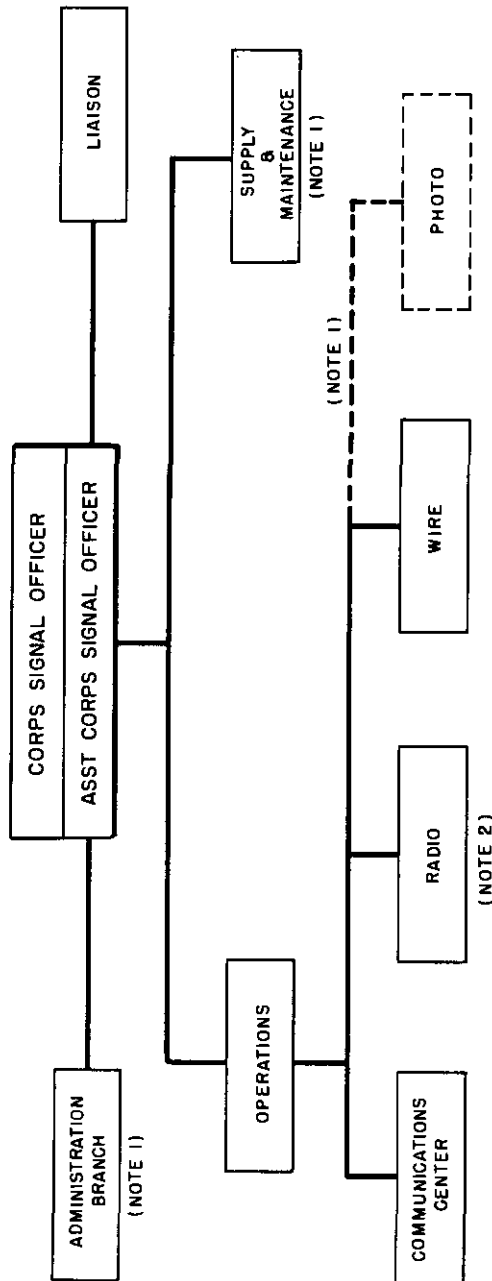
c. *Subordinate Commands.* The corps signal officer exercises technical supervision over the signal logistics, communications-electronics, and photographic activities of subordinate commands.

d. *Staff Relationships.* The corps signal officer confers, consults, and coordinates with other staff officers of the corps staff. See paragraph 15d for a partial list of items that must be coordinated with other staff sections.

49. Corps Signal Section

a. The corps signal section is included in TOE 52-1() as a part of the corps headquarters. The signal officer is responsible for the organization of the signal section subject to the approval of the corps commander. A type organization of the corps signal section is depicted in figure 11.

b. The assistant corps signal officer performs duties as directed by the corps signal officer. He will act for the signal officer in the latter's absence. He may be designated as the signal officer of an alternate headquarters. The assistant corps signal



NOTES :

1. AUGMENTATION DETACHMENT PROVIDES
 - 1 EACH MAJOR MOS 4400, 1 EACH CAPTAIN MOS 4400 FOR SUPPLY & MAINTENANCE SECTION
 - 1 EACH CAPTAIN MOS 8500 FOR PHOTO, 1 EACH CAPTAIN O210 FOR OPERATIONS BR, AND
 - 1 EACH LT. 2210 FOR ADMINISTRATIVE BRANCH.
2. THE COMBAT SIGNAL EW BN COMMANDER ADVISES AND ASSISTS THE CORPS SIGNAL OFFICER ON EW. IN THE EVENT THERE ARE NO ASSIGNED EW ELEMENTS, THE RADIO SECTION WILL ASSUME THE RESPONSIBILITIES FOR COORDINATION OF EW FUNCTIONS WITHIN THE CORPS.

Figure 11. Type organization of a corps signal section.

FM20-11

officer performs the usual duties of a staff section executive in accordance with policies established by the corps signal officer. He coordinates the work of the signal staff with other staff officers of the corps headquarters, except when such coordination is a specific duty of some other staff officer.

c. The assistant signal officer for operations is responsible for the planning and staff supervision of the corps signal communication system. It is his responsibility to—

- (1) Plan, direct, and supervise the installation, operation, and maintenance of all signal communications facilities at and between the echelons of the corps headquarters and between the corps headquarters and its major subordinate commands. This includes the radio relay multichannel circuits between corps artillery headquarters and its major subordinate units and the communications facilities to support the corps tactical operation center (CTOC).
- (2) Direct and coordinate the preparation of the corps SSI and SOI.
- (3) Provide coordination with the corps staff on matters concerning communications-electronics.
- (4) Prepare signal and EW plans for the corps signal officer to present to the staff planning groups; any subsequent signal and EW annexes; and appropriate portions of paragraphs 4 and 5 of the corps operations orders.
- (5) Provide staff supervision of the communications activities of the corps signal battalion and other signal units assigned or attached to corps headquarters.
- (6) Coordinate with the communications division of the army signal section to insure adequate communications support of corps units and headquarters located in the vicinity of army area signal centers, and to assure adequate trunking facilities to connect the echelons of corps headquarters into the field army area communication system.
- (7) Supervise and coordinate the activities of the communications center, radio and wire officers in the corps signal section. He may also supervise and coordinate the activities of the battalion photographic officer when the latter is designated as the corps photographic officer.

d. The corps signal supply officer serves under the supervision of the corps signal officer. He is responsible for advising the corps signal officer on all signal supply and maintenance matters concerning the corps.

50. Corps Communications Center Officer

The corps communications center officer is responsible for staff supervision of the communications center activities at the echelons of the corps headquarters and at subordinate commands, to assure that all communications center activities are conducted in accordance with published operating procedures and policies.

51. Corps Radio Officer

The corps radio officer is responsible for staff supervision of all radio communications activities conducted within the corps. This officer—

- a.* Prepares and disseminates radio net diagrams of the nets controlled by the corps.
- b.* Establishes and maintains a radio-frequency utilization register and map to assure accurate and up-to-date radio-frequency assignment data.
- c.* Prepares and disseminates the corps radio relay system maps.

52. Corps Wire Officer

The corps wire officer is responsible for the preparation and dissemination of telephone and teletypewriter traffic diagrams, telephone and teletypewriter directories, and line route maps of the corps communications system. He is also responsible for—

- a.* Preparing traffic studies on all communications systems used by the corps and making recommendations to the operations officer for the increase or decrease of facilities furnished by the corps system or the field army area communication system.
- b.* Compiling factual and experience data for future reference.
- c.* Providing staff supervision over teletypewriter and telephone operations throughout the corps.
- d.* Establishing wire construction and maintenance practices and exercising staff supervision over their employment throughout the corps.

53. Corps Photographic Officer

The signal section is not authorized a photographic officer. However, the signal battalion photographic officer is usually designated as the corps photographic officer as an additional duty. When so designated, he serves under the direct supervision of the operations officer and is responsible for planning, coordinating, and supervising all photographic activities in the corps.

Section III. CORPS SIGNAL UNITS

54. Corps Signal Battalion

One corps signal battalion is assigned to each corps. The battalion provides signal communication facilities which, when supplemented by the field army area communication system, satisfy the communication requirements of the various echelons of the corps headquarters.

a. The corps signal battalion consists of a headquarters and headquarters company, a command operations company, and a field operations company. The corps signal battalion is approximately 85 percent mobile and is a category II unit within the meaning of AR 320-5.

b. The mission of the corps signal battalion is to—

- (1) Provide signal communications for all echelons of a corps headquarters.
- (2) Install, operate, and maintain multichannel communications facilities to major subordinate tactical units.
- (3) Install, operate, and maintain multichannel communications facilities between major headquarters of corps artillery.
- (4) Operate the corps ground and air messenger service.
- (5) Provide photographic service (except aerial photography) for the corps.

c. For further details of the organization, operation, and employment of the corps signal battalion, refer to FM 11-92 and TOE 11-15.

55. Combat EW Signal Battalion

One combat EW signal battalion, corps is assigned to each corps. The battalion provides noncommunication electronic counter measures (ECM) capabilities.

a. Organization. The battalion consists of a headquarters and headquarters detachment, and a number of attached combat EW signal companies, infantry or armor, to correspond with the number of infantry and armored divisions in the corps. The battalion, including its attached companies, is 90 percent mobile, and is a category II unit within the meaning of AR 320-5.

b. Mission.

- (1) The mission of the headquarters and headquarters detachment of the battalion is to—
 - (a) Direct and coordinate operations and training, and

provide administrative and logistical support for the combat EW signal battalion, corps.

(b) Provide an EW section for the corps tactical operation center.

(2) The mission of a combat EW signal company, infantry, is to provide—

(a) EW support for an infantry division, and its subordinate combat elements.

(b) EW staff and equipment to operate an EW section at the division tactical operations center.

(3) The mission of a combat EW signal company, armored, is identical to that of the combat EW signal company, infantry. It supports an armored division.

c. *Employment.* For the employment of the combat EW signal battalion, corps, see FM 24-150 and TOE 11-66 (), 67 (), and 68 ().

56. Signal Intelligence Units

Signal intelligence teams may be assigned or attached to a corps as required. These teams are organized and equipped in accordance with TOE 11-500 (). Each team has at least one signal intelligence officer. For additional information, see FM 11-30.

57. Other Signal Units

The corps may have attached or assigned additional signal units as required. When operating independently the corps normally will be provided, consistent with its mission, such additional signal units as—

Army signal group headquarters.

Combat area signal group headquarters.

Signal combat area battalions.

Signal cable construction battalion.

Signal supply and maintenance battalion.

Signal communication center operation company.

ADP units.

Signal intelligence teams.

Photographic teams.

CHAPTER 9

COMMUNICATIONS-ELECTRONICS FACILITIES FOR DIVISIONS

58. Division Signal Officer

The division signal officer exercises dual functions of staff and command. He is a special staff officer on the staff of the division commander, and commands the division signal battalion which installs, operates, and maintains the division area communication system. As the division signal officer, he performs those functions of the staff signal officer as indicated in paragraph 14 and FM 11-50 and 11-57.

59. Command and Staff Relationships of the Division Signal Officer

a. Higher Commands. The division signal officer receives technical instructions, advice, and assistance from the corps signal officer.

b. Adjacent Commands. The division signal officer coordinates communications-electronics operations and future plans with the signal officers of adjacent commands. Complete coordination will be required to satisfy the requests for, and allocation of, various types of lateral communication circuits or channels.

c. Subordinate Commands. The division signal officer exercises technical supervision over the communications-electronics and photographic activities of subordinate commands.

d. Staff Relationships. The division signal officer confers, consults, and coordinates with other staff officers of the division staff. See paragraph 15*d* for a partial list of items that must be coordinated with other staff sections.

60. Division Signal Section

The division signal section is included in the TOE of the headquarters and headquarters company of the appropriate division signal battalion. The assistant DSO, radio officer, and enlisted staff members are organic to the DSO's section. In addition to these staff members, the DSO normally appoints a division photographic officer from the photographic section in headquarters and headquarters company.

61. Division Area Communication System

The division area communication system is installed, operated, and maintained by the division signal battalion. This system is a multi-axis, multichannel, multimeans, communication system composed of signal centers and interconnecting trunk facilities. The signal centers are located at or near the headquarters of major divisional elements. They are interconnected by multichannel radio relay and, when the situation permits, by field cable or field wire circuits. The units of the division are connected to the signal centers by radio, radio relay, field wire, field cable, or by radio/wire integration links. The major portion of the trunking system consists of common-user circuits; sole-user circuits are provided when authorized by the commander.

62. Division Signal Battalion (Armored, Infantry, or Mechanized)

a. The signal battalion organized under TOE 11-35 () provides signal support for the armored, infantry, or mechanized division to which it is assigned.

b. The mission of the division signal battalion is to—

- (1) Provide signal communications to include communications to subordinate units, for the—
 - (*a*) Division headquarters and the division headquarters company, exclusive of internal radio nets.
 - (*b*) Headquarters and headquarters company, support command, exclusive of internal radio nets.
- (2) Establish and operate the division area communication system.
- (3) Provide each brigade headquarters with multichannel communications to each of the two command echelons of the division.
- (4) Provide area signal center service to units located in the vicinity of the division area signal centers, supplemental to organic facilities.
- (5) Establish and operate facilities to connect division artillery headquarters into the division area communication system.
- (6) Operate the division area ground messenger service.
- (7) Perform photography (except aerial photography) for the division, and still picture laboratory service for all divisional units.
- (8) Perform third echelon maintenance of all cryptographic equipment in the division and organizational maintenance of signal equipment organic to the battalion.

c. For further details on the organization, operations, and employemnt of the division signal battalion, refer to FM 11-50 and TOE 11-35 ().

63. Airborne Division Signal Battalion

a. The airborne division signal battalion is assigned on the basis of one per airborne division. It is 50 percent mobile and 100 percent air transportable, and is a category II unit within the meaning of AR 320-5 with the exception of the forward communication company which is a category I unit.

b. The mission of the airborne division signal battalion is to provide—

- (1) Signal communications for an airborne division headquarters and an airborne division support command headquarters.
- (2) An airborne division area communication system.
- (3) Long lines communication service to brigade headquarters, support command headquarters, and to other units operating directly under division headquarters.
- (4) Photography (except aerial photography) for the division and still laboratory service for all divisional units.
- (5) Third echelon maintenance of cryptographic equipment in the division and organizational maintenance of signal equipment organic to the signal battalion.

c. For further details of the organization, operations, and employment of the airborne division signal battalion, refer to FM 11-57 and TOE 11-215 ().

CHAPTER 10

THEATER SIGNAL LOGISTICS

Section I. INTRODUCTION

64. General

Theater signal logistics are those aspects of military operations which deal with the acquisition, storage, movement, distribution, maintenance, and disposition of communications-electronics equipment, supplies, and services for military forces. Logistics has a great influence on the strategy and tactics applied in the theater of operations. The amount of logistical support required in a theater of operations is determined in part by the mission, size, and composition of theater forces.

65. Responsibility for Logistics

The commander at every echelon is responsible for the logistical support of his forces and all subordinate units. The personnel who actually perform the tasks and administrative duties may range from a deputy chief of staff for logistics and his large, complex staff to a supply sergeant and his clerk. For further information on logistical operations of various types, see FM 101-10.

66. Interrelation of Supply and Maintenance

Since supply and maintenance functions are closely allied, plans and operations for supply and maintenance must be closely integrated. An effective maintenance program including the prevention of equipment failure by adequate and timely preventive maintenance reduces the supply requirements, and the efficiency of supply agencies in replacing unserviceable equipment increases the combat capability of supported units.

Section II. SIGNAL SUPPLY IN A THEATER OF OPERATIONS

67. General

The actual organization and control of a theater signal supply system cannot be predetermined. Centralized control and decen-

tralized operations are essential for the operation of the signal supply system. Its operation will be facilitated by timely information and simple orderly supply procedures.

68. Signal Supply Planning

Planning is the first step in signal supply operations. Initial signal supply plans must be based on preliminary tactical plans and must be sufficiently flexible to meet the requirements of the changing tactical situation.

a. Signal supply planning must be developed concurrently and coordinated with tactical planning.

b. An essential factor in signal supply planning is to know the troop basis. Even a small change in the composition of forces may cause an important change in the type and quantity of signal equipment required. In addition, signal equipment is so designed that substitution of one type for another is often impractical.

c. Other factors that must be considered in the signal supply planning are—

- (1) Distance of the theater from the source of supply.
- (2) Maintenance requirements inherent in the equipment.
- (3) The geography of the theater.
- (4) Climatic conditions.
- (5) Availability of indigenous support.
- (6) Transportation facilities.
- (7) Enemy capabilities.

69. Signal Supply Requirements

Requirements are statements indicating the need or demand for specific signal supplies to support a force for a specific period of time or for a specific project. The following factors must be considered in the computation of signal supply requirements for a specific theater:

a. *Initial Signal Supply Requirements.* Initial signal supply requirements are the allowances prescribed in tables of organization and equipment, tables of allowances, equipment modification lists, and similar tables. To determine these requirements, signal officers obtain from appropriate staff members such basic data as troop basis, status of supplies in the hands of troop units, the phased arrival of troop units, operational plans for troop units, and the period of time for which computations are to be made.

b. *Replacement and Consumption Requirements.* Replacement and consumption requirements are the quantities required to maintain authorized levels of supply and to replenish supplies consumed or expended by the using units.

c. Reserve Requirements. Reserve requirements are the quantities of items needed to meet emergency situations which may be expected by the command, and to establish additional reserves which may be prescribed for particular purposes. Computation of these requirements is the signal officer's responsibility. Commanders are responsible for obtaining authorization for reserves from the next higher command echelon, and for issuing directives for the accumulation and replenishment of reserves.

d. Signal Project Requirements (Class IV). Class IV requirements are those supplies that are not included in normal allowances, but which are necessary to complete a specific task. Project requirements may originate in a theater, or they may be included as a part of the Department of the Army plan for a specific operation. They may include a bill of materials and, when necessary, provide a schedule for the shipment of the materials. Signal project requirements are divided into three principal categories:

- (1) Operational project requirements for additional equipment or supplies for tactical operations.
- (2) Development project requirements for supplies and equipment for construction, reconstruction, development, or remodeling of military installations, utilities, or facilities required to support military forces or activities in theaters.
- (3) Maintenance project requirements for quantities of class IV supplies for normal maintenance of installations, facilities, and utilities that are required to support forces in a theater of operations.

70. Procurement

Signal supplies are obtained in a theater of operations by requisition and shipment from sources outside the theater, by exploitation of resources within the theater, or by a combination of the two methods. Sources outside the theater may be the zone of interior, another theater, or allied countries. Sources of supply within the theater include local procurement, captured material, and reclamation of supplies through repair. Procurement from allied countries will be in accordance with instructions from the Department of Defense.

a. During the first months of operation in a theater of operations, signal supply usually is on an automatic basis from the zone of interior. Units going into a theater are accompanied by their

initial equipment and supplies for replacement and maintenance for a specified period of time. As soon as practicable, a normal requisitioning procedure is established.

b. Procurement from local sources of supply within a theater of operations should be fully utilized. By this means, time, transportation, and our national resources are conserved. In procuring items from local sources, consideration is given to the arrangements made with allied governments and the needs of the local population. The procedure for obtaining supplies from local sources in the theater of operations is prescribed by the theater commander.

71. Stock Control

The objective of stock control is the organization and management of signal supply operations in such a manner that adequate signal supplies are on hand and are delivered to the using units as required. With the large number of signal items procured and issued by the Signal Corps, a simple, yet efficient, stock control system is essential.

a. An efficient stock control system provides information concerning the total signal stocks in the theater, theater due-ins and due-outs, receipts and issues, authorized stock levels, requisitioning objectives, quantities in transit, items unserviceable but repairable, and other pertinent data relative to the stock position within the theater. Stock records are used as a basis for requisitioning and distributing signal stocks within the theater. They also are used to redistribute unbalanced stocks, dispose of surpluses, and control maintenance operations.

b. Stock levels are maintained through replenishment actions. This is accomplished by submitting requisitions sufficiently in advance to assure that the supplies will arrive at their destination by the required date.

c. Stock levels may be computed by automatic data processing (ADP) equipment for every item received or issued. The replacement factor, used as the basis for determining the estimated daily issue, may be established by either the authority prescribing the supply level or by higher authority.

72. Storage

a. In a theater of operations, signal supplies may be stored at both branch and field depots, as well as at supply points. Relatively large quantities of supplies, including slow moving items, are stored only at COMMZ depots. A supply of balanced stocks

of fast moving items are stocked at forward supply points to be readily available to using units.

b. The type of storage facilities required is determined by the characteristics of the items to be stored and the manner in which they are packaged. Among the types of storage to be provided are open storage, covered storage, refrigerated storage, and controlled humidity and temperature storage. Mobile storage may be provided when the transportation situation permits and when the operational situation requires it.

c. There is an increasing requirement for dispersion, duplication, and protection of storage facilities to provide passive defense against the effects of mass destruction weapons.

- (1) Dispersion and duplication of storage facilities are accomplished to the degree required by known or estimated enemy capabilities and within the capabilities of the supply agency.
- (2) Protective measures include the use of underground storage, protective construction, natural cover and concealment, and camouflage. Since the construction of storage facilities is expensive in terms of manpower and materials, existing facilities and open storage is utilized to the maximum extent practicable.

73. Distribution

The ultimate objective of signal supply operations is to provide necessary signal supplies and equipment to the using unit, where and when needed.

a. The distribution and issue functions within a theater of operation are performed at depots and supply points. Depots are established in the COMMZ and in the field army area. Supply points are established at selected locations in the theater to facilitate the issue of supplies to using units.

b. Procedures governing the movement of supplies in a theater of operations include the principle that when supplies are loaded and moved forward, they are moved as far forward as practicable before they are unloaded. Application of this principle will reduce the handling of supplies and expedite delivery of supplies to the user. In determining the extent of movement that is practicable, due consideration is given to the principle of "first-in - first-out" as applied to stocks on hand in intermediate storage locations. To preclude undue deterioration in storage it is necessary to periodically turn over supplies on hand.

Section III. THEATER SIGNAL MAINTENANCE

74. Signal Corps Responsibility

The signal officer at every level of command exercises technical control over all phases of maintenance of communications-electronics equipment to include combat surveillance/target acquisition equipment within the command and within subordinate units. The signal officer makes such technical inspections as he considers necessary to assure the proper maintenance of all communications-electronics equipment for the command. He recommends broad plans, policies, and procedures for the maintenance and repair of signal material. After approval by the commander, these recommendations are published as maintenance directives for that command.

75. Principles of Maintenance

The objective of signal maintenance organizations is to assure maximum availability of equipment to using units by repairing equipment at the lowest echelon of maintenance. In order to attain this objective, the application of the following principles of maintenance are necessary:

a. Signal maintenance is performed as far forward as is consistent with the tactical situation, the time available, capabilities of personnel, and the availability of repair parts and equipment. When feasible, maintenance personnel should be moved to equipment rather than to move equipment to maintenance personnel.

b. Each unit is authorized a supply of repair parts, tools, and test equipment commensurate with its maintenance responsibility. No unit will neglect its properly assigned function in order to perform the work of a higher echelon.

c. Signal maintenance units are deployed to offer the best possible service to the units being supported. Maintenance units remain close enough to the units being served to provide them with direct support. Whenever practicable, maintenance units support the same tactical units throughout an operation.

d. Depot maintenance facilities remain in operation in the same locality as long as practicable.

e. A system of recovery and evacuation is established for signal equipment. This system evacuates signal equipment which cannot be repaired or replaced at the using unit to the echelon capable of effecting its repair and return to the user, repair and return to depot stocks, or salvage.

f. Repair of equipment by the process of "repair by exchange" or by "repair by replacement" is employed at all appropriate supply points and depots. Replacement items are provided by an authorized maintenance float.

Section IV. THEATER CRYPTOLOGISTICS

76. General

The information contained herein is limited to the logistical support mission of the Signal Corps in providing the means to maintain a cryptographic security capability. This mission is referred to as a cryptologicistic mission. For further information refer to FM 32-5.

77. Functions Within Cryptologistics

A brief description of each major function included within the army cryptologistics mission is as follows:

a. *Procurement.*

- (1) Procurement generally embraces all actions taken to place an item of cryptomaterial into the cryptologicistic distribution system.
- (2) These actions are taken at national and departmental level, and are not within the scope of this manual.

b. *Distribution.*

- (1) Distribution channels are prescribed and developed in a manner to insure timely and economical delivery of cryptomaterial from the source to the user. While the cryptologicistic system provides for distribution of material from the original source at national or departmental level to the field user through a succession of intermediate cryptologicistic support echelons, intermediate echelons are frequently bypassed to avoid unnecessary handling. This expedient is applied to shipments of a routine or recurring nature and in specific instances when timeliness of delivery is a paramount consideration.
- (2) Distribution channels generally parallel command channels from theater level down to and including tactical commands and tactical support organizations.

c. *Requirements Determination and Allocation.*

- (1) Allocation of cryptomaterial is based upon current and anticipated requirements of the supported command. Consequently, the allocation function must be closely coordinated by personnel in the cryptologicistic support

organization with personnel engaged in communications systems development, engineering, planning, operation, and maintenance. Because cryptologic planning is an element of communications planning, the cryptologic support activity for a command invariably functions under control of the command signal officer.

- (2) The importance of determining cryptographic requirements concurrently with communications planning cannot be over-emphasized. It is essential that sufficient lead time be provided the cryptomaterial production agency to fill requirements not previously programed, in order that cryptomaterial required to support communications plans may be available on a timely basis.

d. Accounting.

- (1) Crypto-accounting functions are performed at all echelons in the cryptologic system. The close control necessary to protect cryptomaterial from compromise demands that each item of registered or classified cryptomaterial be accounted for from the time it is produced until it is ultimately destroyed. Details concerning this function are covered in AR 380-40 and AR 380-41.
- (2) Each cryptologic support activity accounts for all accountable material issued to the mission area. To obtain complete accountability, and for the purpose of uniform control, accountability is assumed by each intermediate accountable office.
- (3) In addition to security measures that are provided by the accounting function, a secondary purpose is achieved by using accounting records as a means of compiling statistical data. These data are used for planning, programing, determining requirements, and making allocations.

e. Storage.

- (1) Adequate secure storage facilities are required for cryptomaterial at all echelons.
- (2) Depending upon the mission of the particular activity, secure storage facilities are required for material used in daily operations and for material required for emergency and future use.
- (3) The prescribing of requirements for physical security is a responsibility of the U.S. Army Security Agency and is covered in AR 380-40.

f. Maintenance.

- (1) Depot maintenance on cryptographic equipment is performed by personnel of U.S. Army Signal Communication Security Agency (USASCSA).
- (2) Field maintenance is performed by designated TOE signal field maintenance shops and using organizations when so authorized. Organizational maintenance is performed by using organizations. Details concerning maintenance policy, procedure, and responsibility are contained in AR 750-5 and 750-610.

78. Cryptologistics Support

Cryptologic support is provided in theaters of operations in the following manner:

a. The principal cryptologic organization is the command issuing office (CIO).

b. Normally, a CIO supports a theater, and operates under immediate control of the theater COMMEL officer. CIO's are accountable to USASCSA for all material issued to the theater.

c. A field army issuing office (FAIO) is established as the cryptologic support activity to provide service to all elements of the field army.

d. Distribution authorities may be established by the theater commander to augment the CIO distribution facilities.

e. Distribution authorities may be established by the army commander to augment the FAIO by supporting elements of the field army on a command or area basis.

CHAPTER 11

AUTOMATIC DATA PROCESSING OPERATIONS

79. General

a. The army will utilize automatic data processing equipment at each echelon of command from theater army headquarters down to and including division headquarters. Computers with proper programs and appropriate operating procedures and input-output devices, all linked together by communication circuits, provide an automatic data processing system (ADPS). This system operates under the technical supervision of the signal officers of the various headquarters. See FM 101-5. An ADPS provides timely data for close control and coordination of the operational, logistic, and administrative activities of forces in a theater of operations. The system has the ability to digest large volumes of information (data); to perform programmed (preplanned) operations on these data; to make rapid evaluation based upon established criteria; to perform additional tasks as a result of these evaluations; and to display or transmit the final result or computations to the action authority to permit accurate and timely decisions.

b. Computer equipment developed for, and integral to, weapons fire control systems is under the operational control of commanders of the units employing such weapons or missiles.

80. Command and Combat Use of ADPS

The ADPS is a component of the command communications system. It assists the commander in his exercise of command. It is a tool of command; not a substitute for command. The command decision remains, as always, a human function, but ADPS helps the commander to make more accurate and significant decisions. Some of the combat uses of a processor are for computing data for fire control and coordination; air defense; intelligence production; war-gaming of courses of action available to the command; stream flow and flood predictions; topographic, geodetic, and meteorological information; EW coordination; frequency management; traffic control, and personnel and supply actions and reports.

81. Logistic Support Operations

Within the COMMZ there will be automatic data processors,

in support of logistical operations at TALOG, BALOG, ADLOG and surrounding depots with input-output devices at installations and technical services supply offices. At theater and theater army levels, long-range supply estimates, tonnage calculations, and replacement factors comprise the bulk of the processing workload. Requirements for the dispersal of the installations lead to a number of service-center type data processing facilities serving various elements within a given area. However, the communication and data transmission links between all these installations are of sufficient capacity and dependability to permit interaction between them as though they were physically located in one place.

82. Logistical Type Applications

Following are some of the applications of ADP in COMMZ and the rear areas of the combat zone :

- a. Supply actions, stock management, and inventory control.
- b. Evacuation and hospitalization statistics.
- c. Transportation requirements.
- d. Movements, both tactical and nontactical, including airborne loading plans.
- e. Determination of requirements for construction materials and equipment.
- f. Area damage estimates and control plans.
- g. Personnel accounting, records, and statistics.

83. Communication Requirements

To obtain the maximum use from high-speed processing devices, current data are gathered and forwarded quickly and accurately to the processing center. This requires that responsive communication circuits be provided to connect input-output devices to the central processor, and data transmission links between processors at higher and lower echelons. Though the minimum requirement is that of one telegraph channel, the usual form of transmitting data is by one voice channel. A teletypewriter may serve as an input-output device, and is a means to query the central processor for information. However, at theater and theater army levels where high speed processing is utilized the transfer of data between computers requires high quality, wide bandwidth circuits equivalent to many voice channels.

CHAPTER 12

ELECTRONIC WARFARE

84. General

Electronic warfare (EW) is that division of the military use of electronics involving actions taken to prevent or reduce the enemy's effective use of radiated electromagnetic energy and actions taken to insure our own effective use of radiated electromagnetic energy. EW includes electronic countermeasures (ECM) and electronic counter-countermeasures (ECCM). ECM may be either active or passive.

85. EW Responsibility

a. The theater commander establishes EW policies, based on the recommendations of his signal officer, for the theater of operations. The theater commander may delegate certain authority to major subordinate commanders for the operational employment of EW.

b. The theater army commander, in accordance with the policies of the theater commander, is responsible for the employment of EW in support of his operations. He delegates operational responsibility for EW in the combat zone to the army group commanders, or to the field army commanders if army groups are not established. Under the policies of the theater army commander, all subordinate commanders are responsible for the employment and control of EW units assigned or attached to their commands. Subordinate commanders are also responsible for the integration of preplanned EW missions with tactical operations. The EW responsibilities of commanders and their signal officers are not abrogated in the event no EW units are assigned to the command.

86. EW Systems

a. *General.* The army relies on its electronic equipment for signal communications, combat area surveillance, control of guided missiles, and functioning of certain artillery fuzes and other miscellaneous systems. Efficient use is made of this electronic equipment, and effective measures are taken to reduce the efficiency of the enemy's use of electronics.

b. Vulnerable Electronic Systems. The following are susceptible to the application of EW :

- (1) Radio communication.
- (2) Radar.
- (3) Proximity or variable time (VT) fuzes.
- (4) Missile guidance.
- (5) Navigational aids.

87. Employment of EW Units

The tactical employment of EW lends itself to the formation of special EW units. These units are assigned to organizations where the need for countermeasures is indicated by the effective use of EW by the enemy. Combat EW units are assigned to major commands for employment within these commands. For additional information on the organization and employment of these units see FM 24-150.

CHAPTER 13

SIGNAL TECHNICAL INTELLIGENCE

88. General

a. Signal technical intelligence is the analysis of technical and scientific information regarding military and civilian communications-electronics equipment, systems, installations, doctrines, tactics, and techniques of foreign nations. It is one of the technical functions of the Signal Corps.

b. The objectives of signal technical intelligence in the theater of operations are to—

- (1) Provide the theater with the signal technical intelligence required for the prompt and efficient use of captured signal equipment and signal communication systems.
- (2) Process captured signal equipment and documents which are of unusual importance for analysis as to use, design, or techniques employed, and arrange for their transfer to CONUS for further technical study.
- (3) Provide information for the evaluation of the capabilities and limitations of enemy communications-electronics personnel, equipment, tactics, and techniques.

89. Staff Relationships and Responsibilities

The signal intelligence officer may serve in a dual capacity; primarily as commander of a signal intelligence unit under the operational control of the signal officer, and secondly as a staff member of the signal section. Under the direction of the signal officer and in accordance with G2 policies, his responsibilities may include any or all of the following :

- a.* Training personnel in signal technical intelligence practices.
- b.* Evaluating and evacuating captured signal equipment for technical intelligence purposes.
- c.* Training personnel in the characteristics of enemy signal equipment and its compatibility with, or adaptability to, our own equipment.
- d.* Exploiting signal technical intelligence derived from captured maps, diagrams, documents, or obtained by POW interrogation of enemy signal personnel.

e. Collecting, collating, and analyzing information concerning foreign signal materiel, communication facilities, and installations required by the signal officer in preparing his recommendations concerning the immediate tactical mission or for aid in long range strategic planning.

90. Signal Technical Intelligence Units

Signal Corps technical intelligence units normally are assigned or attached to corps, field armies, theater, or certain types of logistical commands. The units are responsible for exploiting any signal situation or captured signal equipment, supplies, documents, and other materiel that will aid the signal technical intelligence effort. They are employed in the field to procure and process information promptly, and to disseminate the resultant intelligence. They serve as the basic operating and coordinating elements of signal technical intelligence activities.

91. Organization and Mission

There are several types of teams within the signal technical intelligence organization. Each team is organized to perform specific operations at corps, field army, and theater army level. For additional information, refer to FM 11-30.

92. Responsibilities of Signal and Other Units

a. In addition to general intelligence responsibilities common to all combat and service units, signal units at all levels have a specific responsibility to assist signal technical intelligence personnel. This includes reporting the capture of enemy signal installations, equipment, and supplies to the nearest signal technical intelligence officer; giving as much information as possible as to location, quantity, condition, design, and nature of the equipment; and safeguarding it consistent with the assigned mission of the unit. Signal units also have the responsibility for destroying captured equipment when recapture by the enemy is imminent.

b. Although signal intelligence is the direct concern of specifically organized units and agencies, all unit commanders should impress upon their troops the necessity for recognizing and reporting promptly any information pertaining to all signal intelligence. Individuals may obtain information accidentally while performing a routine mission, or during a tactical reconnaissance. The value of information is increased when the details concerning its origin, including time it was obtained, are given. Failure to report the circumstances may materially reduce the value of the information.

APPENDIX

REFERENCES

1. Field Manuals

- FM 7-24 Communication in Infantry and Airborne Divisions.
- FM 11-8 Field Radio Relay Techniques.
- FM 11-14 Army Signal Supply and Maintenance Battalion.
- FM 11-15 Signal Cable Construction Battalion.
- FM 11-16 Signal Orders, Records, and Reports.
- FM 11-21 Tactical Signal Communication Systems, Army, Corps, and Division.
- FM 11-30 Signal Corps Technical Intelligence.
- FM 11-40 Signal Corps Pictorial Operations.
- FM 11-50 Signal Battalion, Armored, Mechanized, and Infantry Divisions.
- FM 11-51 Signal Air Photo Reproduction and Delivery Company.
- FM 11-57 Airborne Division Signal Battalion.
- FM 11-83 Signal Base Depot Company, (TOE 11-597 ().)
- FM 11-86 Combat Area Signal Battalion, Army.
- FM 11-92 Corps Signal Battalion.
- FM 11-95 Army Signal Battalion.
- FM 17-70 Communication for Armor Units.
- FM 21-30 Military Symbols.
- FM 24-150 Electronic Warfare (U).
- FM 27-10 The Law of Land Warfare.
- FM 30-16 Technical Intelligence.
- FM 32-5 Communications Security (U).
- FM 32-10 United States Army Security Agency in Support of a Field Army (U).
- FM 54-1 The Logistical Command.
- FM 100-5 Field Service Regulations—Operations.
- FM 100-10 Field Service Regulations; Administration.
- FM 100-11 Signal Communications Doctrine.
- FM 100-15 Field Service Regulations; Larger Units.
- FM 101-5 Staff Officer's Field Manual; Staff Organization and Procedure.
- FM 101-10 Staff Officer's Field Manual: Organization, Technical, and Logistical Data.

2. Technical Manuals

- TM 11-486-1 Electrical Communications Systems Engineering: *Military Communications Systems.*
- TM 11-486-2 Electrical Communications Systems Engineering: *Traffic.*
- TM 11-486-3 Electrical Communications Systems Engineering: *Transmission and Circuit Layout.*
- TM 11-486-4 Electrical Communication Systems Engineering: *Inside Plant.*
- TM 11-486-5 Electrical Communications Systems Engineering: *Outside Plant Wire.*
- TM 11-486-6 Electrical Communications Systems Engineering: *Radio.*
- TM 11-486-7 Electrical Communications Systems Engineering: *Power.*
- TM 11-486-10 Electrical Communications Systems Engineering: *Handbook.*
- TM 11-486-11 Electrical Communications Systems Engineering: *Definitions and Abbreviations.*

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,
*General, United States Army,
Chief of Staff.*

Official:

J. C. LAMBERT,
*Major General, United States Army,
The Adjutant General.*

Distribution:

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516th Sig Gp (20)
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NG: State AG (3) Div; Corps Arty; Div Arty; Bde; Regt/Gp/Bg; Bn
(1 each except Armd Div (4) (1 each CC)).

USAR: Same as Active Army except allowance is one copy each unit.

For explanation of abbreviations used, see AR 320-50.

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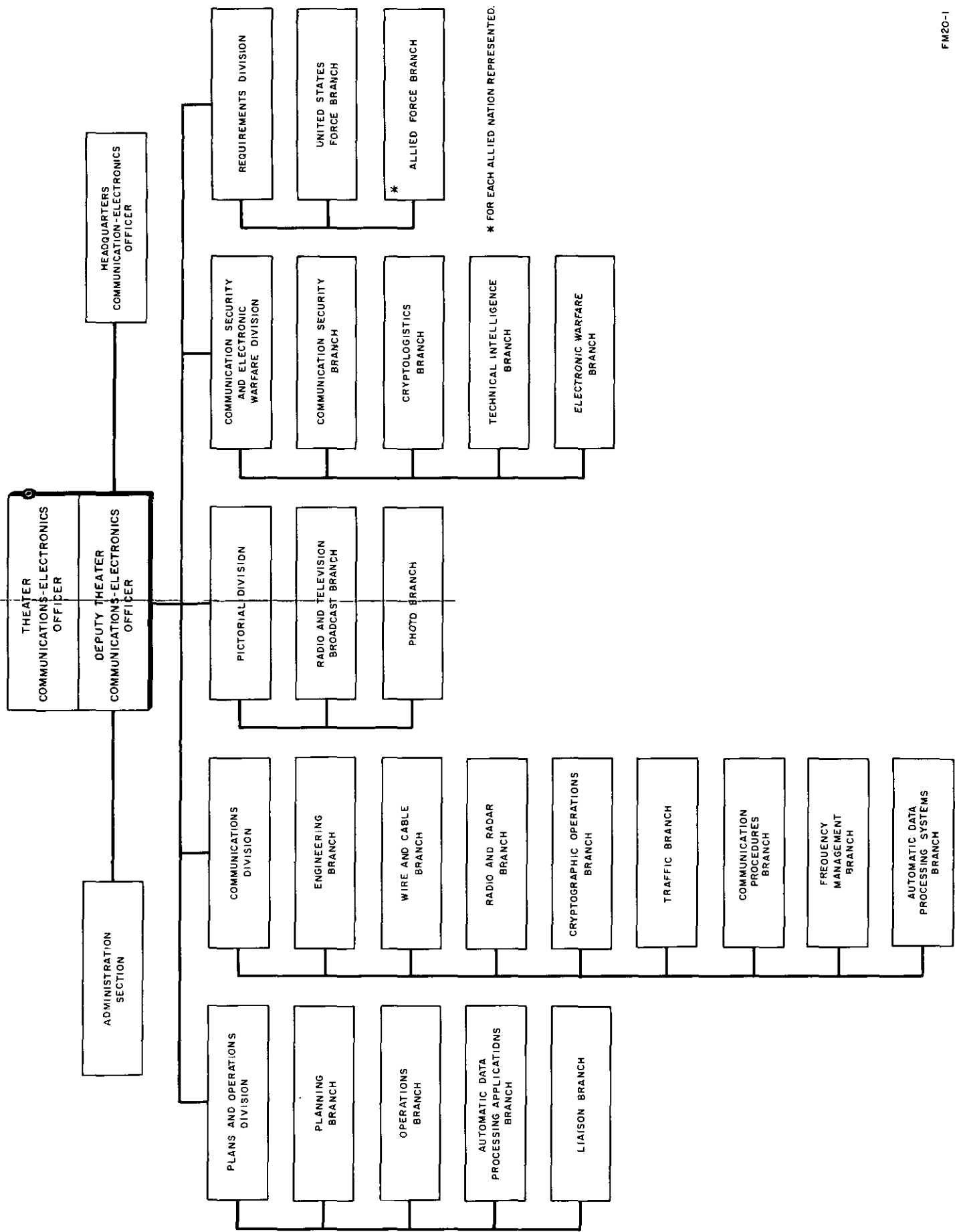
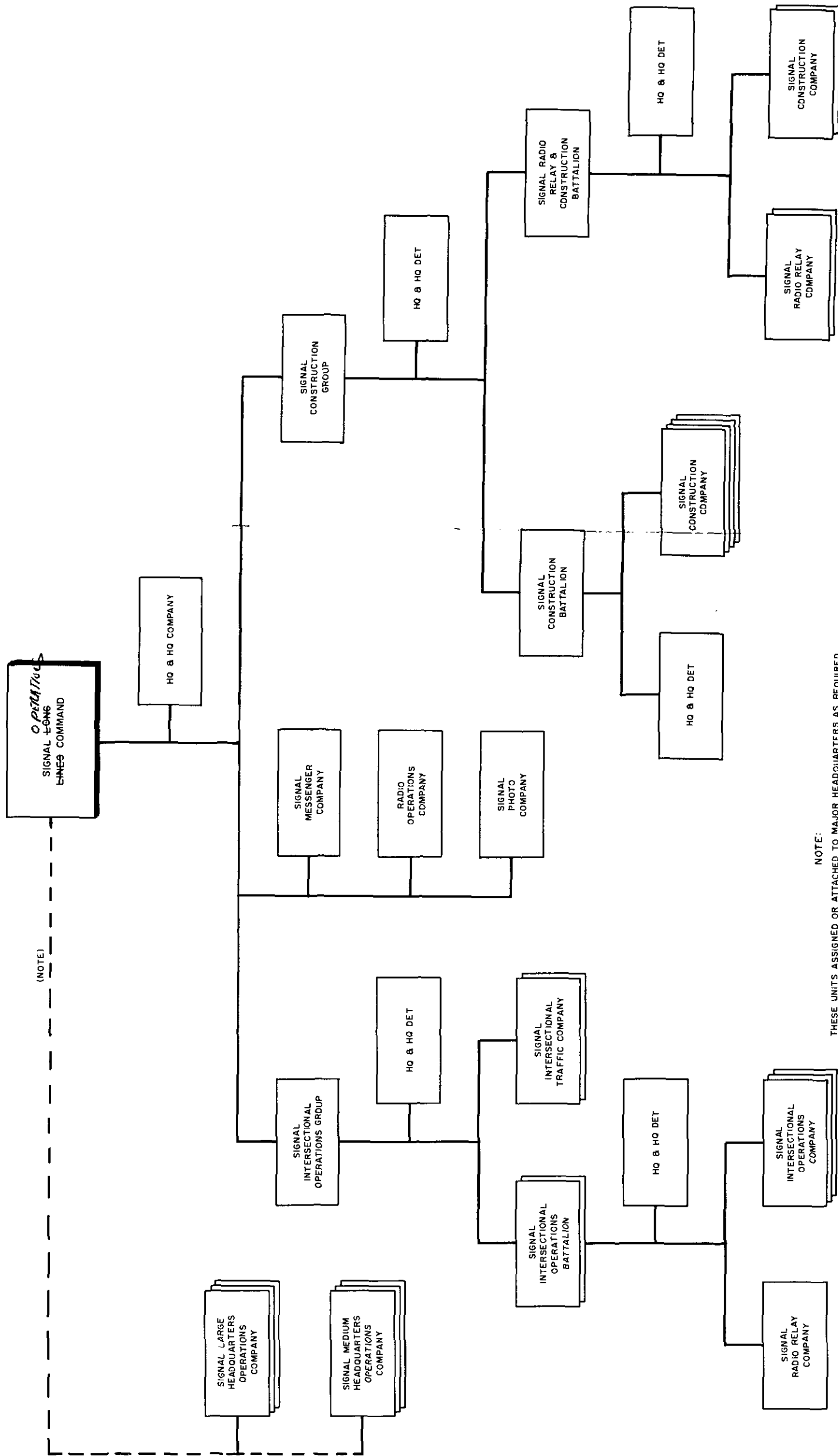


Figure 1. Type combined communications-electronics staff organization for a theater headquarters.



(NOTE)

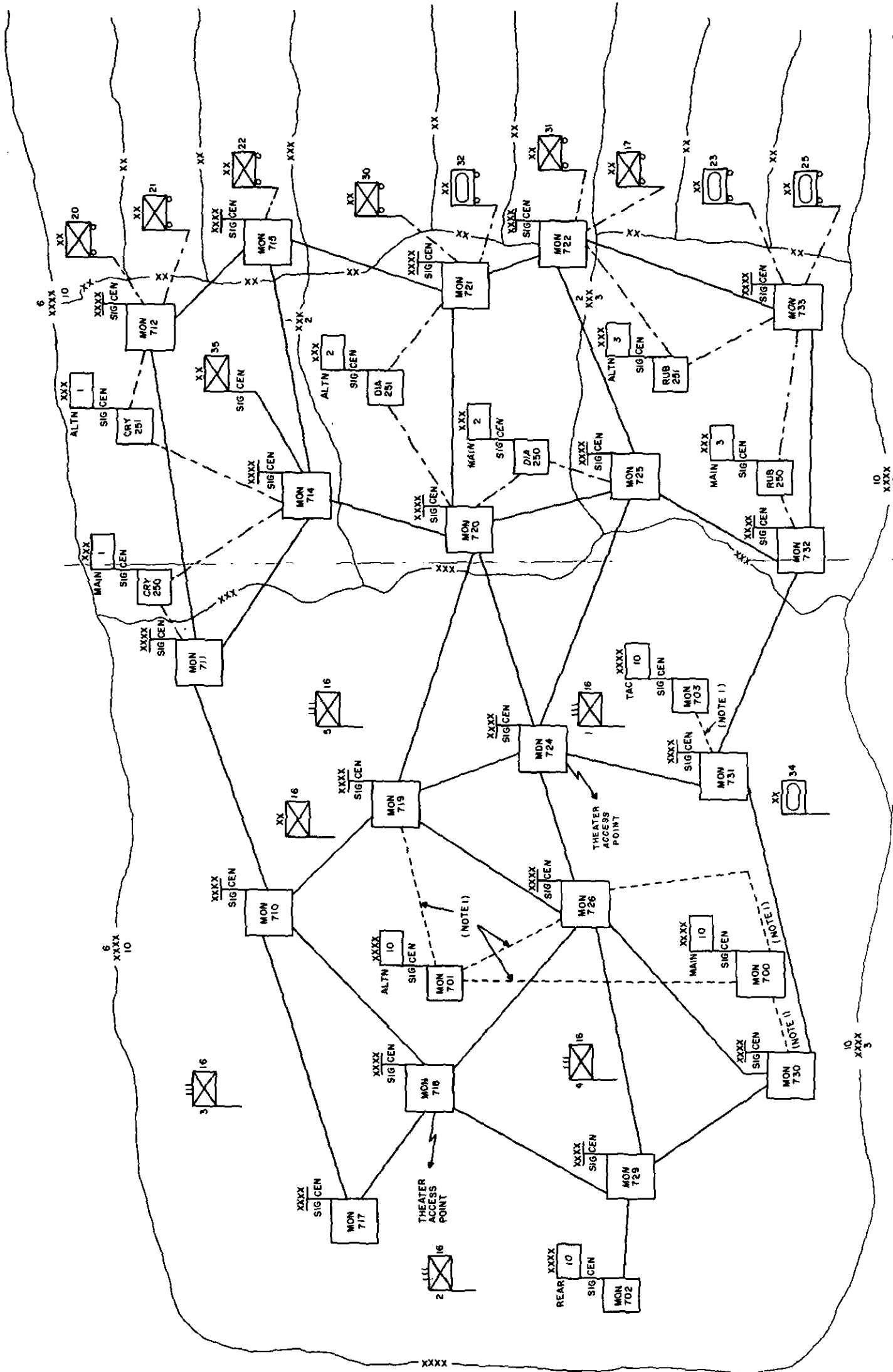
THESE UNITS ASSIGNED OR ATTACHED TO MAJOR HEADQUARTERS AS REQUIRED.

NOTE:

Figure 5. Type signal long lines command.

FM20-5

Figure 5.



- NOTES:**
1. WHEN SPIRAL-FOUR CABLE IS INSTALLED TO PROVIDE THESE SYSTEMS, THE CABLE IS INSTALLED BY THE CABLE CONSTRUCTION BATTALION.
 2. THE EXTENSION SYSTEMS TO THE DIVISIONS NORMALLY TERMINATE AT DIVISION TRAINS.
- LEGEND:**
- MULTICHANNEL SYSTEMS PROVIDED BY SIGNAL COMBAT AREA COMPANIES.
 - - - MULTICHANNEL SYSTEMS PROVIDED BY FIELD OPERATIONS COMPANY, ARMY SIGNAL BATTALION.
 - - - MULTICHANNEL EXTENSION SYSTEMS PROVIDED BY SIGNAL COMBAT AREA COMPANIES.

Figure 7. Type field army area communication system.